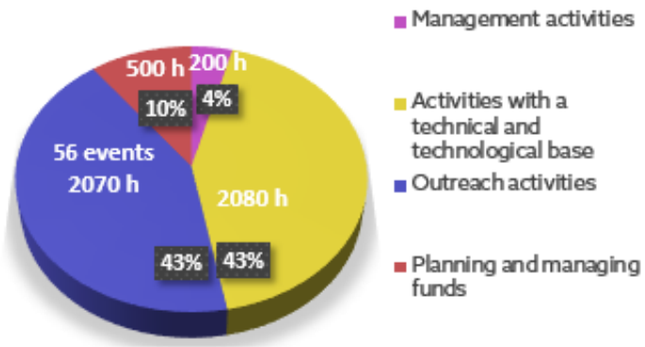
Summary page

our season in review.

Activities



56
Number of events

4850
Time spent (hours)

44858
The impact (number of persons)

This year we managed to obtain the amount of 21,640.84 USD

Our mission is to learn and apply STEM principles as we build a robot from scratch, blending them with well-defined life skills such as teamwork, communication and leadership and to become a strong, sustainable and active FIRST hub in our community by creating and participating in events that spread FIRST's values.

80% custom parts
Intake (p.277)
Scissor lift (p.271)

Mentoring 2 FTC teams
1 FLL team (p.199)
30 teachers involved
70 volunteers
Networking (p.215)

Inspiration and Recognition of STEM
Mindcraft by BRD (p.221)
Coolest Projects 2019 (p.134, 219)
Laura TedX (p.217)

CSH as a local partener
Flight Festival (p.156)
European Researcher's Night (p.154)
CodeCamp (p.171)

CSH for the community
Open Robotics Intelligent Grid (p.130, 147)
Winter Robotics Games (p.92)
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New software approach
State machine (p.116)
Localization (p.289)

General Table of contents

BRD | FIRST TECH CHALLENGE ROMANIA | NAȚIE PRIN EDUCAȚIE

TEAM CSH - **RO074** -
"CARMEN SYLVA" HIGH SCHOOL
2019-2020

EMAIL: contact@team-csh.ro
FACEBOOK: Team CSH
INSTAGRAM: @team_csh
WEBSITE: https://team-csh.ro
FOUNDED IN: November 2017

17th SEPTEMBER 2020
NOTE: First Version

1.Contact |Social Media| Executives|-Mentors|Sponsors|School

Team Name	**CSH**
Date Founded	**November 2017**
Members	**6 girls ☺** **5 boys**
Mentors	**2 teachers** **1 parent** **1 engineer**
School	**The National Pedagogical College "Carmen Sylva"**
Sponsors	**o APTIV Technology Services & Solutions S.R.L** **o INTEL SOFTWARE DEVELOPMENT SRL** **o HAMILTON CENTRAL EUROPE S.R.L.** **o UNIVERSITATEA DE VEST DIN TIMIȘOARA** **o CREATIVE SPACE** **o NOKIA NETWORKS S.R.L** **o DUEVERDE SRL** **o VISTA VISION SRL** **o COLEGIUL NATIONAL PEDAGOGIC ,,Carmen Sylva" Timisoara** **o ELTREX SRL** **o AQUATIM SA** **o SIM VISION OPTICS SRL** **o CONSTRUCTIM S.A**
Website	**https://team-csh.ro/**
Mail	**contact@team-csh.ro**
Youtube	https://www.youtube.com/channel/UCywQdIdOjh4nAzxVRIJWe_g
Facebook	**Team CSH**
Instagram	**@team_csh**
Executives	**Nușa Cojocaru - Head of Mentors** **Robert Cristian Iridon - Leader** **Gloria Victoria Moroșan - Head of Marketing & PR** **Bogdan Preda - Head of Hardware & 3D Design** **Laura Chirilă - Head of Programmer** **Andrei Aungurencei - Head of Notebook**

2. Team History

Our team consists of eleven students from the National College "Carmen Sylva" Timișoara between the ages of 16-18. Team CSH is now participating for the third time in this competition.

During our first season we won the Judges' Award, suring our second season we won First Place Connect Award in the regionals, and at the national phase we won Third Place Think Award and Third Place Compass Award, and we are positive that the experience we have gained will guide us to a big success this season. Our pure passion, the tenacity, but also our 'gracious professionalism' are the ingredients that make team CSH a redoubtable opponent. Inspired by this contest, the team members also got involved in multiple contests, obtaining 16 national and international awards, until now. By participating in FIRST programs we develop many abilities that are seemingly unrelated to the STEM field: leadership, entrepreneurship, public speaking, teamwork.

Team CSH understands the need for such programs and embraces them, hoping to spread the spirit of Gracious Professionalism and to inspire anyone that collaborates with us in any way, or crosses our path.

3. Team Bios

Spiri

- Leader
- Assembly
- 3D Designer
- Programming
- Dean's List Nominee

Personal Achievements:

- „Coolest Projects", 2nd place (Dublin) ROBOTICS CATHEGORY
- „Grigore Moisil" Contest, 1st place ROBOTICS CATHEGORY

Hi, my name is **Robert**, a.k.a. Spiri (because I'm the spirit of the team), and I'm this season's leader. Leading has been by far the best experience I've ever encountered, and because of FIRST I found out that managing is one of my best traits and now one of my biggest dreams is to become the CEO of my own IT company. And to go to The US. I really REALLY want to go to America (alongside with my team, of course).
P.S.: Because of my experience, I already have job offers in the IT field!!

Side note from anonymous member:

„To be honest, at first I didn't really believed that Spiri could handle being a leader, because he used to be such a sensitive boy. But now, I can only say that he grew so strong and so powerfull, being one of the most hardworking person I met. Without any doubt, he did his best to reach us to Inspire, because he became an inspiration himself".

„Being the head of Marketing&PR department and the main event organizer of the team, I learned a lot about people and working with them. I personally believe that this is the ultimate goal for the FIRST programme, to help us empathize with others and develop our people skills. If my future seemed uncertain before, FIRST helped me figure out how I really want my life to be, and now I believe that my purpose is to help people grow, by sharing the values of this beautiful competition (the main project that helped my take this decision was CSH Academy)."

Side note from anonymous member:

„Gloria is always very well organized, all about the details, the best networker and also the sweetest ever. She acts and thinks like a leader, takes great resposability and does everything to make sure that everything goes out smoothly. She is also a pump of energy and optimism, setting the vibe eveytime she enters the door. If you ask anyone about CSH, their first thought will be Gloria, everybody loves her."

Gloria

- Head of Marketing&PR
- Event organiser
- Dean's List Nominee 2nd time

Personal Achievements:

- Interactive Digital Media Student Contest 2019- 1st place, Audio Video Production, organized by Polytechnic University
- „InfoEducation 2019"-2nd place, Multimedia cathegory
- „PedaScience 2019"-Mention
- Debutant for the charitable event „Timisoara's Viennese Prom"-edition VIII

Bogdan

• Head of Hardware&3D Design
• Assembler

Personal Acheivements:
• Coolest Projects International- 2nd place Runner Up
• Info Education- Mention, Galaciuc
• „Grigore Moisil" Contest 1st place, Software Cathegory

„My name is **Bogdan** and I'm part of the first generation of CSH. I'm also a retired leader, but I mostly preffer working exclusivelly for the robot, because I'm a bit introverted. Anyway, I'm very glad I gained my team's trust last year to vote me as the leader. The best thing that FIRST ever taught me was how to colaborate and introcing me into STEM education. Since middle school I realised that I enjoy the technical field in general, but First Tech Challenge gave me, without any doubt, the best highschool experience, and made me have a big dream: create a humanoid with artificial intelligence."

Side note from anonymous member:

"Bogdan is the type of guy that never brags about his work, he enjoyes silence and can do wonders if you'll colaborate. He's both ambitious and hardworking, knows his goals, knows how to achieve them and never gives up from his ideas. He may want to seem tough on the outside, but he loves children and he's always the one that brings them at our stand and start explaining them about our project, which makes him a kind man."

„I started studying computer programming about 5 years ago. Since then I've won several awards at county, national and international programming contests. My dream regarding FTC is to win a prize at the World Championship in Detroit. My dream outside FTC is to have a successful startup in the world of IT. After I finish high school I want to go study computer science and get a degree in machine learning preferably at a US university. The FIRST program helped me to develop my skills in the STEM field and to wish to continue in this field. You can see more details about me and my projects on my portfolio website: www.laurachirila.com"

Side note from anonymous member:

„Is there anything more to say about Laura? I mean, aren't you convinced yet? She's the Elon Musk of our team, always very well documented, always with practical ideas, with a good sense of humor and noncomformist."

Laura

• Lead Programmer

Personal Achievements:

• National Software Contest "Grigore Moisil" Lugoj-Educational Software, 1st Prize

• Coderdojo Coolest Projects Awards Dublin, Hardware Category-Winner

• The Infogim software creativity contest,Website creation-1st Prize/ Applications and Games creation-1st Prize

• National Software Contest "Grigore Moisil" Lugoj,Utility software and games-1st Prize

• Climate Launchpad Global Grand Final, The Green Business Ideas Competition-Finalist; 1st place at nationals

• Zero Robotics High School Tournament ISS Final MIT, Finalist

Unguru (One Guru)

• Head of the Engineering Notebook
• Assembler

Personal Achievements:

• Dancing Competition „Lada cu zestre"-Solo dancers
• „Pedascience"-1st place

„I could say that this is my second year with team CSH, because at first I was their unicorn mascot. I became the official simbol of CSH by frequenting to their meetings and eventually started to learn about the competition and the robot mechanisms. I began to desire so much to be part of the team, but because the register closed a long time ago, by gaining their trust, last year they decided that I should be the mascot and join them to the regional and national competition, so for this year I could be an official member. Because of my fast learning, now I'm even the head of the EN. FIRST helped me discover my passion for robotics and physics, things I never believed I could enjoy so much. However, my first love ever was dancing, and my dream is to visit all of the coutries and learn each one's specific dance."

Side note from anonymous member:

„Calm and calculated, but at the same time energetic, Unguru is the person that knows how to make everyone trust him. Has a positive attitute in every challenging situation, and besides, he wants to make everyone feel safe and is the best supporter. Moreover, he does great massages."

Sorinica

- FLL Trainer
- EN Writer
- Marketing

Personal Achievements:

- Vicepresident of School's Student Council
- „Management and Marketing of the Pyramid" Competition, 1st place- organized by Polytechnic Univeristy
- Won a 3 week Summer Camp in UK, at St. Edmunds College
- Attented Neurology and Economy courses at University of Cambridge

„My story with CSH is quite funny. I joined the team in their fisr year, stayed for 3 days then quit, because I got scared for whatever reason. The next year I joined again as part of the Marketing department and writer of the EN and stayed for good. This year, I decided to get involved even more and founded CSH Junior, being their main tutor. Training FLL was the best experience of my entire life, I found out that love teaching and motivating others, as well as learning how to cope and talk with different types of personalities. Thanks to FIRST, I discovered my passion for persuasion, psychology and neurology, and now I've applied to a Bussiness Management profile in UK."

Side note from anonymous member:

„She is extremelly good at handling stressful situations, takes quick decisions and never gives up on them. If she took the right decision, she embraces it, and if she was wrong, she learns from it and says: „Better now than

Alexandra M.

- FLL Mentor
- EN Writer
- Assembly

Personal Achievements:
- 2nd place in Handball Competition

„This is my 3rd year in team CSH, and throughout the years FIRST convinced me that the area I'm most passionate about is IT. When I got into this competition, I had 0 experience in any type of language programming, never assembled a robot before, but I managed to learn quick and develop a huge interest into the STEM domains. Before FIRST, I actually wanted to study sports, my favorite one being handball. However, I will never quit sport, now I go to the gym, because a healthy body keeps a healthy mind, right? In my 3rd year, I volunteer to mentor the FLL Team and hold workshops on the technical side, help them assemble the robot, finding problems and how to solve them. I took this role as a mentor mainly because I wanted to teach others things I didn't know when I was their age. My biggest dream is to study at a University in USA."

Side note from anonymous member:

„Alexandra could literally break her bones and still stay calm, calling 112 and telling them she has a small injury. She's always chill, finds solutions to problems easily and almost never panickes. Has a very rational and practical attitude, but still knows how to have fun."

„ Sounds interesting that I first I wanted to join the competition to learn programming, who tought that a robotics competition will help me discover that I'm more interested in psychology? At the beginning of highschool, I felt genuinely sure of my future, but FIRST helped me to choose a path that really describes me. I still like informatics and mathematics, but being a fundraiser for 2 years and FLL mentor for 1 year made me more extrovert and relaxed when I talk to people. That's how I got interesting in psychology and human behavior, by working with them. In the future, I would like to study the deepest secrets of the mind, either psychology or criminology. Oh, and I love cats. I want a house full of cats."

Side note from anonymous member:

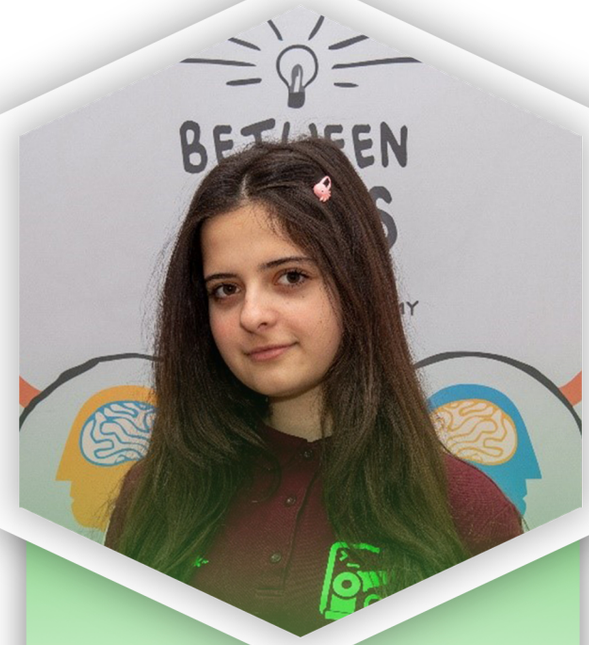
„Carla is the deffinition of color. Always in bright clothes, pink, blue, purple hair, colorful eyeshadow and a bright and pretty smile. She's, without any doubt, very creative, loves to design things, very empathetic and warm, especially with cats and kids."

Carla

- FLL Mentor
- Marketing

Personal Achievements:

- Bebras county competition- 1st place
- InfoEdu- 4th place- Film cathegory



Leti

- EN writer
- Marketing
- Design

Personal Achievements:

- Noi Info Competition-4th place, Movie Section

„I want to go to space. This is the biggest dream a man can have, because, as FTC says: „The sky is not the limit". My dream became when I joined the team and found out how beautiful STEM education is and how everything is guvernated by the laws of physics. I'm mostly interested in engineering, because it requires a lot of deep thinking, a lot of research and focusing on every single detail, things that I find challenging, and challenges give me energy and motivation. For the future, I want to study Computer Science and then get a Master Degree in Aerospace Engineering. Besides career goals, I would love to have a big family and travel the world with them."

Side note from anonymous member:

„When you first meet Leti, you would say that she is the sweetest girl ever. When you meet her for the 3556 time, you would still say that she is the sweetest ever. Always dressed like a cutie, with unique anime inspired chloting, she looks like a kitty. You can sense by her style that she is very creative and nonconformist, and with such a bright mind, she becomes a deadly combination."

„I'm going to be honest with you: at the beginning of my 12th grade, I quit FTC, because I felt I couldn't handle it. After 2 months, I got back, because I missed the vibe of the competition a lot. FTC is my best high school experience, and because of it, I found a part of myself: robotics and engineering give me a sense of calm, but at the same time as motivation. Besides school, I spend my free time splitting between robotics and voley (Troy Bolton wannabe), and both of them hold a big place in my heart, one of my greatest dreams ever is becoming a professional volley player, but for now, I just want to get accepted into our Polytechnic University, Electronics and Telecomunications section."

Side note from anonymous member:

„It's easy to spot Peto everytime you enter the room. Well, might be the big afro hair and the 6'3 height, but also the bright attitude that brings people closer to him. He always wants to listen to both sides of the story before the creates an impression, and never talks bad of anyone. Moreover, his big body holds a bigger heart: he melts over kittens."

Peto

• Assembler
• Emotional Support. I like to calm my team mates when they are stressed.

Personal Achievements:

• Coolest Projects International- Runner Up Award, Hardware Cathegory
• County phase Volley Competition- 3rd place, twice

Robert

• Programmer
• Assembler

Personal Achievements:
• Coolest Projects International- Runner Up Award, Hardware Cathegory
• „Grigore Moisil" Contest 1st place, Software Cathegory

„I'm an outgoing person that loves to work in a team, so that's the main reason why I joined this competition. Besides, I had a vague idea of what actually means to work in the robotics and IT domain, so I wanted to gain experience on both sides. One of my biggest dreams is to explore the world and meet as many people as possible, and with FIRST's programme, things seem to align perfectly: a robotics competition that promotes equally the importance of communication and colaboration fits me perfectly. I feel that FTC teaches us all of the aspects of a successful bussiness, being one of the very few competitions that actually prepares us for real life, while still having fun."

Side note from anonymous member:

„Robert is hilarious. You can have the worst day of your life and still laugh out loud around him. He knows how to cheer people up and knows how to approach conflicts in a charismatic way. Moreover, he's very wise and always has his words in his pocket"

Mrs. Nușa

- Mentor
- Informatics teacher

In the last few years, I choose robotics because it is a novel field, one that draws the young people I work with, and because I consider robotics and artificial intelligence to be the future.
I wanted an opened and transparent mentoring relationship, to share from my own experience, to suggest ways out of deadlocks, to listen, to offer feedback and stimulate my students to follow their road and dreams to success. I always had the luck to attract passioned and full of energy students. Their results of the competitions were recognized at international level.

Side note from anonymous member:

„Nușa is both a mom and a teacher, motivating us everytime we are feeling low and making sure everyone is feeling included. She is well organized, always with a backup plan and a great manager."

Mr. Cojocaru

- Mentor
- Physics teacher

I am deeply impressed with the intense, solid and creative work of the team, but also with their perseverance and attention to details and innovation. This effort makes them capable of overcoming their own limits.

I choose robotics because is a captivating and entertaining way that strengthens programming, physics, and mathematical notions that stimulate creativity, critical thinking, and the ability to work in a team.

Mr. Cristi

- Mentor
- Hacker space Creative space
- Team lead

"What did you enjoy most from the experience as a mentor?"

„I am pleasantly surprised by their inventiveness, their tenacity and their ability to solve problems under time pressure."

Side note from anonymous member:
„He dedicates himself entirely in every project, has a great sense of humour and a personality I would love to follow."

Mr. Petolea

- Mentor
- Electrical engineer

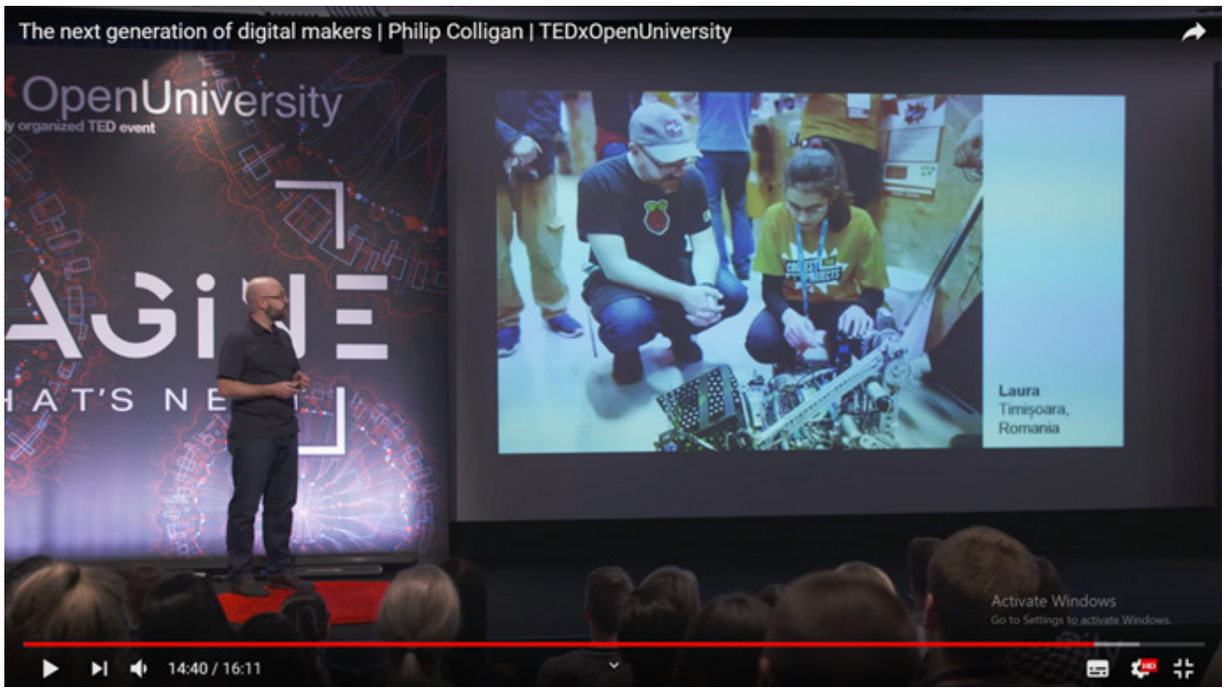
Why this project? I was excited by the idea of being a part of a team that participates in such a diverse competition like the FTC, and also by being surrounded by students. I think that sharing with them technical knowledge and brainstorming with them ideas about building the robot will be fun.

Side note from anonymous member:

„A man that never gives up on his plans, a great mentor and teacher, knows how to achieve even his biggest goals and he's very caring."

4. Awards

Laura appearing in a TEDx held by the CEO of Raspberry Pi
December 12th 2019



Promoting teamwork and representing our team in the workshop "Ce faci,te face" Faculty of Economics and Administration of Businesses,West Univerisity Timisoara
October 23rd 2019

Dream BIG, build BIGGER!

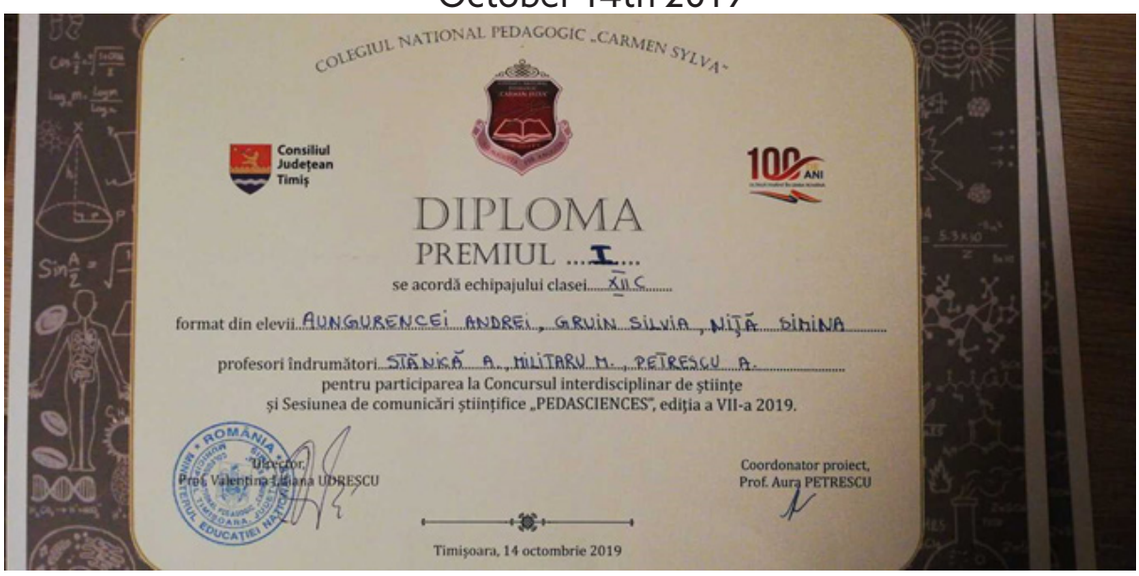
Judges' Award – FIRST LEGO League
Cluj-Napoca, Romania
February 2nd 2020

4th place, robotics section – InfoEducatie
Gălăciuc, Vrancea county, Romania
August 4th 2019

Dream BIG, build BIGGER!

Finalist Alliance – Robotx Demo
Hunedoara, Romania
January 11th 2020

First place – PEDASCIENCES
Timisoara, Romania in our school
October 14th 2019



Dream BIG, build BIGGER!

Runner Up Award – Coolest Projects
Dublin, Ireland
May 5th 2019

First Place, robotics section – National Software Contest "Grigore Moisil"
Lugoj, Romania
May 19 th 2019

MINISTERUL EDUCAȚIEI NAȚIONALE

Clubul Copiilor Lugoj

romania2019.eu

Inspectoratul Școlar Județean Timiș

CONCURSUL NAȚIONAL DE SOFT „GRIGORE MOISIL", EDIȚIA a XXV-a, LUGOJ, 15-19 MAI 2019

DIPLOMA

Premiul I

Se acordă elevei/elevului: Preda Bogdan,
Instituția: Colegiul Național Pedagogic „Carmen Sylva" Timișoara
Secțiunea comunicări științifice liceu: Soft utilitar și jocuri
Clasa: X
Titlul lucrării: Qubit- robot utilitar
Profesor coordonator: Nușa Cojocaru , Tatiana Cărăbaș , Daniel Cojocaru

Director,
Prof. Simona Bogdan

Președinte comisie de evaluare,
Prof. Cezarian Preoteasa

Inspector Școlar,
Prof. Jelco Stancov

Calendarul Activităților Educative Naționale finanțate de către M.E.N 2019 -Poziția 120 . Nr. 422/3 /18.05.2019

Dream BIG, build BIGGER!

Gala of excellence- Laura Chirila

COMPASS AWARD 3RD PLACE– National Robotics Championship
BRD FIRST TECH CHALLENGE ROMANIA, Season 2018-2019
March 2019

THINK AWARD 3RD PLACE– National Robotics Championship
BRD FIRST TECH CHALLENGE ROMANIA, Season 2018-2019
March 2019

5. Selection of members

	2017-2018	2018-2019	2019-2020
Members	13	14	11

"New colleagues – new stage"	
Date	24 octombrie 2019
Meeting held	Colegiul National Pedagogic Carmen Sylva
Attendance	The whole team
Impact	30 people
Time spent	2h preparing, 8h the activity

Goals:

1. To extend the CSH family

Results:

2. We have formed the CSH Academy with the volunteers that want to become members of the team

Preparations:
We have defined the procedure of selection of the new members, that will happen in different steps:

The procedure of selecting new members:
Target group: students belonging to "Colegiul National Pedagogic Carmen Sylva" - grades 9th, 10th, 11th
Selection term: February 25th 2020

1. Signing up online

Launching an online questionnaire, which will be completed by the people willing to become volunteers of the team. It contains: first name, last name, specialization, e-mail address, phone number, abilities/strong points, the department(s) they are applying to.

2. Setting up a meeting

Place: The festive room of CNPCS

Activities:

1. A short presentation of the team (the departments, roles)
2. Activities based on departments

PR - To present an object that will be picked out from a box (analyzing the way of thought and ingenuousness when approaching the problem)

Marketing - The problem situation (i.e. launching a challenge; choosing a time period and way of promotion) – will analyze the methods used

Design - Presenting a project that they have worked on before; making a poster with the proposed subject

Notebook - Analyzing an article from the notebook (eventually getting tips&tricks from Bianca); writing an article about recruiting day (the text, page layout and significant pictures will be taken into account)

Photo/video - Taking pictures throughout the activity (important! Moments from all departments will have to be captured); a short video (30s) about that day (analyzing the moments that happened)

Technical (assembly) - The problem situation (i.e.
the collecting system of the big cubes from season

2); resulting in sketches and ideas (analyzing the way of thought and seeking solutions)

We are looking for:
- cooperation
- creativity
- responsibility
- enthusiasm, energy

3. Member selection

The results will be analyzed after the meeting, the spots that have been announced vacant previously will be taken, becoming a volunteer.

Vacant spots:
- Assembly
- Photo/video
- Design

Result:
We have gathered the first groups of students for the CSH Academy, and more precisely, 15 students that will participate in the courses of the Academy and activities of the team.
Students of "Colegiul National Pedagogic Carmen Sylva" that have joined the visual making team (photo/video):
- Alin Balosin - student in 9th grade, the philology section
- Mike Marcu – student in 10th grade, the intensive mathematic-informatics section
- Matei Albu – student in 9th grade, the intensive mathematic-informatics section

As a volunteer, Caunii Paul, student in student in 9th grade, the intensive mathematic-informatics section, has joined the assembly department.
The editing department grew in size with the arrival of:
- Oriana Iancu – student in 9th grade, the intensive mathematic-informatics section
- Daria Atanasiu – student in 9th grade, the intensive mathematic-informatics section
- Noemi Banu – student in 9th grade, the intensive mathematic-informatics section

Although we have managed to find the people we needed for the team, the most important thing is that we have managed to spread our energy and courage to the students in our school, and that we have helped them believe in themselves and their ideas.

6. ALUMNI

This is for the people that never forgot about us, and even if they are physically far away from us right now, they still did their best to help us achieve the results we desire.

Daniel Stoica

Daniel is currently a Computer Science Student at University of Birmingham. During winter break, he came for a whole month to tutor our FLL Team, holding programming workshops and helping with the innovative project. The FIRST programme helped him during his application process at university, but also the experience achieved while programming a robot is helping him getting some pretty good grades right now.

Fraunhoffer Bianca

Bianca is also a Computer Science student at University of Birmingham. During her 2 years of FIRST, she was the leader of the Engineering Notebook, being able to learn about the robot's mechanisms at it's finest. This year, we held together countless of skype conversations about the notebook composition, what should and how should we write, and some tips and tricks for design.

Prodaniuc Pavel

Studying Computer Science at University of Southampton, Pavel was the main leader of the programming department during his period in the team. He also created our team's website, and he's still the one that manages it, updating it frequently.

BRD | FIRST TECH CHALLENGE ROMANIA | NAȚIE PRIN EDUCAȚIE

BUSINESS PLAN
2019-2020

1. Executive Summary

Our mission is to learn and apply STEM principles as we build a robot from scratch, blending them with well-defined life skills such as teamwork, communication and leadership and to become a strong, sustainable and active FIRST hub in our community by creating and participating in events that spread FIRST's values.

Over the past few years, the interest in the field of robotics has been constantly increasing. Robots are now part of industry, research, medicine, space exploration and households, presenting an unprecedented potential for taxing, routine, detail-heavy work, even in hostile environments. The market is scarce for other competitions that provide children with such a wide array of benefits like the FIRST Tech Challenge.

"**Dream big, build bigger**" is the motto that represents us, and under this motto we evolved during the 3 years as a team. The first year was purely for observation, to understand what was happening in the competition, and already from the second one we managed to reach from the Judge's Award to the Think Award, the closest one to Inspire.

Children are being more and more interested in the field of robotics at younger ages, which emphasizes the need to extend related programs to elementary and middle schools. Thus, encouraging the younger generation to pick up STEM-related abilities and competences proves to be invaluable. By wanting to create a huge impact in our comunity and the desire to spread FIRST's and promote STEM education, this year we surpassed ourselves and founded CSH Jr., a FIRST Lego League Team whose we are the mentors. The students need to be a part of a friendly learning environment no matter their level of experience, something this competition acknowledges, and our main goal for them is to **teach them the things we wish we knew when we were their age.**

By involving ourselves in both the technical and non-technical aspects of the competition, and by applying FIRST's motto (Gracious Professionalism), we become familiarized with many real-world processes, such as making a budget and we also help and inspire other teams through our own work, creating and implementing different competition strategies.

Our goals for the next several years are mainly to spread all of our knowledges and experiences to further generations, tutoring them while still keeping up with the newest technology innovations. We believe that this is what long term sustainability is based on, and due to our ambition, determination to expand our knowledges and learn from mistakes, Team CSH is for the long run, always ready to create an impact for bigger and bigger communities, by being an inspiration.

2. Mission. Vision for the future. Objectives.

Mission statement:
Our mission is to learn and apply STEM principles as we build a robot from scratch, blending them with well-defined life skills such as teamwork, communication and leadership and to become a strong, sustainable and active FIRST hub in our community by creating and participating in events that spread FIRST's values.
By involving ourselves in both the technical and non-technical aspects of the competition, and by applying FIRST's motto (Gracious Professionalism), we become familiarized with many real-world processes, such as making a budget and we also help and inspire other teams through our own work, creating and implementing different competition strategies.

Vision: To create leaders ready to embrace "real life", accumulating experience, becoming better together, in a world where the technology is the magic of the present and the future.

General objectives:
Student involvement in exciting programs based on mentoring, research, and robotics in order to help them become science and technology leaders and also forming their independent life skills and career planning. This overall objective is within the FIRST mission that promotes well-rounded life skills, including self-confidence, teamwork, communication and leadership skills, applying STEM education principles. Young people are accompanied on their educational journey, "learning by doing", "playing" and "having fun" while creating a robot.

Specific objectives:

OS1 Development of team CSH, highly performing in the term of 29 weeks with the goal of gaining qualification at the Mondial Championship FTC by attending the Regional Competition (at least the finalist alliance in field and 1st place of Inspire Award) and the National Competition (at least finalist alliance in field an 1st place of Inspire Award), until the 29th March 2020.
OS2 Active involvement in the life of the community in the term of 6 months by participating in three social projects, two community projects and two environment projects in the term of eight months since the competition was launched.
OS3 Promoting the FIRST spirit by CSH by using the educational concept STEM under the division 'Gracious professionalism' through organizing 12 promotion events in public

spaces and institutions, mass media and online until 29th March 2020.

OS4 Involvement of the CSH team in the FIRST community through networking with the goal of creating an efficient network of communication that includes at least 50 teams until 29th March 2020.

OS5 CSH Team spreads the spirit of Gracious Professionalism in order to inspire anyone that collaborates with us in any way, or crosses our path in the eight months of the season.

OS6 Building a robot which contains four specific hardware elements, programmable use of Road Runner library for motion profiling and odometry, having Modularity, reusability of code by the robotics team CSH in 29 weeks from project launch.

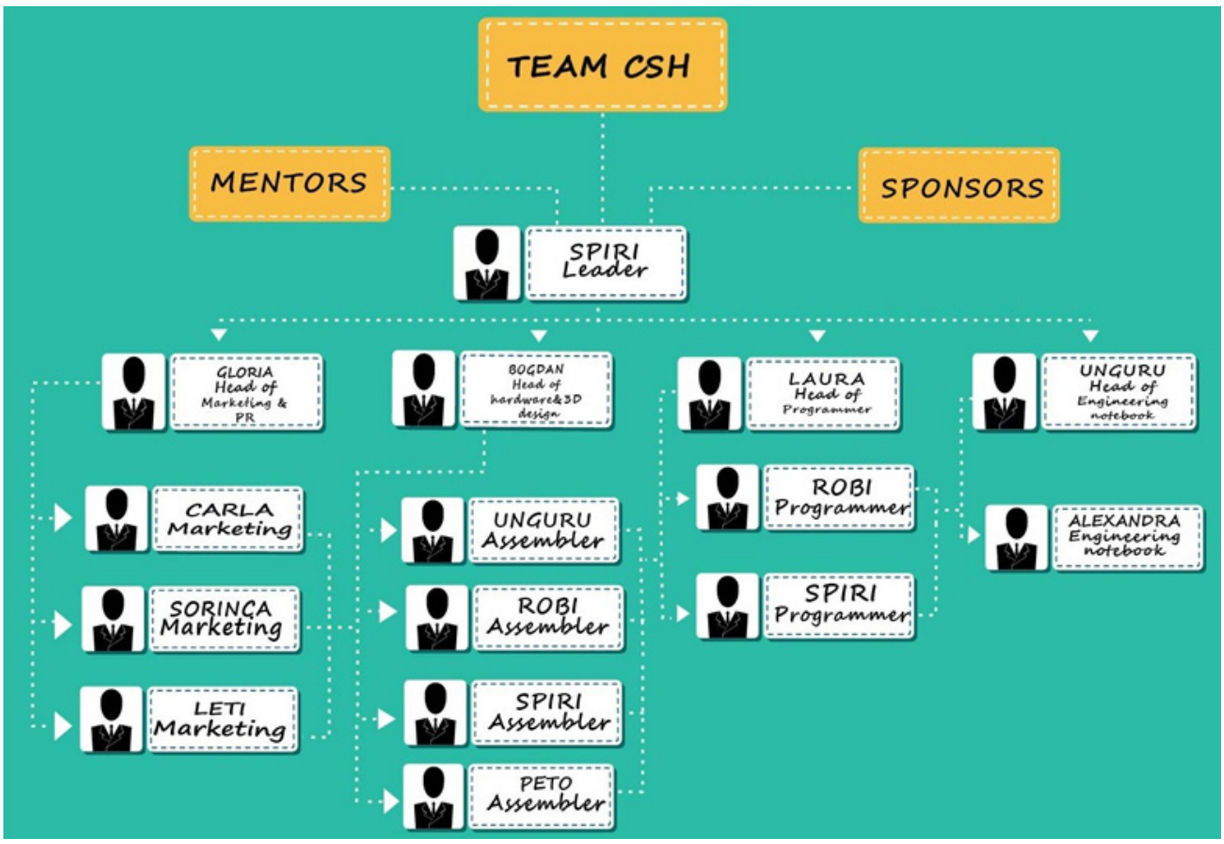
3. Project beneficiaries

Members	• Have fun • Develop self-confidence • Developing Skills: complex problem solving, critical thinking, creativity, emotional intelligence, service orientation, negotiation, judgment and decision making, communication skills and leadership • Learn how to build a robot, to design and to sort their ideas • Learn from specialized mentors in certain fields
Mentors	• Share knowledge and experience • Work with a new generation • Offer students a "real life" learning experience they cannot get in the regular classroom
School	• Support an outstanding student development program • Support students for scholarship opportunities • Assists in the development of students in specialized fields
Sponsors	• Help the community • Real occasion to market their company • Helps train future employees
Executives	• Improves Self-Esteem • Opportunities to grow and develop their leadership • Learn to be versatile (to find ways of adapting and understanding various individual and group dynamics)
Volunteers	• Builds Bonds, Creates Friends • Improves School and College Experience • Have fun • Increases Socializing

4. Management

4.1. Organizational Chart

The 11 team members are assigned to departments considering the organizational plan.



4.2. Roles members | mentors

Roles	Responsibilities
Leader	- establishes the team's mission and goals - is responsible for planning, monitoring and evaluating the project's development - assigns the responsibilities and ensures consistency and linkage between all project team members; - analyzes and solves problems that appear the project's development
Head of Marketing & PR	- coordinates the development of the marketing campaign and the team's relationships with external factors - coordinates the non-technical notebook entries - analyzes and solves problems that appear in the department

Head of Hardware & 3D Design	- coordinates the department assigned for the robot's assembly & D Design - analyzes and solves problems that appear in the department - coordinates the department assigned for the robot's programming - analyzes and solves problems that appear in the department
Head of Programmer	- coordinates the department assigned for the robot's programming - analyzes and solves problems that appear in the department - coordinates the technical notebook entries -analyzes and solves problems that appear
Head of Engineering Notebook	- coordinates the technical notebook entries -analyzes and solves problems that appear in the department
Mentors	- establishes the team's mission and goals - plan, organize, control and evaluate the activity of the team

4.3. Gantt Diagram

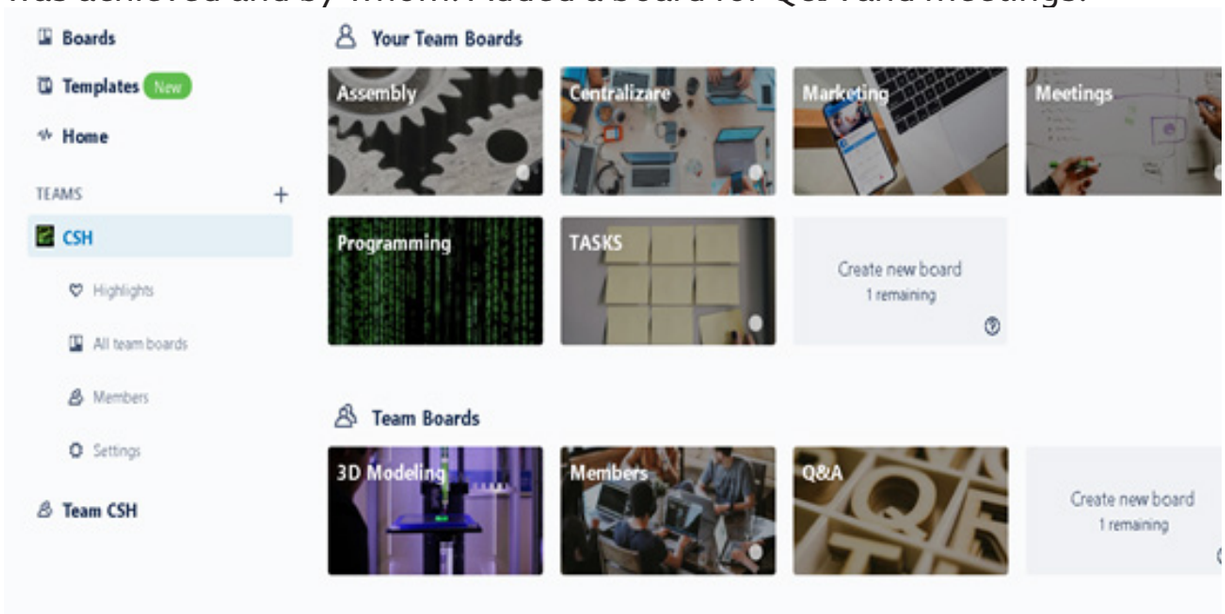
The Gantt diagram is a projection of the previously established tasks. On the left side there is a list of all tasks, and o the right side, each activity is chronologically displayed through a tab representing the duration of the activity. The diagram is constantly updated and adjusted in order to meet the deadline and stick to the budget.

Gantt Diagram

Nr.	Activity's name	Offseason meeting mai - sept 2019	september-december 2019																january-march 2020									After the national game
			w1	w2	w3	w4	w5	w6	w7	w8	w9	w10	w11	w12	w13	w14	w15	w16	w17	w18	w19	w20	w21	w22	w23	w24	w25	w26	w27	w28	w29	
	Activities with a technical and technological base- correlated with OS6																															
	Identification of the constructive solution accepted by all team-members																															
	Debate about this seson theme and possible mechanism			x	x	x	x	x	x																							
	Robot design																															
	Making sketches and prototypes 3D models							x	x	x																						
	Preparing a list of required parts								x	x	x																					
	Assembling the robot																															
	Building the chassis												x	x																		
	Building the scissor system													x	x	x	x	x	x	x	x	x	x	x	x							
	Building the suction system													x	x	x	x	x	x	x	x	x	x	x	x							
	Programming the robot																															
	Studing and improving our programing skills								x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x						
	Writing and testing code on the robot												x	x	x	x	x	x	x	x	x	x	x	x	x	x						
	Testing																															
	Testing autonomous paths and robot mechanism													x	x	x	x	x	x	x	x	x	x	x	x	x						
	Management activities – related to OS1																															
	Selection of the team members	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Identification, familiarization and usage of the specific tools: Gantt Diagram, Scrum board Trello	x	x	x	x	x	x	x	x			x	x	x	x	x	x			x	x	x	x	x								
	Notebook	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	General management	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Organization of the working space	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Outreach activities - correlated with OS2, OS3, OS4 and OS5																															
	Development of CSH as a competitor	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Active involvement in the life of the community	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Promoting the FIRST spirit by CSH	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Involvement of the CSH team in the FIRST community	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	CSH Team spreads the spirit of Gracious Professionalism	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Relation with sponsors	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					
	Planning and managing funds	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x					

4.4. Scrum board Trello

Scrum is one of the most popular Agile methodologies. We use Trello from the beginning our journey, since 2017. It is an adaptive, iterative, fast, flexible, and effective methodology designed to deliver significant value quickly and throughout a project. Scrum ensures transparency in communication and creates an environment of collective accountability and continuous progress.
Whenever something important happens, each member / mentor must be aware of it. For this reason, we decided to use an organizing method that we were familiar with since our first year: Trello. What's great about using Trello for Scrum is it encourages breaking tasks down into granular stages with features like checklists and labels.
Trello allows us to keep every department in order. Each department was assigned one board. Trello allows us to keep every department in order. Each department was assigned one board. In addition to these boards I have added some for centralizing all the data of the team, for members to make it easier to communicate and make the connection between what was achieved and by whom. Added a board for Q&A and meetings.



Each board used by our team

How we use it?
Our Scrum boards are organized into five columns:

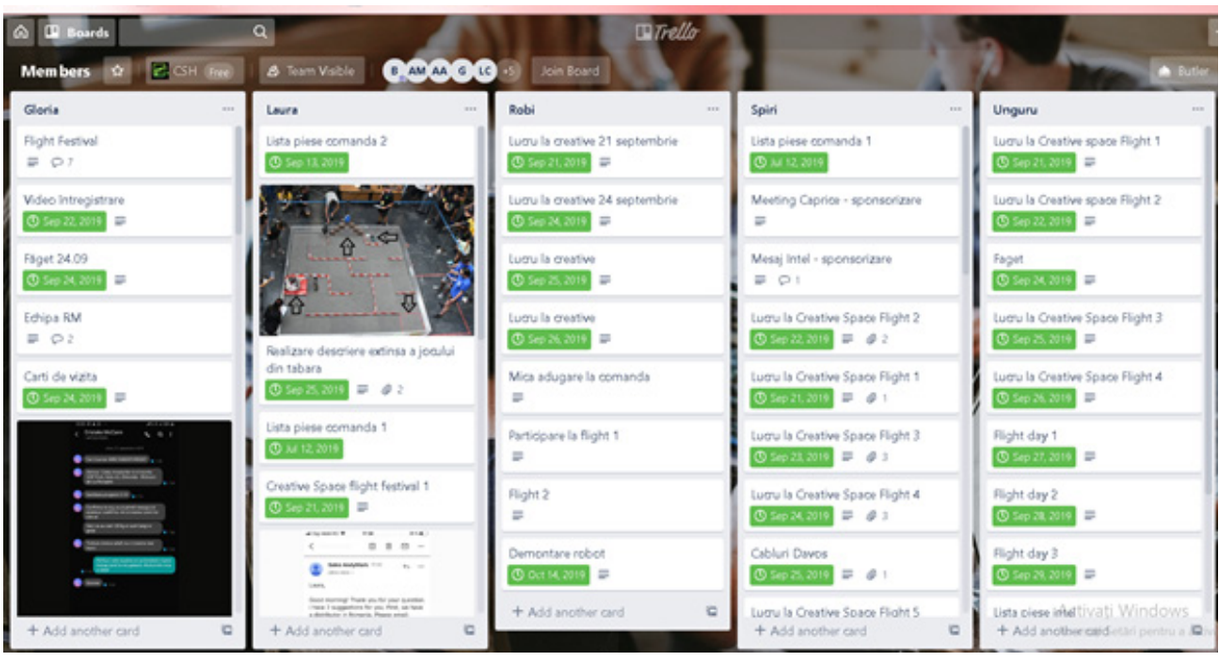
- Tasks: Here is a list of tasks. Each member selected what he wanted to accomplish and the remaining things were then distributed by mentors to the right members.
- To do: Subtasks of stories for which the work hasn't started yet. These are displayed as cards or sticky notes and include important details like owners and due dates.
- Doing: Subtasks the team is currently working on.

• Done: Completed subtasks, remain on the board at the end of the sprint, with results.
• Obs: A list of observation and comments

All tasks start in the leftmost To Do list. As the sprint progresses, the tasks move from left to right. The team updates the board, adding new tasks as needed. When someone moves a task all the way to the finish line- Done list, they move back to the leftmost column to choose the next task to work on. By the end of the sprint, all tasks from all stories should be in the Done column, sprint is considered successful. Finally, the team holds a retrospective meeting to analyze the efficiency of tasks and success of the overall sprint. Then resets the board.

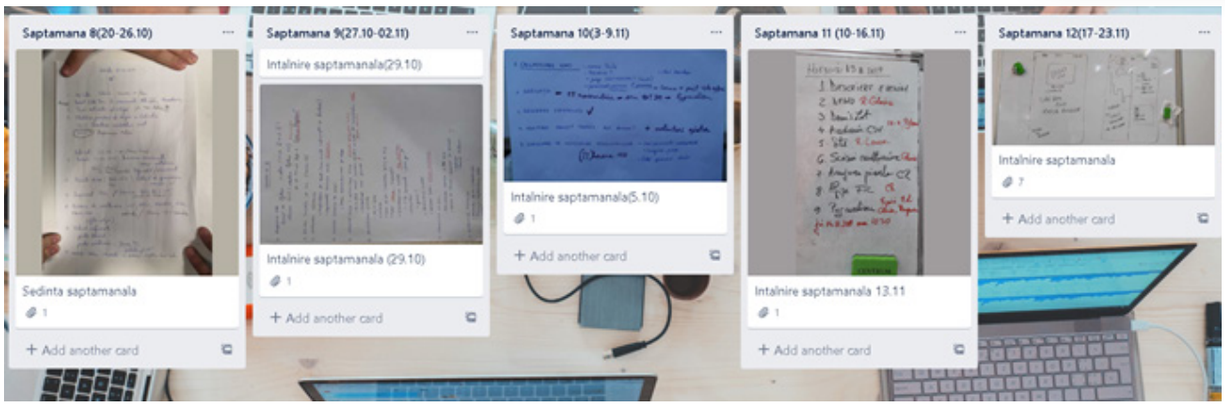
Other exemples:

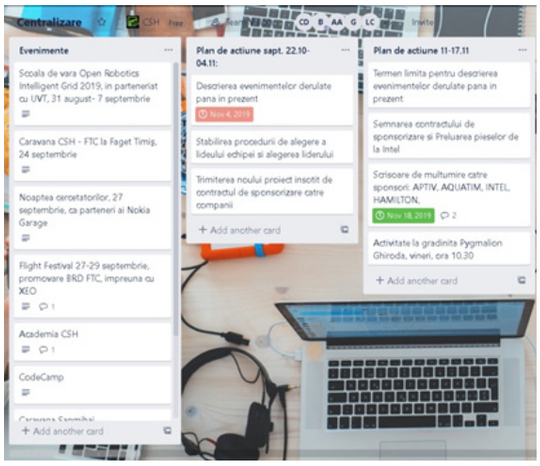
One of the things that helped us the most is the evidence of each thing done. each member noted what should be done and a dead line.



part of the record of our members

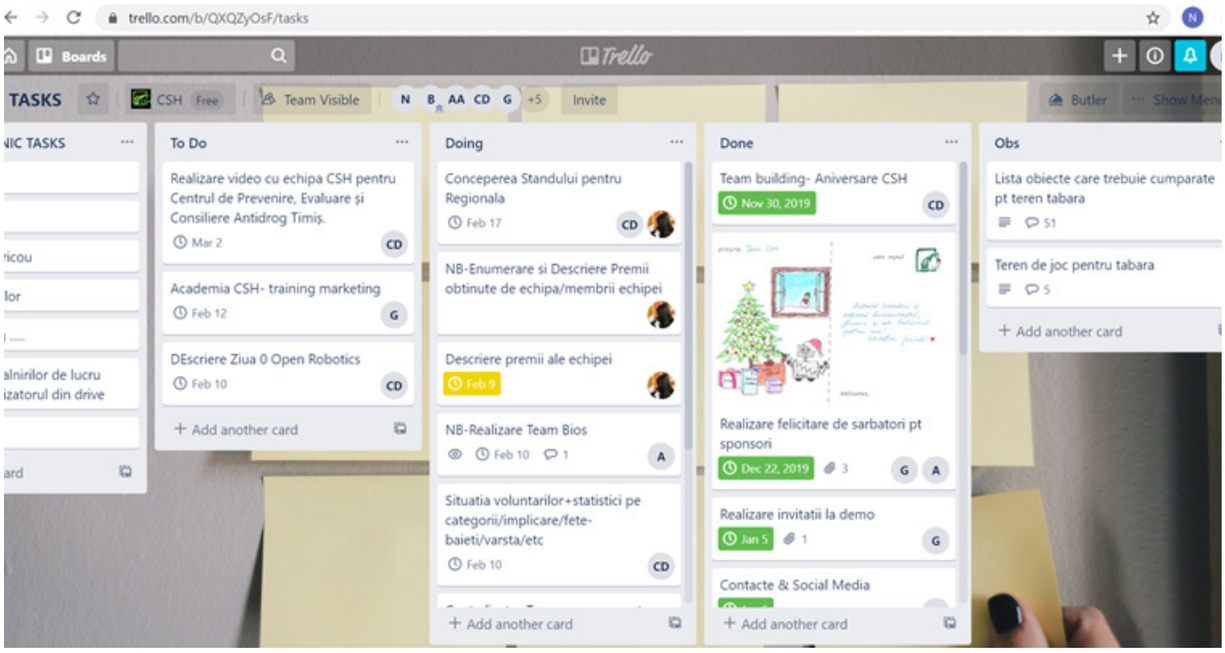
In order to make it easier for us to make the engineering notebook, the centralization part contained every event that I attended or organized, every team meeting and activity plan for a certain period.





the content of the centralization board

Another board that went hand in hand with that of the members was our To Do, Doing, Done List. This board is an exemple from the non-technical side.



Trello works in real-time, real fast. When somebody moves a card, it moves on your board instantly, no matter what device you use.

With checklists and due dates, we didn't miss important tasks, upcoming dates, or items. each department was well organized and each of us was able to keep track of the things we want to do.

4.5. Notebook

One of the goals of FIRST and FIRST Tech Challenge is to recognize the engineering design process and the journey that a team makes. This journey includes the phases of the problem definition, concept design, system-level design, detailed design, test and verification, and production of the robot. Throughout the process of designing and building a robot, teams will come across obstacles, lessons learned, and the need to draw ideas out on paper. The engineering notebook is a documentation of the team's robot design and records the time spent doing research, outreach, team meetings, and plans for growth.

PLAN OF THE NOTEBOOK

This is very simple: the notebook is technical and non-technical. Although we have two official representative person for the notebook, all the members from the technical contribute to the technical part of the notebook, and all the members from the non-technical take care of their's part of the notebook. This way the result was a very well structured notebook informatively and aesthetically.

4.6. General management

Team Meetings

Date	September 17th
Meeting held	Our school
Attendance	Bogdan, Ale, Sorinca, Spiri, Unguru, Robi, Gloria, Laura, Carla, Leti

Today's meeting was held by our mentor Mrs. Cojocaru. She noticed small deficiencies that the team had, and needed to be solved.

The big problem was finding a more efficient way of organizing, creating an organizational chart for the departments and the strategy of this season.

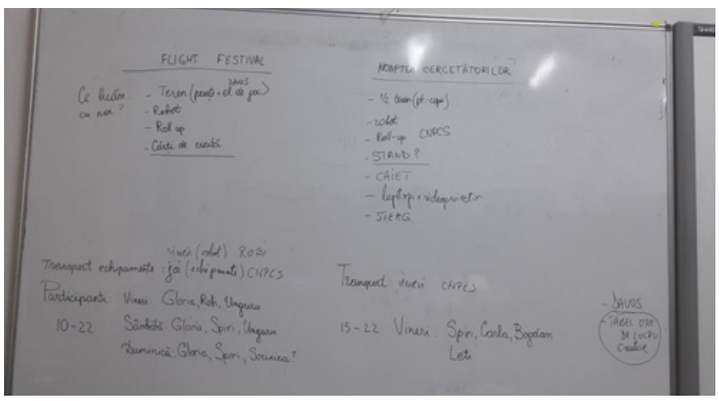
To organize the team, Bogdan proposed an idea: Trello. Organizing ourselves, and the rest of the members is very complicated. Bogdan created the Trello and the boards for it so that it would be easy for us to work on there.

The next problem we addressed was the strategy. We decided to reduce the working meetings of the non-technical and technical team so that the technical team would meet separately from the non-technical team. A weekly meeting will be organized to keep in touch with the depart-

ments. The technical team was going to hold their meetings at CreativeSpace and the non-technical part understood and agreed that most of the work had to be done online in order to increase efficiency. We also determined how we will approach the fundraising department in the upcoming months.

Date	September 24th
Meeting held	Our school
Attendance	Bogdan, Ale, Sorinca, Spiri, Unguru, Robi, Gloria ,Laura, Carla, Leti

Today we gathered together all the departments to decide how we will manage the invitations to European Researcher's Night and Flight Festival. The events took place in the same weekend, so we decided to split into 2 teams: Spiri, Carla, Bogdan, Leti and Laura in the European Researcher's Night team, and Gloria Unguru, Sorinca and Robi at the Flight Festival team.



The Flight Festival was 3 days long and team was organized so that at all times, there will be 3 people present there.

We needed to put one person in charge for each of the events: Gloria at the Flight Festival and Carla at the European Researcher's Night.

the sketch of today's meetings

Date	October 5th
Meeting held	Our school
Attendance	Sorinca ,Gloria, Carla, Leti

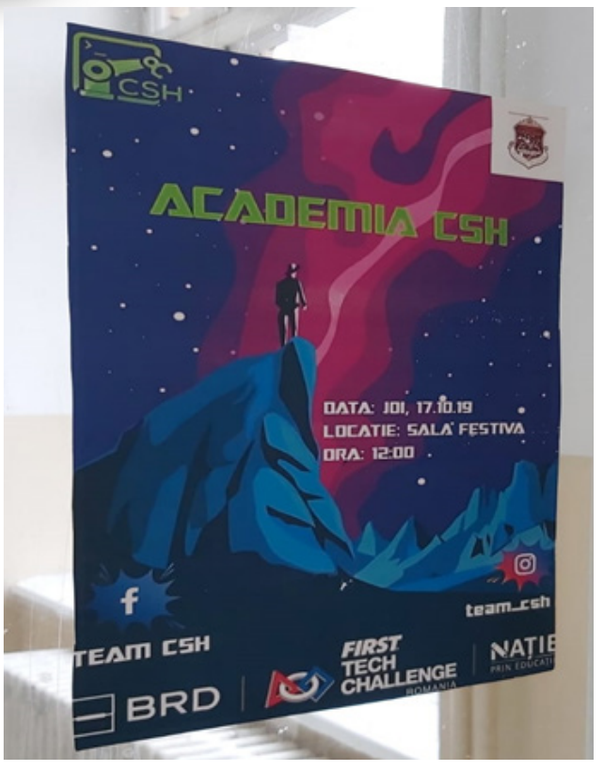
After 2 successful events we decided that we wanted to have more. Today's meeting had the purpose of coming up with ideas about what events we want to organize. Besides the demo we decided to organize during the winter, we had some other ideas.

Not long ago the non-technical team came up with the concept of CSH Academy, which included the CSH FTC Team, CSH-Junior FLL Team and CSH-Volunteers Team.

Starting from this concept, we decided to organize an event in our school, promoting CSH Academy.

We decided to create a poster to invite as many students to the event, and we placed it in many parts

of our school.



the final poster of the CSH Academy

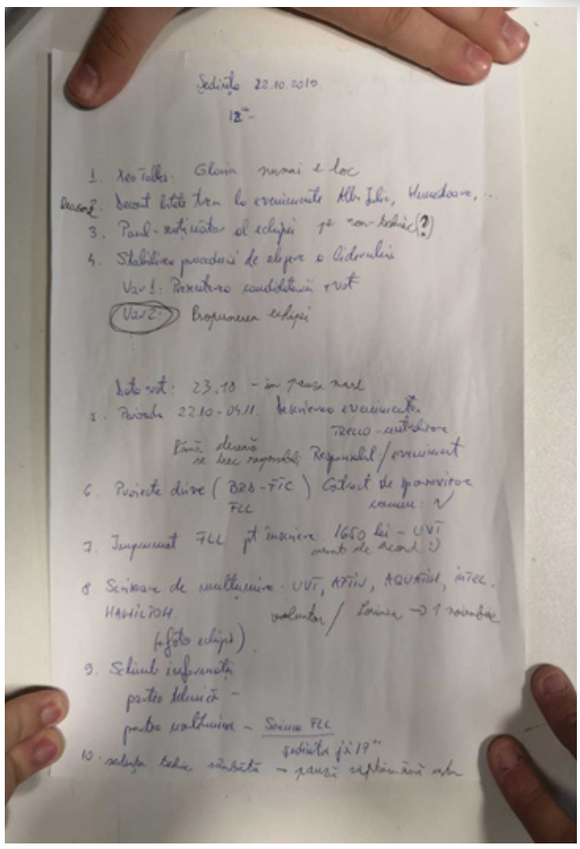
Date	October 17th
Meeting held	Our school
Attendance	Sorinca, Spiri, Unguru ,Carla, Leti

In this meeting we had the following objectives: 1. CSH Academy presentation event taking place on the occasion of the school's Centenary
2. Including the event and it's workshops in CodeWeek
3. Participating as exhibitors at Code Camp
4. Sanmihaiu Roman promotion event
5. Proposal to carry out training workshops for CSH team members

We decided that the CSH Academy event will include a GameDev Workshop held by Cristi (former CSH member) and Diana Codreanu.
Speaking of CodeCamp, we divided the day into 2 shifts for our members.

We received the opportunity to organize a promotion event in Sanmihaiu Roman. Unguru spoke with director Durla Nicoleta and together, we decided that the event will take place on October 18th.
Starting from the same idea of the CSH Academy workshop during the season, we discussed the possibility of Python and Marketing workshops for CSH's volunteers.

today's meeting list

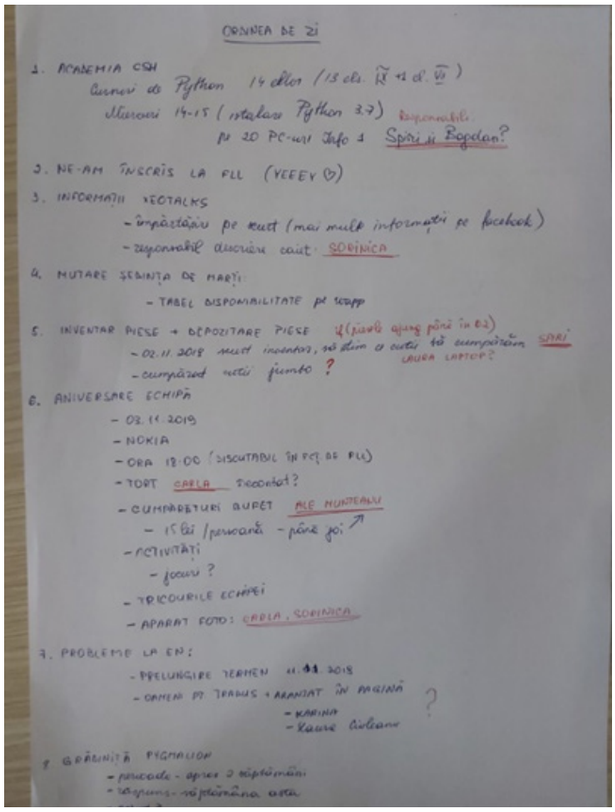


Date	October 20th
Meeting held	Our school
Attendance	Bogdan, Ale, Sorinca, Spiri, Unguru, Robi, Gloria, Laura, Carla, Leti

This meeting included 10 goals.
Xeo Talks was coming up soon and we had to determine who should participate and how we would get there. Gloria, Unguru, Sorinca and Spiri were the members that were chosen to attend the event.

A former Davos team member Paul Borbosu contacted us, saying that he wants to help us on the technical side and the fundraising side. After a few discussions we accepted his help.
The next step was choosing the team leader. After a close vote between Spiri and Laura, Spiri officially became the CSH's team leader.
The following items contained a list of tasks for most members, about our Notebook Engineering.

today's meeting notes



Date	October 28th
Meeting held	Our school
Attendance	Bogdan, Ale, Sorinca, Spiri, Unguru, Robi, Gloria, Laura, Carla, Leti

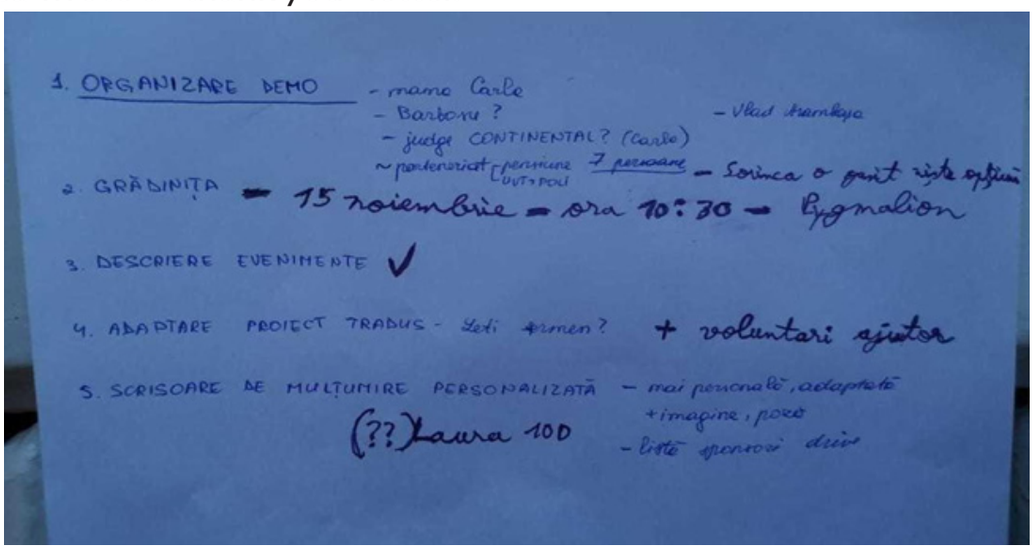
The main objective of this meeting was the CSH Academy.
We established the day which the Workshops for CSH-Volunteers will be held: Wednesday after the class hours. After we completed the CSH-Junior team registration!
The members who attended Xeo Talks told us about what happened there and how fun and useful it was.
Every meeting, each member is given a list of things to do for the Engineering Notebook. The Pygmalion kindergarten was the next event on our list. We decided to go with the robot to show our children our passion.
Lastly, we established some details related to the Anniversary of our team.

Date	November 5th
Meeting held	Our school
Attendance	Bogdan, Ale, Sorinca, Spiri, Unguru, Robi, Gloria, Laura, Carla, Leti

The Demo organizational process was the big objective of this meeting.
We need to find people to perform the functions of
Referee, Queuer, Field Manager, Robot Inspector,

Scorekeeper, Check-in, Speaker, Microphone and Photographer. CSH's volunteers team represented our solution.

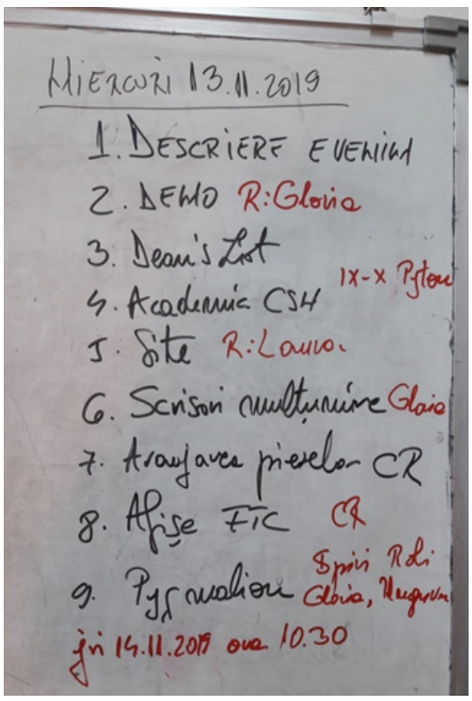
Promoting the demo is very important so we decided to make posters and set the official name of the demo: Winter Robotics games. Carla made the design of the diplomas and the agenda. To send our thanks to the sponsors Sorinca wrote a "thank you" letter.



the sketch of today's meeting

Date	November 13th
Meeting held	Our school
Attendance	Bogdan, Ale, Sorinca, Spiri, Unguru, Robi, Gloria, Laura, Carla, Leti

Today we discussed the organizational details for Winter Robotics Games.
The person responsible for this event was Gloria.
We spoke with Andrei Craciun from UVT to determine the date and location of the event.
Initially the scheduled date was January 11, but we had to postpone it for a week so the demo date became January 18.
We encountered a problem with the team site and Laura had to take over the site from Paul.
The robot parts we ordered arrived and everything had to be rearranged at Creative Space.
Also a design had to be made for the team posters and promotional materials. We had a little debate on this topic and in the end we decided to have bracelets, stickers and business cards.

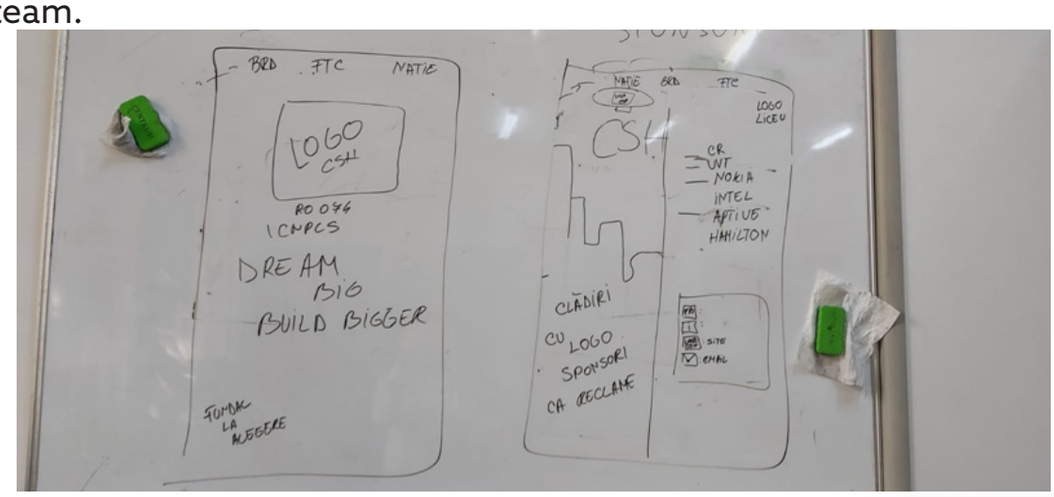


Date	November 17th
Meeting held	Our school
Attendance	Sorinca, Gloria, Carla, Leti

Today, the entire non-technical team gathered to discuss the overall designs for this season.

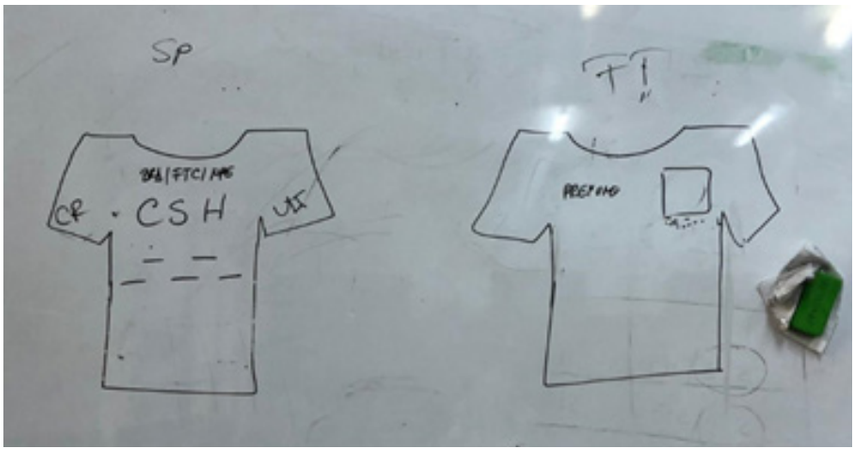
We decided that this year we will show two different sides of us. At the Regionals, the fun one, and at the Nationals the serious one, to show the team's course and the maturation each member experienced.

We made a sketch of the roll up. We decided to make 2 roll-ups, a simple one and another one containing sponsors and some essential details about the team.



Next on the list was the design of the team shirts.

We wanted to change the color of the t-shirts from black to another color, and we barely managed to agree on a color, but in the end, the chosen color was maroon.

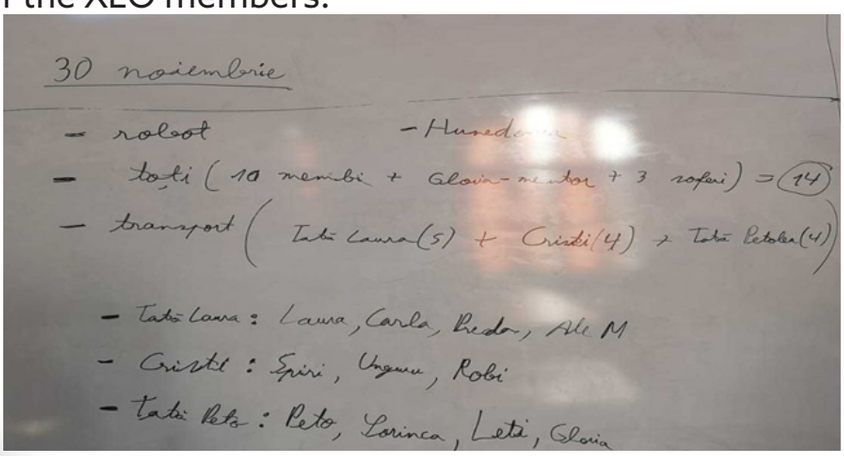


Date	November 30th
Meeting held	Our school
Attendance	Bogdan, Ale, Sorinca, Spiri, Unguru, Robi, Gloria, Laura, Carla, Leti

In today's meeting we decided to participate in 2 events. Bistrita Robotics Demo organized by Bolts and Gears and Medieval Robotics Day organized by RobotX.

In the end we realized that we can participate in only one event because we had to focus on making the robot.

We agreed that we will attend the event in Hunedoara, because its closer and getting there is easy. We divided into groups of 3-4 members to fit in the cars. After the event in Hunedoara we thought about taking a short break in Alba Iulia so one of the groups, containing Carla, Bogdan, Gloria and Spiri weill stay there. Concerning the accommodation, we will sleep in the apartment of one of the XEO members.

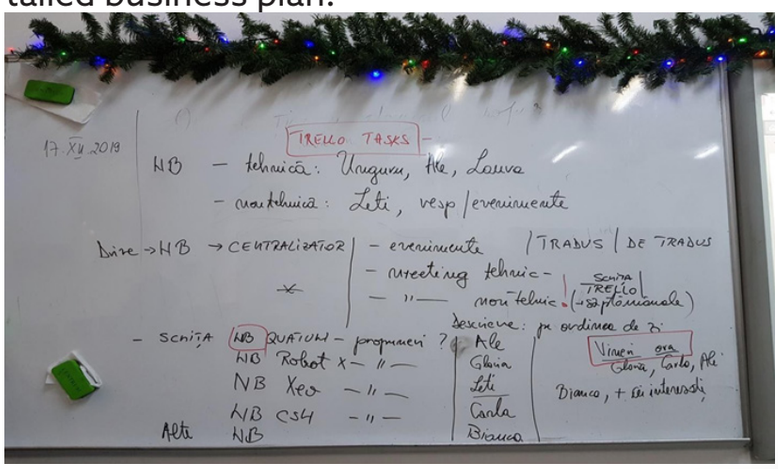


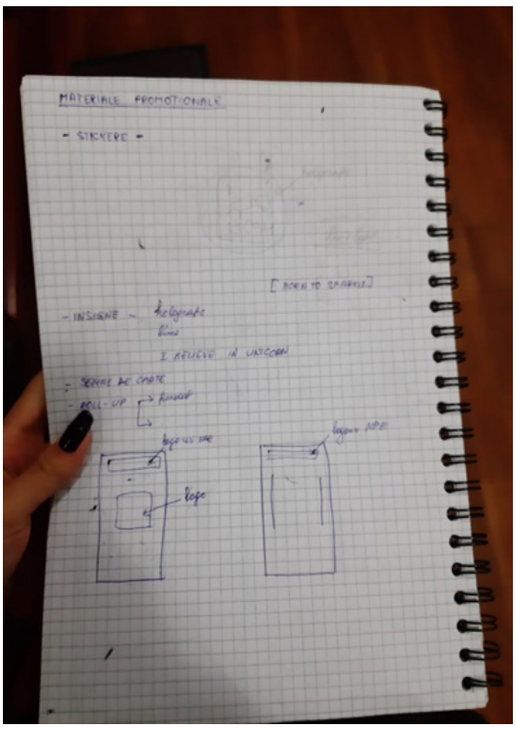
Date	December 7th
Meeting held	Our school
Attendance	Gloria, Carla, Leti

The regional was approaching so a meeting of the non-technical team had to be carried out. In today's meeting we established how the Engineering Notebook and stand will look like. We found some ideas for the stand and we decided to go for transparent side walls, because they give the illusion of a bigger space. We decided to use CDs on one side of the wall. For the remaining walls we thought of some ideas such as a 3D model or something made from old materials.
We made a sketch for the design of the promotional materials. We were thinking that this year our stickers should have a fun message and a more complex pattern.

Date	December 18th
Meeting held	Our school
Attendance	Sorinca, Gloria, Carla, Leti, Ale

The next month was going to be a busy one so today every missing detail had to be addressed. In today's meeting we developed a strategy for the next month. The next meetings will take place only on Trello, where each member will be able to take tasks and see the progress.
We contacted Bianca to help us organize as efficiently as possible. We established a general design for the description of the events and meetings. It is necessary for the technical part to list each mechanism separately with calculations and pictures. The programming team is going to use the same model from last season, and the non-technical part will make a more detailed business plan.

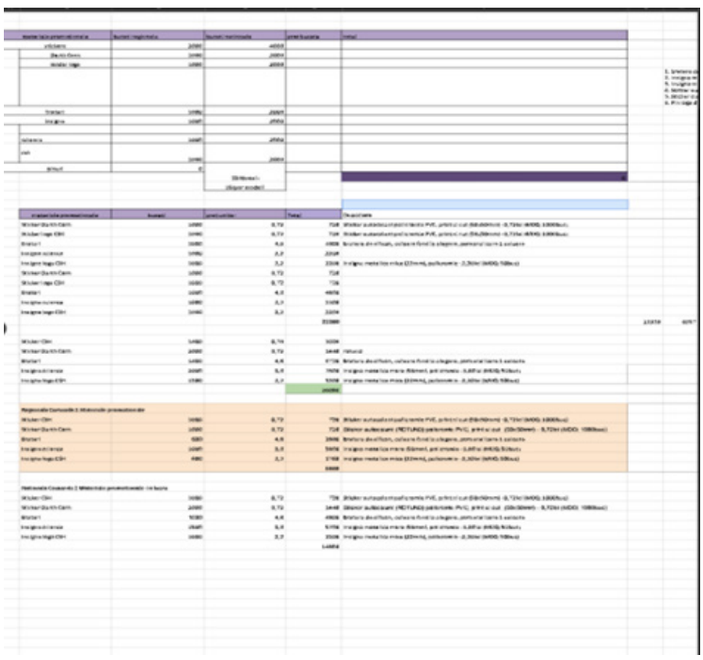




today's notes

Date	December 30th
Meeting held	Our school
Attendance	Ale, Sorinca, Gloria, Carla, Leti

The last non-technical meeting of this month aimed to finalize the list of promotional materials.
We chose 3 models of stickers and badges as well as a model for bracelets and roll-ups. We made a detailed table that included several tasks such as the description of the events organized by us.



1. Executive Summary (2-3 pag)
2. Mission. Vision for the future. Objectives.
3. Project beneficiaries
4. Management

4.1. Organizational Chart
4.2. Roles members | mentors | volunteers
4.3. Gantt Diagram
4.4. Scrum board Trello
4.5. Notebook
4.6. General management
4.7. Organization of the working space

5. Outreach (general summary in images and statistics)

5.1. Development of CSH as a competitor
5.2. Active participation in the community
5.3. Advertising the FIRST spirit through direct involvement
5.4. Involvement in the FIRST community through networking

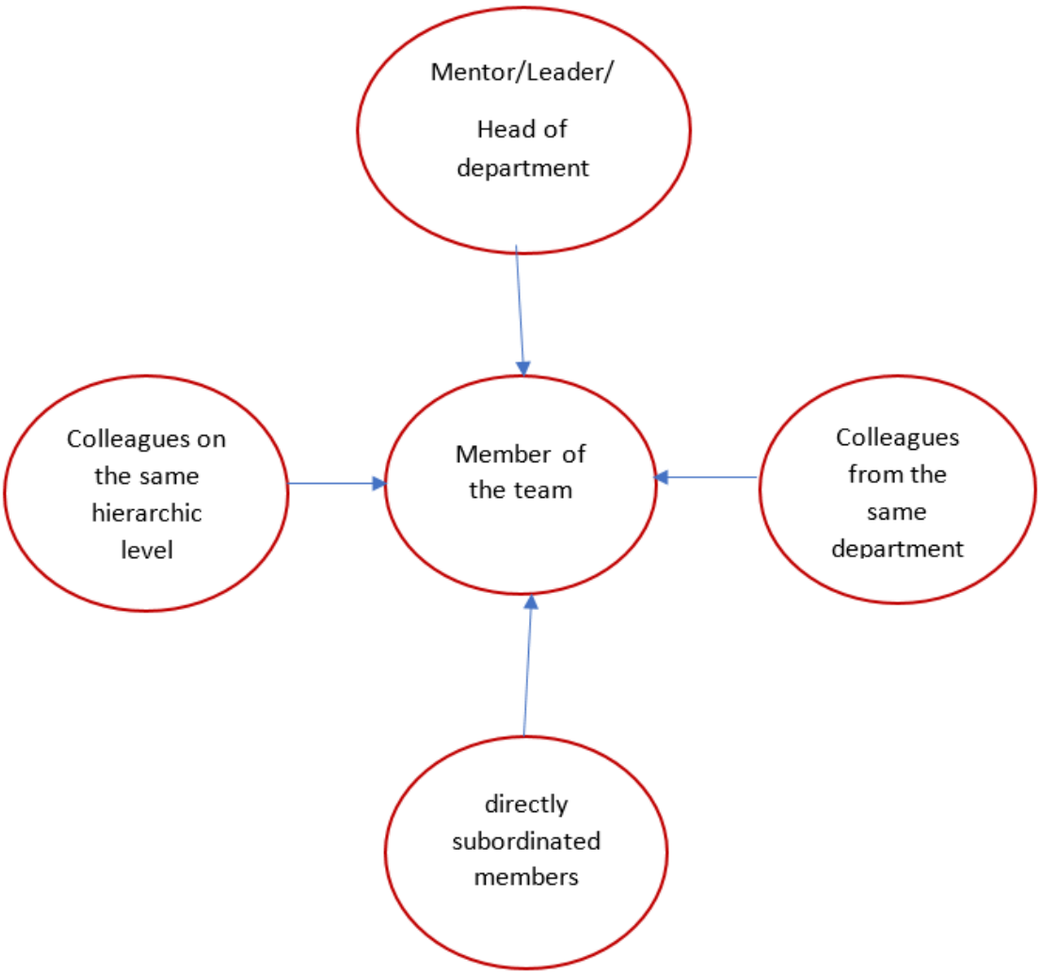
the beginning of our summary

4.7. The evaluation

of the performance of the team aims to develop the team. The evaluation is made directly by measuring personal and collective performances.

In our team, the evaluation of the activity of the members takes place every three months. At the evaluation there must be a mentor, the leader of the team and the head of marketing and PR.

As an instrument, we used the Evaluation 360 degrees, F360. This is an evaluation instrument of performance that provides the global value of the performance of a member saw from the perspective of the leader/head of department, the subordinate members of the team, colleagues on the same hierarchic level, the member themselves and the development plan.



Every member of the team has completed this from for the other members of them and for their own person as well.

Name of member of the team	0	1	2	3	4	5
Level of involvement in the team						
How well they respect the FIRST culture and values.						
Team-work skills						
How they get along with the other members						
How do I see.....? List: - Strong points: - Flaws:						

Individual Result

Number of member that have completed/ the Question	1	2	3	4	5	6	7	8	9	10	11	Total	Points (max 5)
How involved they are in the team	4	3	5	5	5	5	5	4	5	4	4	45	4.5
How well they respect the FIRST culture and values.	5	4	5	5	5	5	5	4	5	4	4	47	4.7
Team-work skills	4	3	5	5	5	5	4	5	5	4	4	45	4.5
How well they get along with other members	5	4	5	5	5	5	5	5	5	5	4	49	4.9
How do I see...? List: - Strong points: pragmatic, calm, willing to help any time, involved, hard-worker, resourceful on the technical side, dedicated, serious, intelligent - Flaws: doesn't express his feelings regarding the things that bother him													

Interpretation

The points have been obtained as the media of appreciation of the other members of the team.

11 represents self-evaluation

By placing the perception of others of us (resulted through points) over our perception of ourselves (column 11), we obtain a better understanding of our own person. Self-knowledge is the key in understanding the needs of our development and performance.

Results/team. Out of a score of 50 points, the team obtained:

	How involved they are in the team	How well they respect the FIRST culture and values	Team-work skills	How well they get along with the other members
Average of the team	40	48	42	43

After the evaluation, the members' results are being appreciated once the goals are reached or, depending on the situation, a custom training/reorientation plan is elaborated when there is more development needed for the activity to become better and for the members go through their personal-development journey by

putting them in the right place.

• The first evaluation happened on 11th December 2019:

The individual results accentuated the fact that the team has members with innovative, serious, dedicated, motivated, ambitious and joyful personalities that bring practical ideas; members that always try to find the right solutions for certain problems and are able to accomplish great things.

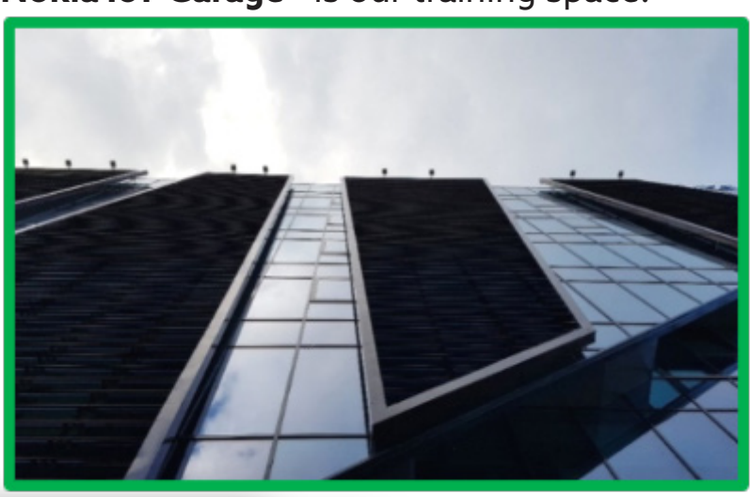
These results drew the attention to the fact that there are certain problems in the team such as frustrations, sometimes no cooperation and initiative, excess comfort and non-communication regarding the things that bother them. In order to solve thse things, there's been made a strategic plan of intervention by looking for solutions for the members to go back on track and get the feedback they need. An immediate and remarkable solution was brought: tasks that developed the CSH Academy. Due to this, they got the chance to express the personal experience that they have accumulated throughout the three seasons by the 9th graders and by their younger gymnasium colleagues, forming the robotics team CSH Junior. They participated in the First Lego League competition, where they obtained the Enthusiasm Prize under the guidance of the member-mentors of CSH. After this experience, the involved members of team CSH in this project returned in the team with a lot of joy and trust in their own abilities, being able to overcome the problems of the team in a great manner.

The next evaluation will take place in 27th February 2020.

4.8. Organization of the working space

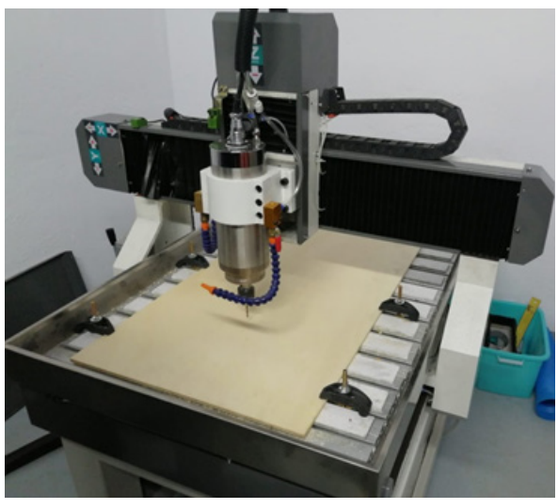
We have two working space in this season: **Nokia IoT Garage and Creative Space**

Nokia IoT Garage - is our training space.

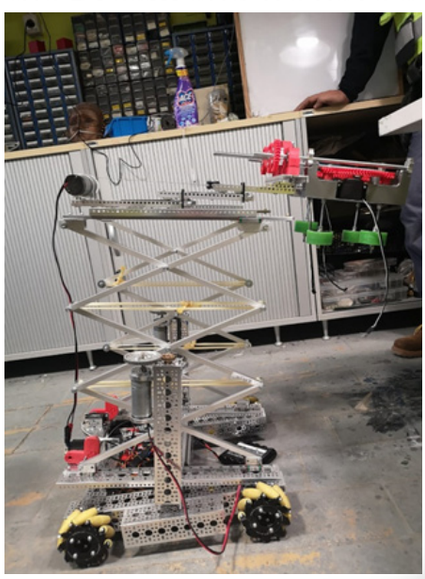


The CSH Junior team also used this space for putting together the robot competing for FLL (First Lego League)

Creative Space - The new makerspace in Timisoara, the space where the robot of the SKYSTONE season was born. The CSH Team found it's perfect place to create: a place where hobbies and creative ideas can easily be materialized.



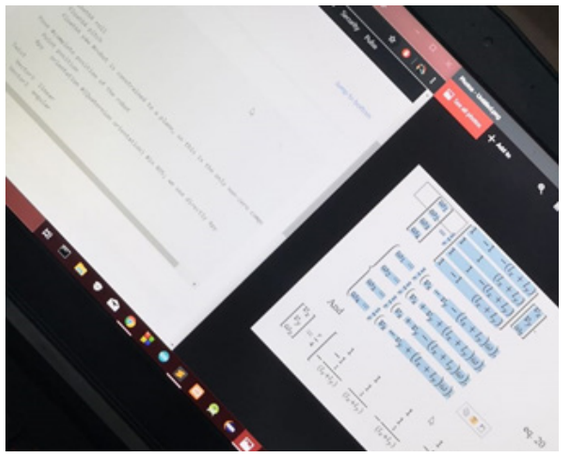
Through her energy, passion and determination, the CSH team managed to impress and joined the initiative of a group of enthusiasts interested in technology and design in creating a community of 'makers' in Timisoara.
Makerspace is a place in which people with shared interests, especially in computing and technology, can gather to work on projects while sharing ideas, equipment and knowledge.
The makerspace is equipped with laser cutters, various milling devices, lathe, welding station, as well as a full range of basic tools.
Our logo is **Dream big, build bigger!** and theirs is **Dream it, Believe it, Make it!** We have in common the **Dream** and we have a wonderful season there.



5. Outreach

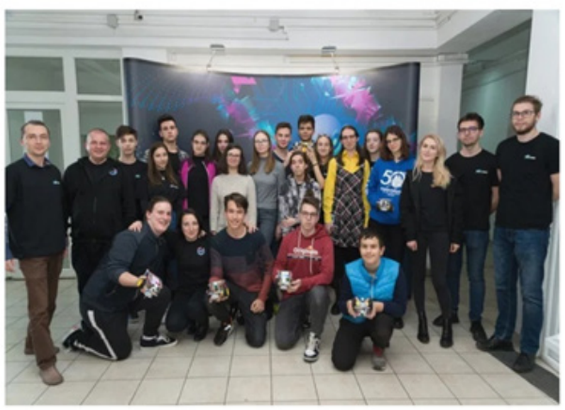
1.Development of CSH as a competitor	
	
Cambridge Advanced (C1/C2)	XEO Talks Robotics Conference
	
CSH aniversary	Medieval Robotics Day
	
Official meeting of First Lego League trainers and The national conference of stem education	RobotX Hunedoara's demo

Winter Robotics Games 2020



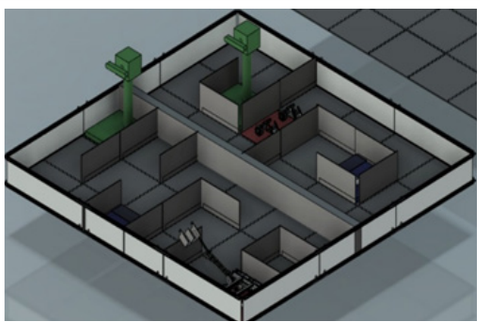
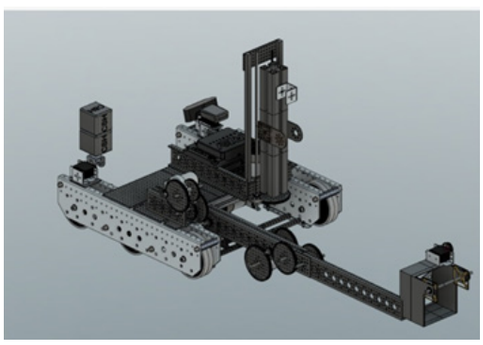
Workshop State Machines, Odometry and PID control

Workshop Open Robotics



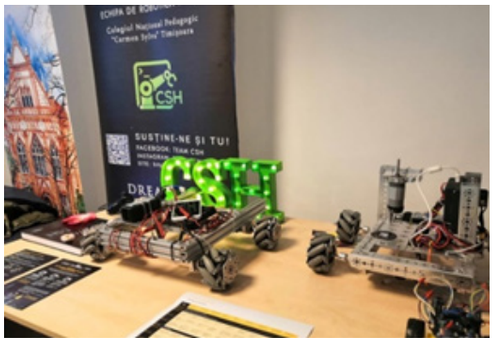
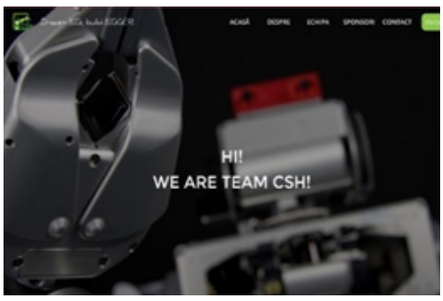
Workshop Everseen- Machine learning and artificial intelligence

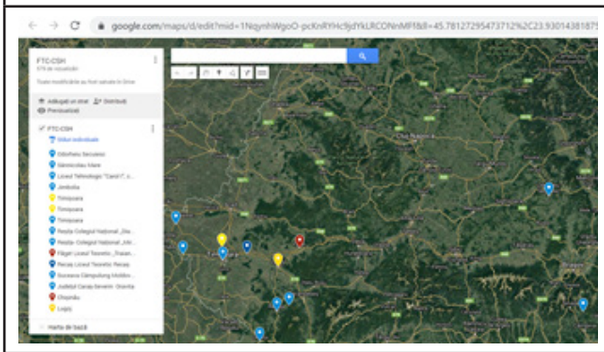
EROBOCAMP

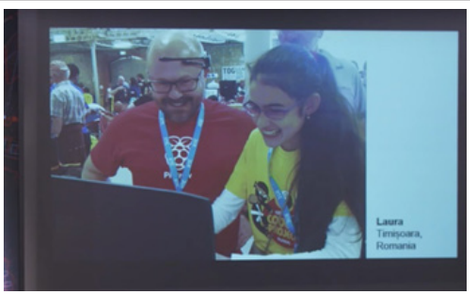
Active participation in the community	
	
County contest of creativity in the field of informatics "InfoGim"	We unify robots to create a future for all of us
	
From the soul, for you!	"Viennese Ball"
	
Little People Charity Quiz Night	Game Concept
	
Project Concept Dublin, Irland	CSH Academy

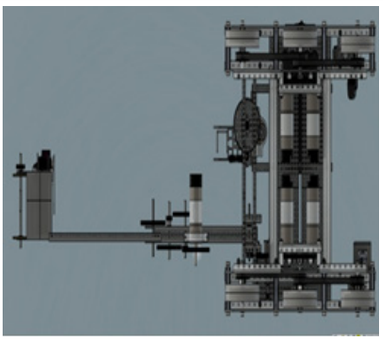
	
International Project Erasmus+ "Power of words"	Charitable project "Literature and colour for the Togo children"

Promoting the FIRST spirit by CSH events in public spaces and institutions, mass media and online	
	
Open Robotics Intelligent Grid	CSH Caravan - Faget
	
European Researcher's Night	Flight Festival
	
CSH Academy Event	CSH Caravan - Sanmihaiu Roman

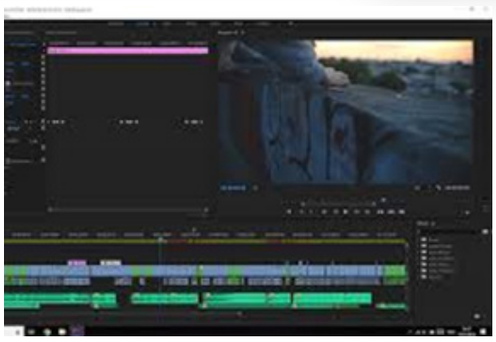
	
CodeCamp	CSH Caravan - Pygmalion Kinder-garten
	
Promoting FIRST to teachers from our school or other high schools	Attracting volunteers
	
Social media	Promoting in our college
	
Promoting in Republic of Moldova	Press Articles

Involvement of the CSH team in the FIRST community through networking	
	
CSH Map	Mentoring new teams
	
CSH-Networking	

CSH Team Spread the spirit of Gracious Professionalism to inspire	
	
TedxOpenUniversity	Ce Faci, Te Face!
	
Team CSH Junior Award: Enthuziasm	International Competition- Coolest Projects

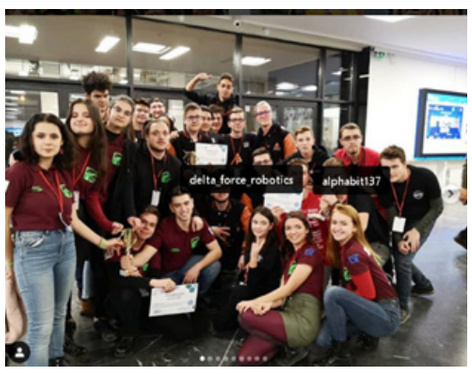


InfoEducatie National Competition- 4th place



Noi Info, movie section

Finalist Alliance Award RobotX HD



Finalist Alliance Award Winter Robotics

18	Simionic	Andrei	Colegiul National "C.D.Loga"	0	40	20	60	M
19	Sion	Denis	Liceul Teoretic Grigore Moisil	0	40	20	60	M
20	Chirilă	Laura	Colegiul National Pedagogic "Carmen Sylva"	10	20	20	50	M

Mention at Computer Science Olympiad

BRD Mindcraft

The excellence gala in 2019

PEDASCIENCES

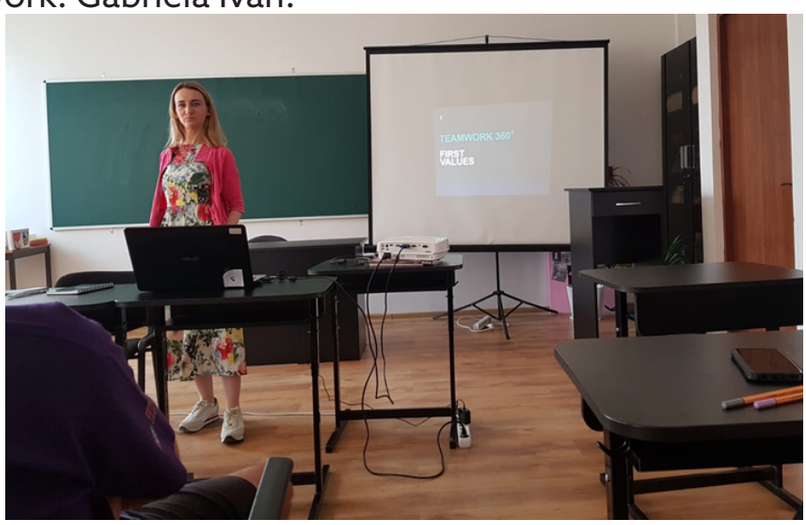
5.1. Development of team CSH, highly performing in the term of 29 weeks with the goal of gaining qualification at the Mondial Championship FTC by attending the Regional Competition (at least the finalist alliance in field and 1st place of Inspire Award) and the National Competition (at least finalist alliance in field an 1st place of Inspire Award), until the 29th March 2020.

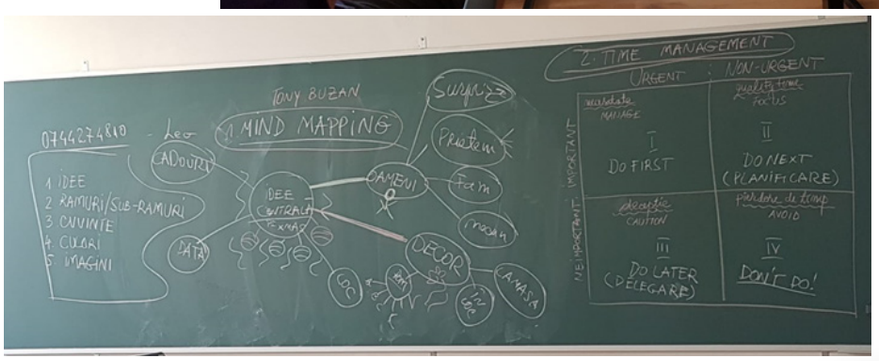
Results: 11 actions

EROBOCAMP

Date: 8-14th of July 2019
Attendance: Spiri, Robi, Gloria, Sorinica, Unguru, Dani
Location: Beclean
The camp started with the meeting of all the teams in front of the school. The teams were divided into groups, each participating in one of the courses organized by the camp:

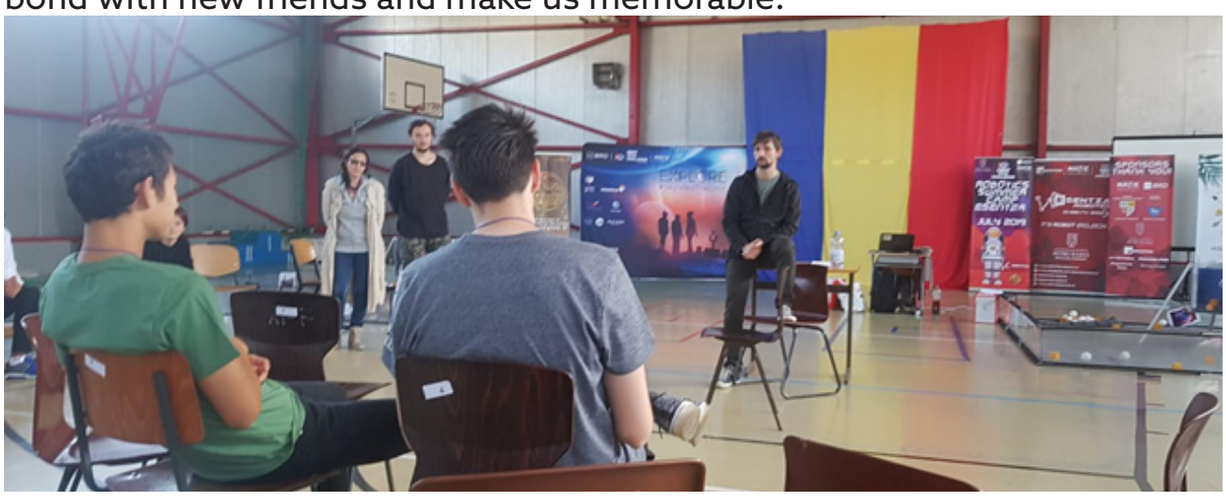
- Programming: Nicula Cristian
- CREO: Alex Cazacu
- Robot construction: Ionel Doboaca
- Team creativity: Ana Popescu
- Motivation: Mioara Soldan
- Teamwork: Gabriela Ivan.





Pictures from some of the Workshops

After the completion of the courses, the matches were on, following the semifinals and finals.
The morning of the fourth day of the camp began with the participation in technical courses, followed by the theater course, for both students and mentors. We all laughed and had a great time. The program for the evening was a visit to Băile Figa, but the weather didn't stay with us and we were forced to stay on campus. Most stayed in the candy bar next to us or in the workshops, working on the robot for the contest to be held on Saturday, while others played football, sat in the hammock or went out to visit the city. Even though we spent it all day on campus, it was a perfect time to bond with new friends and make us memorable.



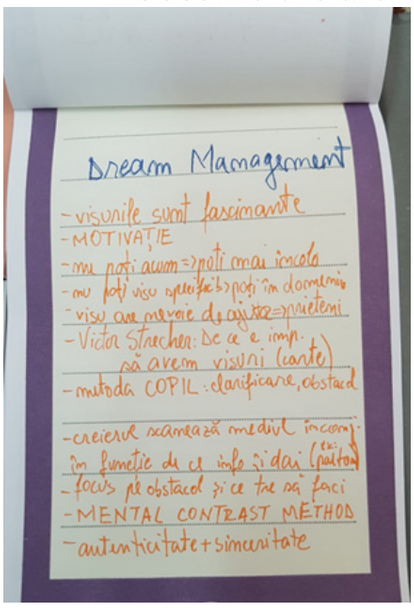
In the middle of the theatre workshop

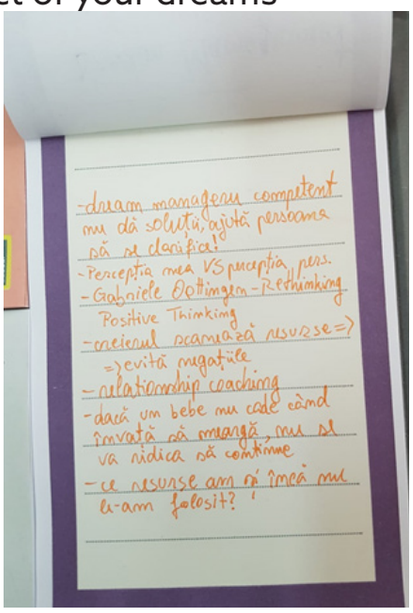
Friday proved to be full of exciting activities. In the morning, the participating students attended the courses. Later they appreciated and admired the workshops of Megatitan, the official sponsor of Essentza. There, we were able to observe all the mechanisms required to make certain parts in the final stage and also made correlations and comparisons between the systems used in the field of robotics and those they saw at the firm. At the end of the visit, each student re-

ceived some gifts from them. Also, each student received an emblem made right when they were visiting Megatitan.

Another wonderful workshop held on Friday was Mirela's Oprea Dream Management course, where we had to speak up about our dream, whilst Mirela teaching us how to achieve even the ones we believe we can't.

Mirela Oprea, introducing the concept of Dream Management and how to become the architect of your dreams





Notes taken by Corina Puscas- Bolts&Gears- Dream Management workshop

This time, the weather was on our side, and the final destination was at Băile Figa, where everyone could relax and enjoy the days spent in the camp.

Dream BIG, build BIGGER!

This picture is actually taken before going to Baile Figa, but a cute one

Cambridge Advanced(C1/C2) Certification , Computer Based, 2019 - Colegiul National Pedagogic “Carmen Sylva”

Date	17 september 2019
Attendance	Peto, Unguru
Goals	a good knowledge of English language and computer based
Results	international certification

XEO Talks

Date	25-27th of October 2019
Attendance	Spiri, Ale S, Gloria, Unguru
Location	Alba Iulia

The CSH Team is participating for the second time within the XEO Talks edition, an event which simply fascinated us so much that we can't not tell you more. If the first edition was incredible, this year XEO outdid themselves, managing this time too to hit it big. We are overjoyed of the success and evolution of a team, which, after the well-deserved successes, managed to demonstrate to us that even more is possible and managed to inspire us one more time.

Day 1: October 25th

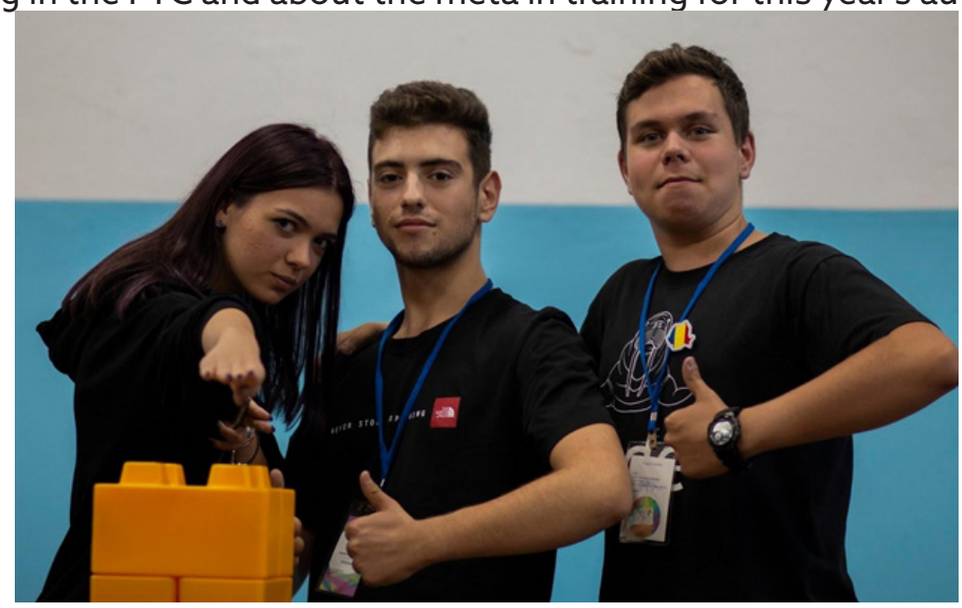
The four Wise Men woke up during the night to catch the 6 AM train. There was one in the evening too, but the earlier we arrive, the better.
During the 5 hours spent on our way, we did a little brainstorming related to the future activities and some that will take the baccalaureate this year started to learn because no second has to be wasted.
When we arrived at the train station, we were welcomed by 2 volunteers, Denisa and Alex, who led us to the high school where we reunited with some of our dearest persons from the FIRST community.
A short while later, we went to a café to charge our batteries and to get to know our volunteers better. Immediately after an Espresso and Cappuccino, we went to the "1 Decembrie" University for the opening ceremony.
After the presentation of the participating teams, * of the university spoke to us, but also of the Alba Iulia city's: Mr. Daniel Breaz, rector of the "1 December 1918" University, Ms. dean of the Faculty of
Exact and Engineering Science of the "1 Decem-

brie 1918" University, Corina Rotar, and Liviu Stanciu, a representative of Alba Iulia Municipality Town Hall.

Near the evening, more teams were assigned for a treasure hunt and we allied ourselves with DecebalTech. We had to accomplish some missions, even to decipher a code in C++ (which confused us a bit) and, after we'd circuited for almost 2 hours through the Alba Iulia Fortress, we finished among the first teams!

In the evening, after dinner, we had a series of discussions. Firstly, we discussed the non-technical things, where Gloria was talking about fundraising, which prompted a discussion of more than an hour, in which some teams shared some of their ideas and strategies about how to attract sponsors on your side and how to win their trust.

The second discussion session was related to the theme of the game, where we were presented with the official site this year and where we did a brainstorming related to this year's robot strategy, about the importance of scouting in the FTC and about the meta in training for this year's autonomy.



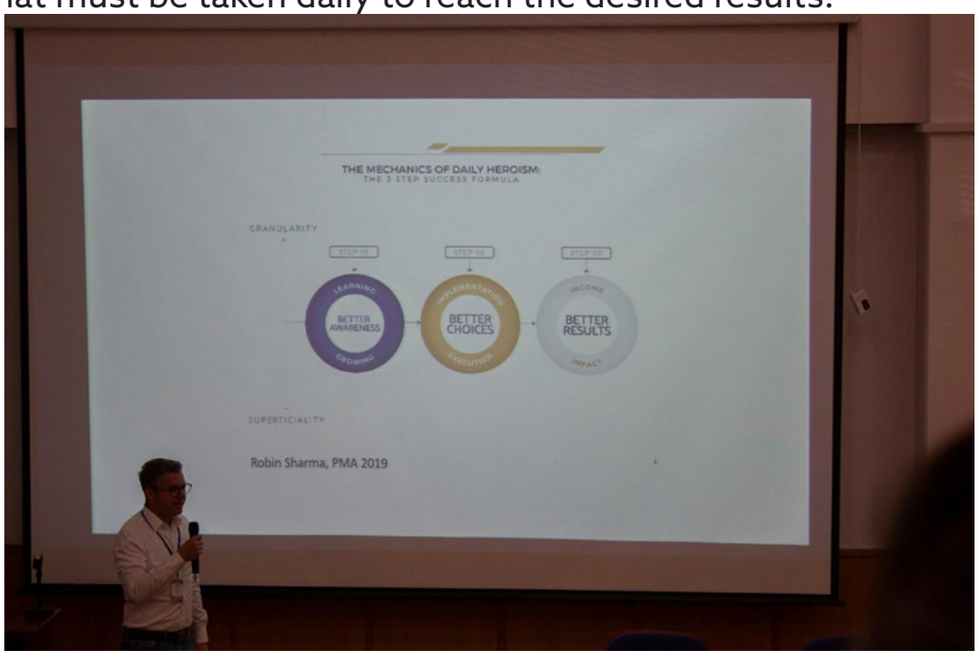
Day 2: October 26th, 2019

The second day was full of different kinds of workshops. We started at 10 AM and finished at 6 PM, but, considering how good we felt and how many interesting things we learned, we didn't even feel the passing of time.

Workshop 1: Leadership with Marius Bicu

The first workshop was hosted by Marius Bicu, a successful entrepreneur who runs the Unilact company and who, through branza de burduf, managed to generate millions

in revenue.
You may be wondering: what is the connection between branza de burduf and robotics? Well, it's more than than.
It's about the ambition and strategy that one can start from scratch with and can become among the best, no matter the field.
This is what Mr. Bicu told us about, about how we can become the best in a field.
He began his speech with his own definition of what a leader is: a first definition would be that the leader is a boss, an organizer, the one who motivates others to work, and the second definition would be that the leader is that person who is the best in the world at something. In his case, when making branza de burduf.
However, how can we be leaders?
First of all, we choose only one area in which to excel: just like Simona Halep, she is very good at tennis and only tennis, not basketball, not football.
Secondly, we need to attract collaborators on our part, to always have someone we can rely on when we need help when we don't know something, but we are also with them.
Thirdly, we must constantly learn and diversify our knowledge. He presented us THE 3 STEPS FORMULA - Diagram by Robin Sharma, PMA 2019, steps that must be taken daily to reach the desired results:



He also told us about the importance of mentors, and why we need to have more mentors in one life to become leaders. It is true that the leader is a good specialist in one area, but he must master other things well outside his field. First and foremost, it is the leader who inspires and develops the people around him, teaching others of his mistakes and empathizing with them. The leader is the per-

son who makes sure that everyone has a win and that each member of his team reaches his maximum potential, getting to form and manage a "Picasso" team, in which each, in the end, will become a leader.
In the end, he presented us with two inspirational videos, one with Enzo Ferarri, and another with a simple janitor, which, despite his role, a role many would not be proud of, transmitted an overwhelming optimism and energy.

Workshop 2: Public Speaking with Catalina Moleavin

Catalina Moleavin is a world champion in public speaking contests and her presence at the XEO Talks event represented a great opportunity for us to learn a bit about public speaking secrets and techniques to create an honorable speech.
She started her speech by sharing a little bit of her story: surprisingly, she was a very shy person, hardly daring to raise her hand in the classroom, but a workplace situation made her mobilize herself. She is a hard-working human, with great results, who was on the verge of receiving a promotion if she were to present a project in front of a not very big audience. When she heard that she had to speak in public, she took a step back and lied that she was ill and could not come to the presentation to avoid a speech in front of some people.
A few years later, she becomes a well-known public speaker, eager to inspire and motivate future generations to rise from their desks and say things by name (and how to say them, most importantly).

After she caught our attention and created a connection with the public (a very important technique of public speaking), she started with a list of places where you are likely to need to speak in public:
- in class
- at school
- at a contest
- on a birthday
- in the workplace
- at a robotics competition (you know about the jury meeting)
- meeting with sponsors
- partnerships
- practically anywhere.

The truth is that public speaking is a necessity, not

something that necessarily has to do with the will. Many people are facing the fear of failing at the time of a speech, so they would rather miss a huge opportunity than sit on a stage for a few minutes, but in order to get just about anything in this life, you have to talk to an audience.
She also gave us some tips on mastering emotions, such as recording each speech and listening to it afterward, even if it will be uncomfortable, or repeating it in front of a mirror to control our nervous tics or exaggerated gestures.
As a message is 7% verbally, 38% para-verbally and 55% non-verbally transmitted, she also shared with us some methods through which we can create a connection with the public, through intonation, the tonality of the voice, rhythm, and obviously, smile. She also told us a little about the voice of the head, which is calmer and more soothing, and that of the chest, which is a little more dominant and inspires power.
She did not forget to also point out the structure of the speech, mentioning that 20% is the introduction, the most important moment to connect with the public, 60% is the content, in which you develop the chosen topic and follow a red thread of events, and 20% is the conclusion, where it is very important to leave to people the moral and a small summary of the speech so that they leave with a learned lesson. In the end, she suggested we watch "The speech that made Obama president" and the famous TED Talk: "How to speak so that people want to listen."

Workshop 3: Teamworking with Andrei Avram

A member of the " Romania's Scouts" national organization, Andrei, known as Yeti for reasons he did not want to share, came as a guest at XEO Talks to talk about teamwork and collaboration.
First of all, he asked us to establish a scale of values: "what you do shows what is important to you." He created a survey that we could all access and vote on which are the most important aspects to be scored in a team, and among them were: collaboration, establishing a friendship, innovation, fun, inclusion.
However, why work in a team and not individually?
"If you want to go fast, go alone. If you want to go far, go together."

A team combines several personalities, which, at first glance may seem like they have no connection, but they actually complement each other. A team must have a common goal, to which each one must then contribute in its own way, which is why there are the marketing, fundraising, programming, assembly, 3D design, team management, etc. departments.

Besides, Andrei shared with us a lesson learned as a jury? at the FIRST Lego League competition. There, obviously, he interacted with a lot of teams, but one of them attracted his attention in particular because of their voting system: when someone was talking and they could not choose an order, each one put his hand over the other, and the first one from the end began to speak, then the second began and so on. It is an example of collaboration and equality because no one was left aside "to let the best speak."
One of the first aspects the public voted as important in a team was innovation and, in order to reach innovation, we must debate and disagree, we must philosophize so much about a situation until we can finish it and we can follow a smooth running of events to reach the desired results. And it is possible, through a vision, a lot of work and a few quarrels, to be successful, because "Teamwork makes the dream work!"

Workshop 4: The XEO Story

How can we learn better if not through others' experiences? Our dear XEO members decided to tell us more about how they formed as a team, their ambitions and, obviously, failures.

Two of the former XEO members, now current team mentors, talked about how the team was born and how it all went in the early years. The first year, in particular, was to gain experience, to see things as a whole and to create connections.
The second year, they grew exponentially, but they experienced their first big failure: the match lost to 6 points against the Esentza team in the semi-finals. At that time, they were disappointed, but they did not lose their optimism, they showed perseverance and gracious professionalism, an attitude adopted throughout the entire year, which ultimately nominated them for the Inspire I award.
Then followed the final in Detroit, where, obviously, they observed a completely different approach to the contest by the Americans, and as travel changes you only for the better, they came home with new experiences, with new techniques and ideas, which helped them
get the big prize for the second time.

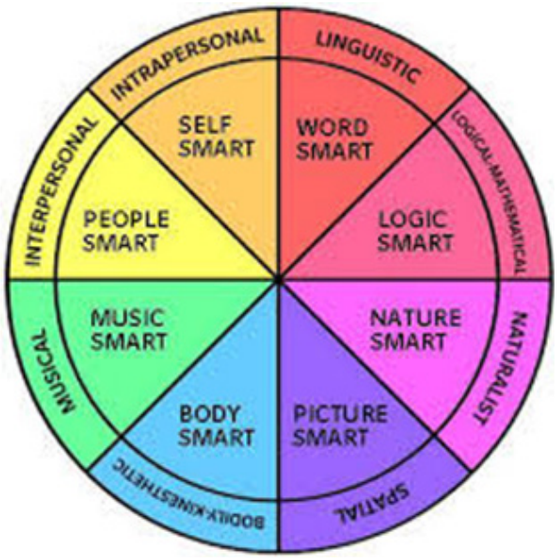
Thank you, XEO, for the beautiful story and the experiences that gave both you and us a lesson. We are already looking forward to a third edition of XEO Talks!

Workshop 5: Mentorship with Gabriela Alexandru

Gabriela Alexandru is a physics teacher at a prestigious high school in the capital and her speech was based on her experience as a mentor.
"People are not cats", that's how Mrs. Gabriela started her speech. Cats learn how to adapt, how to jump, how to catch a mouse in their first months of life, but once they have passed the stage of kittens, they have no chance of learning on the go, unlike people, who learn all their life.
But in order to succeed in teaching people something, you have to connect with them and form a network. She shared the story of the first years in education, when she was a teacher at a technological high school, in the mechanical field. Generally, the students of such schools don't seem very passionate about the school syllabus and refuse to learn, so she tried to teach her lesson about vectors by making a football match analogy, immediately attracting their attention and motivating them to come to the board.

At that moment, she discovered one thing: "There are no good students and no weak students. There are good students at something and good students at something else." These children may not have a highly developed linguistic or logical-mathematical intelligence, but they may have very good kinesthetic intelli-

gence.



She was determined to help each student, who may have seemed to be a lost cause, understand the physics class and inspire their confidence in themselves and, most importantly, inspire their feeling that someone trusts them. We, the people, are programmed to be validated and sometimes we need someone to raise our morale, to attract us to focus and to understand, to push us from the back when we may want to give up and to send us a positive vibe. All of these things need to be accomplished by a mentor to help novices achieve success and increase their self-esteem.

But you must know and earn your respect. She set a set of rules that each student must follow, if not, they will be sanctioned. She explained to her students from the first day that at lunchtime, they could drink water, they might not have a notebook, but they must be 100% careful when she's teaching, otherwise, they will be taken out and sanctioned properly. However, she is a respected teacher who has managed to gain the respect and empathy of the students.

One method through which she distances herself from the Romanian educational system is to give tests of grade 15 so that from there, the students can choose only a few problems to solve to reach grade 10.

Recommendations on how to become a better mentor:

1. ASK BEFORE
Do not conclude from the beginning, do not rely on the first impression about a person, maybe someone acts in a certain way due to personal reasons that we do not know. It is the mentor's role to empathize with his students.

2. DON'T ALLOW DISLIKES
A mentor cannot afford to like some people more and some less. He must have an overall vision of each one and notice the full part of the glass.

3. DON'T BE COMMUNISTIC
Do not try to impose your method on others, nor expect each one to be like the other.

4. RELY ON MULTIPLE INTELLIGENCES
Try to discover each potential and use it.

5. DO NOT SAY NO!
When you say no, there is a risk of discouraging and demotivating others to work. Replace the NO with the alternative: "I understand what you mean, but ..." and motivate your answer.

6. ORIENT THE NEED TO ADVERSE TOWARDS OUTSIDE
Give others the feeling of competition, this way they increase their adrenaline and workload.

7. DON'T TAKE YOURSELF TOO SERIOUSLY
A little humor is really beneficial in establishing a connection with others.

8. ACCEPT IDEAS, COME WITH IDEAS
Suggest ideas if necessary, and vote with everyone democratically.

We mentioned a little earlier about the attributes of the mentor, which, in the end, would have come to increase your self-esteem. With high self-esteem, people feel much more motivated and persevering, eventually forming a passion and passion conquers in any field, both personally and professionally. People are much more beautiful when they talk about their passions and they automatically convey positive energy that draws people around them.

As a moral of the whole discourse, the mentor

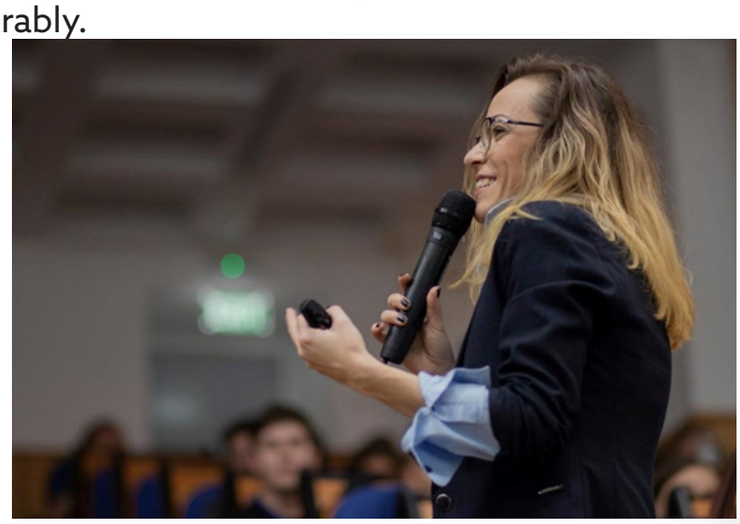
must form a vision related to the success of the team, adopt and develop to others a spirit of altruism and teamwork, be authentic, with their own ideas, inspire, and transmit, of course, a positive vibe (like Zorba the Greek).

"A child is not a vessel to fill, but a fire to ignite"

Workshop 6: Neuromarketing with Crina Luha

Crina comes as a guest for the second time in this edition, being so beloved in the first year, and this year she told us a little bit about neuromarketing and the methods that sellers use to sneak into your brain and convince you to invest in their product or project.

She started by presenting the brain and the 3 fundamental parts: the neocortex (the part of the brain that is based on reason, current information, and experiences), the limbic one (that part based on feelings and emotional connection), and the reptilian one (the oldest part of our brain, developed since prehistory, forms the survival instincts).
Which of these do you think neuromarketing methods use? The last part, activating the survival instinct, makes you think you need that product to validate yourself. We, the people, since prehistory, had this feeling that we must be accepted: the cave people lived in tribes and, if you were removed from the tribe, you had to survive on your own. Now, the environment has changed, but as nature, we have remained the same.
She also gave us an example of a company dealing with electricity conservation, so to reduce consumption in a neighborhood, she began to compare each tenant with his neighbors, through a diagram. In a short period of time, the results were in line with expectations, with the consumption rate falling considerably.



She also explained how most of us do certain analogies unconsciously, which may have no connec-

tion. She showed us a picture with a circle and a square, and we had to choose which one would be female and which would be male. Absolutely the whole room decided that the circle is the woman and the man square, without being able to explain why.

She talked a little about persuasion and how you can "manipulate" your brain to take action to the end, even in times when we feel we do not want it anymore. Our first opinion about persuasion was that it would be a strictly rational process, but she was able to show us the opposite and to show us that it is, in fact, an art of emotion: in order to succeed in doing an activity we need to, we need to be emotionally involved in the whole process, to feel that part of us is there, to find a cause that we have to solve and to solve it. How would have Greta Thunberg been able to continue the march for Climate Change if she hadn't had a considerable cause to fight for, despite her condition and the many who are trying to take her down? Form a purpose that represents you, that will do you and others good, and fight for it!

Halloween party!!!

Towards the evening came the long-awaited moment, the Halloween party! Everyone got dressed as per preference, more difficult with the girls, who also had to do their makeup. Alexandra dressed in a simple dress, but with an eccentric makeup on the face, doing the outline of a skull, Gloria was a Dark Angel, Spiri took a mask inspired by the classic movie SCREAM, and Unguru, obviously, the unicorn costume.

We partied the entire night, we became friends with a few people and, obviously, we took a lot of pictures. It was a pleasant vibe, in which everyone had fun without any signs of tiredness, enjoying a party so well deserved after all the work!

I conclude by quoting Alexandra's wise words: "More amazing than at any coming-of-age party from this summer! XEO, you are incredible! "

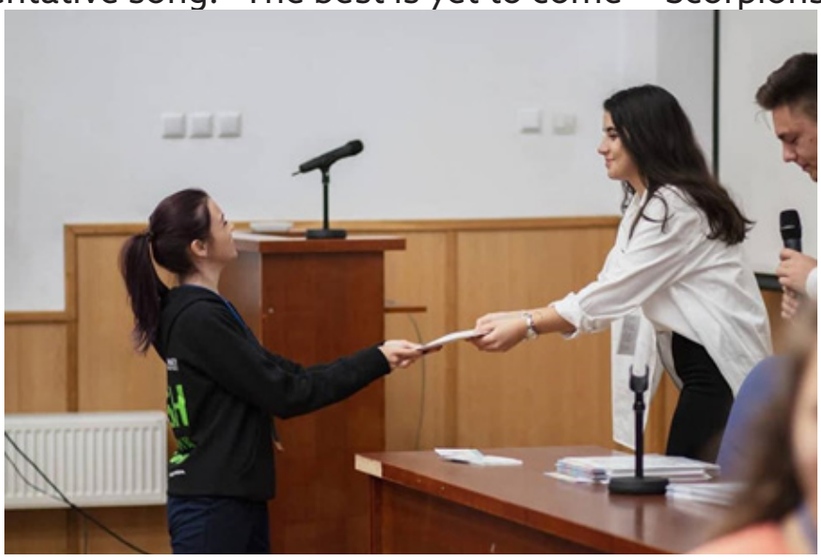
Day 3: October 27th, 2019

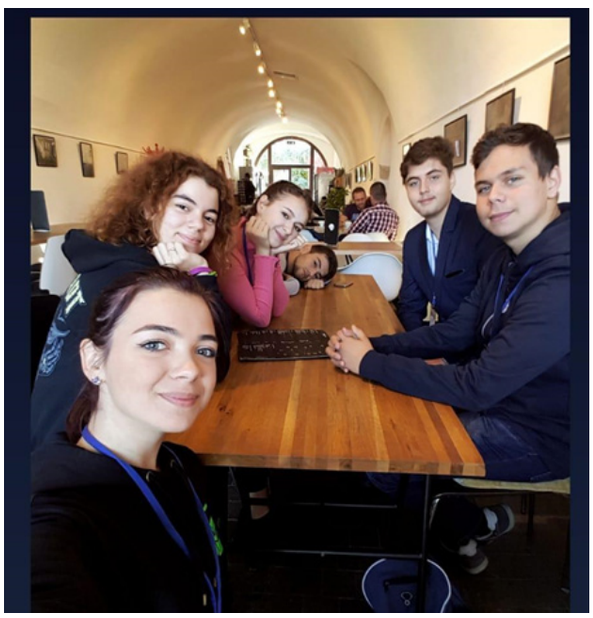
Here comes, unfortunately, the last day. We are easily separated from our dear colleagues and are already planning when to see each other next time. The day started with the last workshop of the edition, namely Augmented Reality and CREO, supported by Mr. Andrei Cazacu. He taught us how to translate a certain thing from Creo into Vuforia View and how to work into Creo Illustrate. Certainly, our members on the technical side will be greatly helped by this information in the making of this year's robot, but also for some individual projects.

Then began the closing festivity, where XEO members mentioned all the sponsors who supported them last season and then the 29 participating teams, giving us individual diplomas.
After that, some members gave a closing speech, but we were not satisfied enough, so we started

to nominate them one at a time: first, it was Sofi, who was called by Spiri, then Oana, Alexandra, and more, who, willing unwilling, had to say a few words to us. We hope that after this incident, the friendship remained the same!

The festivity ended with an emotional moment, in which we all sang the XEO representative song: "The best is yet to come" - Scorpions.





After the festivity, we went out again with our volunteers to a restaurant, and we wandered around the city until we had to go back to the train station and say goodbye.

On the train, however, we met with Sofi, who was returning to the city for classes, and with whom we stayed for discussions, and from word to word, I also invited him to the CSH Anniversary, which was to be shortly after this event. He also invited Mihai, now a college classmate, who accepted, to whom we prepared a little surprise. What happened at the CSH Anniversary is a story for another article, so stay tuned!

CSH Anniversary

Date	November 9th
Meeting held	Nokia
Attendance	Ale, Alexandra, Bogdan, Bogdan's brother , Carla, Gloria, Laura, Robi, Spiri, Unguru, Mrs. Cojocaru, Mr. Cojocaru, Carla's mother and XEO's Mihai Mermezan and Robert Sofrac
Time spent	3h preparations, 5h activity

After the meeting with Team CSH Junior we celebrated the team's one year anniversary! Gloria, Carla and Leti took it upon themselves to plan a party. They decorated the room and had prepared party hats for everyone, and had ordered a cake for the occasion. We had loads of fun, and we reminisced about the past year. So that we can gather the whole team together,we had a video call with former members Bianca and Dani. We miss them a ton, and we can't wait to call them again, as a team, at our Christmas party. After we ate the cake, we played board games.
We also had two special guests, our very good friends Mihai Mermezan and Robert Sofrac, former XEO members, that are now in university here, in Timisoara. We're very glad that we managed to spend time with them.

The whole team back together

Us Talking and laughing together

Medieval Robotics Day

Date	30th November
Meeting held	Hunedoara, Corvin Castle
Attendance	Ale, Bogdan, Carla, Laura, Leti, Peto, Robi, Sorinca, Spiri, Unguru
Time spent	10h for preparations, 7h for presentation

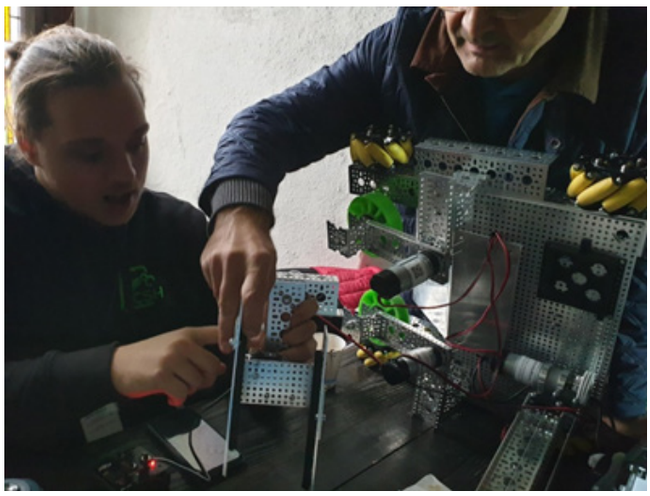
We were invited to participate in the Medieval Robotics Day, organized by RobotX HD. We had a funny day along with the other guests. We arrived at Corvin Castle in the morning, around 10am, right before the event started. RobotX HD gave us a warm welcome and guided us to the place where the event was being held.

This is how the badge looked like

Our stand

We didn't have enough cables for motors and servos, but RobotX was kind enough to lend us some and a servo controller for some testing.
We realized that we make more points if we play as feeders instead of stacking, because our slider didn't work properly and we couldn't fit under the skybridge.
We figured that our idea for building the robot wasn't that efficient so we planned on changing almost the whole mechanism.

Before the game matches started, in the inner courtyard of the castle, there was a theatre play corresponding to the history of the castle.



Robi and Mr.Petolea working on rotation mechanism for the stone stacking

The short theatre play

Spiri getting ready for some action

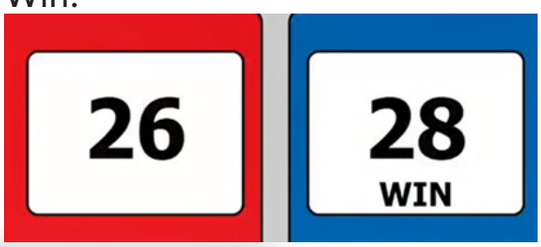
RobotX Hunedoara's demo

Date	January 11th
Meeting held	"Traian Lalescu" High school's sports hall
Attendance	Bogdan, Laura, Peto , Spiri, Unguru
Impact	150 persons
Time spent	7h preparations, 10h presentation

Goals: It gives the team the chance to enter the competition and participate actively in its running, to spend exciting and motivating moments with other teams animated by the same desires and ideals, and last but not least, to self-assess.
Because we have to participate in at least 2 demos before the regional, we decided that we should attend RobotX Hunedoara Demo. Our scissor lift mechanism wasn't finished so we weren't competition ready, so we thought to put the intake system on the chassis. Because of our speed, we were the so called "feeders" transporting an average of 10 – 13 stones per match.

Our robot for the RobotX's demo

We arrived at 10 a.m. The first thing that we did was to test our to see if it's working properly.
Our first match was Qualifying Match 8, in the blue alliance with RO140 infO1Robotics against RO115 DarkEnergy and RO042 Bionic Royals
Win:

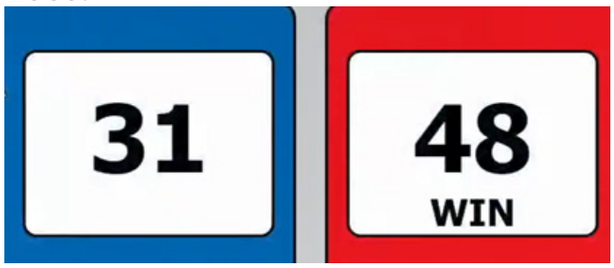


It was our first match so Bogdan wasn't warmed up so we delivered only 9 stones, but in the end we

managed to win with the help of InfO1Robotics because they could stack while we collected stones.

Our second match was Qualifying Match 15, in the blue alliance with RO159 CNapSys, against RO72 Brainstorms and RO075 Phoenix.

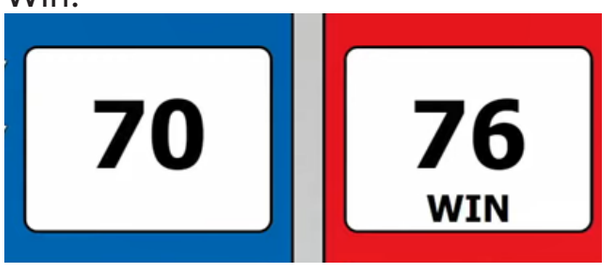
Loss:



This match was an almost win but we forgot to move the foundation into the building zone. because of that the points for stacking on the foundation weren't taken into account and that's sad. If we observed more early we could've won.

Our third match was Qualifying Match 22, in the red alliance with RO060 DecebalTech, against RO087 TeaBorgs and RO137 AlphaBit

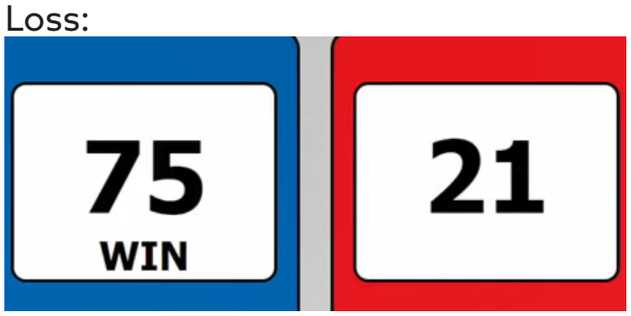
Win:



It was an amusing match because in the end game the robot from TeaBorgs collided with our robot and it switched off. Even if this event happened we managed to win

Our fourth match was Qualifying Match 29, in the red alliance with our friends from Timisoara RO093 Cyber Moon against RO086 Biytes and RO122 RaSky

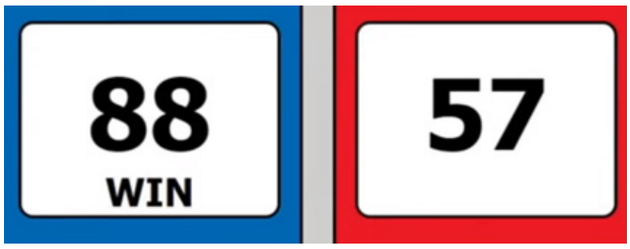
Loss:



We managed to collect 8 stones but even with that many stones we couldn't have won. In the end game we didn't even park.

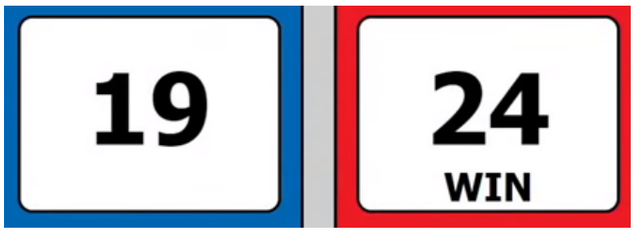
Our Fifth match was Qualifying Match 37, in the blue alliance with RO161 RoboKey against RO132 LTCDMNrobotics and RO121 RobotY Hunedoara

Win:



In this match we could hardly deliver stones (6 stones) because the robot from RO121 RobotY Hunedoara blocked our way to the deposit. Because of that they took 3 major penalties resulting in us winning the match.
Our Sixth match was Qualifying Match 45, in the red alliance with our friends from Timisoara RO069 TEAMORIGINALS against RO007 GearManiacs and RO169 ROBOPEDA

Win:



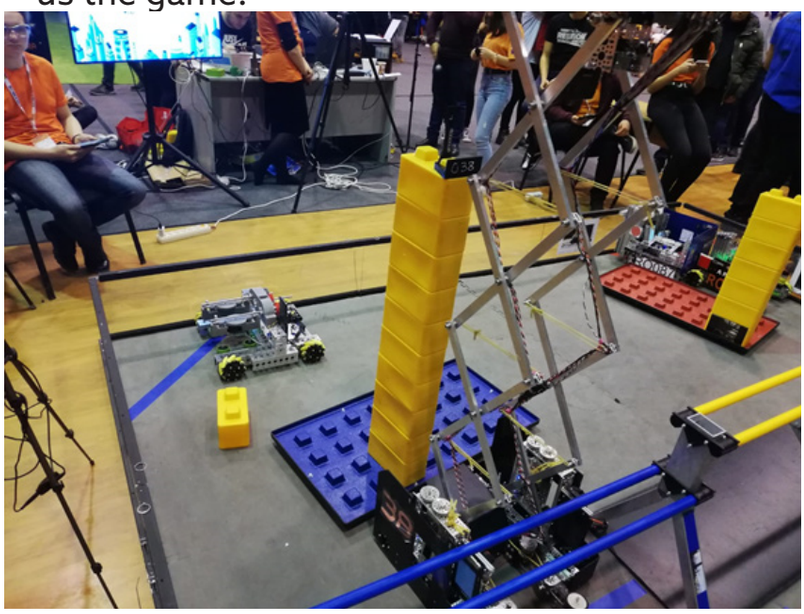
Before the game, our teammates had a problem with the robot, so Unguru rushed to our stand to bring a fully charged battery. After that the robot worked properly. In this game we managed to deliver 9 stones and to park in the building zone.

With 4 out of 6 matches won we now waited for the alliance selection with hope that someone would choose us. The Alliance captains were RO151 Startech, RO087 TeaBorgs, RO038 RobotX Hunedoara, RO115 DarkEnergy. When it was the RobotX's turn to choose, they picked us as their 1st pick. We were happy and very excited to play the semifinals and couldn't wait any longer. Our alliance was RO038 RobotX as the captain, us as the 1st pick and RO42 Bionic Royals as the 2nd pick.
Semifinal 2 Match 1, in the blue alliance RO038 RobotX and RO074 CSH, against RO087 TeaBorgs and RO119 Delta Force.

Win:

This was one of our best matches, delivering 10 stones. This way we helped our friends from RobotX to beat their personal record of stacked stones. They made a 10 stones tower

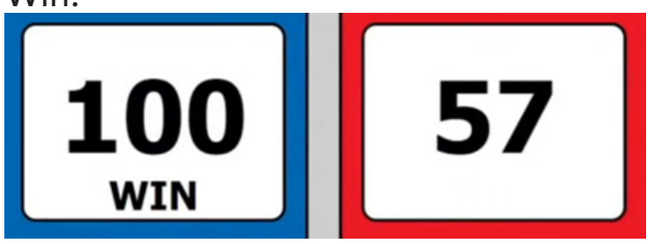
with a capstone on top. In the endgame we managed to park in the last second which won us the game.



RobotX with the 10 stones tower and us in the back parked.

Semifinal 2 Match 2, in the blue alliance RO38 RobotX and RO042 Bionic Royals, against RO119 Delta Force and RO060 Decebal tech.

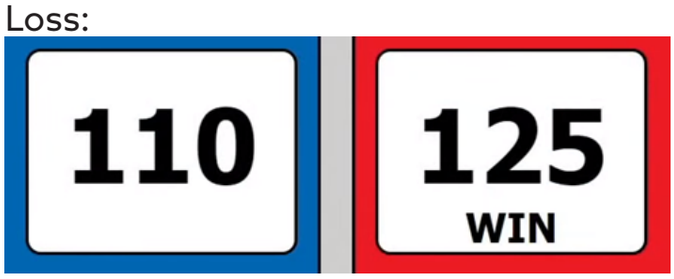
Win:



In this match our teammates managed to stack 7 stones. In the endgame RO042 almost destroyed our tower but luckily it didn't happen. Now that we won both of our semifinals we've got to play the finals.

Finals Match 1, in the blue alliance with RO038 RobotX Hunedoara and us RO074 CSH against RO151 Startech and RO077 QuantumRobotics.

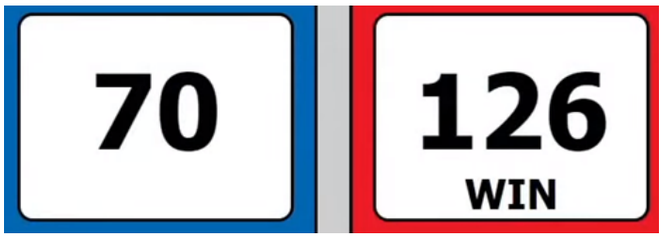
Loss:



Even though we had more stones stacked and delivered we lost because we didn't have a capstone and that made a difference.

Finals Match 2, in the blue alliance RO038 RobotX Hunedoara and RO042 Bionic Royals against RO077 QuantumRobotics and RO140 infO1Robotics

Loss:



RobotX Hunedoara had a problem in the autonomous period and couldn't score a lot of points. In the TeleOp period they did fairly well but the Red alliance had an advantage because of autonomous. Unfortunately we lost, but we were still happy because it's the first time for us to play in the finals.

The finalist alliance.

Even though we couldn't be the winning alliance, we were still joyful that we have came so far in the event.

Winter Robotics Games 2020

Date	18th January 2020
Meeting held	Universitatea de Vest Timisoara
Attendance	All of us + volunteers
Impact	250 people
Time spent	84 h preparations, 12 h process

Goals:

To reunite the FTC teams in Timisoara

To test the mechanisms of the robot for situations of competition.

Results:

We brought 22 teams together at the demonstrative matches.

We realized that the aluminium profiles we used at scissor lift weren't resisting to the tension assessed by the used intake system.

One of the important aspects of the team's preparation for the regional competition is training, and the most optimum type of training is represented by demos. Although we though about participating in the demos organized by other teams, we really wanted to bring the FTC community together in Timisoara as well, so we started the first edition of the CSH demonstrative matches – Winter Robotics Games 2020.

Preparations:

In order for the event to be well put together, we started organizing three months before the event.

We had read the manual for the Tournament Director so that we knew what details to keep in mind regarding the organization of the event and we structured the steps we needed to follow in a certain sequence.

To do list for CSH demo:

1. Reserve the date for demo
2. Discuss with teams from Timisoara regarding fields
3. Registration of the demo in the centralizer of the events Natie Prin Educatie.
4. Approximation of the number of the participating teams.
5. To make a model of the banner for the demo
6. To create the event on Facebook with an attached link for registrations
7. Registration and training for the volunteers.
8. Estimative calculation of the time of the matches
9. Confirmation of the participating teams + number of members
10. Making the agenda
11. Buying water/snacks for the teams
12. Making models for name tags, diplomas, papers per team, numbers for the robots.

13. Request for offer of table to partner restaurant
14. Mails to the teams with logistic details.
15. Centralizing the logistic dates
16. Food order
17. Listing the needed materials.
18. To contact the media, press release
19. Signing the diplomas by Colegiul National Pedagogic "Carmen Sylva" and UVT
20. Organization of the space of the event
21. Contact the teams from Timisoara
22. Organization of the space for pictures
23. Installation of the sound-system, scoring, 2 screens

1. Reserving the date for the demo

First of all, we established the date of the event so that it wouldn't be at the beginning of the season, as the majority of the teams are constructing their robots that time, but so it wouldn't be too close to the regionals either, so that we'd still have time to adjust the details that don't work well. The date of 18th January sounded just perfect to us, so we talked to Andrei Craciun (head of innovation at UTV) and, lucky for us, that date was free and we could place our demo in the University.

2. Discuss with teams from Timisoara regarding spaces

Although we ordered a complete field for the events we proposed to organize, we decided to make a back-up plan through which we would collaborate with the teams from Timisoara to bring two complete fields – an official one, where the matches would take place and the second one for training. Because we were aware of the fact that we managed to create an FTC community of people that help each other in Timisoara, we all got along very well. So, the teams Cyber Moon RO and Team Originals RO were about to bring us the field tiles, stones and foundation , while team DAVOS RO012 were about to bring us the skybridge as well.

3. Registration of the demo in the Calendar of Regional Activity – season #4

For a better organization of the events under the tutela of Natie prin Educatie we registered the date of the event as a sign of official initiation of the demo in the Calendar of Regional Activity.

CSH Demo in the Calendar of Regionl Activity #4 BRD FIRST Tech Challenge Romania

4. Approximation of the number of the participating teams

In order to offer to all of the participants the needed space for the activities within Winter Robotics Games 2020, it was established that every team had a space of minimum 1.5 (m) x 2 (m). Keeping in mind that the space we had (the principal hallway of UVT) we had enough space for 24 teams.

5. Making the model for the banner of the demo

Because humans perceive visual information on a high percentage, the banner of the event had to indicate the basic idea and the atmosphere of the demo. Because of this, we decided to make it look austere, to combine the seriozity of making a robot with CSH specific elements of radiance. Therewith, it must contain the information regarding the event, but also the sponsors and the partners of the team.

6. Making the Facebook event, attachment of link for registration.

After the banner is all done, there is time for a presentation of the event in a more dynamic and attractive way for the students involved in the FIRST programme, but also for the followers of team CSH from other fields. The description had to inlucde dates about teams and the FIRST programme, about the type of event that was about to take place and also about the activities within it.

Final version of the poster for Winter Robotics Games 2020

The description of the event

ATENȚIE, ROBOȚI ÎN ACȚIUNE!

În 18 ianuarie 2020, ne întâlnim la Timișoara pentru a desfășura un demo organizat de echipa de robotică CSH, la care sunt invitate echipele participante la competiția BRD FIRST Tech Challenge România, organizată de Asociația Natie prin Educație, ca să își testeze roboții în condiții de competiție.

Este un eveniment deschis publicului larg, în care vom vorbi despre valorile FIRST, ne vom pregăti împreună cu celelalte echipe de regionalele eliminatorii care vor urma și vom împărtăși din experiența noastră tuturor celor interesați.

Înscrierile echipelor se pot face accesând link-ul de mai jos până în 3 ianuarie. Vă așteptăm în număr cât mai mare!

Let's sparkle!

https://forms.gle/xwXW6bBuz5wKHnr66

7. The registration and training the volunteers.

We made the registration offline, at school, after the presentation of the 9th and 10th graders project. We presented the roles that everyone could have as they worked at the check-in or as scorekeeper, queuer and field resseter, then we made a list with the interested students where they added their names and phone number. Later they became the paperwork that they needed for the training and then we organized meetings regarding the revision of the information and the Q&A section.

8. Calculating the estimated time for each match.

In order to know exactly the time that we need to allocate to each match, we used the manual calculation formula for Tournament Director.

Example:

12 teams x 5 matches = 60 / 4 teams per match = 15 matches x 12-minute cycles = 180 / 60 minutes/hour = 3 hours

Match Time Calculator

__ teams x __ matches = __ / __ teams per match = __ matches x __ min. cycles = ___ / __ minutes/hour = __ hours

Extract from the Tournament Director book for time calculations during the match.

We calculated the time that we needed to assign according to the enrolled teams number. In Roima Instant, we calculated the time schedule with each match lasting no longer than 12 minutes.

For 16 teams :

16 teams x 5 matches = 80
80 / 4 teams per match = 20 matches
20 matches x 12-minute cycles = 240
240 / 60 minute/hour = **4 hours**

For 20 teams:

20 teams x 5 matches = 100
100 / 4 teams per match = 25 matches

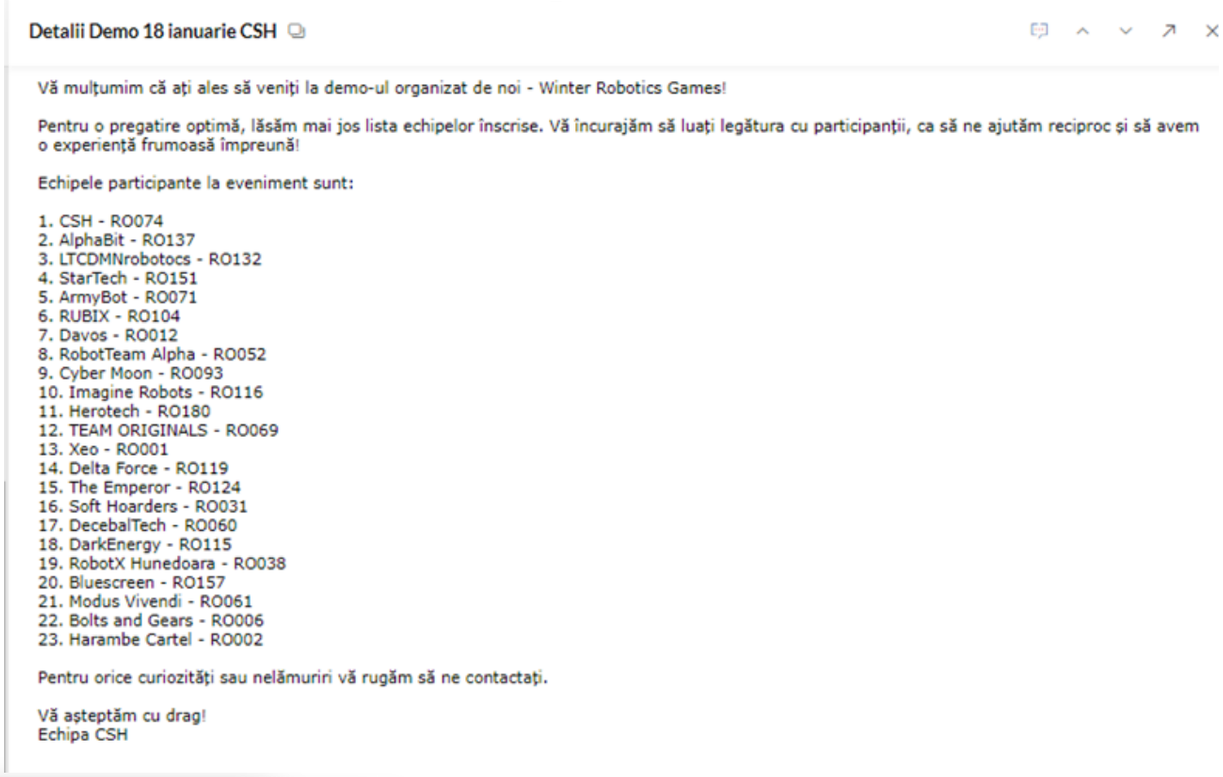
25 matches x 12-minute cycles = 300
300 / 60 minute/hour = 5 hours

For 24 teams:
24 teams x 5 matches = 120
120 / 4 teams per match = 30 matches
30 matches x 12-minute cycles = 350 || 30 matches x 7-minute cycles = 210
360 / 60 minute/hour = 6 hours || 210/60 = 3.5 hours
For 24 teams that singed up at the demo, we evenly calculated the operation time for each match as 7 minutes for each.

For 24 teams (7 minutes for each match) :
24 teams x 5 matches = 120
120 / 4 teams per match = 30 matches
30 matches x 7-minute cycles = 210
210/60 minute/hour = 3.5 hours

9. Confirmations of the involved teams with their members number.

Throughout the process of the teams preparation, we tried to assure the good communication in between us, the organizers, and the involved teams. We sent a confirmation mail to all the teams, in order to communicate better with each before the demo began.



Detalii Demo 18 ianuarie CSH

Vă mulțumim că ați ales să veniți la demo-ul organizat de noi - Winter Robotics Games!

Pentru o pregatire optimă, lăsăm mai jos lista echipelor înscrise. Vă încurajăm să luați legătura cu participanții, ca să ne ajutăm reciproc și să avem o experiență frumoasă împreună!

Echipele participante la eveniment sunt:

1. CSH - RO074
2. AlphaBit - RO137
3. LTCDMNrobotocs - RO132
4. StarTech - RO151
5. ArmyBot - RO071
6. RUBIX - RO104
7. Davos - RO012
8. RobotTeam Alpha - RO052
9. Cyber Moon - RO093
10. Imagine Robots - RO116
11. Herotech - RO180
12. TEAM ORIGINALS - RO069
13. Xeo - RO001
14. Delta Force - RO119
15. The Emperor - RO124
16. Soft Hoarders - RO031
17. DecebalTech - RO060
18. DarkEnergy - RO115
19. RobotX Hunedoara - RO038
20. Bluescreen - RO157
21. Modus Vivendi - RO061
22. Bolts and Gears - RO006
23. Harambe Cartel - RO002

Pentru orice curiozități sau nelămuriri vă rugăm să ne contactați.

Vă așteptăm cu drag!
Echipa CSH

Mail regarding the involved teams at the demo.

10. The making of the notebook.

The event agenda was supposed to include every planned activity, so that we can have everything in an adequate tempo. The time for each game had already been calculated, now we only need to know how much time do we need for the technical inspections. Acording to the fact that we have 3 teams with 2 inspectors each (robot inspector and field inspector), 10 minutes each team, we made the calculations for the inspection time.
24 teams x 7 minutes = 168 minutes
168 minutes / 3 teams = 56 minutes ≈ 1 h
Throughout the making of the notebook we minded the calculations that we had previously made, adding an estimated time margin, acording to the involved persons. We also took care to assure time for lunch-breaks and rest-breaks.

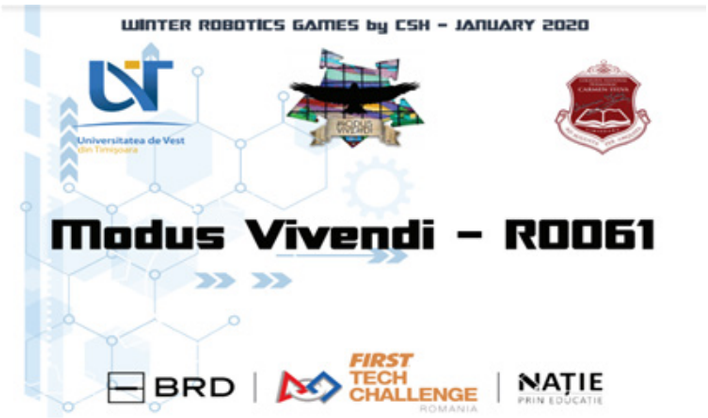
This is the final agenda:
8:30 - 9:30 : Check in
9:30 - 9:45 : The opening ceremony
9:50 - 11:00 : Robot and field inspection
11:00 - 11:15 : Drivers meeting
11:15 - 13:15 : Qualification matches
13:15 - 14:15 : Lunch-break
14:15 - 15:50: Qualification matches
16:00 - 16:15 : Choosing the paragraphs
16:20 - 17:20 : Semi-finals and finals
17:30 : The awards and closing ceremony

11. Reserving water and snacks for the teams.

In partnership with the West University of the Timişoara we got water and soda for the involvede teams, in order to assure that everyone could focus on the matches.

12. Making badge, diploma, robot numbers and charts for each team.

Every promotion material needed to have the same concept, so we thought of making something interesting but not too detailed, in order not to get lost in details and missing the most important part, the information. The most important part here was to include the CSH, UVT and our highschools' logo to the badges. The CSH logo is in the lower middle, above in the left is the UVT logo and in the right the CNPCS logo. We left a space between those upper two so that we could crop it and add the blooming grip with the red strings that we had chosen, in order to recognize the participants. We also added to lines on different rows where you could write your name.

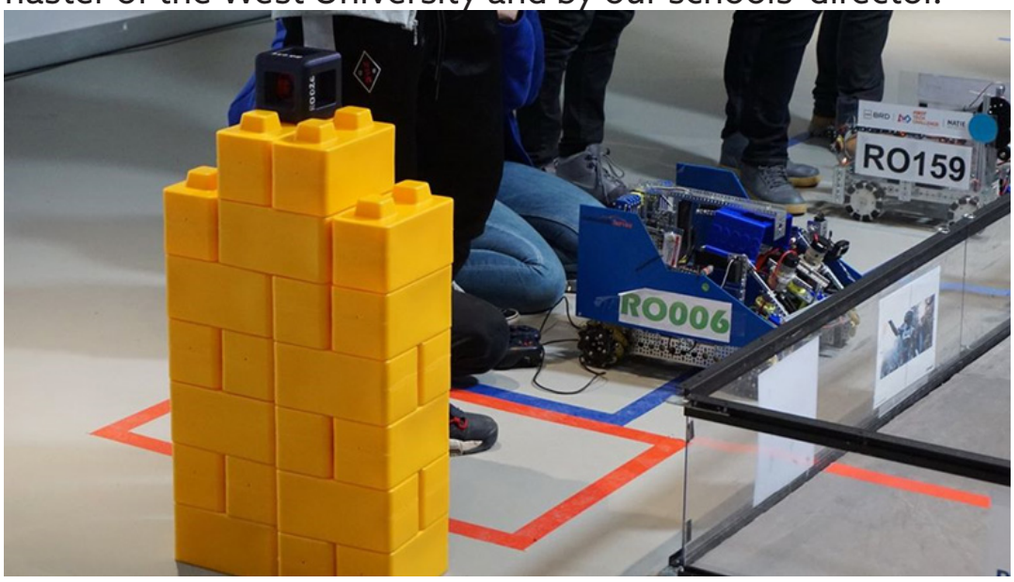


This, below, is one of the charts that defined the teams' tables. They all had the same design as the badges but the lines were horizontal so that you could add the teams' logo and name.

The agenda and the charts that were used to make a difference between the events staff (queuer, field resseter) were designed the same way, in order to make the event look better.

In order to be sure that every team had their numbers on the robots, we decided to offer them ourselves. We were very happy that some of them decided to keep them till the regionals at Cluj-Napoca.

The degrees had different shades of green and they were handed to every involved team. The teamns of the Financial Alliance and the Winning Alliances received a certificate of merit. All of them had been signed by the head-master of the West University and by our schools' director.



13. Request of deal from the partner restaurants for the meal.

Because we knew how hard these FTC events were and how small the breaks were whenever you wanted to get something to eat, we decided to ask the restaurants for meal deals for the FIRST students. The food was delivered at our event at luch time. The teams received an e-mail with the proposed deals and they chose the desired ones.

De asemenea, pentru pauza de masă am primit câteva oferte speciale pentru echipele de robotică.

Restaurant Caprice:

Varianta 1: preț/ persoană 19 lei
- Ciorbă de pui a la Grec (450 ml)
- Șnițel de pui pane (130 g)
- Cartofi piure (200 g)
- Salată de varză (200 g)

Restaurant Nora:

Varianta 2: preț/ persoană 21 lei
- Ciorbă de văcuță
- Pulpă de pui
- Legume
- Salată de varză

Varianta 3: preț/ persoană 21 lei
- Ciorbă de cartofi
- Piept de pui parizian
- Piure de cartofi
- Salată de varză

Varianta 4: preț/ persoană 21 lei
- Ciorbă de pui
- Pulpă de pui
- Piure de cartofi
- Salată de varză

În cazul în care optați pentru una dintre ofertele prezentate mai sus, vă rugăm să ne trimiteți numărul de porții alături de numărul ofertei (ex. V1 - 5) până marți, 14 ianuarie, la ora 20:00. Costurile aferente vor fi susținute de fiecare echipă.

Mulțumim pentru colaborare!

Echipa CSH RO074

14. Mails towards the teams with logistic details.

In order to have a good event process, we tried to offer the teams all the information that they might need. We have made a list that they should keep it with them at all times. We used this method to be sure that everyone is ready for the matches and, who knows, maybe they will use this genuine method when they would take part of other events too.

Informații importante Demo 18 ianurie

"peleemy" <peleemy@gmail.com>

Tags

Bună ziua!

A mai rămas doar o săptămână până la demo-ul Winter Robotics Games și avem nevoie de câteva detalii logistice în vederea participării echipei dumneavoastră, și anume NUMELE ȘI NUMĂRUL PARTICIPANȚILOR (elevi și mentori) și ORA LA CARE AJUNGEȚI (în cazul în care nu veniți cu o seară înainte).

De asemena, vă rugăm să va asigurați că o să aveți la voi:
- Robot, telefoane și controllere
- Trusă de scule
- Roll up (opțional)
- Un prelungitor
- Ochelari de protecție
- Insigne pentru 2 driveri și 1 coach
- Bună dispoziție și doza necesară de Gracious Professionalism :)

Fiecare echipă va avea o masă pentru robot și alte ustensile, încurajându-vă să vă bucurați de atmosfera demo-ului alături de ceilalți participanți!

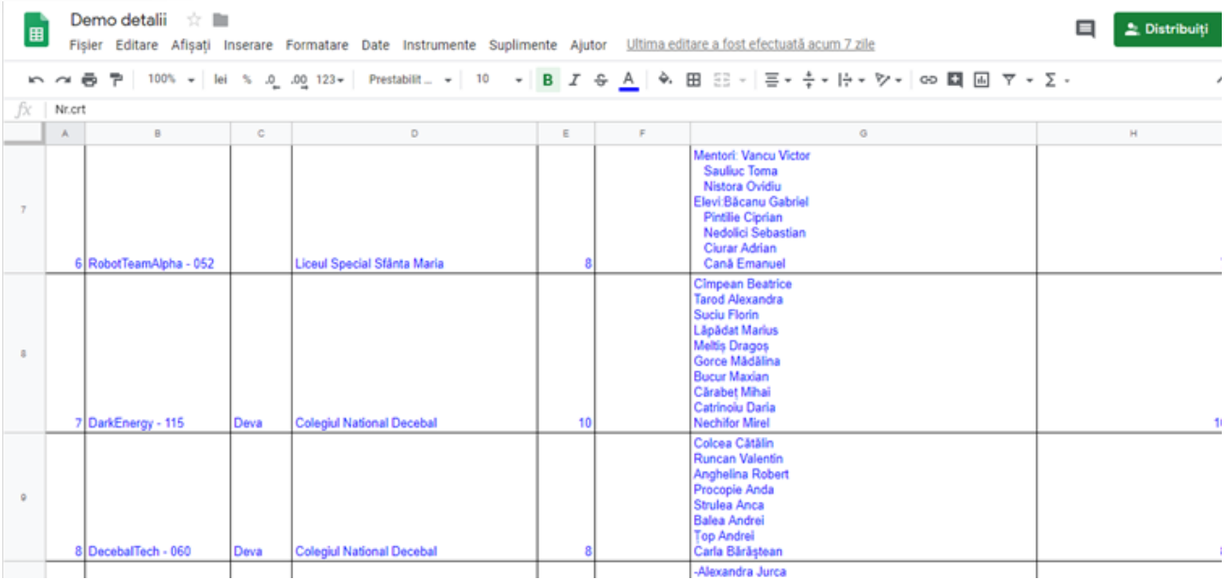
E-mail with important information about the Winter Robotics Game 2020 for the involved teams.

15. Logistic data being centralized.

After we had received the participation confirmation from the teams, we centralized the names and the number of participants but also the meal-deals that they had chosen. Now we had a clear image of the entire event including the number of participants and the time and space we needed.

AlphaBit/RO137		Petrosani	Colegiul National Mihai Eminescu Petrosani	4+1	Hunedoara	5
LTCDMNrobotIcs / 132		Moldova Noua	Liceul Tehnologic Clisura Dunării Moldova Noua	12	Caraș-Severin	12
StarTech / RO151		Satu Mare	Colegiul Național Ioan Slavici		Satu Mare	15
ArmyBot RO071		Alba Iulia	Colegiul National Militar Mihai Viteazul	10	Alba	10
RUBIX RO104		Blaj	Colegiul National Inochentie Micu Clain	10	Alba	10
Ro 012	Andonie Silviu	Timisoara	Colegiul Tehnic Emanuil Ungureanu	5+2	Timis	7
RobotTeam Alpha/052	Sauliuc Toma	Arad	Liceul Special "Sfânta Maria"	5+2	Arad	7
Cyber Moon / 093	Rușeț Ovidiu	Timișoara	Colegiul National C. D. Loga	19	Timis	19
Imagine Robots(RO116)	Ferhat Travaci	Bucuresti	Liceul International de Informatica Bucuresti		Bucuresti	6
Herotech #180	Andreea Demco	Sibiu	Colegiul National "Octavian Goga" Sibiu	7	Sibiu	7
TEAM ORIGINALS RO 069	BORUGA Gabriel	TIMISOARA	COLEGIUL TEHNIC HENRI COANDA	13	Timis	13
Xeo RO001	Ghișa Alexandru Nicolae	Alba Iulia	Colegiul Național "Horea, Cloșca și Crișan"	15	Alba	13
Delta Force / RO 119	Dragos Botosan Corina	Arad	Liceul Național de Informatică Arad	16	Arad	14
The Emperor RO 124	Zagara Ana-Gabriela	Drobeta-Turnu S	Colegiul Național Traian	9+1	Mehedinți	10
Soft Hoarders RO031	Sucea Cosmin	Craiova	Colegiul Național Frații Buzești	6+1	Dolj	7
RO060 DecebalTech	Stanculescu Sorin	Deva	Colegiul National Decebal	10	Hunedoara	10
DarkEnergy / RO 115	Stănculescu Sorin	Deva	Colegiul Național „Decebal"	8	Hunedoara	8
RobotX Hunedoara - RO038	Mircea Nistor	Hunedoara	Liceul Teoretic "Traian Lalescu" Hunedoara	11	Hunedoara	
Bluescreen/ 157	Romana Salajan	Arad	Colegiul National Preparandia- Dimitrie Tichindeal	11	Arad	11
Modus Vivendi RO061	Buzle Bogdan	Oradea	Colegiul Național Mihai Eminescu	6	Bihor	6
RO006 Bolts and Gears	Corina Puscas	Bistrita	Colegiul National "Liviu Rebreanu" Bistrita	8	Bistrița-Năsăud	8
Harambe Cartel/ RO002	Ileana Selejan	Arad	Colegiul National „Moise Nicoara" Arad	5	Arad	5

Attendance confirmation:
yellow – confirmed; white- resigned



Demo detalii

Fișier Editare Afișați Inserare Formatare Date Instrumente Suplimente Ajutor Ultima editare a fost efectuată acum 7 zile

Distribuiți

Nr.crt

Nr.crt							
6	RobotTeamAlpha - 052		Liceul Special Sfânta Maria	8		Mentori: Vancu Victor Sauliuc Toma Nistora Ovidiu Elevi:Băcanu Gabriel Pintilie Ciprian Nedolici Sebastian Ciurar Adrian Cană Emanuel	
7	DarkEnergy - 115	Deva	Colegiul National Decebal	10		Cîmpean Beatrice Tarod Alexandra Suciu Florin Lăpădat Marius Meltiș Dragoș Gorce Mădălina Bucur Maxian Cărabeț Mihai Catrinoiu Daria Nechifor Mirel	1
8	DecebalTech - 060	Deva	Colegiul National Decebal	8		Colcea Cătălin Runcan Valentin Anghelina Robert Procopie Anda Strulea Anca Balea Andrei Țop Andrei Carla Bărăștean -Alexandra Jurca	

Number and participants' name confirmation + meal-deal offer

16. Ordering food.

After we had centralized all the meal-deals that the teams had requested, we had a discussion about the details of the food-delivery process according to the number of requested portions with our partners.

17. Making a list with the materials that we need.

The materials that we needed, had been centralized into a document and then it would be divided into two categories: materials that were going to be listed at school and materials that needed to be listed at special centers

1. Referee (pagina a5 laminata, prinsa de tricourile lor) - ***4***
2. Queuer (pagina a5 laminata, prinsa de tricoutile lor) - ***10***
3. Field Resseter (pagina a5 laminata, prinsa de tricourile lor) - ***5***
4. Lista echipe check in -1
5. Lista echipe inspectie (trecute sau nu) -1
6. Field Inspection Check list - 26
   https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/field-inspection-checklist.pdf
7. Robot Inpection check list - 26
   https://www.firstinspires.org/sites/default/files/uploads/resource_library/ftc/robot-inspection-checklist.pdf
8. Ecusoane 8 x 11
   scorekeeper - ***2***
   check in - ***2***
   boxa si microfon - ***1***
   inspector- 6
9. Afis eveniment A0 - 1
10. Program eveniment - 25
11. Denumire echipa si nr. din concurs - 24
12. Nav target dublu
    https://firstinspiresst01.blob.core.windows.net/ftc/2020/nav-tar-international.pdf

A list with the materials that needed to be listed.

While Gloria and Laura were listing the materials at school, Ale and Daria went to a print shop to list the diplomas, the events banner and the badges. Also Ale and Daria went to polish the staff charts. We have later hanged them to our T-shirts to define the role that each had.

18. Talking with the media.

Because everything we do is for and about teenagers, we're trying to promote more and more FIRST events, through social-media and press. We had sent a press-release to our media partners and to other newspapers.

În 18 ianuarie 2020, 200 de elevi, 24 de echipe din 11 județe ale României își prezintă roboții în cadrul meciurilor demonstrative Winter Robotics Games. Evenimentul este organizat de echipa de robotică CSH a Colegiului Național Pedagogic ,,Carmen Sylva" din Timișoara în parteneriat cu Universitatea de Vest Timișoara.

Evenimentul face parte din seria meciurilor demonstrative organizate la nivel național în circuitul activității competiției BRD FIRST Tech Challenge România organizată de Asociația Natie Prin Educație. Scopul acestuia este de a aduce echipele de robotică împreună, pentru a stabili legături de prietenie și colaborare, de a facilita împărtășirea experiențelor și de a pregăti atmosfera programului FIRST.

În fiecare an programul abordează o nouă temă de joc, în 2019-2020 fiind vorba despre SkyStone.

În timpul unui meci care durează 1,2 minute, roboții îndeplinesc anumite sarcini pentru a acumula puncte. În primele 30 de secunde roboții se mișcă autonom, urmând să fie controlați un minut de la distanță de către driveri cu ajutorul controllerelor.

Concursul se bazează pe lucru în echipă, formarea alianțelor și ajutor reciproc, valoarea de bază fiind Gracious Professionalism

Extract from the press-release made by Team CSH

19. Signing the diplomas by the National Pedagogic College "Carmen Sylva" and the West University of Timișoara.

On Thursday morning we assured that the degrees were signed by both of the institutions, in order to make the degrees official from the Winter Robotic Games 2020.

20. Contacting the teams from Timișoara and planning the fields.

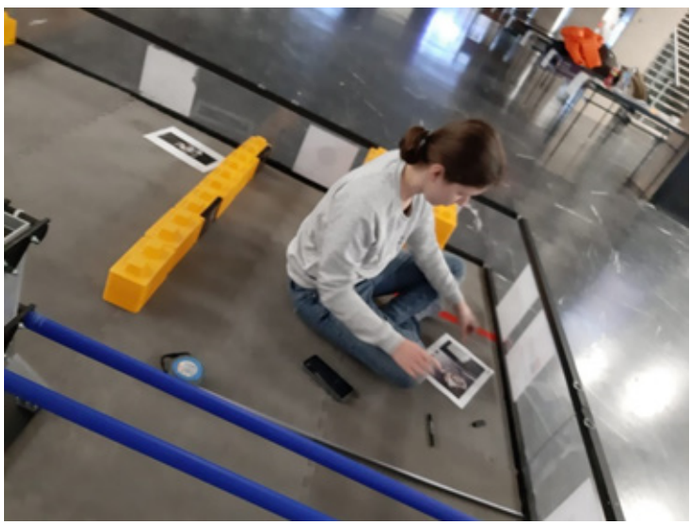
On Friday we had contacted the teams from Timișoara again, in order to make a collaboration that would help us sync and plan the fields.

Conversation with Andreea, Cyber Moon RO about the transport of half the field.

21. The layout of working spaces.

On Friday we went to the West University of Timișoara to layout the working spaces. We planned the 24 meals for all the involved teams and we assured that each had their own table with their name, logo and robot numbers.

Also together with the CSH volunteers we had planned the 2 fields, a training one and the official match one.



Robi and Ale, planning the match fields:

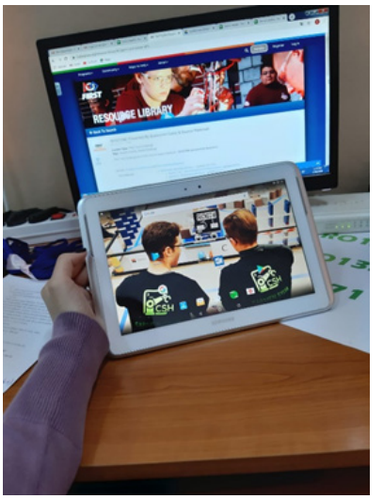
22. Arranging the place for taking pictures

To make sure that we have checked all the details about the image of the event, we have created an area to take pictures of the teams. So, we put up the poster of the event, together with the panel from Open Robotics Intelligent Grid, because we are proud of this project – and we're already preparing for the next edition!

23. Installing the sound system, scoring, 2 screens

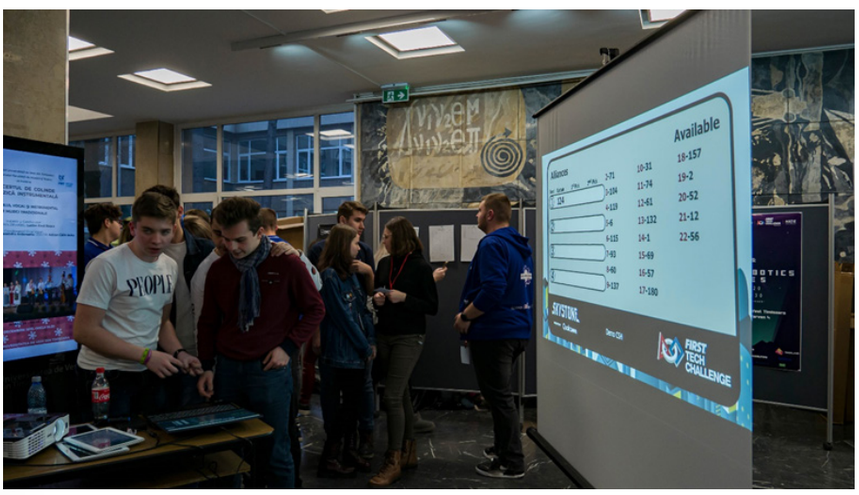
On Friday we have installed and tested the sound system, just to make sure that the sound will be heard inside the entire room.

The area for pictures



Preparing the tablets for scoring

Everything is ready, we're waiting for the day of the matches!

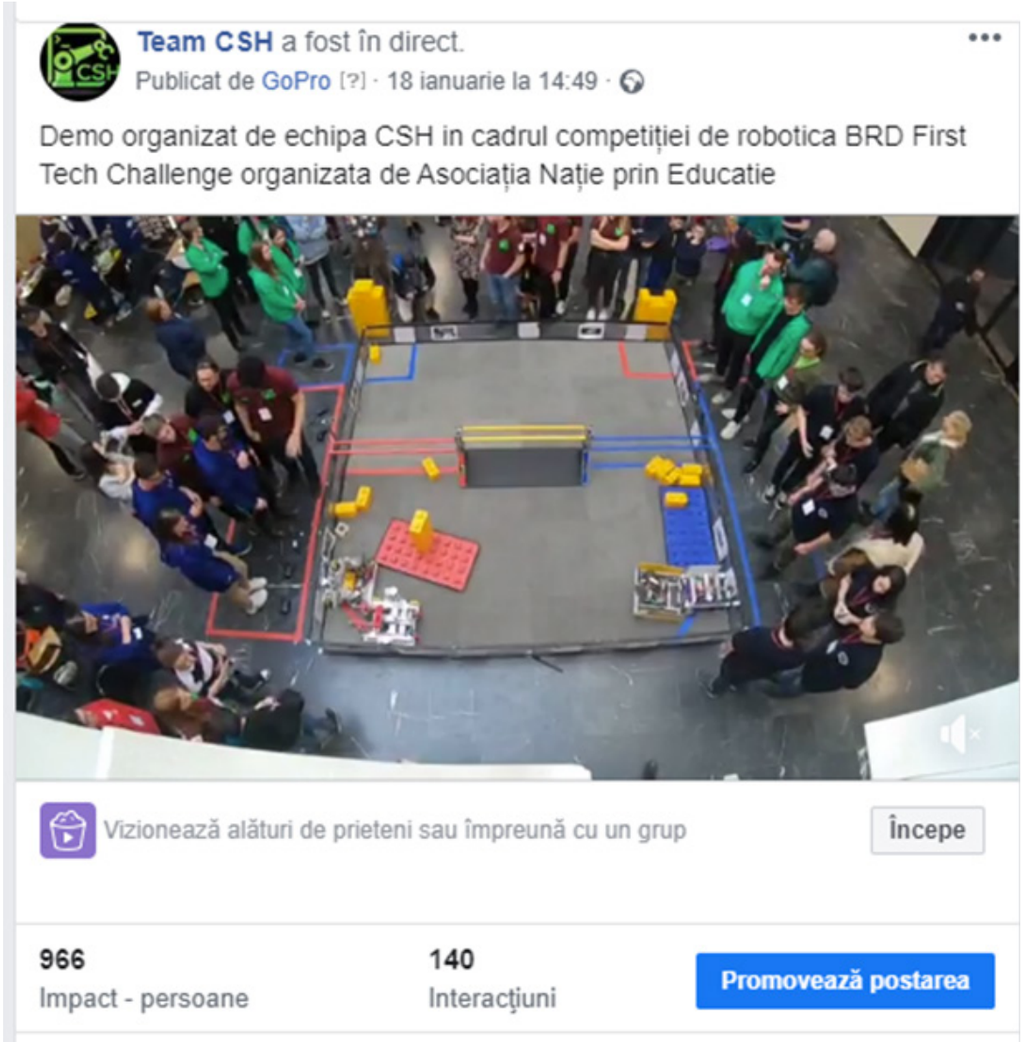


The unfolding of the activity:

By 8 in the morning, all the members of the CSH team, the mentors and the volunteers were already at the West University, waiting for the arrival of the other teams.

One of the teams, LTTV Team Faget Ro, had called us in the morning to announce us that because of some technical problems that had appeared the night before, they could not make it to the demonstrative matches. Although we have tried to help them mend the situation, we didn't manage to find the necessary solutions in such a short time – but we offered our help after the event.

Alex, an ex member of CSH, came to help us with the event, and more precisely he had ensured us a live transmission on the Facebook page of the team of the demonstrative matches.



24. Check in:

At the end, the teams met up with the ladies from the check-in – Riana and Tania, who gave them their badges and files for their travel signed by the secretariat of our school, so they can settle their money for the transport to our event.

Riana and Tania waiting for the teams to welcome the teams.

25. Opening Ceremony

When all teams showed up, we started the Opening ceremony, in which we have announced the present teams and made a short description of the event. Andrei Crăciun – Head of Innovation UVT, Octavian Mădălin Bunoiu – vice-rector UVT and the vice principal of the National Pedagogic College "Carmen Sylva" started the day with a few kind words.

Andrei Craciun – Head of Innovation at UVT welcoming the teams

Gloria, calling out the participating teams at Winter Robotics Games 2020

26. Announcing the alliances

After the opening ceremony, we had listed the order of the matches and, respectively, the alliances that will form.
Initially, the order of the matches looked like this:

Demo CSH Schedule

Teams: 23 Matches Per Team: 5 Matches: 29

Match	Field	Red 1	Red 2	Blue 1	Blue 2
Qualification 1	1	124	1	57	180
Qualification 2	1	48	132	6	56
Qualification 3	1	74	2	71	93
Qualification 4	1	60	119	69	137
Qualification 5	1	104	31	52	157
Qualification 6	1	115	12	61	60
Qualification 7	1	132	57	104	71
Qualification 8	1	56	31	1	69
Qualification 9	1	93	48	180	12
Qualification 10	1	157	115	124	2
Qualification 11	1	52	6	119	74
Qualification 12	1	137	132	61	157
Qualification 13	1	57*	52	69	2
Qualification 14	1	119	124	93	56
Qualification 15	1	61	71	180	31
Qualification 16	1	6	1	137	115
Qualification 17	1	74	104	60	48
Pauza de masa					
Qualification 18	1	12	71	1	119
Qualification 19	1	56	157	57	60
Qualification 20	1	115	180	52	132

Match	Field	Red 1	Red 2	Blue 1	Blue 2
Qualification 21	1	93	61	6	104
Qualification 22	1	2	137	31	48
Qualification 23	1	69	74	12	124
Qualification 24	1	60	93	132	1
Qualification 25	1	2	104	12	56
Qualification 26	1	31	57	115	74
Qualification 27	1	180	69	157	6
Qualification 28	1	137	52	71	124
Qualification 29	1	119	61	48	57

In the meantime, one of the teams didn't show up at the check in, so we called them to check if they

were still coming. Their answer was negative, so we were forced to take them out of the database and change up the alliances and order of the matches. Although some of the teams had their own strategies with the announced alliances, everyone was understanding of the situation – and they started preparing for the matches.
So, we had 22 actively participating teams.

Demo CSH Teams

Number	Team Number	Name
1	1	Xeo
2	2	Harambe Cartel
3	6	Bolts and Gears
4	12	Davos
5	31	Soft Hoarders
6	52	RobotTeam Alpha
7	56	Muschetarii
8	57	Wire Impulse
9	60	DecebalTech
10	61	Modus Vivendi
11	69	TEAM ORIGINALS
12	71	ArmyBot
13	74	CSH
14	93	Cyber Moon
15	104	RUBIX
16	115	DarkEnergy
17	119	Delta Force
18	124	The Emperor
19	132	LTCDMNRobotics
20	137	AlphaBit
21	157	Bluescreen
22	180	Herotech

The participating teams at the demonstrative matches

That being said, this is the listed after the changes made:

Demo CSH Schedule

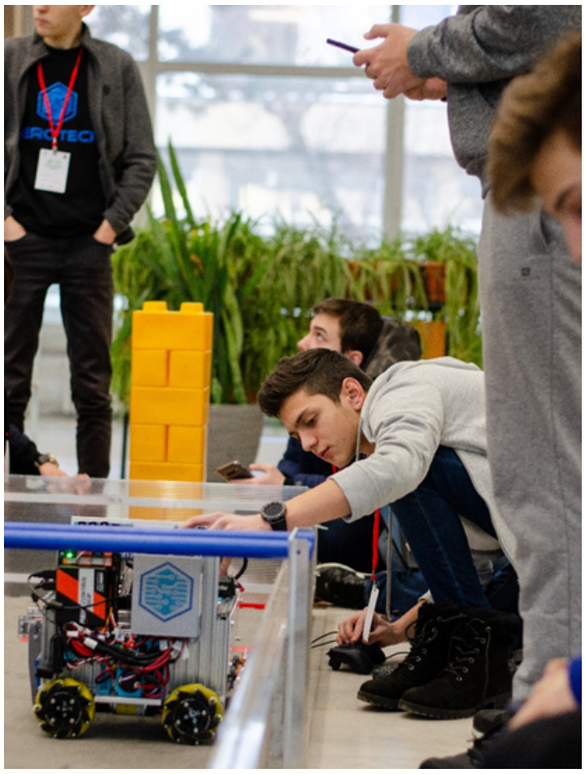
Teams: 22 Matches Per Team: 5 Matches: 28

Match	Field	Red 1	Red 2	Blue 1	Blue 2
Qualification 1	1	74	71	52	6
Qualification 2	1	132	31	180	12
Qualification 3	1	60	104	2	56
Qualification 4	1	57	69	115	61
Qualification 5	1	119	157	137	124
Qualification 6	1	93	6	1	180
Qualification 7	1	12	52	61	119
Qualification 8	1	31	57	157	2
Qualification 9	1	93	115	60	137
Qualification 10	1	56	132	71	1
Qualification 11	1	104	124	69	74
Qualification 12	1	31*	52	60*	93
Qualification 13	1	180	61	124	71
Qualification 14	1	115	74	56	157
Qualification 15	1	6	137	12	57
Qualification 16	1	1	2	69	119
Qualification 17	1	104	61	132	93
Pauza de masa					
Qualification 18	1	31	119	6	115
Qualification 19	1	132	137	2	74
Qualification 20	1	180	69	56	52

Match	Field	Red 1	Red 2	Blue 1	Blue 2
Qualification 21	1	157	12	104	71
Qualification 22	1	124	1	57	60
Qualification 23	1	137	56	61	31
Qualification 24	1	157	60	6	132
Qualification 25	1	52	115	1	104
Qualification 26	1	119	57	74	180
Qualification 27	1	2	12	124	93
Qualification 28	1	71	31	69	60

The training field was always filled with the teams who wanted to be 100% sure that everything will

work accordingly during the matches.



Member HeroTech, fixing the last details during training on the field 2

Qualificatory Games

The teams are prepared for galleries, the robots are ready for action! Let the fun begin!
Am avut, in total, 28 de meciuri calificative, iar fiecare echipa a jucat 5 meciuri.
In total, we had 28 qualifying matches, and each team had 5 matches.

Demo CSH Ranking

Teams: 22 | Matches Per Team: 5 | Most Matches by Team: 5 | Total Matches Played: 28 | Total Matches Remaining: 0

Rank	Team #	Team	RP	TBP	Highest	Matches
1	124	The Emperor	2.00	43.0	66	5
2	71	ArmyBot	1.60	34.0	66	5
3	104	RUBIX	1.60	29.5	61	5
4	119	Delta Force	1.20	45.8	68	5
5	6	Bolts and Gears	1.20	44.8	65	5
6	115	DarkEnergy	1.20	44.0	65	5
7	93	Cyber Moon	1.20	43.5	64	5
8	60	DecebalTech	1.20	42.8	61	5
9	137	AlphaBit	1.20	41.5	60	5
10	31	Soft Hoarders	1.20	37.8	75	5
11	74	CSH	1.20	33.3	64	5
12	61	Modus Vivendi	1.20	29.3	68	5
13	132	LTCDMNRobotics	0.80	36.3	64	5
14	1	Xeo	0.80	33.8	61	5
15	69	TEAM ORIGINALS	0.80	33.8	46	5
16	57	Wire Impulse	0.80	32.5	75	5
17	180	Herotech	0.80	32.5	43	5
18	157	Bluescreen	0.40	41.0	61	5
19	2	Harambe Cartel	0.40	38.0	49	5
20	52	RobotTeam Alpha	0.40	35.0	57	5
21	12	Davos	0.40	29.0	49	5
22	56	Muschetarii	0.40	27.5	48	5

The highest score was of 75 points in the qualifying match no. 8, from the alliance formed by the teams Wire Impulse RO057 and soft Hoarders RO031.
The captains of the finalist alliances proved to be The Emperor RO124, ArmyBot RO071, RUBIX RO104

and Delta Force RO119, and the finalist alliances were:

A1. The Emperor RO124 (Alliance Captain) – Xeo RO001 (1st pick), LTCDMNrobotics RO132 (2nd pick)

A2. ArmyBot RO071 (Alliance Captain) – DecebalTech RO060 (1st pick), Bolts and Gears RO006 (2nd pick)

A3. RUBIX RO104 (Alliance Captain) – Cyber Moon RO093 (1st pick), Soft Hoarders RO031 (2nd pick)

A4. Delta Force RO119 (Alliance Captain) – AlphaBit RO137 (1st pick), CSH RO074 (2nd pick)

Following to the matches in the semi-finals, the finalist alliances became A2 - ArmyBot RO071 (Alliance Captain) – DecebalTech RO060 (1st pick), Bolts and Gears RO006 (2nd pick) si A4 - Delta Force RO119 (Alliance Captain) – AlphaBit RO137 (1st pick), CSH RO074 (2nd pick).

The winning alliance was A4 - Delta Force RO119 (Alliance Captain) – AlphaBit RO137 (1st pick), CSH RO074 (2nd pick).

The winning alliance at Winter Robotics Games 2020

More impressing than the actual results of the teams are the genuine emotions that have been shown throughout the entire event. The teams thoroughly celebrated the matches they won, fact that shows that their work hasn't been in vain.

The red alliance formed by The Emperor RO124 and Xeo RO001 celebrating the victory of match no.22

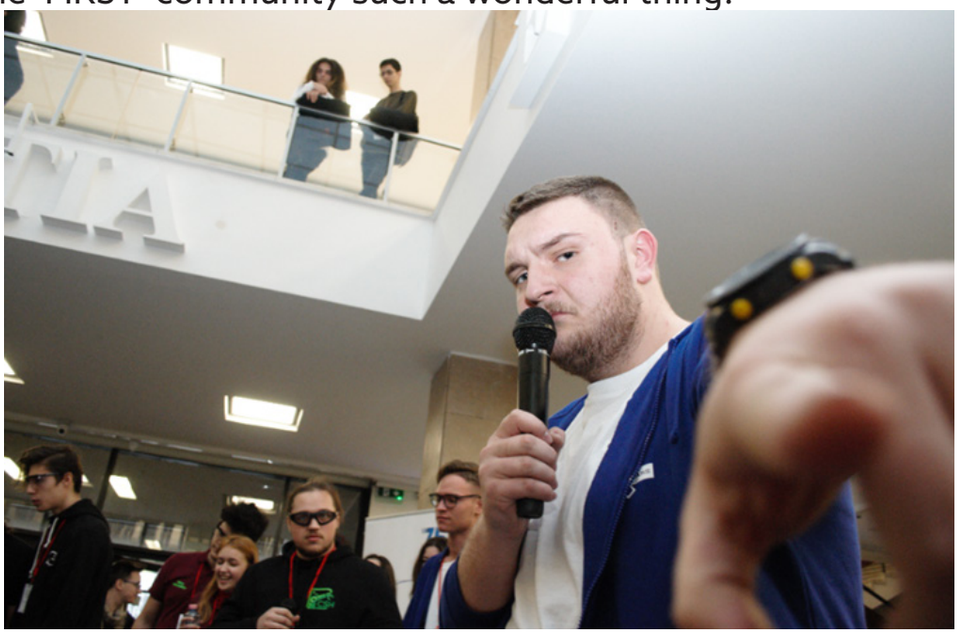
The teams have also had moments with the drivers next to the field during the matches, cheering from above and watching every move of the robots on the field.

Team DeltaForce RO0119 cheering on the others

For CSH as a competitor, the demo had a major impact, because they took notice of the details that worked really well and others that needed some modifications.

The commentary during the matches was done mostly by Gloria. As time passed, more people joined her. Spiri and Alex did the commentary for a few matches, and Alex was so intrigued by this activity that he insisted on also doing the commentary during the finals as well!

Another impressing moment was the commentary of the 27th match done by Robi and Nelu, member of the Bolts and Gears RO006 team. They decided to try and create the atmosphere of a big, real match, with a lot of energy and enthusiasm. They made us all smile and enjoy the fact that we have made the 'FIRST' community such a wonderful thing!



Nelu from Bolts and Gears RO006 commenting on match no.27 along with Robi, the programmer of team CSH

The highlight of every 'FIRST' event is the atmosphere created there, which is why we have done our best to make sure that all requirements were fulfilled, so that everyone would have a great time.
First of all, the background music is the one that sets the atmosphere of the competition, so we created a playlist full of motivational, energetic songs. We tried our best to include all music genres we could, so that everyone would be satisfied. We also had some very popular songs, which people started humming of even dancing to!
Aside from the playlist that we have prepared, the participants surprised us with different pieces played on the piano from the university's hall, showing us once again how multilaterally developed and how creative are the minds that think up mechanisms.
We also wanted to show off the contribution of each team for the event, because nothing could've hap-

pened without them. So we could nominate everyone, we showed on the screens on the hallway the poster of the event that showed the logos of every participating team. Their happiness is our happiness, because we are truly a family!

The Emperor RO124, celebrating finding their logo on the halls of the West University of Timisoara

Obviously, we had the occasion to smile with the mascots of the teams, one of the most attractive and energetic being the mascot of the ArmyBot RO071 team!

The kids couldn't pass by the event without getting curious about how robots work. Answering their questions, explaining the mechanisms and making them love the STEM field is what makes us continue our daily activity!

Mihaela Bors with the mascot of team ArmyBot

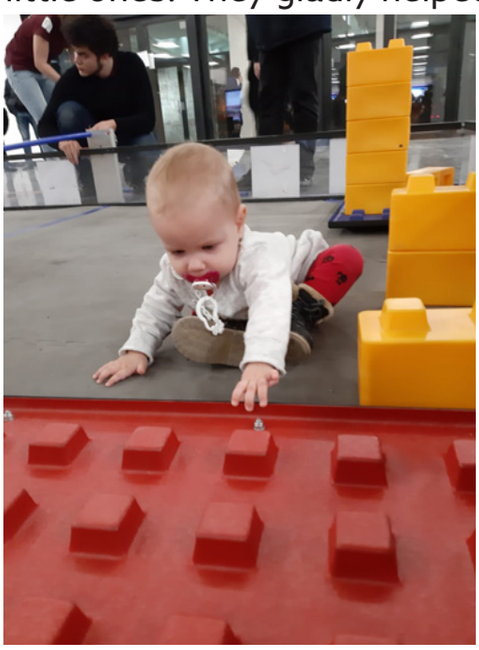
Visitors interested in the robots made by the students

The ending-festivity was a less formal one, in which we focused again on the importance of every single participant. We were pleasantly surprised to see so many of them and learn from their experiences. Also, some of their impressions remained in our minds, meaning so much for us!

"I am motivated to go home and make the best notebook for Inpire!" said Teodora from team XEO RO001 at the end of the day. You are so right, Teo! Absolutely right!

"These were the types of events that make you realize how important it is to stay understanding and involved!" said Cora, the team leader Bolts and Gears RO006.

Cleaning everything turned out to be a lot harder than preparing the event because it meant that it was over, but the thought that we would soon see each other soon gave us hope. After we guided the teams, we started tidying up. The most impressed ones with the cleaning of the field were the little ones! They gladly helped us through the process.



After all, Winter Robotics Games 2020 wasn't all about demonstrative matches, as the robotics teams are so much more than regular groups of people – they're families. Winter Robotics Games 2020 was about happy moments, overcoming disappointment, appreciation, cooperation, friendship and about the entire FIRST community! The event helped us be more united and convince us one more time that we can accomplish wonderful things together. Although we ended the day by being the member-team of the Winning Alliance, we are sure that the matches aren't the only aspect that determines the success of the team and that all of the participating teams presented themselves at a very high level, making us proud of the FIRST family!

Workshop State Machines, Odometry and PID control

Date	October 2019 - February 2020
Meeting held	online, Skype
Attendance	Laura, Spiri, Bogdan, Robi
Goals	Training courses
Time spent	4h preparations, 8 h process
Results	A good autonomous robot control

Description:

Since October 2019, Vasile Nemeș, an embedded engineer, agreed to help us on the software part of the robot.

Since then he has given us a series of introductory courses for several important concepts that have helped us in developing the software for this season's robot. Some of the most important concepts he presented are State Machines, Odometry and PID control.

In the first several lectures held online on Teamviewer he introduced us to the concept of State Machines.

Vasi insisted that we note down some key words in the lesson so we can read more from Google about them.

Here are our notes from courses related to state machines:

- First meet – 12 october 2019

UML 2.0 and higher (unified modeling language)-
https://ro.wikipedia.org/wiki/Unified_Modeling_Language

UML - este un standard facut de OMG (object managment grup)
Diagrame - State diagram (https://en.wikipedia.org/wiki/State_diagram)
Asincron / Sincron
State machines:
- FSM (https://en.wikipedia.org/wiki/Finite-state_machine)
- HFSM (ii practic FSM cu inheritance)
!!! Poti fii intr-o singura stare simpla la un moment dat
model driven engineering

tranzitie: un trigger si/sau o garda(conditie) si o actiune
composite state: container de stari - HFSM - asemanator cu inheritance
un entry (pseudostare) per ierarhie

entry (ca si bulina) - pseudostare*

choice = switch mai multe ramuri care se pot continua cu else

trigger[garda]/actiune

Keywords:
- Entry
- After x sec ->in state uri

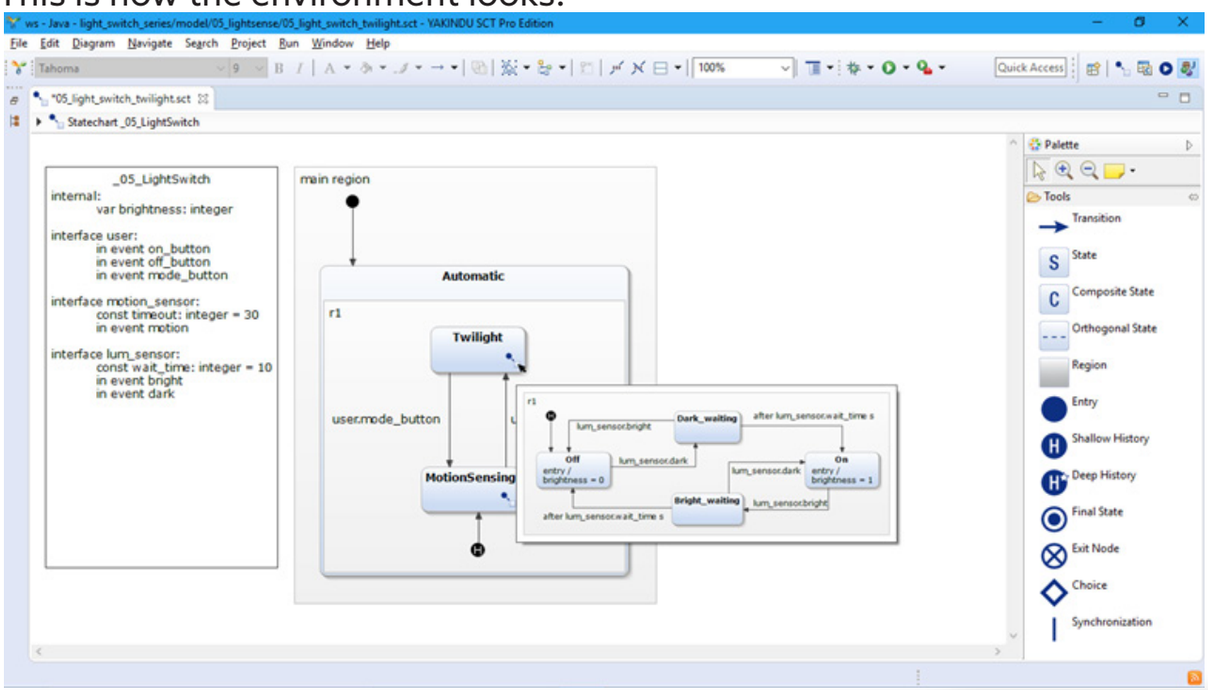
- Second meet – 14 october 2019

- folosim github
- Git Extensions
- separation of concerns: https://en.wikipedia.org/wiki/Separation_of_concerns
- modular, testabil, reutilizabil - Sfanta Treime in software development
- JNI - JAVA Native Interface
- Pelican Crossing - simple example of state machine
- logica sa fie separat de input, output
- java coding guidelines

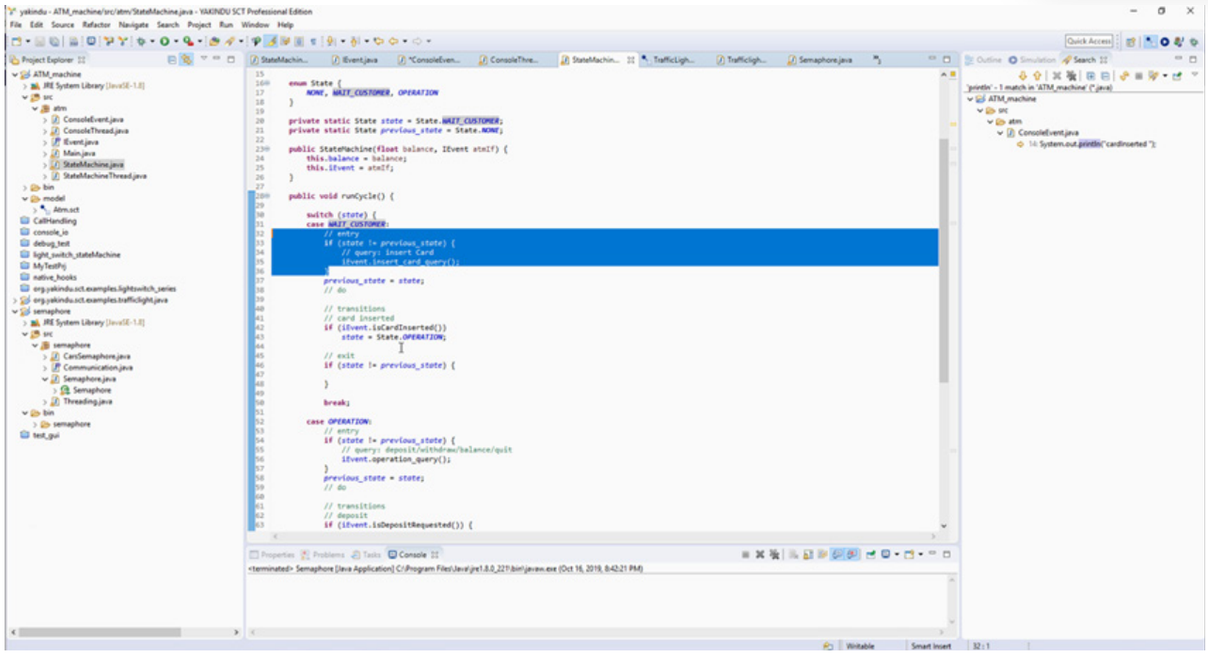
- Third meet – 16 october 2019

- ATM machine
- Java ruleaza byte code in JVM (din motive de portabilitate)
- interface - un plan pt o clasa
- sincron - sa se execute "instant"
- pooling
- STATE Explosion

Vasi told us the basics of state machines using a development environment based on Eclipse called Yakindu Statechart.
This is how the environment looks:



Another screenshot with a common pattern of a state machine called „observer pattern”:



In the second part of the course, after we asked for more details about odometry, Vasi taught us about:

- kinematics, especially mecanum kinematics
- how real time localization is done in real life situations using ROS (Robot Operating System)
- motion profiling
- feedforward control
- PID control

Then we looked together on some sample code from other teams that already implemented some sort of localization methods and he found the RoadRunner (https://github.com/acmerobotics/road-runner) - a motion planning library designed for FTC – and proposed us to use it because it implements the concepts that we need.
We followed his advice and it turned out that Road Runner is very usefull especially because we don’t have enough time during the season to implement all the concepts on our own.

In the last few lessons Vasi wanted to give us more detailed explanations regarding PID control, so he bought a course from Udemy called “Intro to PID Controllers” and when we were all available, we watch together each lesson in that course and he offers extra explanations for each concept presented. Currently we have only watched half the course, and we will continue as soon as possible.

Workshop Everseen
Machine learning and artificial intelligence

This initiative comes along with the launch of the new "Eduseen" programme, recently launched by Everseen in Ireland. The programme initiates highschool students in the new posibilities of careers such as AI and Automatic Learning. The beginning of the programme took place on Saturday on 8th February 2020 in the new automatic learning laboratory Everseen, inaugurated at the Polytechnic Automatics and Computers University Timisoara. Everseen is the company that activates in the fields of Artificial Intelligence and sight.

Around 8:50 we and other 20 students were selected out of a number of 60 interested students from the highschools in Timisoara that have informatics departments. The opening word was given by the rector of Polytechnic University of Timisoara. We participated in workshops about machine learning and AI presented by the teacher Cernazau, and then the introduction in the Vision of Calculators was presented by the teachers Gui and conf. Dr. Dan Pescaru. Artificial Intelligence refers to systems or machines that imitate human intelligence made to effectuate certain tasks and can be iteratively improved based on the information they collect. The vision is the capacity of a computer to see the surrounding objects. The vision of the machine is similar in complexity with the vocal recognition.

The lunch break took place after the workshops, so the participants had enough time to meet each other and share ideas regarding the events. The lunch break ended at 1 pm and the robotics workshop started, so we split in 7 teams of 3 people. In the following two and a half hours we solved several tasks in the Python language, through which we controlled a small robot. We were faced with the challenge to programme a robot to recognize an apple or a banana with the help of a specific algorithm. The challenges were getting more and more complex: the robot had to look through the camera until it identified the object, to go in front of it and to bypass it. It was a workshop that tested our abilities in the field of robotics.

5.2. Active involvement in the life of the community in the term of 6 months by participating in three social projects, two community projects and two environment projects in the term of eight months since the competition was launched.

Results: 5 social projects, 3 community projects, 2 environment projects

Date	29th November 2019
Meeting held	Colegiul Național Pedagogic "Carmen Sylva" Timișoara
Attendance	Spiri, Laura, Bogdan, Gloria, Cristi, Michael- specialists evaluator Carla, Ale M – volunteers in organization
Goals	Active participation in the life of the community through getting involved in the educational project with the goal to stimulate creativity in the informatics field.
Time spent	4 h preparations, 8 h process
Impact	129 people

Results:

As members of the team CSH, we also had judge qualities, observing the process of evaluation in this point of view as well.

By getting ivolved in these evaluation committees we also got the recognition and appreciation of the Timis County Scholar Inspectorate through the specialized inspector of informatics Jelco Stancov, Head of our highschool, of the student collective and collective of professors that initiated this stimulating project for the students from all over the county, both in highschool or primary education.

Description:

The participants were evaluated by a mixed commission formed by specialized teachers and students that were remarked at national and international competitions, members

of the robotics team CSH.

http://tminfo.ro/index.php?Pages=Concursuri&foodar=81

Theme of the contest: „The rights of children"

SECTIONS:

- Graphic processing (posters, advertisements, flyers, magazine covers/files): Subsection 1 – third and fourth grade, subsection 2: 5-8 graders

- WEB FILMS AND APPS: Singular section 5-8 graders – Student evaluators in the commission: Spiri, Cristi

- PRESENTATIONS (Power Point, Prezi etc.): Subsection 1: third and fourth graders, subsection 2 – fifth and sixth graders – Student evaluator in the commission: Gloria

- CREATION OF WEB PAGES: Subsection 1 – fifth and sixth graders, Subsection 2: seventh and eighth graders – evaluator students in the commission: Spiri, Cristi

- CREATION OF APPS/GAMES: Subsection 1 – fifth and sixth graders, subsection 2 – seventh and eighth graders, evaluator students in the commission: Laura, Bogdan

AGENDA:

Primary cycle

• 9:30 – 9:50 arrival of the participants, handing the posters, downloading of the apps;

• 10-1 pm – the contest

Highschool:

• 12-1 pm: arrival of the participants, handing the posters and downloading the apps

• 1:30 pm: start of the contest

NR CRT	NUME PRENUME ELEV 1	CLASA ELEV 1	NUME PRENUME ELEV 2	CLASA ELEV 2	NUME LUCRARE	SECTIUNE CONCURS	COMPLEXITATE	PUNCTAJ	PREMIUL
12	WELZECK JANNIK RICHARD	V			O AVENTURĂ ÎN MARE	CREARE DE APLICAȚII/JOCURI – clasele V-VI	12	72	M II
13	GENES ANDREI	VI	IACȘIN MARCO	VI	SOCCER	CREARE DE APLICAȚII/JOCURI – clasele V-VI	10	58	
14	LUCUȚ IOANA-BIANCA	VI	PĂCURARU CARINA	VI	FLAPPY FISH	CREARE DE APLICAȚII/JOCURI – clasele V-VI	10	58	
15	GRECU MATEI-ALEXANDRU	VI			STREET DANCER	CREARE DE APLICAȚII/JOCURI – clasele V-VI	10	58	
16	PLATON ROBERT	VI	VELIMIROVICI SASHA	VI	GALAXY RUN	CREARE DE APLICAȚII/JOCURI – clasele V-VI	10	58	
17	VIDONI ANA-MARIA	V			TARA EDUCATIEI	CREARE DE APLICAȚII/JOCURI – clasele V-VI	14	62	
18	BROWN THOMAS	VI			ESCAPE ROOM	CREARE DE APLICAȚII/JOCURI – clasele V-VI	5	40	
19	IVAS MAXIMILIAN	VI			RUN SCAPE	CREARE DE APLICAȚII/JOCURI – clasele V-VI	0	0	Absent
20	BALOGH EDUARD	VI	OPRISOR RADU-ANDREI	VI	EVENTS PLATFORMER	CREARE DE APLICAȚII/JOCURI – clasele V-VI	24	84	P III
21	SINGER FABIAN	V			ZOO MATEMATIC	CREARE DE APLICAȚII/JOCURI – clasele V-VI	30	90	P II

Comisia de evaluare:

prof. Violeta Ruican - Liceul Teoretic "Nikolaus Lenau" Timișoara
prof. Luminița Dolângă - Școala Gimnazială Nr.30 Timișoara
elev Laura Chirilă – Colegiul National Pedagogic "Carmen Sylva" Timișoara
elev Bogdan Preda – Colegiul National Pedagogic "Carmen Sylva" Timișoara

Concurs județean de creativitate în domeniul informaticii „InfoGim”
29.XI.2019

NR CRT	NUME PRENUME ELEV 1	CLASA ELEV 1	NUME PRENUME ELEV 2	CLASA ELEV 2	NUME LUCRARE	SECTIUNE CONCURS	PUNCTAJ	PREMIUL
1	MICȘA ITANA SONIA	VII			DREPTURI ȘI OBLIGAȚII	CREARE DE PAGINI WEB – clasele VII-VIII		absent
2	VATASESCU ALEXANDRU	VII			SA NU DISCRIMINAM, HAI SA NE JUCAM	CREARE DE PAGINI WEB – clasele VII-VIII	30	
3	VELA MARIA	VII			DREPTURILE COPILULUI	CREARE DE PAGINI WEB – clasele VII-VIII	0	absent
4	BUCOVAN MIHNEA	VIII			OLDIES BUT GOLDIES	CREARE DE PAGINI WEB – clasele VII-VIII	85	I
5	APOSTOL CALIN PETRU	VI			UN OM MIC INTRO LUME MARE	CREARE DE PAGINI WEB – clasele V-VI	30	
6	MURARIU ELIAS	VII			DREPTURILE COPILULUI	CREARE DE PAGINI WEB – clasele V-VI	70	II
7	GHITA IOANA	VI	LEUCIAN OANA	VI	DREPTURILE COPILULUI	CREARE DE PAGINI WEB – clasele V-VI	80	II
8	COLDEA PAUL	V	STEPAN RADU CRISTIAN	V	DREPTURILE COPILULUI	CREARE DE PAGINI WEB – clasele V-VI	40	

Comisia de evaluare:

prof. Nusa Cojocaru- Colegiul National Pedagogic “Carmen Sylva” Timișoara
prof. Bianca Crîsnic - Liceul Tehnologic Special “Gheorghe Atanasiu” Timișoara
prof. Monica Tănasie - Colegiul Tehnic de Vest Timișoara
elev Cristi Dăescu – Colegiul National Pedagogic “Carmen Sylva” Timișoara
elev Robert Iridon – Colegiul National Pedagogic “Carmen Sylva” Timișoara

NR CRT	NUME PRENUME ELEV 1	CLASA ELEV 1	NUME PRENUME ELEV 2	CLASA ELEV 2	NUME LUCRARE	PUNCTAJ	PREMIUL
41	TĂMAȘ ALENA	VI	GRECU MARA	VI	DREPTURILE COPILULUI	90	M II
42	TUTUNARIU SÂNZIANA	VI			DREPTURILE COPILULUI	94	M I
43	UNGUREANU ALEXANDRU DARIUS	VI			DREPTURILE COPILULUI	60	
44	URSESCU ALEXANDRU	VI	BADEA OCTAVIAN	VI	DREPTURILE COPILULUI	50	

Comisia de evaluare:

prof. Mirela Stângă - Colegiul Național “Constantin Diaconovici Loga” Timișoara
prof. Mirela Bretotean – Colegiul Național de Artă “Ion Vidu Timișoara
prof. Daniela Jitărașu - Liceul Teoretic “Jean-Louis Calderon” Timisoara
prof. Sebastian Constantin - Colegiul Tehnic “Emanuil Ungureanu” Timișoara
elev Gloria Moroșan – Colegiul National Pedagogic “Carmen Sylva” Timișoara

JUDGING:

The score after which the work was evaluated was established by the members of the commission keeping in mind the following criteria: the complexity of the app, the capacity of analyzation and synthesis, the clarity of the exposure, the capacity to form answers to the questions of the evaluators, the aesthetic of the work, adequacy to the specific of the problem, interactivity (where there is), originality and finality. Results were posted on the site: http://tminfo.ro/index.php?Pages=Concursuri&-foodar=81 , and the premiere took place in December 2019.

"We unify robots to create a future for all of us"

Date	1st december
Meeting held	Alba Iulia
Attendance	Gloria, Spiri, Bogdan, Carla, Carla's parents
Time spent	21 h preparations, 8 h process
Impact	300 people

Goals	Results
To collect and store stones on the fundament	• We embraced another game strategy by focusing more on the speed of collection than on the storing
To initiate a series od activities dedicated to the day of the Great Union Day	• We worked together with Xeo to the robots, we participated at the pride of the Great Union Day, we spent a day under the title #RoboticaSarbatoresteRomania (Robotics celebrates Romania)

Preparations:

In November we got an invitation from Team XEO RO001 to participate besides them and Team Rubix, Team Cyberpunk and XeoAcademy at the demo organized by them in Alba Mall. The event was for charity, the main cause for our meeting being to raise funds for the Centre of Guidance and Supprot for Parents and Children

Sfanta Maria. fonduri pentru Centrul de Consiliere Si Sprijin Pentru Parinti si Copii Sfanta Maria.
We hesitated at first because on the 30th November we were supposed to participateat the Medieval Robotics Day Hunedoara organized by RobotX HD, the difficulty being our travel to Alba Iulia. Carla's parents were receptive and offered to take us by car. Everything is planned, we're starting the work!
After we left Timisoara on Saturday morning, after the energetic matches at Castelul Huniazilor, we arrived in the evening at Alba Iulia. We were welcomed with warmth by Teo, who offered us accommodation at her place and helped us feel much better. Right after we headed to the hub at Xeo's. to see everyone else and establish certain details for the following day. Because we weren't the first time there, we felt so good about surprising them while they were working on the robot. We couldn't stay much longer, so we got involved in adjusting the robot and the kit for the following day, working like a team instead of acting like rivals. After it got late, we decided to continue the work at the house of one of the members of team Xeo. What can be more beautiful than an evening spent with friends you've missed, pizza, juice and a lot of creativity regarding robots?

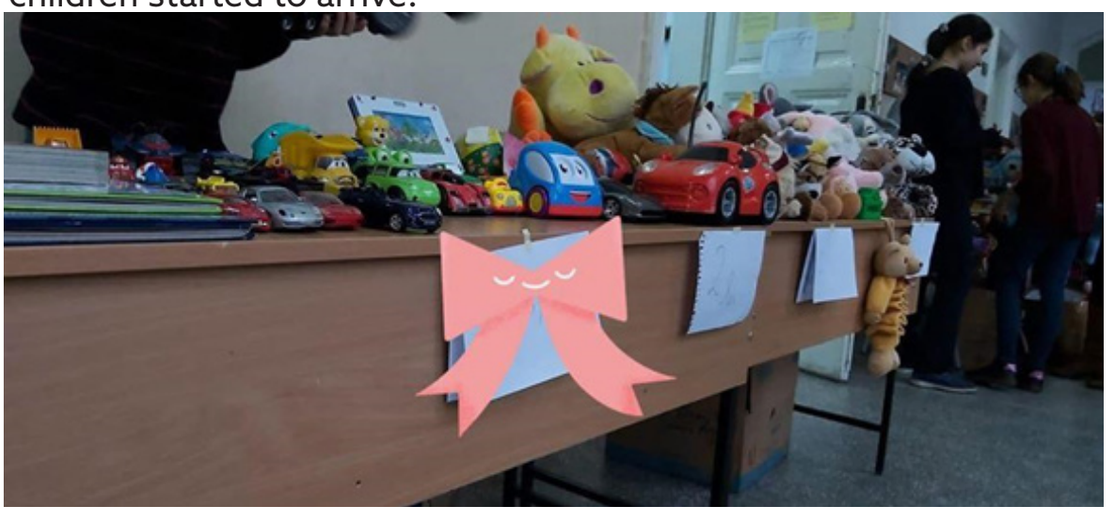
Process:
In the morning we went to Alba Mall to help with the land arrangement and meet with the other participating teams. While we were scrolling the posts #RoboticaSarbatoresteRomania, we started the demonstrative matches.
After the first two matches, we realized that the systems chosen by us for the collection and storing of the stones weren't the most practical ones, so we decided to take them off, so we could go under the skybridge of the alliance. We changed the strategy, focusing on the skills of the team which were the speed of the robot and the skills of the driver. It was a wonderful idea, that's how we managed to win most of the matches. We were able to create alliances with all of the participating teams, we offered our support in all that had to be done – starting by charging the phones, continuing by hanging servos, and even commenting on the matches.
However, our common goal was to raise fund for The Center of Guidance and Support for Parents and Children Sfanta Maria, so we don't hesitate in asking people for help so that we, together, can make a beautiful celebration day for all the kids.
The evening continued with dinner and fireworks that we admired within the FIRST family. The day marked as #RoboticaUnesteRomania (tr. Robotics unifies Romania) got as all together, taught us to be attentive to the ones around as and showed us one more time that we can do great things together!

"From the soul, for you!"

Date	December 13th
Attendance	Carla, Leti, Sorinca, Gloria
Time spent	1500 students
Impact	10h preparations, 3h of process

The winter charity fair "From the soul, for you!" organized in our school by Prof. Mirela Carp, gave us the opportunity to share a little kindness in our community and to help the Rosu family.

With the help of our colleagues, we managed to get toys and coloring books that the children were delighted with. Carla arranged the stand, and at 9 am the children started to arrive.



Our stand

We split into 2 groups, Gloria and Carla the first hour, and Leti and Sorinca the last hour.

Within 2 hours we managed to raise a total of 280 lei and contribute to the amount of 18000 lei donated to the family on the occasion of the holidays. The remaining toys were

also donated.

Rosu family together with Lions Club Timisoara Dynamis

Our post on Facebook page with an impact of over 900 people

"Viennese Ball" – the debut in society through charity"

Date	22nd November
Meeting held	Romanian National Opera, Timișoara
Attendance	Gloria
Impact	400 pers
Time spent	32 h preparation, 8 h process

Goals:

1. To get involved in foreign charity funds
2. Make cream ties with entrepreneurs from various fields

Results:

1. I was part of the campaign "Corner flower - offers a hot chicken with needy baby"
2. I kept in touch with the Vienna Ball mentors

Descriptions:

As I saw the entries for the Vienna Ball beginners, I knew we had to get involved too. It was a unique opportunity to join the community of flu care people are open to helping a young generator.

I participated in the 6 workshops dedicated to beginners from the BVT Academy (Vienna Ball Timisoara), where I met people with experience or care I could learn.

Workshop 1 (October 1) - "Democracy and the USA system" with His Excellency, Hans Klemm, US Ambassador to Romania.

The first person I had the honor to meet was His Excellency, Hans Klemm, US Ambassador to Romania.

He spoke to us about democracy and how it should work for the benefit of all citizens. I had the opportunity to ask him questions about the organizational system of a large group of people, but also about approaching the problems from different perspectives to find the optimal solution. (photo by BVT)

Workshop 2 (October 15, 2019) - "Is success a goal?" with Virgil Iantu

The person who told us about the success was Virgil Iantu, one of the most representative television people in Romania, with an experience that spans two decades. Virgil has always been distinguished by elegance, chivalry and the ease of interacting with small and old alike, transforming it into a true bond between generations and worlds. He walked us through his experiences, told us how it was to choose television in favor of the music that flows today through his veins, about the fatigue on the set, but also about the passion with which he continues his activity. We have analyzed situations of the problem of people with a lot of public attention, but also about the limit between being proud of your results and being proud.

Workshop 3 (October 18) - "Be the designer of your future!" with Carmina Dragomir

Carmina Dragomir is CEO at Metropolitan Life Ro-

mania, part of MetLife, Inc., a global leader in insurance, pension plans and employee benefit programs. During the meeting, she shared tips and tricks on how to design your career path. We talked about dreams and, above all, about their realization. We left more motivated that we would never be afraid to act!

Workshop 4 (October 23) - "Etiquette and Good Maniers" with Count Graf Andreas of Bardeau

A basic quality of the person of the new generation is the education they have. The good manners represent an important detail in the interaction with the people around us and facilitates the transmission of information. A few basic rules of contemporary good manners regarding the offline and online environment we discussed together and analyzed their need.

Workshop 5 (October 28) - "The European Parliament, the European Commission, Large and Small Member States - Who decides within the EU" with His Excellency Gerhard Reiweger

His Excellency, Gerhard Reiweger, former Austrian Ambassador to Romania, gave us a lesson on everything the European Union means, how we can get involved and what are the privileges of the EU member states.

Workshop 6 (October 29) - "Buisiness and culture - what a mix!" with Guy Burrow

Guy Burrow has been CEO at Shell Romania and has 40 years of experience in business and consulting in different sectors. We talked about the role of the business environment as a supporter of culture in communities and we received some tips on how to present our projects to large companies in order to receive their support. We also told him about our team and he was surprised by how developed our generation is and he told us that if all young people have such concerns, decades of great discoveries will follow!

Deployment:

The Vienna Ball was accompanied by the "Spirit of Vienna" orchestra. Special guests were Irina Marinaș - soprano in Koblenz, Austria, Matei Ioachimescu - flutist in Vienna, Austria and Michael C. Havlicek - baritone in Vienna, Austria. We had the opportunity to talk with all the guests, to spread the passion for technology at a charity, cultural and educational event.

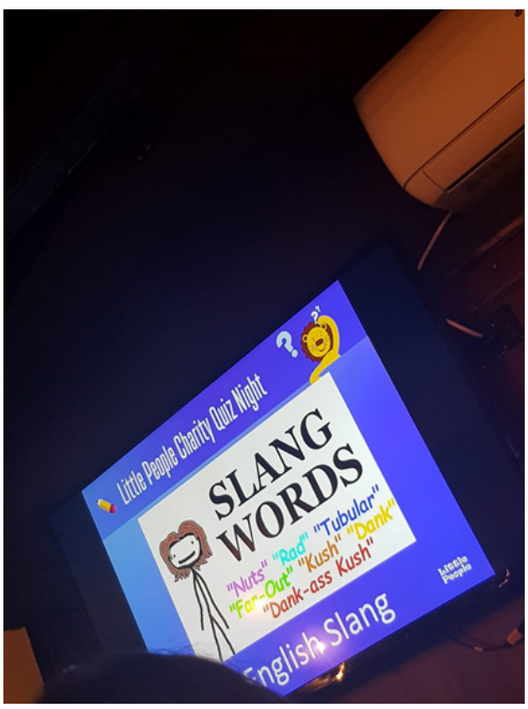
Also, I participated actively in the campaign "A corner flower for a hot lunch", a campaign meant to raise funds for children from orphanages,

which we joined, carrying corner flowers.
Even though the Vienna Ball is not a STEM specific event, we managed to be part of this wonderful project and to spread our passion for robotics, but also to understand what our contribution is to society!

"Little People Charity Quiz Night"

Date	27th January 2020
Meeting held	Anturaj (a café)
Attendance	Ale, Leti, Sorinca

Today we participated in a charity quiz organized by the association Little People (this is the second time we've worked with them, the first time we went to a children's hospital). Before the quiz started, we made a donation. There were various questions about things such as geography, history, fashion, food, English slang words and so on. We were pretty much the youngest people there, and we barely knew the answers.



The three of us taking a selfie
(Ale on the left, Sorinica in the middle and Leti on the right)

This is how the questions were displayed, and we had a piece of paper with 10 questions for each round.
At the end of the day, we managed to be on the last place, but they let us choose a topic for next time's quiz night (we chose math). There was also a raffle, Leti bought two tickets, while Sorinca and Ale bought one. They let us choose what numbers we want and Ale chose 074, our team number, and guess what...SHE WON a really nice pair of socks. Turns out our team brings us a lot of luck! Hopefully this is our lucky year!!

"Game Concept"

Date	29th November 2019
Meeting held	West University of Timisoara
Attendance	team CSH
Impact	63 people
Time spent	50h preparations

Goals: Active involvement in the life of the community

Results: Game showcase: In order to combine the pieces from BRD First Tech hallenge and the microcontroller Raspberry PI, together with humidity and smoke sensors, we thought of something that could help the community.

This consists in the robots detecting the humidity in the air and the pollution level of it, and figure out if they are unusual and go and stabilize it.

The robots will be placed on the red spot marked on the field following the analysis of the data received from the sensors. The robots will be controlled from the distance by two drivers that will not be in the same room, but by using the phone camera they will guide themselves through the maze to reach the objectives. The blue area represents the Water Bottling Plant that can be polluted, while the green area represents the Wind Power Station that is no longer functioning, both needing to be fixed.

In the blue area, the robots will have to detect the color underneath them, which represents the color of the city's water – and depending on the color, they have to remove whatever caused it.

In the green area, the robots will have to stand up and spin the wind turbine for at least 3 seconds, generating some energy – and showing that they were on.

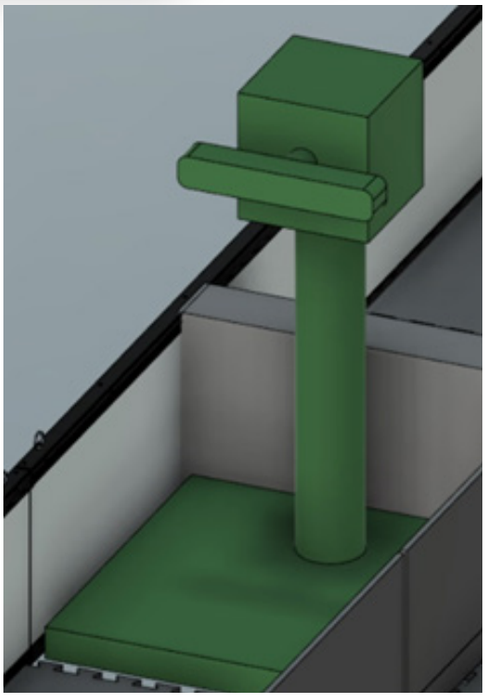
In the end, the robot has to go back from where he started.

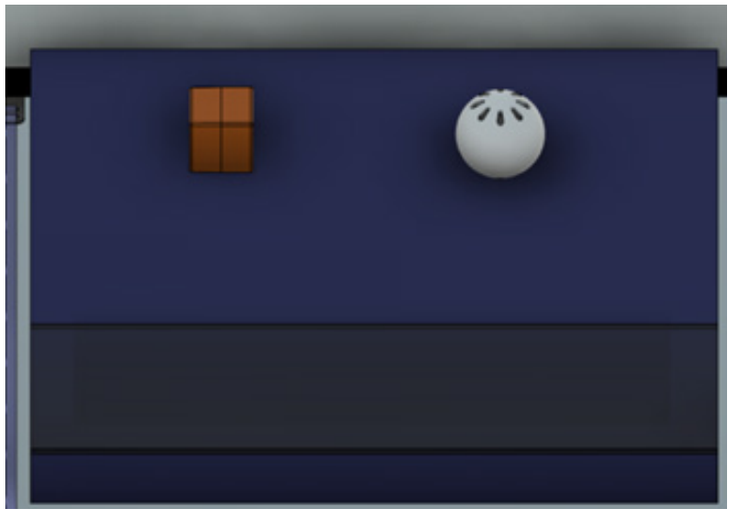
Time period of the game:

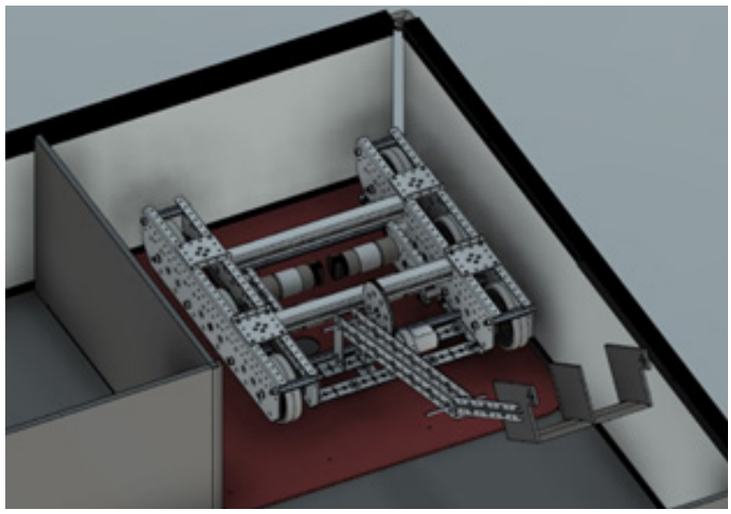
-15-30 seconds, analyzing the air

-1:30 minutes, finishing the objectives

-30 seconds returning to the starting point







The field had the following characteristics:

Dimensions: 3.58m x 3.58m;

The maze path : 3 areas for specific tasks

In the starting area the robot had the task to recognize the colour of a starting label and display it on the route coordinator phone of each team, this aspect being verified by one of the referees;

After successfully completing the colour recognition part, the robot had to go through the maze and solve the tasks specific to each of the 3 zones: **Water Tower**, **Waste zone**, **Fire Building**.
The 3 areas had the following tasks:

Water Tower: The robot will balance on an unstable plate and press one of the 3 buttons (red, yellow or blue) depending on the colour detected at the beginning.

Waste zone: Two objects - one recyclable and one non-recyclable - were placed on a stand, the robot having the task of removing the non-recyclable object from the stand,

without moving the recyclable object.

Fire building: The robot collects from the path a container that, hypothetically, contains water. It must lift the bucket, so that it is subsequently placed at the highest level of the "building in flames", to put out the fire. The building has four levels, the score being awarded depending on the level at which the robot managed to place the bucket without destroying the building.

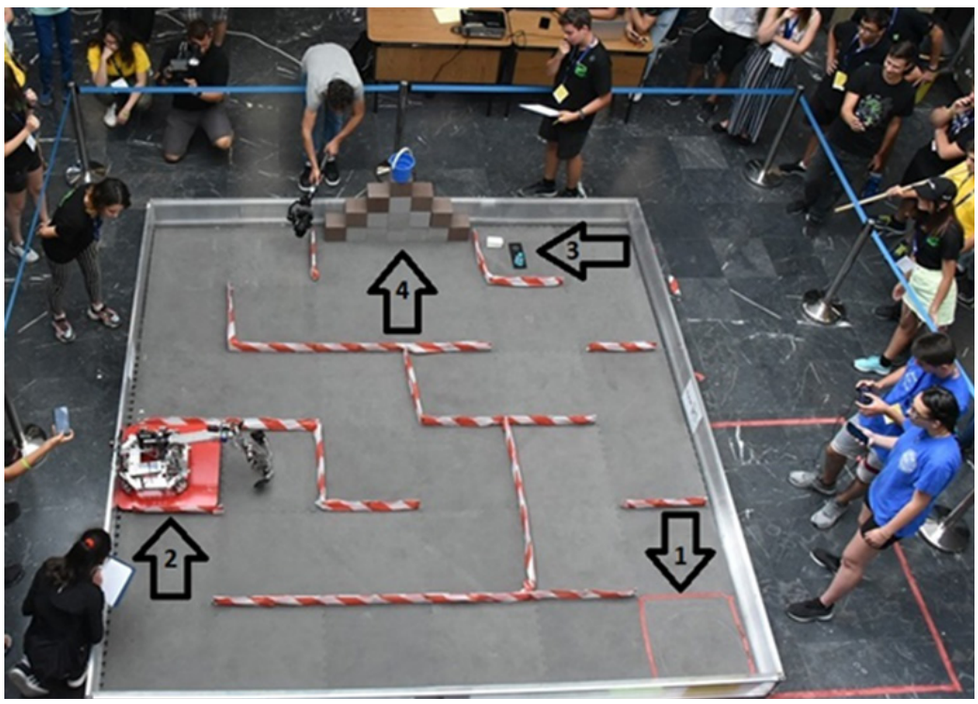


Image 1. The field presentation

Conventional signs:
1 - Start/Finish zone; 2 - Water Tower; 3 - Waste zone; 4 - Fire Building
Finally, the score consisted of:

- The maximum score for the correct performance of all tasks was 100 points;
- For damaging the field or any other field or parts of the field, the penalties were between 5 and 25 points depending on the damage.
- In case there were teams with the same score, the final conclusion was made the basis of the time needed for the robot to finish the maze.

The scores for each task was as follows:

A. Water Tower - 30 points
- The robot is fully balanced - 20 points
- The robot is partially balanced - 10 points
- The robot is not balanced - 0 points
- The robot presses the correct button - 10 points

B. Waste zone - 10 points
- The robot removes the non-recyclable waste,

without removing the recyclable one - 10 points

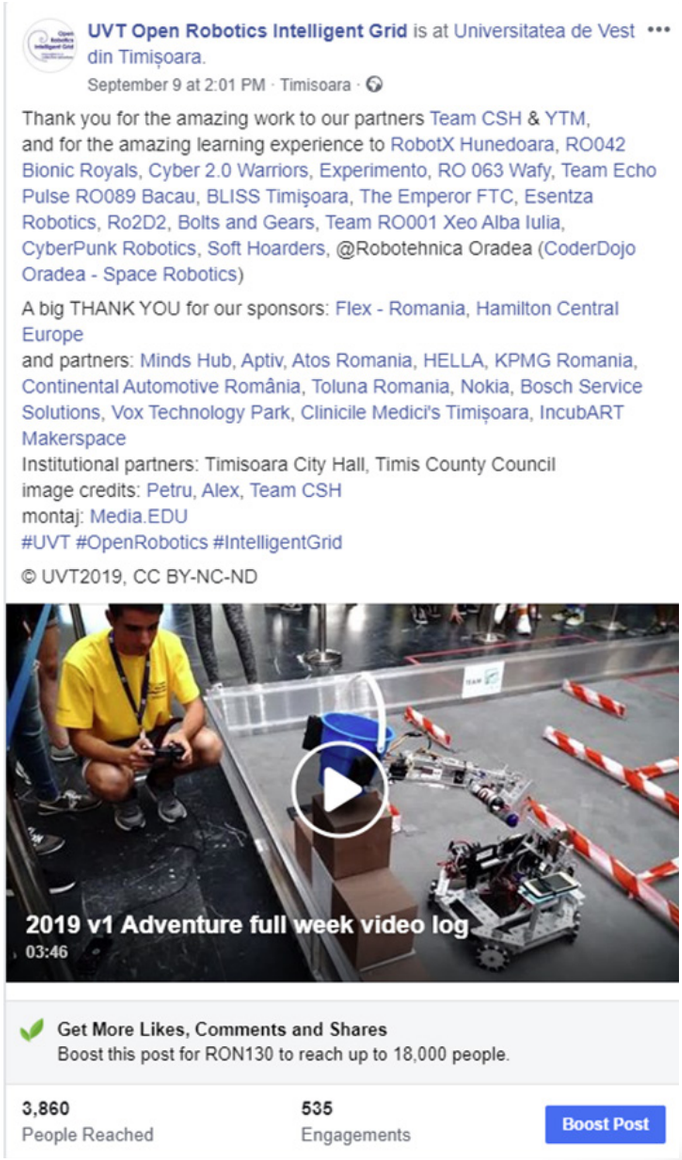
C. Fire building - 40 points

- The robot managed to lift the bucket - 10 points
- Bucket placed on level 1 - 10 points
- Bucket placed on level 2 - 15 points
- Bucket placed on level 3 - 20 points
- Bucket placed on level 4 - 30 points

D. Finish - 20 points

- The robot returns to the starting point

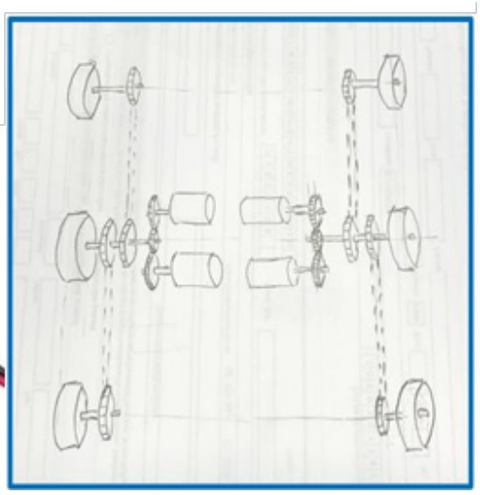
The score was established in real-time by two referees who awarded the score for each task as soon as it was completed, while also registering penalties for each damage produced by the robot on the field.



"Project Concept Dublin, Irland"

Qubit to Dublin is an autonomous waste recycling project (an upgraded version of last season's robot) and our idea is to combine robotics and machine learning software. That robot would solve the problem of littering while also increasing recycling and robot it can also serve as a guide for blind people.
It's an ambitious project because the robot must navigate in an urban environment autonomously. This robot find, categorize and sort the waste that he finds. We used a neural network and machine learning software. We had to categorize 3000 images of recyclable waste to train the neuronal network.
Qubit had 7 DC motors with incorporated encoders and 2 servo REV 360 degrees motors.

DC motors



The Chassis

Servo motors

Qubit also had an USB camera that was connected to a Raspberry Pi. It can see the images in real time with the help of a code written in Python. We used OpenCV (an open source type of library for computer vision) to capture live videos and to convert every frame into a BLOP (binary large object). After that, the BLOP goes through a neuronal network MobileNet SSD V2 to detect the waste. He used TensorFlow (an open source type of library for machine learning) to retrain the neuronal network with our set of data that contained 5000 images of manually labeled waste, with the help of MS COCO dataset (common objects in context).

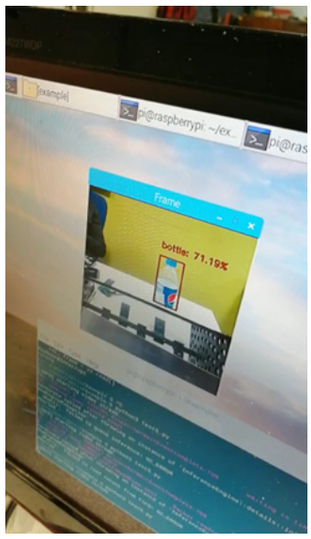
```
1.      #importarea librarrilor folosite
2.      import cv2
3.      from sys import argv
4.      import matplotlib.pyplot as plt
5.      import numpy as np
6.      from imutils.video import VideoStream
7.      from imutils.video import FPS
8.      import argparse
9.      import imutils   10.import time
11.
12.#setam threshold-ul minim pentru a evita detectiile inexacte
13.threshold = 0.65;
14.
15.     #initializarea listei cu clasele obiectelor pe care le recunoaste reteaua neuronala
MobileNet SSD reantrenata de noi
16.     CLASSES = ["unlabeled", "person", "bottle", "cardboard", ...]
17.     #generarea culorilor pentru chenarelele fiecarei clase
18.     COLORS = np.random.uniform(0, 255, size=(len(CLASSES), 3))
19.     # incarcarea modelului de pe disk
20.     print("[INFO] loading model...")
21.     net = cv2.dnn.readNet('frozen_inference_graph.bin', 'frozen_inference_graph.xml')
22.
23.# specificarea procesorului Myriad X din NCS 2 ca si target device
24.net.setPreferableTarget(cv2.dnn.DNN_TARGET_MYRIAD)
25.
26.
27.     # initializarea video stream-ului, pornirea senzorului camerei
28.     # initializarea FPS counter-ului
29.     print("[INFO] starting video stream...")
30.     vs = cv2.VideoCapture(0)
31.     vs.set(3, 1920)   32.vs.set(4, 1080)
33.     time.sleep(2.0)
34.     fps = FPS().start()
35.     x_center = 0
36.     y_center = 0
37.
38.     # iteratie peste frame-urile de la camera
39.     while True:
40.     # preluarea frame-ului, crop si resize al imaginii pentru a mari viteza de procesare
41.     # dimensiune maxima de 300 pixeli si rotire la 90 de grade
42.     ret, frame = vs.read()
43.     cropped = frame[60:1080-60, 0:960]
44.     cropped = imutils.resize(cropped, width=300)   45.        cropped =
imutils.rotate(cropped, 90)
46.
47.     # preluarea dimensiunilor frame-ului si convertirea acestuia intr-un BLOB
48.     (h, w) = cropped.shape[:2]
49.     frame = cropped
50.     blob = cv2.dnn.blobFromImage(cropped, size=(300,300), ddepth=cv2.CV_8U)
51.
52.     # trecerea blob-ului prin reteaua neuronala si obtinerea detectiei
53.     net.setInput(blob)   54.
detections = net.forward()
55.
56.#operatie de reshape aplicata array-ului care contine detectiile 57.
detections2 = detections.reshape(-1,7)
58.
59.# iteratie peste aray-ul cu detectii 60.for
detection in detections2:
61.     # extragerea confidentei (probabilitatii) asociate cu predictia
62.     confidence = float(detection[2])
```

```
    # filtrarea detectiilor inexacte prin compararea confidentei cu valoarea minima de threshold
    if confidence >threshold:
    # extragerea index-ului corespunzator numelui clasei din array-ul
    # `detections`, calcularea coordonatelor chenarului
    # care inconjoara obiectul detectat
    idx = int(detection[1])
    box = detection[3:7] * np.array([w, h, w, h])
    (startX, startY, endX, endY) = box.astype("int")
    #daca obiectul detectat este un gunoi reciclabil (sticla), salvam coordonatele acestuia intr-un fisier txt
    if CLASSES[idx] == "bottle":
    x_center = (startX+endX)/2
    file = open("testfile.txt","w")
    file.seek(0)
    file.truncate()
    file.write(str(x_center)+","+str(endY))
    file.close()
    # desenarea chenarului, eticheta obiectului si procentul confidentei
    label = "{}: {:.2f}%".format(CLASSES[idx], confidence * 100)
    cv2.rectangle(frame, (startX, startY), (endX, endY), COLORS[idx], 2)
    y = startY - 15 if startY - 15 > 15 else startY + 15
    cv2.putText(frame, label, (startX, y), cv2.FONT_HERSHEY_SIMPLEX, 0.5, COLORS[idx], 2)

    # afisarea frame-ului prelucrat
    cv2.imshow("Frame", frame)
key = cv2.waitKey(1) & 0xFF

# daca este apasata tasta q, executia programului este oprita if key == ord("q"):
    break

    # update-ul FPS counter-ului
    fps.update()
    # oprirea timer-ului si afisarea valorii medii a FPS-ului
    fps.stop()
    print("[INFO] elapsed time: {:.2f}".format(fps.elapsed()))
    print("[INFO] approx. FPS: {:.2f}".format(fps.fps()))
    # inchiderea ferestrei cu video-ul de la camera si oprirea camerei
    cv2.destroyAllWindows()
    vs.stop()
```

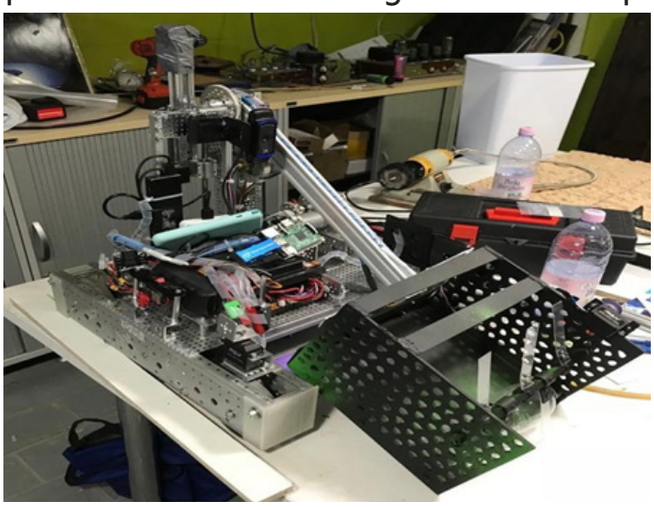


The object detection

There's also a server programmed in Python on the Raspberry Pi that takes the coordinates of the object and displays them in a JSON format, on a web page, when the client requests it.

```
1.  from flask import Flask
2.  from flask import jsonify
3.  app = Flask(__name__)
4.
5.
6.  @app.route('/')
7.  def index():
8.      return 'Conexiune stabilita'
9.
10. #returneaza coordonatele citite din fisierul txt intr-un format JSON
11. @app.route('/coord')
12. def summary():
13.     file = open("testfile.txt", "r+")
14.     string = file.read()
15.     print(string)
16.     string.split(",")
17.     coordX, coordY = string.split(',')
18.     file.close()
19.     return jsonify(coordX, coordY)
20.
21. if __name__ == '__main__':
22.     app.run(debug=True, host='0.0.0.0')
```

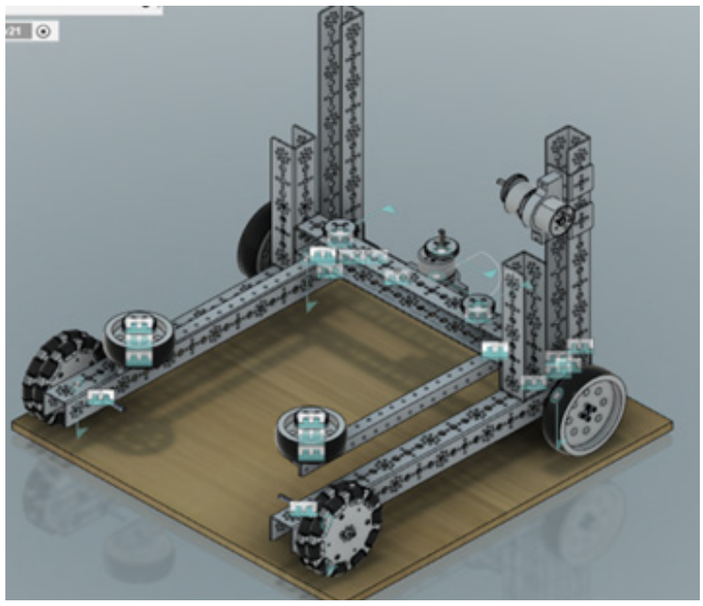
The design of the robot was simple, the systems being able to be easily replaced. The cable management is compact, with no risks of disconnections.



The robot used for Dublin, Irland

Dream BIG, build BIGGER!

The robot was firstly designed in 3D, in Fusion 360.



The first two chassis ideas

"CSH Academy"

Meeting held	"Carmen Sylva" National Pedagogical College

We offer courses	**Date**	**Attendance**	**Mentors**
Python Courses	Wed. 14.00- 15.00	10 students	Mihai
Gaming Development	Monday 14.00-15.00	15 students	Cristi
Marketing Courses	Tuesday 14.00-16.00	15 students	Gloria
Lego Mindstorms EV3	Sunday 14.00-18.00	8 students	Sorinica, Ale M, Carla, Cristi, Virgil

Gaming Development Impression

I started the gaming development courses in September. They've taught me what team-work really means and helped me make new friends.

Besides this, I've learned the basic parts of a game and realized that it is way harder than I thought. The first things I've learned were the basic instructions C++: if, while, do while, for, switch. Then, I learned how to make a cube move. I slowly started from these basics and, with the help of our mentor, I managed to create my first game. Although it wasn't the best, it was a great start.

We participated in November at iTEC. Here we had

to split our team in groups of 2 members. Although we haven't won a prize, we managed to work together, help each other and accentuate our friendship.
During winter break, we all made the first game of the team. We split in two teams, design and coding, and started working. The design team was occupied with the pixel art, as the game was 2D, while the coding team made sure everything went down well. In approximately 3 weeks, the first version of the game was finished, and the result was pretty good for the first game made by the team.

Python Courses

As an introduction to the python world, I told the students why should they learn python, where is it used, how powerful it can be. I tried to accentuate the differences between the programming language they knew – C++ and python, so we started talking about syntax; what is iteration, what is an object, how can they use loops, if statements and so on. I taught them the data types provided by python and after that, we moved on to language's semantics. They learnt how to manipulate some of the data types, how to use some 'magic tools' named functions that do certain things on certain objects and how to work with files. As we finished some of the theoretical part, we started to do exercises: some of them from the programming class, so they can observe the differences, and others, specific problems, that can be solved much easier by using python. To help, I gave them a theoretical support with the most used functions in python. As we finish with exercises, I will teach them what is a function, how do they create their own functions, and how can they use them. Once I do that, things will become more challenging.

Marketing Courses

International Project Erasmus+ "Power of words"

Date	10th-16th November 2019
Meeting held	Piacenza, Italy
Attendance	Laura, Michael
Impact	60 people
Time spent	84 h preparations, 84 h process

Goals

The aim of this project is first to raise pupils' eloquency about current topics. Words, and power of words, have become some of the most important things in our daily life . Therefore we want to give pupils the chance to work on this urgent matter.

Results

These pupils, aged 15-18, divided into teams, have focused on specific topics concerning speaking, discussing and reflecting, both to be developed during preparatory phases and during the learning activities organised as an exchange meeting in one of the partner schools.

https://www.piacenzaonline.info/romagnosi-words-erasmus/

http://www.powerofwords.one

OUR WORDS CAN CHANGE THINGS

The italian leg of the "Power of words" project focused on the possibility that words have to change the world around us. During the days in Piacenza, students analyzed some important speeches given by influential people of the past and contemporary times, facing topics as social justice, equality, freedom and environment. Once inspired by those speeches, the students spoke out loud their own

wishes for the Europe they want to live in.

As a conclusion to the week, all the students have been involved in the preparation of a theatrical show which has been played the very last day in Piacenza: through drama, music, dance and visual art, the students showed to the audience how powerful words can be, both in a good or evil way. In the end of the performance, the students have underlined our necessity of caring and lovely words in order to change the world.

Dream BIG, build BIGGER!

A lovely day trip to Cinque Terre and its amazing landscapes has enriched the week.

Charitable educational project "Literature and colour for the Togo children"

Originator	Alexandra Petruse, librarian at the Politehnica Library and a member of the international volunteering organisation SADA
Meeting held	Colegiul National Pedagogic ,, Carmen Sylva", along with our partners from Timisoara: Sc. Gimnaziala nr. 19 "Avram Iancu", Lic. W. Shakespeare, Lic. J. L. Calderon, Sc. Gimnaziala nr. 2
Attendance	teachers and students from our school but also from our partner schools and the CSH team-members
Impact	40 children from Togo received support
Time spent	20 h

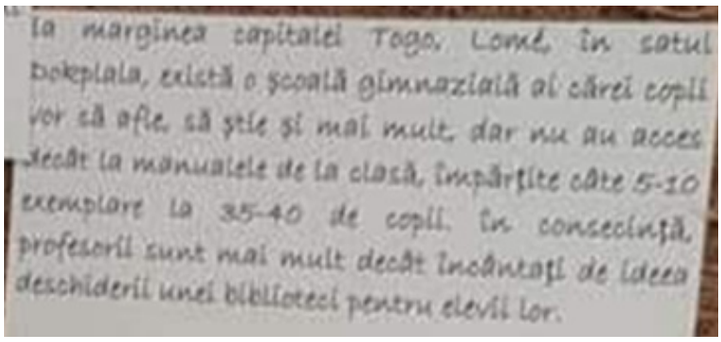
Goals:
The involvement of youth in such a project, in order to come and support children from a village in Togo, Africa, with the help of SADA.

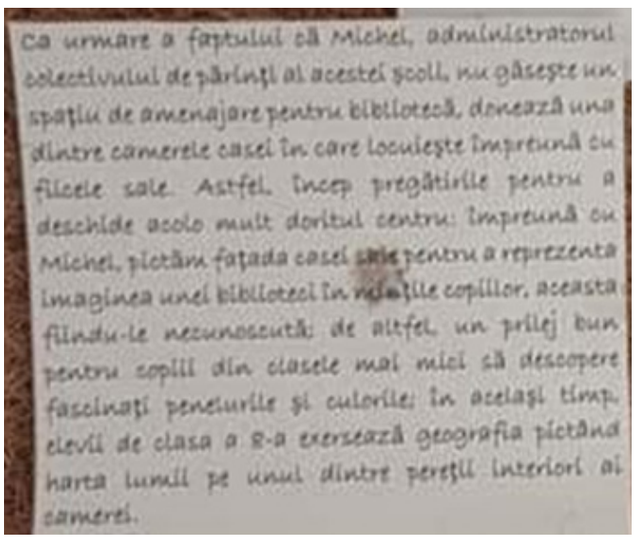
Results:
130 kilograms of materials. Books in French and English, art supplies and others were sent to the children of Togo, Africa.
A project where students and teachers from our school and some other schools from Timisoara involved in the collection of books in English and French, art supplies and others that were sent to the SADA organization in Togo, Africa. The 150 kilograms of materials have been delivered to the children.

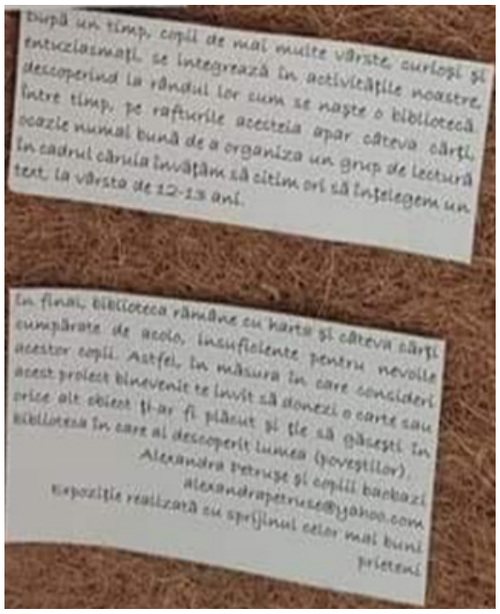
Alexandra Petreuse, a librarian and a member of the SADA international volunteering organization had noticed the sad story of the children from a village in Togo, Africa (The story of the Baobab Library). She spent a while there, getting to know each and every one of them, she loved them and she captured the rural joy that they had in their everyday lives through photographs. With the help of her photographs we have sent their story out in the world. It made us emotional and that's why we decided to help them and join this incredible project.

The children of Africa are not sad or traumatised, they are curious and willing to live at their happiest. They are celebrating it every single day. At least that is the attitude of the Togo children, which we met, towards life. Down below it's the story of the Baobab Library and the process of this amazing exchange between these different but kind countries.

Dream BIG, build BIGGER!


la marginea capitalei Togo, Lomé, în satul Bokpiala, există o școală gimnazială al cărei copii vor să afle, să știe și mai mult, dar nu au acces decât la manualele de la clasă, împărțite câte 5-10 exemplare la 35-40 de copii. În consecință, profesorii sunt mai mult decât încântați de ideea deschiderii unei biblioteci pentru elevii lor.

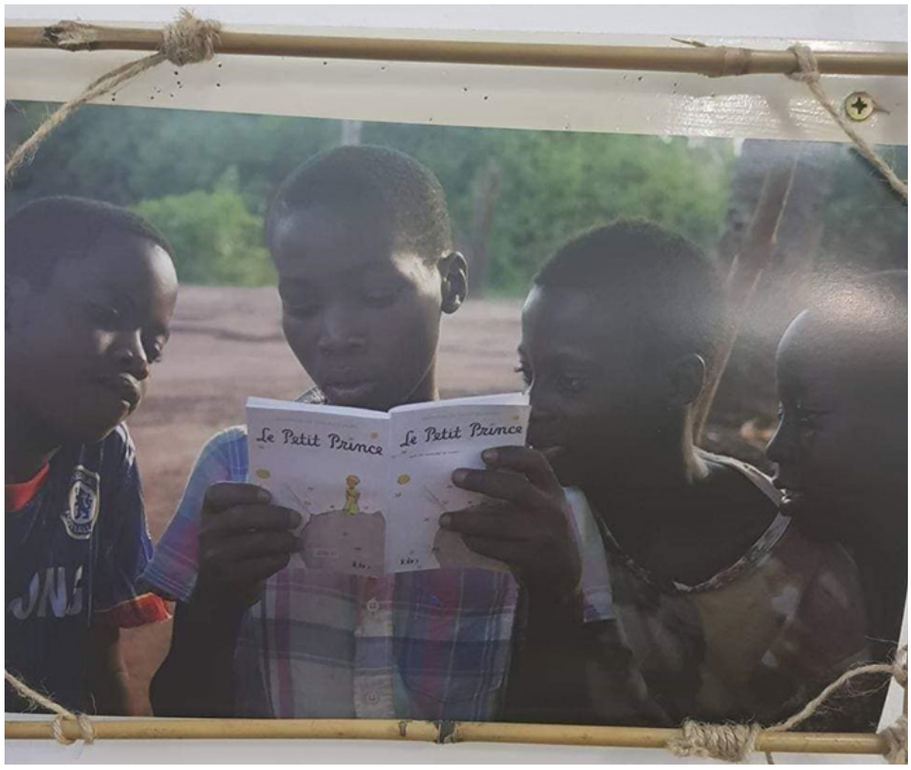

Ca urmare a faptului că Michel, administratorul colectivului de părinți ai acestei școli, nu găsește un spațiu de amenajare pentru bibliotecă, donează una dintre camerele casei în care locuiește împreună cu ficele sale. Astfel, încep pregătirile pentru a deschide acolo mult doritul centru: împreună cu Michel, pictăm fațada casei [illegible] pentru a reprezenta imaginea unei biblioteci în ochii copiilor, aceasta fiindu-le necunoscută; de altfel, un prilej bun pentru copiii din clasele mai mici să descopere fascinați penelurile și culorile; în același timp, elevii de clasa a 8-a exersează geografia pictând harta lumii pe unul dintre pereții interiori ai camerei.


După un timp, copii de mai multe vârste, curioși și entuziasmați, se integrează în activitățile noastre, descoperind la rândul lor cum se naște o bibliotecă. Între timp, pe rafturile acesteia apar câteva cărți, ocazie numai bună de a organiza un grup de lectură în cadrul căruia învățăm să citim ori să înțelegem un text, la vârsta de 12-13 ani.

În final, biblioteca rămâne cu harta și câteva cărți cumpărate de acolo, insuficiente pentru nevoile acestor copii. Astfel, în măsura în care considerați acest proiect binevenit te invit să donezi o carte sau orice alt obiect și-ar fi plăcut și ție să găsești în bibliotecă în care ai descoperit lumea (poveștilor).

Alexandra Petruse și copiii bucuroși
alexandrapetruse@yahoo.com

Expoziție realizată cu sprijinul celor mai buni prieteni


Le Petit Prince
Le Petit Prince


PHYSIQUE
CHIMIE

5.3. Promoting the FIRST spirit by CSH by using the educational concept STEM under the division 'Gracious professionalism' through organizing 12 promotion events in public spaces and institutions, mass media and online until 29th March 2020

Results: 15 promotion events

Open Robotics Intelligent Grid

Date	31 august - 8 november 2019
Meeting held	West University of Timisoara
Attendance	Team CSH and 15 robotics teams from Romania
Impact	60 people + partners of the Open Robotics Intelligent Grid+ specialists in the area of private companies
Time spent	84 h preparations, 84 h process

Goals and results:

We have always felt the need to promote STEM education in the community we are a part of, to focus on the young people and their interests, as well as to transform Timisoara in a hub of innovative approaches in the promotion and development of technologies.

To this end, we went to our partners to see if they can help us with some logistical details for the event that we wanted to organize. Initially, we intended to organize a few days of demonstrative matches for the citizens of Timisoara together with teams from all over the country, to promote the FIRST spirit. Later we found out about the `Youth Elite` program of the West University of Timisoara (WUT) dedicated to Olympic students in Romania and Moldova.

Because we know that FTC students deserve to be recognized as model students, we came up with the idea to join that project, introducing the robotics section - Open Robotics Intelligent Grid. Together with the WUT team and Minds Hub, we started the preparations for the "September summer school".

To-do List for Open Robotics Intelligent Grid:

1. Defining the organizing team
2. Building partnerships and sponsorships
3. Designing the game
4. Launch of entries
5. Sending invitations to team mentors
6. Designing the agenda
7. Centralization of entry information
8. Maintaining the connection between organizers and participants

9. Creating the design for badges, T-shirts, and diplomas
10. Allocation of accommodation
11. Forming the volunteer team

1. Defining the organizing team

In June 2019 we had a meeting with Andrei Craciun and Flavia Barta (WUT representatives) with whom we discussed our involvement in Open Robotics Intelligent Grid 2019. We gave a brief description of the events that the team had previously carried out and we expressed our ideas about what we want to organize.
We defined the organizing team as follows:

- Andrei Craciun - WUT Head of Innovation
- Nușa Cojocaru - CSH Mentor
- Team CSH - All of us
- Vlad Arambușa - WUT student
- Vlad Rochian - WUT student
- Theodor Grumeza - WUT student
- Andreea Moldovan - Minds Hub Timișoara representative

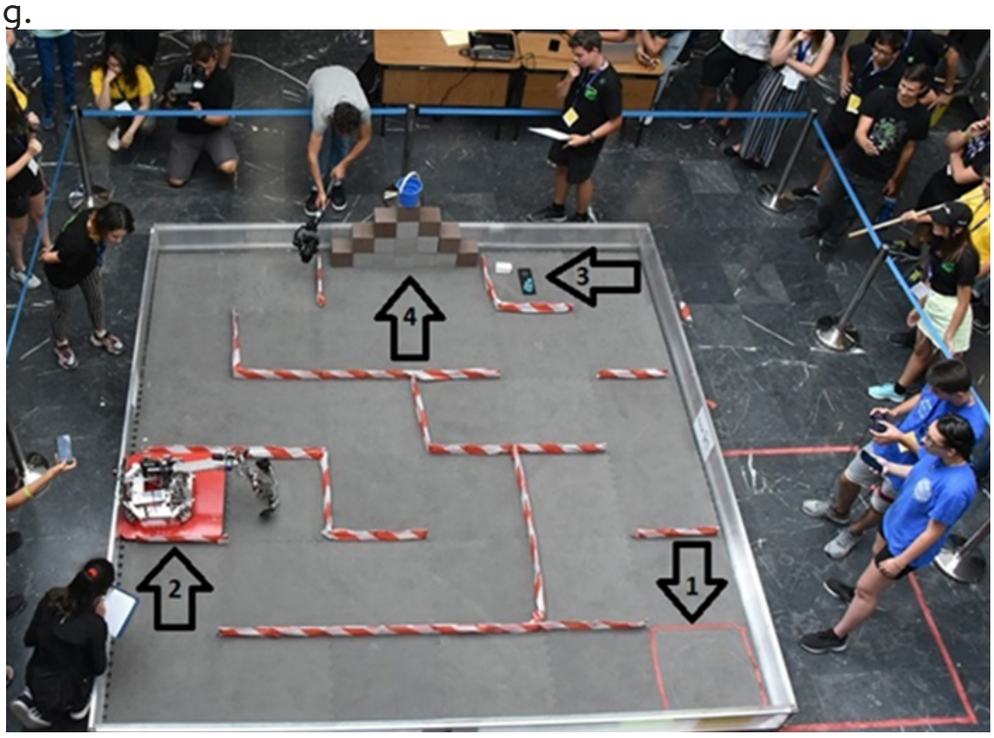
2. Building partnerships and sponsorships

An important part of the project are the sponsors and partners. We have contacted the companies with which we have previously collaborated or that have sponsored us, to support our new project. Also, we have sent emails with data about the project designed by us to other companies from Timisoara, with the hope that we will be able to establish long-term relationships.
Thus, we have managed to work with HAMILTON CENTRAL EUROPE, FLEX, APTIV, BOSCH, NOKIA, Autonom Foundation, Sustainalytics, KPMG, ATOS, HELLA, Iulius Town, Medicis, Continental Automotive, Vox Technology Park and TOLUNA. The main partners of the Open Robotics Intelligent Grid are FLEX and HAMILTON. Also, these two companies have been with us all week and have supported us both financially and with certain workshops held by their specialists.

3. Game Design

Initially, we were thinking about making demonstrative matches with robots from the 3rd season of BRD FIRST Tech Challenge Romania, later we decided we wanted to emphasize the idea of creativity and innovation, so we designed a game based

on the needs of contemporary society.
The theme of the technical competition within the Open Robotics Intelligent Grid was responsibility, ecology and community support. 48 hours was the time that the participants had at their disposal to build and program a utility robot in order for it to perform various tasks within an applicative route/course, developed especially for this event. In the starting area, the robot had the task of recognizing the color of a starting standard and displaying it on the telephone of the route coordinator of each team, this aspect being verified by one of the referees. After the color was detected, the robot had to go through a maze and solve the specific task for each of the 3 zones: Water Tower, Waste zones, Fire Building.



Route sketch of the Open Robotics Intelligent Grid game

4. Launch of entries

The team is ready, the date is set (31st September – 7th September), we are launching registrations! We have places for 15 teams consisting of 3 students (1 programmer, 1 mechanic and 1 non-technical student) + 1 mentor. I have designed the registration form and launched the announcement online.
The registration took place by completing and sending to the organizers the intention form, publicly available. The registration form has been available for 15 days.

Announcement published on TEAMS | BRD FIRST Tech Challenge Romania

Post on the Team CSH FaceBook page

The registration took place by completing and sending to the organizers the intention form, publicly available. The registration form has been available for 15 days.

5.Sending invitations to team mentors

We have designed invitations for the mentor teachers of the robotics teams in Romania, where we mapped the idea of the project and offered them all the details they would need.

6.Designing the agenda

It's time for planning the activities! First of all, we define the philosophy of the project "A week of innovative approaches in a friendly environment of

discovering Timisoara".

What would the young people coming to Timisoara like? How do we make an interesting and useful program for them, but not a very loaded one?

These are the questions that were always in our heads. However, we managed to draft our ideas of activities that could be carried out.

List of ideas for the Workshops

Programming workshop

- Java course(?)
- AI course (Sorin Tirc, or from the Deep learning community)

Assembly Workshop and 3D design

- 3D printing

Nontechnical Workshop

- Business plan (FRIGOGLASS)
- Team management
- Social Media Marketing (FRIGOGLASS)

Other proposed workshops:

Public Speaking (Integral EDU)

Time management

Project Work:

Technical Students: Creating the robot to perform the tasks established in the game theme

Nontechnical students: Preparing the documentation, presenting and promoting the team they represent.

Analysing our ideas, the partners we have and the opportunities that Timisoara offers, we have defined the Summer school workshops:

- Digitalization
- HAMILTON presentation
- Team management
- Flex Industry 4.0
- VIP-time with successful personalities
- JAVA course
- AI course / Deep Learning / Big Data
- 3D course
- YTM Nights - for inspiration

The courses are focused on the success stories of some people/companies. They also have the role of presenting the robotics applied in existing companies, opportunities for professional development and the fact that our society supports the activities of the students involved in the FIRST program. The students had

contact with the directors of the partner companies, participating in a series of meetings with them, during which they learned about the challenges as well as the successes that appear in their sphere of activity.
We dedicated Day 0 to the arrival and accommodation of the teams. However, at the end of the day, we decided to organize a Welcome Party to meet again, for the participants to get to know each other and to start the week in a pleasant and relaxing atmosphere.

7.Centralization of entry information


Universitatea de Vest din Timişoara
OPEN ROBOTICS INTELLIGENT GRID

AGENDA

Ziua 0 - 31.08.2019 (sâmbătă)
09:00 – 19:00 - Sosirea și cazare
21:00 – Welcome party

Ziua 1 - 1.09.2019 (duminică)
10:00 – 12:00 - Workshop 1 - Digitalizare
12:15 – 13:00 - Prânz
13:30 – 18:00 - Treasure Hunt "Discover Timișoara's Community"
20:00 – YTM Nights

Ziua 2 - 2.09.2019 (luni)
10:00 – 11:30 - Deschiderea oficială
11:45 – 13:00 - HAMILTON - Zeus Platforms
13:00 – 13:45 - Prânz
14:00 – 15:00 - Workshop 2
15:00 – 19:00 - Open Robotic Grid, build
19:30 – Cină

Ziua 3 - 3.09.2019 (marți) - Flex day
10:00 - 11:30 - VIP time: Meet your future self @ UVT
11:45 - 13:00 - Flex, workshop (3D Printing)
13:00 - 13:45 - Prânz
14:00 - 16:00 - Flex management exercise, industry 4.0
16:00 - 19:00 - Open Robotics Grid, build
20:00 - Cină

Ziua 4 - 4.09.2019 (miercuri)
10:00 – 11:30 - VIP time: Meet your future self @ UVT
11:45 – 13:00 - Open Robotics Grid, build
13:00 – 13:45 - Prânz
14:00 – 18:00 - Open Robotics Grid, game on
21:00 – Cină

Ziua 5 - 5.09.2019 (joi)
10:00 - 11:30 - VIP time: Meet your future self @ UVT - Igor Bulavitchi, Senior Design & Engineering Managed @FLEX
12:00 - 13:00 - Prânz
13:00 - 14.30 - Java in Robotics & Automation
15:00 – 16.30 – Curs AI / Deep learning
17:00 – 18.30 Curs 3D / Big Data
19:00 – Cină

Ziua 6 - 6.09.2019 (vineri)
10:00 - 14:30 Gala de prezentare a proiectelor

Ziua 7 - 7.09.2019 (sâmbătă)
10:00 - Plecarea participanților

Elementele de competiție tehnică sunt proiectate și realizate în parteneriat cu

Revizia 1.6, update day 1,2,3,4

The registration form was available for 15 days, the number of required teams gathered much faster. Therefore, we had 22 registered teams, of which only 15 received the acceptance email (the first 15 registered teams), and the others were placed on the waiting list.
Participating teams:

1. EXPERIMENTO
2. Bionic Royals RO 42
3. Wafy RO063
4. Echo Pulse RO089 Bacau
5. BLISS
6. The Emperor
7. ESENTZA ROBOTICS
8. Ro2D2
9. Cyber 2.0 Warriors
10. Bolts and Gears
11. RobotX Hunedoara
12. Xeo
13. CyberPunk
14. Soft Hoarders
15. Robotehnica

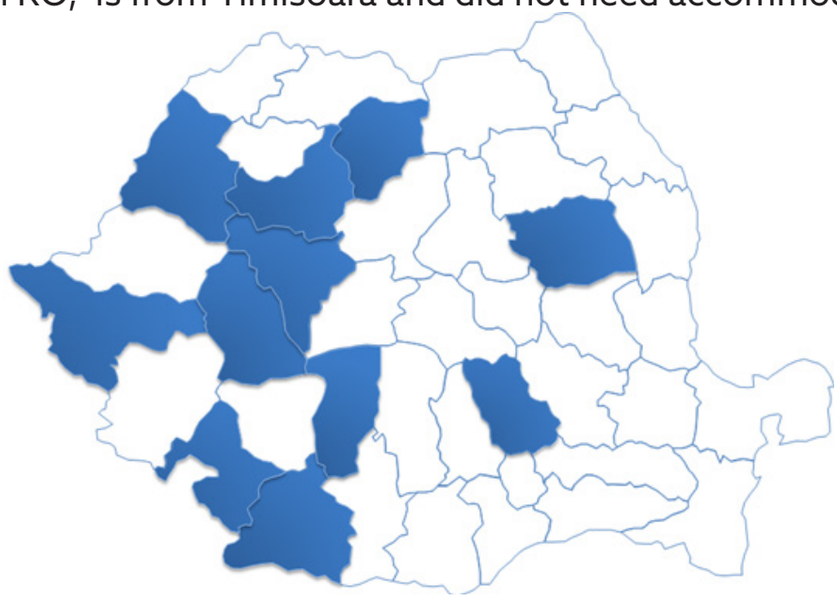
The teams on the waiting list:

1. Cyber Lions
2. ERCAST
3. DecebalTech
4. SnakeTech
5. Kronos Robotics
6. MECHANX
7. ICLASS

The registered teams are from the following areas: Vălenii de Munte, RâmnicuVâlcea, Petrila, Bacău, Timișoara, DrobetaTurnu Severin, Beclean, Ploiești, Deva, Bistrița, Hunedo-

ara, Alba Iulia, Turda, Craiova, Oradea.

We also centralized the names of the participants, in order to calculate the total number of girls and boys, to be able to plan the accommodations. One of the registered teams, Cyber Moon RO, is from Timisoara and did not need accommodation.



Romania`s map with the areas that the teams come from highlighted

In total, we had as participants 51 students and 15 mentors (without the CSH team).

Of them, 54 people needed accommodation, of which Students: 15 girls, 26 boys, and Mentors: 4 women, 10 men.

The participants were accommodated at the West University of Timisoara hostels, Faculty of Law. To facilitate the collaboration between the participant, objective of the event itself, they were distributed in the room with colleagues from other teams.

"CSH Caravan - Făget"

Date	24th September 2019
Meeting held	"Traian Vuia" Theoretical High School Făget, Timiș
Attendance	Gloria, Unguru, Mrs. Nușa
Time spent	4h for preparation, 2h for the presentation

After the start of the new season, we went looking right away for new teams that might join us in this competition. We spoke to a professor from "Traian Vuia" Theoretical high school and he said he'd love to find out more about this competition. So, Gloria and Unguru travelled all the way to Faget to hold a presentation about First Tech Challenge. Seven curious students awaited us there. We told them about FIRST values, we gave them details about the signing up process, and we told them we can be their mentors and help them throughout this season. After the presentation, the professor showed us their freshly paint-

ed high school and told us more about the school.

The outcome:
After the singing up process ended, we noticed they took our advice and signed up for the new FTC season: Skystone. We're really glad they listened to us and we can't wait to help them this season!

RO 174	LTTV TEAM	Liceul Teoretic Traian Vuia	Faget

European Researcher's Night

Date	September 28th
Meeting held	Nokia IoT Garage
Attendance	Ale, Bogdan, Carla, Laura, Leti, Spiri, Mr. Cojocaru, Ms. Nușa
Impact	3000 people
Time spent	50h for preparations, 5h for presentation

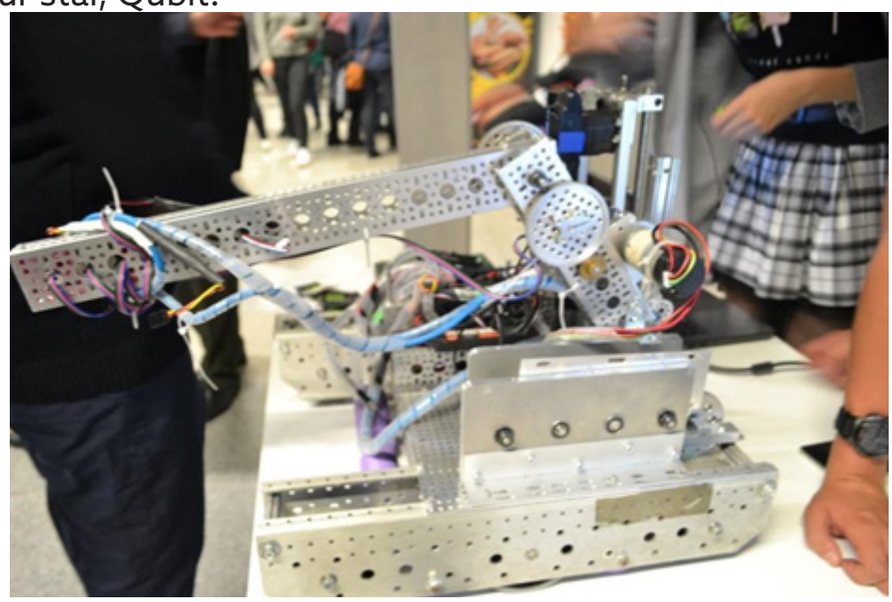
Since this event is taking place at the same time as Flight Festival we decided to split into 2 different teams.
Ale, Leti, Bogdan, Carla and Laura were in charge of European Researcher's Night, while Gloria, Spiri, Unguru, Sorinca and Robi were in charge of Flight Festival.

Preparations

While the non-technical team prepared the roll ups, stickers, flags, pins, business cards and did the overall organizational preparations, the technical part had to build the robot that was going to be on display at the event.

The poster for European Researcher's Night 2019

A few days before the event took place, we got in touch with a gentleman that was responsible of our team to make sure we had everything we need. We found out where our stand will be and where we can set up the playing field for our star, Qubit.

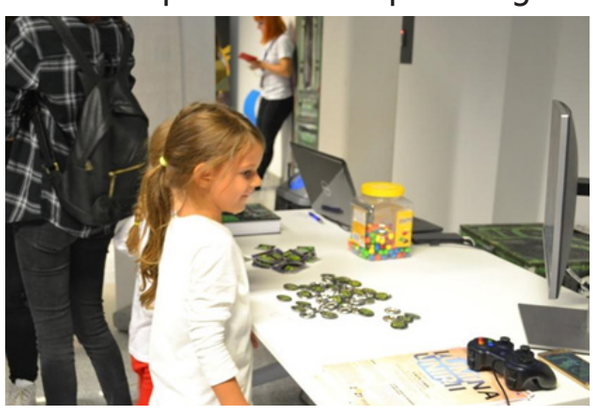


Our robot for European Researcher's Night

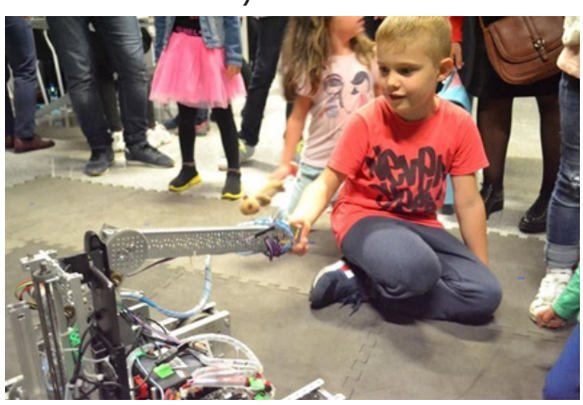
The event

We got there a few hours before the event was scheduled to start so we could set up the field and our stand. Bogdan and Spiri made sure that the field is well assembled while the girls prepared the stand.

Carla prepared some short films which contained our story, everything we've done so far throughout the years, some pictures of our past and present robots and pictures of us. Leti set up the promotional materials and a sweet surprise for the upcoming kids. (hint- it's m&m's)



Kids watching our short team films, at our stand



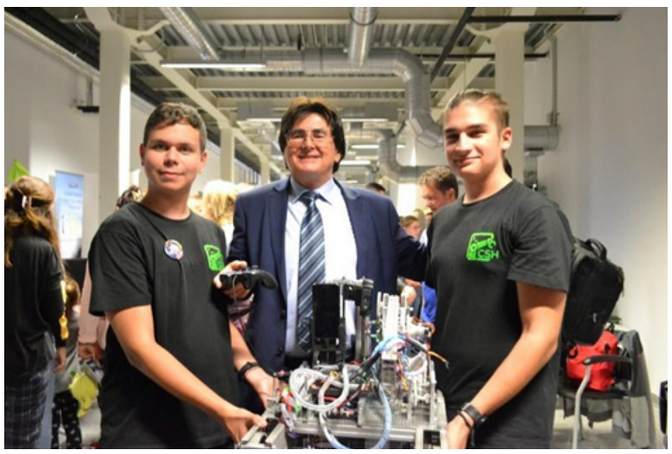
Qubit meets Andrei

Dream BIG, build BIGGER!

Bogdan with our potential future driver

At the end of the evening we were surprised when our city mayor, Mr. Nicolae Robu came to see us. Together with the other kids, he drove our robot and was impressed to find out that high schoolers can do these kinds of stuff. He promised us his support, and a few days later we received a letter from him, saying that he would be more than glad to help us in the near future.

Result:
3000 visitors – an event with a pretty huge impact we participated in! We are proud that we can inspire other people, especially kids to pursue a career in the STEM field! We are very glad that through this event, we managed to spread the FIRST values to so many people.



Bogdan and Spiri together with our mayor and Qubit

Flight Festival

The Beginning of CSH-Xeo's story
Date: 13.09.2019
Gloria: After class hours, I got a call from Mihai – ex-leader of team Xeo, current student in Timisoara.
First, Mihai congratulated us for the event we had previously carried out, namely Open Robotics Intelligent Grid, to which his team also participated in. He gave us a very needed feedback, mentioning moments he liked as well as moments he disliked.
He had two news for us: first was that we will be getting official FTC ground, with game details from the Rover Ruckus and Relic Recovery season, which we should keep throughout the season and use it at any FTC event organized along the way in our city.
The second news wasn't any less surprising. In Ti-

misoara, Flight Festival is being organized between September 27-29. The festival is divided into three big segments: Music, Tech and Art.

They were invited to present their robot and team at the Tech section at the HAMILTON Bastion. Because the event is organized in our native town and because we cooperated well at previous events, they invited us to join them at the presentation. We were going to set up a field in the location announced by the organisers and present the game with the theme Relic Recovery. So, we have 2 weeks to build a robot to present it at one of the biggest festivals in Timisoara, but we are confident. Immediately after the discussion with Mihai announced my colleagues about the events that were to be done by us. Unfortunately, this festival overlaps with another event we were to participate in – The Night of The Scouts, but we agreed that we will manage to participate in both of them. We've got a lot of work to do, but in a few messages on our text group we assigned responsibilities and started working.

The instastory in which we announced that we were participating alongside Xeo in Fight Festival

Preparations

We started by creating a list of priorities.
Stuff to do for Flight Festival:
- Assembling a robot that will complete the tasks for the Rover Ruckus theme.
- Picking up the package with the official walls sent by Natie prin Educatie from Bucharest.
- Gathering the field pieces for the Rover Ruckus theme from the teams in Timisoara.

Spiri, Unguru, Robi and Bogdan will take care of the

robot assembly, Gloria will resolve the logistics section.

Gloria: Monday, the 16th of September, we got in contact with Gabriela Ivan, for discussing the details of the transfer of the land to us. Since Timisoara is quite far from Bucharest, we agreed on receiving the walls from them, leaving it for us to find the game parts from the local teams. First we contacted team Davos, with who we've trained with last season between January – March and with who we've also kept a friendship after the season. In this regard we've spoken to Andrei, one of the team members, who has told us that they didn't have all the game parts, but they can bring us 2 relics and 2 maps for the relics, which he also brought to us at school on the 24th of September.

Next, we've contacted team Wizztech, who told us that unfortunately they don't have the game parts anymore. :(We still needed 2 balancing stones and 2 cryptoboxes and cubes for a full terrain.

We've spoken to Mrs. Cojocaru and she proposed that we contact one of the Davos team mentors, who hosted the team at his house in the 2017 – 2018 season and who could have, in his garage, the materials that we need. Spiri offered to speak with the mentor, because they knew each other from previous tournaments and YEAH! We've received an affirmative answer. Emanuil (team Davos' mentor) brought us the missing parts straight to hub we were working in. The community FIRST is truly special, because besides the fact that he helped us with the missing parts, they have also offered help if we need it and wished us good luck for our following event.

On the 24th of September, we messaged Gabriela again regarding the walls, who got into contact with Cristache. He told me the package was sent on Monday, which meant that it will arrive soon. (Spoiler: they haven't arrived before the event)

On Thursday we spoke to Cristi (Xeo member), who told me to come at 10, so we could arrange the terrain and the other elements. In the evening we brought the materials + the robot at school, from they were to be picked up next morning.

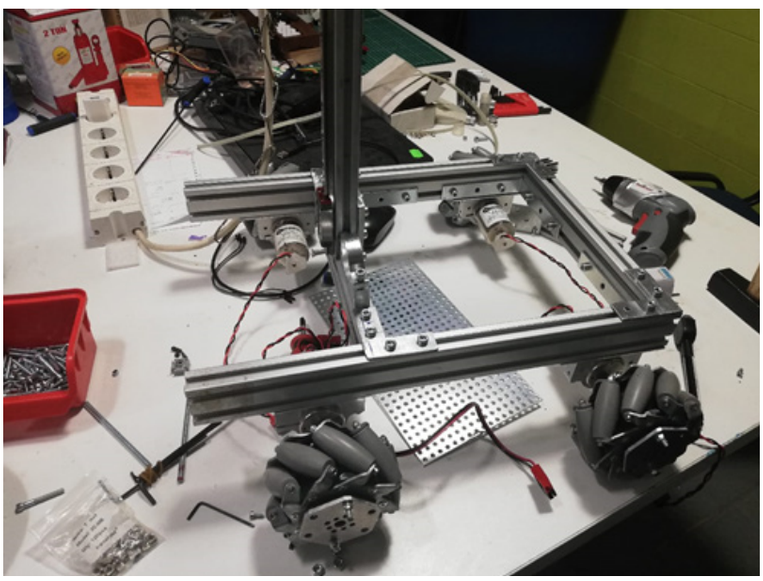
The Robot Preparation:

Sept 22nd :

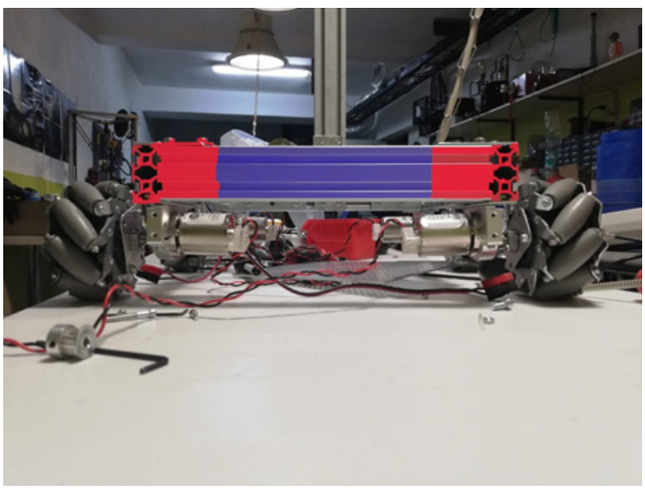
Meeting held at: Creative Space at 12
Attendance: Spiri, Unguru, Bogdan, Carla, Mr. Cristi

We gathered again to build our robot for flight festival. Today we put our mecanum wheels and we saw that our chassis wasn't stable so we put some inside corners to have more reinforcement. Another thing that we did today was to install our linear slide for the lifting mechanism. Spiri discussed with Mr. Cristi how we're gonna make our claw for collecting the Relic Recovery cubes. At the end of the day Unguru noticed that he mounted the wheels wrong, so he had to mount them again correctly. Later that night, Spiri wrote a part of the code.

The boxes ready for Flight Festival



Our custom made chassis at the end of the day.



The red zones points out where is the biggest pressure put on the frame

Sept 23rd :
Meeting held at: Creative Space at 2.
Attendance: Bogdan, Spiri.
Today, Bogdan cut,and grinded some aluminum to make a plate to fix the belt to the motor.

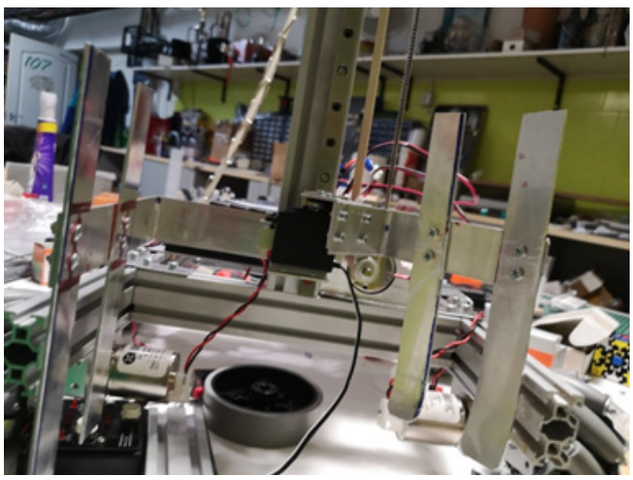
Spiri also cut and grinded some aluminum to make a claw for our collecting mechanism.

Sept 24th :

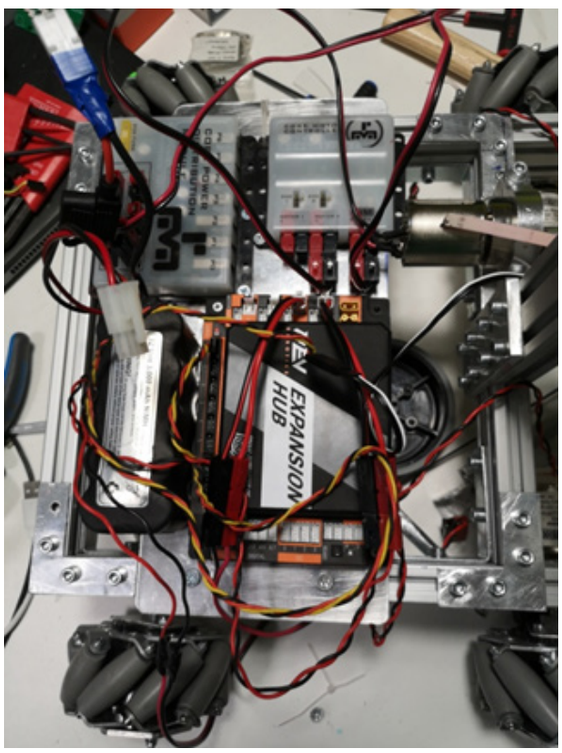
Meeting held at : Creative space at 2 p.m.
Attendace: Spiri, Robi

Today Spiri and Robi finalized the claw, who in theory can collect 2 cubes at once. Also, we did 90% of our electronics part of the robot without the cable management, because we're missing 2 connecting cables for DC motor to Rev ExpansionHub. Spiri called a guy from team Davos to borrow us some cables from them.

Our finalized claw:



Our electronics part without cable management:



Sept 25th :
Meeting held at: Creative Space at 2 p.m.
Attendence: Unguru, Spiri, Robi.
Today we did the cable management for our electronic part of our robot. Spiri borrowed some cables from team Davos for our electronics. We did a little bit of testing but unfortunately one of our wheels fell off. Because it was late, when we did the testing the repairing of the wheel remained for the next day meeting.

Robi doing the cable management while Spiri is playing with the electric screwdriver in the back

First day of Flight Festival
– 27th September

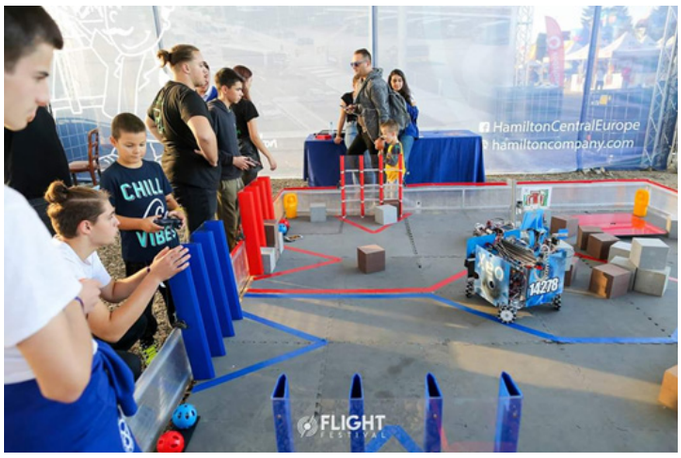
We met at 9 AM, at school, when we got the news that the gentleman who was supposed to help us with the transportation to the location of the event can no longer do it. Searching for solutions, searching for solutions, searching for solutions ... Bingo! – our history teacher, mr. Codat, offered a helping hand. We loaded the boxes in the car (and Gloria between the boxes) and we were on our way.

Gloria, between the boxes, on the way to Flight Festival

Since we haven't yet received the walls from Bucharest, we decided to take ours, custom made by the father of one of the ex-members of our team.
While the festival's volunteers were making the last preparations, we got to know each other a bit better and collect a few mementos. From the first seconds we managed to create a strong and beautiful bond, we were getting along! Because we had a lot of time to wait, Gloria and Alexandra went to town, to get something to eat for everyone, because after all nothing creates a better bond than food. It's time to spruce up the bastion!
The elements that we had to install:

- The Playing Field
- The Robots
- Promotion Area FTC
- Roll ups
- Photo Cab with Confetti
- 3D Printer
- Lock picking zone
- Lego Crane
- Arcade

Dream BIG, build BIGGER!



FTC terrain ready for demonstrations

Open Robotics Intelligent Grid & Youth Elite's cube of memories

After we assembled the terrain and Instagram pictures appeared, we were contacted by Gabriela Ivan, who noticed we didn't have official walls. Immediately after, we got in contact with Cristache, who called the delivery company that was supposed to deliver the package to us. It had reached Timisoara since Tuesday, but for some reason we would have it delivered in a week. Since we had already solved the problem, we told the people at Natie prin Educatie that it isn't a problem, considering no more than that could be done anyway, especially since it was no one's mistake and we shouldn't stress it. We recovered the walls the next day and the situation didn't affect anyone, we acting with a total calmness.

We acted like a true team alongside Xeo surprisingly good for everybody. When the first visitors came in, we presented them our passion for technology and competition that united us all.

We found some time to explore the festival, to acknowledge what was happening in our surroundings and we were truly surprised: the cube of memories form Open Robotics Intelligent Grid & Youth Elite was warming in the sun at the heart of the festival.

The evening ended with the concert of the band "The Motans", where we filled even more with the energy of the festival.

The Motans at Flight Festival

Second day of Flight Festival
– 28 September

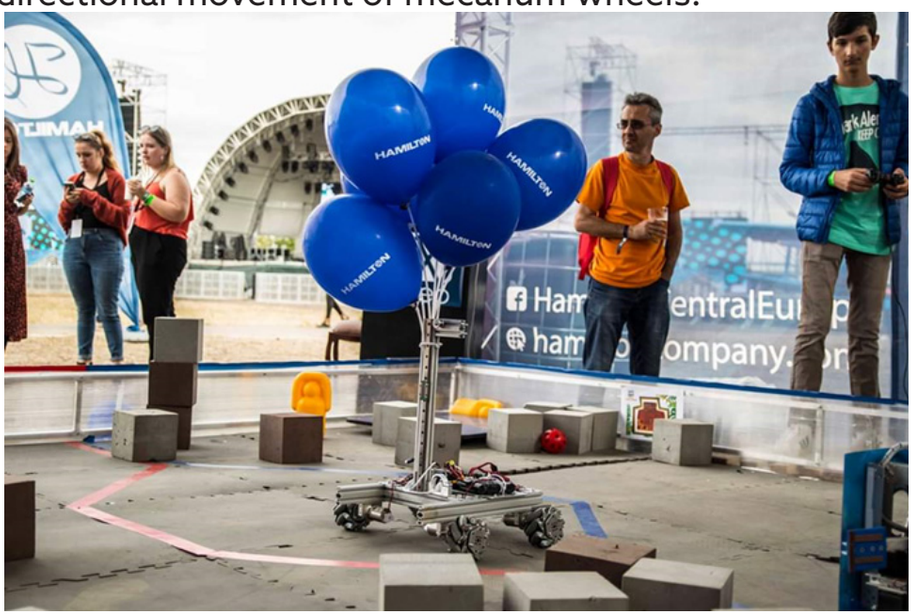
We started at 9 AM, fixing up the bastion. Together with Ale from Xeo we made a selection of representative photos and videos of our teams, which we ran in FTC's promotion zone. We also put the technical notebooks together, which were our support in presenting the competition we were participating in.
Of course, we couldn't come to the festival without the mascot and "our business card" – glitter, which is the primary attraction of both children, and the teens who came to us to leave with a sparkly look, only good for such a festival.

Our mascot – CSH's unicorn

Dream BIG, build BIGGER!

One of the kids that came to see the robots said he disliked robotics. We let him discover what we had offer, we told him how the systems were working, use of robots in everyday life and the creation process. In half an hour, the boy came and told us that he now likes robotics and wishes to do what we do when he grows up. He told us he will be watching us on the matter and left our stand thrilled, leaving us with smiles on our faces and with the feeling that we manage to change opinions not through words, but through activity!

Because we let kids play with the robot, it has happened that one of our systems, that is, the sampling system of the cubes, would come out of operation. At the same time, Ela (team Xeo's robot) has encountered problems in electronics. Since we didn't need that piece anymore (ASK SPIRI WHAT PIECE IT WAS), we offered it to them. We had to find a solution for our robot, to keep on inciting the world for another two days, therefore we decided that Qubit will bring smiles on children's faces, by offering them balloons. Next, children could play with the robot, pushing cubes and having fun with the omnidirectional movement of mecanum wheels.

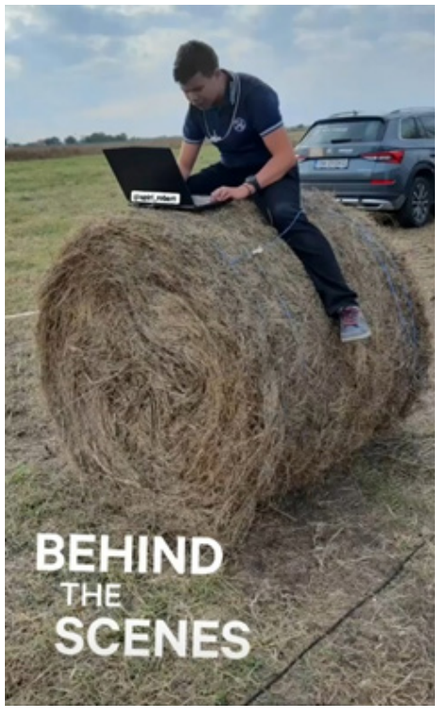


Qubit, adapted to share balloons

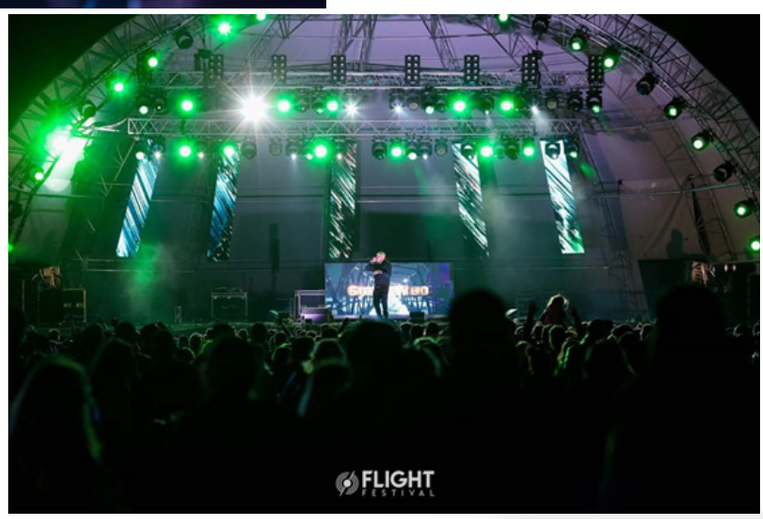
Throughout the festival, seeing how roughed up our robot is by children, Spiri decided to add in the code a section through which he made the robot move smoother through the gradual acceleration, therefore by facilitating the "work" of the children who handle the robot.

Such a beautiful day spent with so many beautiful people, continued with dances on Guess Who and Grasu XXL's music! We sang, we enjoyed the festival atmosphere and we

felt free and happy that we can express ourselves at an event of this magnitude!



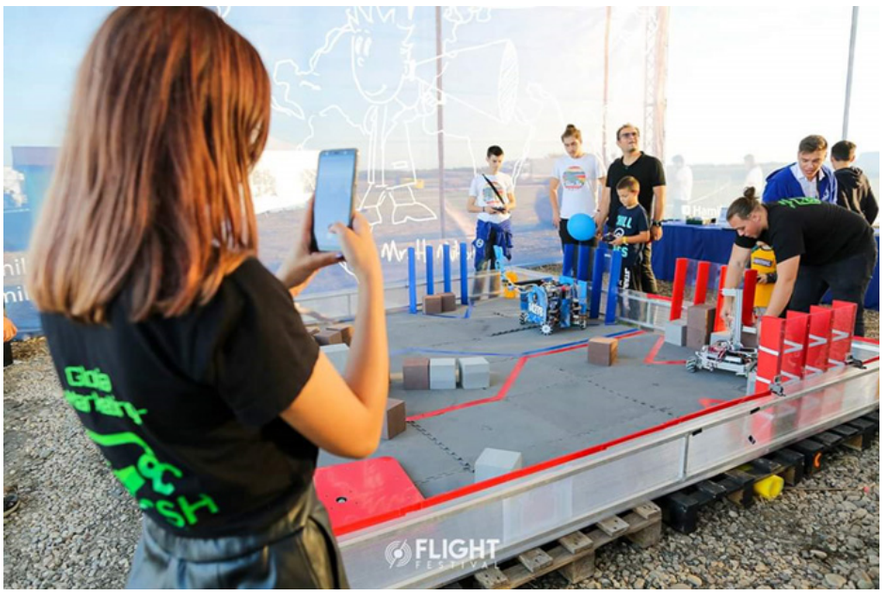
Spiri writing a code anytime, anywhere, in any condition



GuessWho at Flight Festival

Third day of Flight Festival
– 29 September

Last day – with a whole lot of energy, we started wonderful with our first visitors. This time we had time to discuss with the other companies who had bastions at the festival. Special attention I have received from a 3D printing company – Pixel Strat. We discussed with them about the way we use 3D projection, the software we use, our experiences with our old printers and the way they can help us. They offered theoretical advice, that can help us practically when we need.



Gloria, taking pictures for Instagram / EN

We most like to meet the people who support us and show them how important the support they offer us is to us. In this regard we enjoyed meeting Florin Ciocan – manager at NOKIA Timisoara, who offered us support in season 3 and who continues to provide us with a room at NOKIA IoT Garage, where we can do our work. We told him what we were presenting at the festival and how a part of the team participated in the 27th of September at The Night of the Scouts, organized by Nokia in Timisoara, we also discussed about the team's performance at that event. We were very happy to hear from Florin that "I don't know what you were doing there, but there were always a lot of people and everyone happy". We certainly receive a lot of support from our community! <3

We also met with Andrei Craciun with who we've held Open Robotics Intellingent Grid a few weeks ago. He liked the theme of the game we were presenting and we were already beginning to come up with ideas for the next summer school edition in

2020, but we remained to discuss more details at a meeting after the event. Also, he enjoyed listening team Xeo's members' impressions from our summer school, to have a better understanding of what are the opinions of those for whom we have prepared that week full of activities!

In our last day, after we got to know each other better, we discussed more about the technical specifications with Xeo. They shared from their experiences and gave us some tips & tricks. We were very careful about what they told us and we hope the changes are noticeable :)

During the festival, there was a special place, where people could launch their kites. We offered kids, from the Hamilton company, kites that they could paint and launch, but, how we also are kids, we stayed there for a bit to customize our own kite. Everyone contributed with at least a star, and we managed to combine colours and energy into a common work.

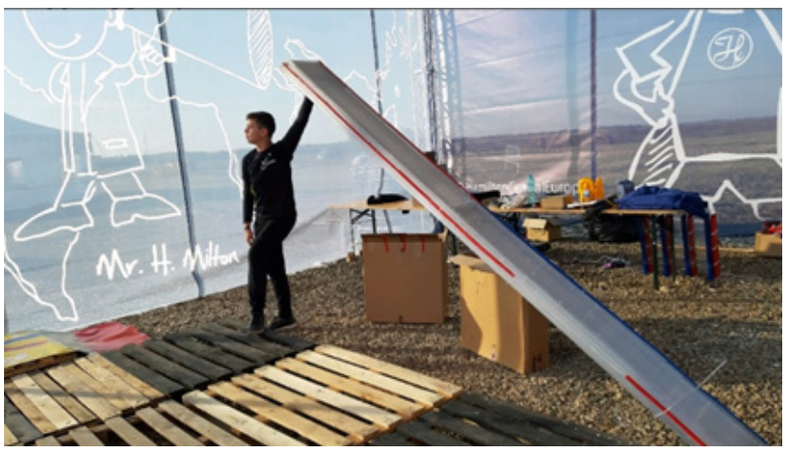
We enjoyed a final concert from "Vama Veche".

Even though we were 3 different teams (HAMILTON's team, Xeo and CSH), working together was easier then it seemed in the beginning. We agreed that our involvement and common purpose united us, the idea of conducting a big event through which we send ambition and talent helped us pass

through all the tense moments (when the robots broke, when we gathered confetti everywhere, when we reassembled some of the crane made from LEOO) without bickering, with smiles and helping each other. We united ourselves under the sign of passion for robots, and we managed to create a beginning of friendship that lasted even after the event ended.

Team Hamilton – Xeo - CSH

The fourth day was they we gathered our things. Since Gloria and Spiri arrived first at the bastion, they gathered the field and other elements, to help the people at Xeo, who had to leave soon. In the sunlight we realized how much glitter and confetti there is everywhere, and we accepted that this was another demonstration that "Robotica uneste Romania" (Robotics unites Romania). Good bye, Xeo! See you soon!



Spiri, posing for the notebook

"Robotics unites Romania" &Glitter & Confetti

CSH Academy Event

Date	17th October 2019
Meeting held	"Carmen Sylva" National Pedagogical College
Attendance	Bogdan, Spiri, Ale M, Ale S, Gloria, Carla, Robi, Unguru
Impact	~50 pupils
Time spent	4h for preparation, 1h the activity itself

Preparation:

Team CSH has some exciting news: we launched our first FIRST Lego League Team, CSH Junior! With 2 years of experience, improving both sides of hard skills and soft skills and mentoring other teams of our age, we decided to get this to the next level and also develop pedagogical and teaching skills.
Since this represents a major step in the evolution of Team CSH, we wanted to make a big announcement, so picking the right time would've been very important. Lucky for us, our school had been celebrating the centenary in the same week as we launched CSH Junior, that means a big big event was approaching.
Aside from FLL Team, we wanted also to remind about our first ever project included in CSH Academy: just one year ago, we started mentoring the our highschool fellows, bringing them to our meetings to familiarize them with the purpose of this whole competition.
To be sure that we checked all these points, we made a Power Point Presentation that included some facts about us, our goals, our greatest achievements, and the main reason we started CSH Academy: to inspire.
Gloria, Unguru and Ale S contributed to make the PP, each creating 3-4 pages of information about each subject, and they also held the speech in front of the public.

Result:

The presentation took place less than a hour, but it had a great impact. Besides presenting ourselves, we also prepared a little surprise and invited 2 of our friends to hold a Game Development Workshop: Cristi Daescu (ex member of CSH Team, now mentoring the FLL one) and Diana Codreanu (ex member and finalist of the Zero Robotics Competition).
One of our purposes was to attract possible new members and volunteers in our team, and as result we received at least 25 messages or phone calls. Moreover, Diana and Cristi also had a great impact with their workshop, especially among middle graders.

CSH Caravan - Sânmihaiu Român

Date	18th October 2019
Meeting held	Scoala Gimnaziala Sânmihaiu Român
Attendance	Unguru
Impact	40 people
Time spent	5h for preparation, 1h for the presentation

Continuing with our caravan, we arrived in Sanmihaiu Roman. We came to this school to promote STEM values in the rural area and among the future generations. The pupils were very surprised and curious about our robot and what we do as a team. In his presentation, Unguru introduced our team, told them how we evolved and what we aspire for in the future. Some of them even asked us interesting questions, proving that they were very interested in our presentation. After that, we allowed the kids to control the robot . At the end of our meeting one kid asked us how could he build his own robot, so we guided him where he can buy a kit. They are looking forward to seeing us again next year!

Unguru talking about FIRST Tech Challenge and presenting our team

The kids from Sanmihaiu Roman driving our robot

Results:
Throughout this presentation we managed to spark curiosity among the generations to come. Who knows, with our help, maybe some of these kids will participate in this competition side by side with us.

CodeCamp

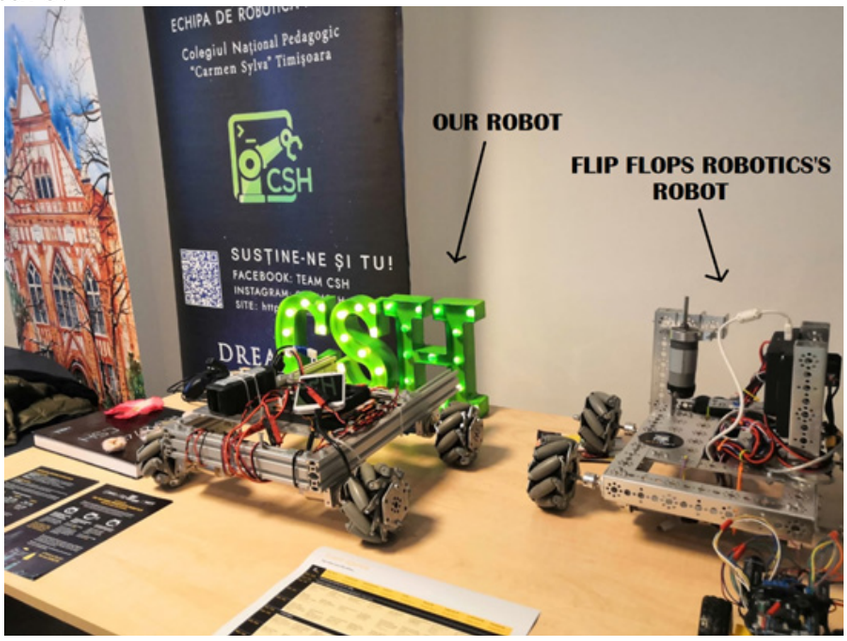
Date	19th of October 2019
Meeting held	Central Library of Politehnica Timisoara University
Attendance	Spiri, Gloria, Unguru, Ale M, Leti, Laura, Bogdan, Carla

Today we participated as exhibitors together with FlipFlopsRobotics from "Grigore Moisil" Tmisoara high school at CodeCamp. In case you don't know, Codecamp is the first and the biggest nation-wide IT conference in Romania. Codecamp is now 12 years old and it brings together all sorts of companies, startups, professionals and IT lovers of all ages. Recently, they announced an event in Moldova as well in May 2020. In Romania, it is held in 4 different cities (sometimes it's held even twice per year): Cluj-Napoca, Timisoara, Bucharest and Iasi. We also participated on 25th of May 2019 but not as exhibitors.

Today the University's library was full of conferences about innovation, architecture, leadership, engineering, machine learning, artificial intelligence etc. and we took part in many of them and we learned many new interesting things.
We brought with us some led-powered lights that spelled "CSH", our roll-up and some pins, stickers and flyers about BRD-FTC to give to the ones that visit our stand. We also brought our robot (which has seen better days) and we walked around the library with it.

There were many companies and we had the chance to talk to many potential sponsors such as: Haufe, Ness, Senticle and Syneto. We showed them our robot and we told them about the biggest robotics competition in the country. They seemed

really interested in it and we hope we will have the chance to collaborate with them in the near future.



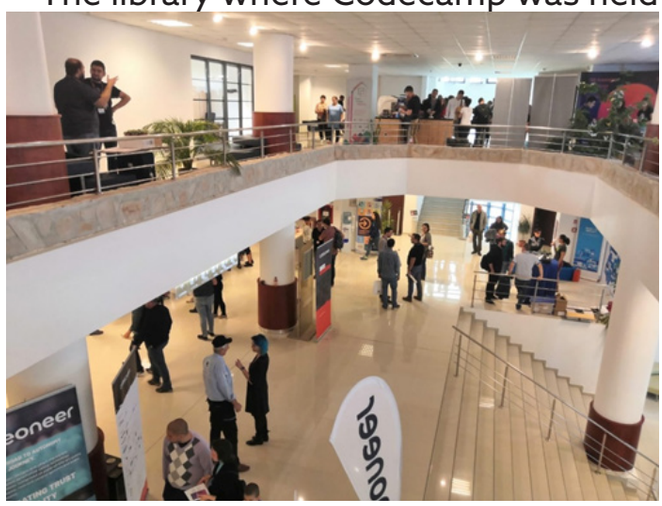
Gloria talking to an IT company called Ness

Many people came to us and were surprised when we told them such a contest exists in Romania. We were able to share with them our journey as a team through our pervious engineering notebooks.

Even though we were mainly focused on talking to people and attending conferences, we also took a bunch of IT-related quizzes and played darts.

Dream BIG, build BIGGER!

The library where Codecamp was held



Leti (and Carla in the back) trying to throw a good shot

Leti missing the shot entirely :(

We met many amazing speakers and we were very glad to be partners with Codecamp, can't wait for next year!

"CSH Caravan - Pygmalion Kindergarten"

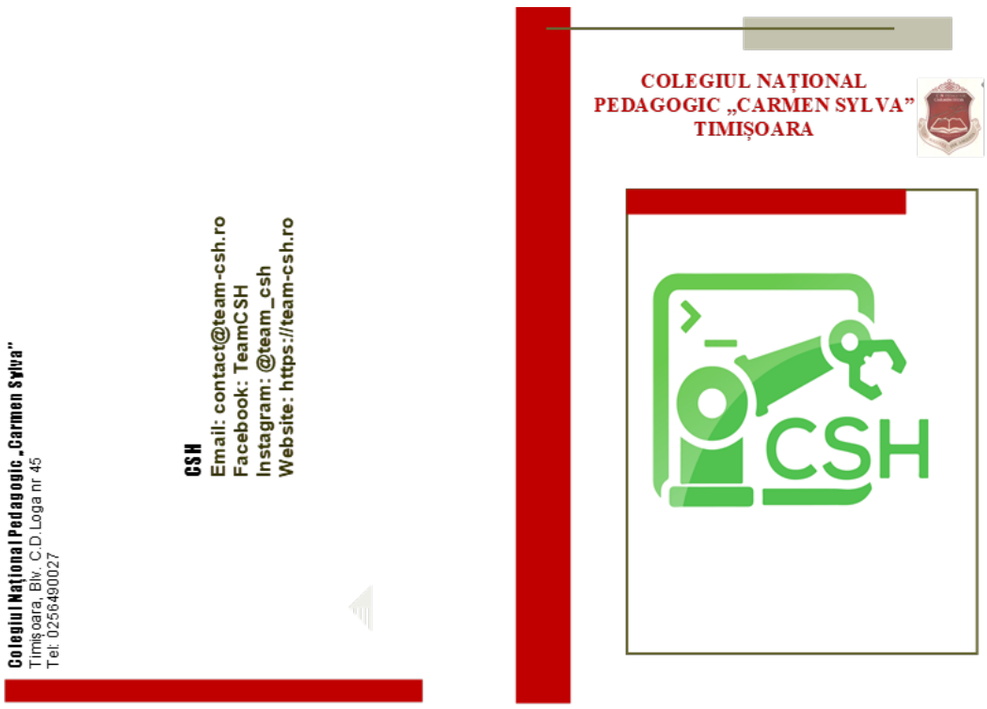
Date	November 15th
Meeting held	Pygmalion kindergarten
Attendance	Gloria, Robi, Spiri, Unguru
Impact	60 persons
Time spent	2 h preparations, 3 h of process

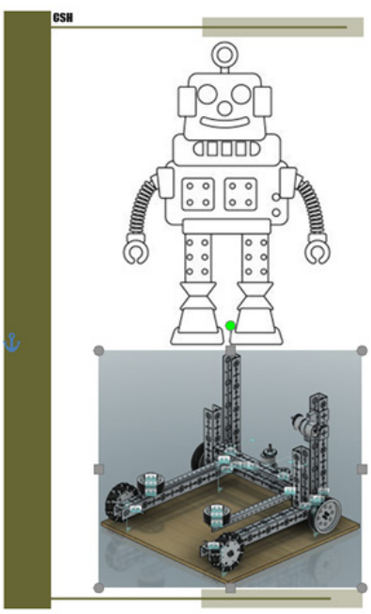
At the Xeo Talks Halloween party, Mihai Mermezan told us that he was contacted by the head teacher of the Pygmalion Kindergarten. She asked us to come and make a presentation to the children because they saw us at Flight Festival. We agreed to go, so we talked to the manager to choose a suitable day for both children and team members.
For children we prepared a story about a child who could not come out to play if he did not store his toys.
Thus, our robot started to help making the job easier. The robot we prepared was a simple one that had a clamp and could clap. In order to please the children, Unguru dressed up in our mascot, the Unicorn CSH. The first group we visited was with the smallest ones there. At first they were confused, the children were scared of the Unicorn and the robot because they did not know what was happening, but during the course they received courage and they approached it to touch it.

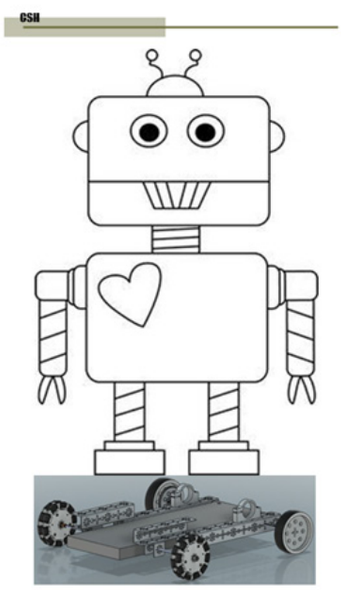
At the next group we could do the screenplay because they were bigger. The children really liked

the role play because they were very careful. For them we also prepared a pamphlet where they could color a robot made by us.

A curious kid who wanted to touch the robot







The scene in which Spiri is the child.

At the end of the presentations, the head teacher was very pleased with the effort. She invited us to come to them whenever we could. We will visit them again because we are trying to pass on STEM values to young generations and because our children are dear to us.

Promoting FIRST to teachers from our school or other high schools

Goals:

45 teachers from other schools who are not involved in the project
The workflow of some activities to benefit from the mechanism and practices developed within the project and will be able to take over and extend them to work with other students in order to participate in the next editions of the competition to teachers from our school or other high schools, from our country or other countries, who are not involved in the project.

Results:

30 teachers involved in 5 international Erasmus+ project from Greece, Spain, Italy, Poland, Latvia, Republic of Moldova
10 teachers from National Pedagogic College "Carmen Sylva" from Timișoara,
2 teachers from "Traian Vuia" Theoretical High School Faget, Timis
2 teachers from "Nicolaus Lenau" Theoretical High School Timisoara, Timis
1 teacher from "Coriolan Brediceanu" Theoretical High School Lugoj, Timis

Description:

The teachers from our school who believed in us and they are proud with our results, presents our project in Greece, Spain, Italy, Poland, Latvia,Slovenia. They are also volunteers in our team, and they help us everytime we need.

Their name's: Sorin, Simona, Corina, Petronela, Eugeniu, Monica, Nicoleta, Angela, Anca, Roxana, Virgil

Erasmus+ "Together in our diversity", Gijon, Spania, 22-26.09.2019:

Erasmus+ project "Hand to hand with CLIL", Koper, Slovenia, 9 October 2019:

Erasmus + project "Power of words" Piacenza, Italia, 10-16 November 2019:

Erasmus +project "Together in our diversity" (Romania, Spain, Italy and Latvia), Gijon, Spain, 17- 22 November 2019:

Erasmus +project "Our European Literary Routes" (Grecia, Polonia, Spania, Italia, România), Edessa, Grecia, 19 January - 25 January 2020:

Attracting volunteers which, through their own experience and professional preparation, can support the team

Date	Permanent
Meeting held	Colegiul Național Pedagogic "Carmen Sylva" Timișoara
Attendance	team CSH+ volunteers
Impact	70 people

Goals:

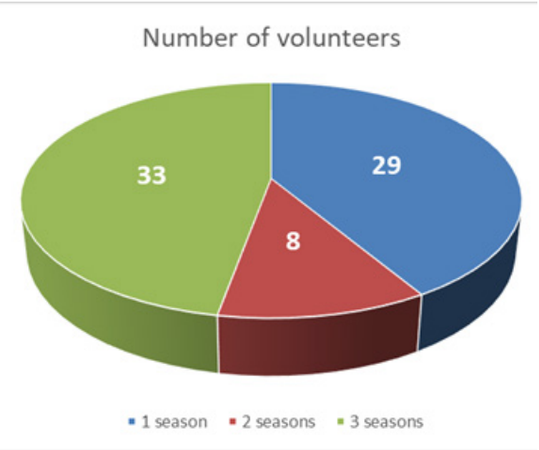
The activity refers to the attraction of young people and adults to volunteering activities. Starting with our colleagues which got involved as volunteers in this project, we extended to our parents, teachers and continued extending to other people with different ages which might accompany us in this journey of knowledge. A complete list of every volunteer that helped us achieve our dreams.

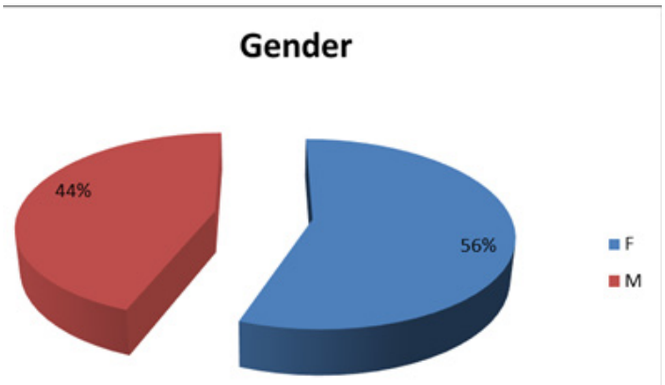
Results: 70 volunteers

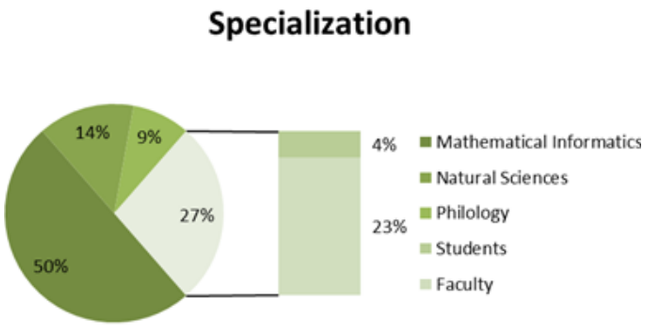
Nr.crt	Name	G	Age	Class	Speciality	College	Role	Event
1	Aida Sandu	F	18	12	SN	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
2	Alex Goman	M	18	12	mate-info	Calderon	Live Facebook	Winter Robotics games
3	Alin	M	16	9	filologie	National Pedagogic College "Carmen Sylva"	Fotograf	Winter Robotics games
4	Andrei Vițan	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Field Resseter/Voluntari	Winter Robotics games
5	Arambașa Vlad	M	22	anul 2	AC	Universitatea de Vest	Robot Inspector	Winter Robotics games
6	Bogdanescu Andrei	M	19	12	mate-info	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
7	Bors Mihaela	F	48	Faculty	parinte	_	Design	Stand/Networking
8	Bugariu Riana	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Voluntari pt amenajarea	Winter Robotics games
9	Bulica Lidia	F	40	Faculty	parinte	_	Design	Stand/caiet
10	Carmen Furculiță	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
11	Caunii Paul	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Scorekeeper	Winter Robotics games
12	Cătălina Jemna	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
13	Chitonescu Adelina	F	16	10	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
14	Ciocan Cosmin	M	19	12	mate-info	National Pedagogic College "Carmen Sylva"	Robot Inspector	Winter Robotics games
15	Cîra Mihai	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Robot Inspector	Winter Robotics games
16	Circiumariu Andreea I	F	17	10	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
17	Claudiu Piparca	M	19	I	PR	Universitatea de Vest	Referee	Winter Robotics games
18	Cojocari Alexandra	F	17	10	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
19	Crisnic Alexandra	F	18	10	mate-info	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
20	Daria Atanasiu	F	17	10	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
21	Daria Latco	F	16	10	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
22	Degău Georgiana	F	16	9	mate-info	Colegiul Național Pedagogic „Carmen Sylva"	Scorekeeper	Winter Robotics games
23	Diana Codreanu	F	18	12	mate-info	Colegiul Național Bănățean	Referee/organizing	Winter Robotics games/ Open Robotics Intelligent Grid
24	Florea Denisa Daria	F	17	10	mate-info	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
25	George Pop	M	15	9	mate-info	National Pedagogic College "Carmen Sylva"	Sounds	Winter Robotics games
26	Georgiana Haba	F	16	10	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
27	Ionuț Utsădan	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Field Resseter/Voluntari	Winter Robotics games
28	Karina Bronț	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
29	Kevin	M	18	12	SN	National Pedagogic College "Carmen Sylva"	Referee/organizing	Winter Robotics games/ Open Robotics Intelligent Grid
30	Matei Albu	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Field Resseter/fotograf	Winter Robotics games
31	Matyus Georgiana	F	18	10	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
32	Medoea Kerezsi	F	18	12	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
33	Momir	M	18	12	mate-info	National Pedagogic College "Carmen Sylva"	Boxa si microfon	Winter Robotics games
34	Noemi Banu	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
35	Oriana Iancu	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
36	Pavlovici Andreea	F	17	10	mate-info	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid

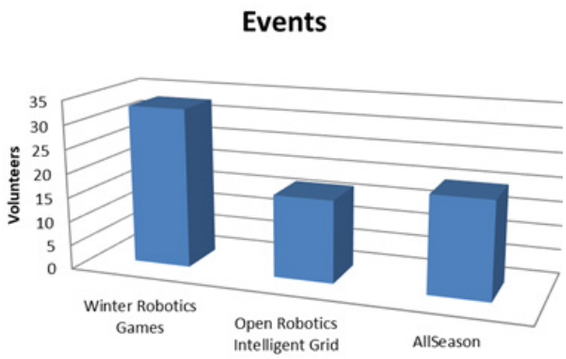
37	Popovici Mihai	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Referee	Winter Robotics games
38	Potîng Nicu	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Field Inspector	Winter Robotics games
39	Riana Bugariu	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Check in	Winter Robotics games
40	Robert Șofrac	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Robot Inspector	Winter Robotics games
41	Robert Șofrac (Șofi)	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Scorekeeper	Winter Robotics games
42	Roxana Tătărușanu	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
43	Silaghi Fineas	M	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Robot Inspector	Winter Robotics games
44	Sirca Diana	F	17	10	SN	National Pedagogic College "Carmen Sylva"	organizing	Open Robotics Intelligent Grid
45	Tania Giurovici	F	16	9	mate-info	National Pedagogic College "Carmen Sylva"	Check in	Winter Robotics games
46	Tania Oprin	F	15	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
47	Teodor Carpencu	M	15	9	mate-info	National Pedagogic College "Carmen Sylva"	Field Resseter	Winter Robotics games
48	Teodora Mircea	F	15	9	mate-info	National Pedagogic College "Carmen Sylva"	Queuer	Winter Robotics games
49	Aniela Nicolin	F	19	I	design	Arts, design and computing U	Design	All season
50	Vlad Paun	M	18	12	mate-info	Colegiul Tehnic Constantin Brâncuși	Design	All season
51	Marcu Michael	M	16	10	mate-info	National Pedagogic College "Carmen Sylva"	Fotograf	All season
52	Asztalos Carla	F	18	12	filologie	National Pedagogic College "Carmen Sylva"	translate	All season
53	Ogîrgin Maria	F	16	10	filologie	National Pedagogic College "Carmen Sylva"	translate	All season
54	Udroiu Razvan	M	16	10	filologie	National Pedagogic College "Carmen Sylva"	translate	All season
55	Popescu Elisa	F	16	10	filologie	National Pedagogic College "Carmen Sylva"	translate	All season
56	Codat Sorin	M	40	Faculty	teacher	National Pedagogic College "Carmen Sylva"	transportation	All season
57	Iudita	F	18	12	filologie	National Pedagogic College "Carmen Sylva"	translate	All season
58	Chirila Daniel	M	56	parent	teacher	National Pedagogic College "Carmen Sylva"	transportation	All season
59	Bogdanescu Simona	F	44	Faculty	teacher	National Pedagogic College "Carmen Sylva"	volunteer	All season
60	Cojocariu Roxana	F	42	Faculty	teacher	National Pedagogic College "Carmen Sylva"	volunteer	All season
61	Blidar Virgiliu	M	55	Faculty	teacher	National Pedagogic College "Carmen Sylva"	volunteer	All season
62	Petrescu Aura	F	57	Faculty	teacher	National Pedagogic College "Carmen Sylva"	volunteer	All season
63	Carabas Tatiana	F	60	Faculty	teacher	National Pedagogic College "Carmen Sylva"	regional judge	Regional Competition
64	Stoica Daniel	M	19	I	student	Computer Science UK	translate	All season
65	Prodaniuc Pavel	M	19	I	student	Cyber Security UK	web site	All season
66	Sugurel Anca	F	38	Faculty	teacher	National Pedagogic College "Carmen Sylva"	translate/promotion	All season
67	Crisan Corina	F	38	Faculty	teacher	National Pedagogic College "Carmen Sylva"	translate/promotion	All season
68	Barbulescu Petronela	F	53	Faculty	teacher	National Pedagogic College "Carmen Sylva"	translate/promotion	All season
69	Trandafir Nicoleta	F	56	Faculty	teacher	National Pedagogic College "Carmen Sylva"	promotion	All season
70	Chiritoiu Eugeniu	M	42	Faculty	teacher	National Pedagogic College "Carmen Sylva"	promotion	All season

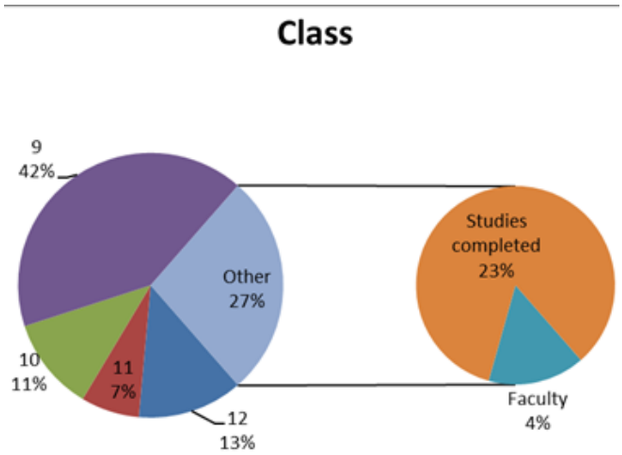
Statistics

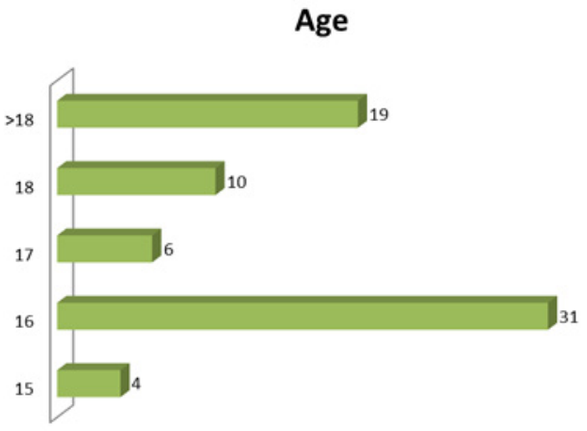










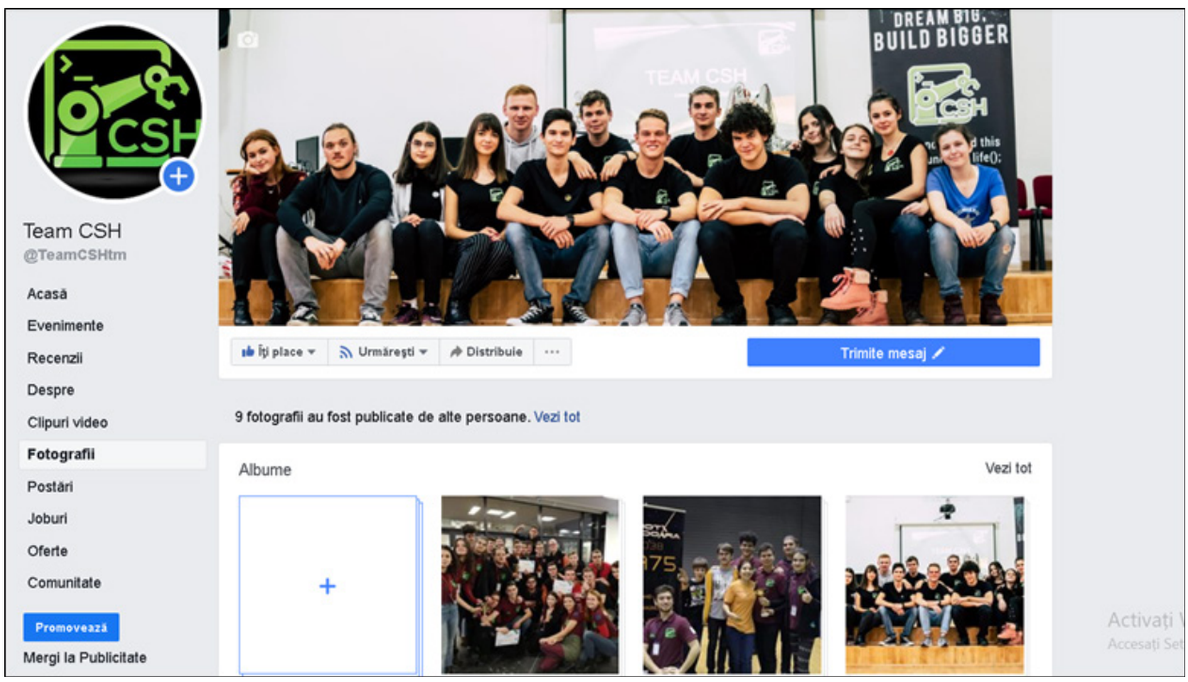


Social media

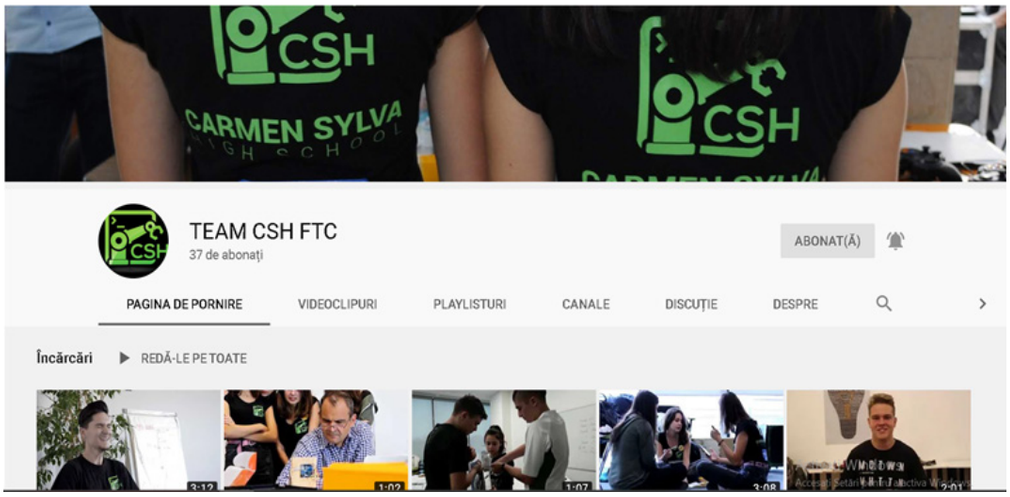
Facebook	Carla
Instagram	Gloria
Website	Laura
Youtube	Sorinca

Preparations

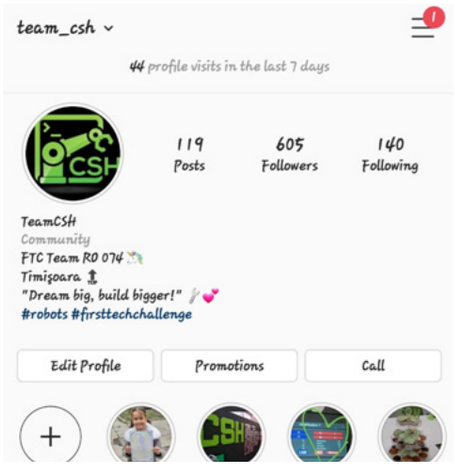
At the beginning of the season I had a meeting where I set up people on social media pages.
Like last year, Gloria was responsible for the Instagram page and Carla the Facebook page.
As last year's site manager Paul was now off to college, the team site had to be taken over by someone. Laura took over the team's website and added a few changes to the sounds.
The Youtube page was a problem, although it was from the first season it wasn't a platform I was active on. I have established that the person in charge of this platform should be Sorinca and every time a video was edited to be posted on Youtube.
On the Instagram page and on the Facebook page I decided that it should be posted at least 2 times a week. Tuesday and Saturday were the days set for Facebook posts, and Wednesday and Sunday for Instagram posts.
Just like last year each post was shared between facebook and instagram depending on the category in which it is located.
The facebook page contained official postings, events and news, the instagram page posts about the team when we work, content for young people and the FTC community, on the team's website will appear general information about the team, sponsors and volunteers, and on YouTube all the existing videos with team.



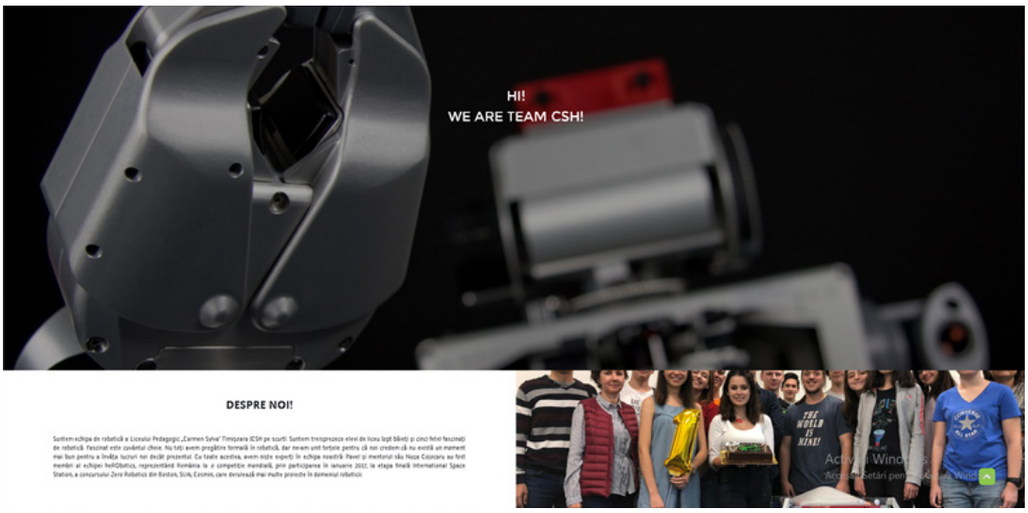
CSH's Facebook page



CSH's Youtube channel



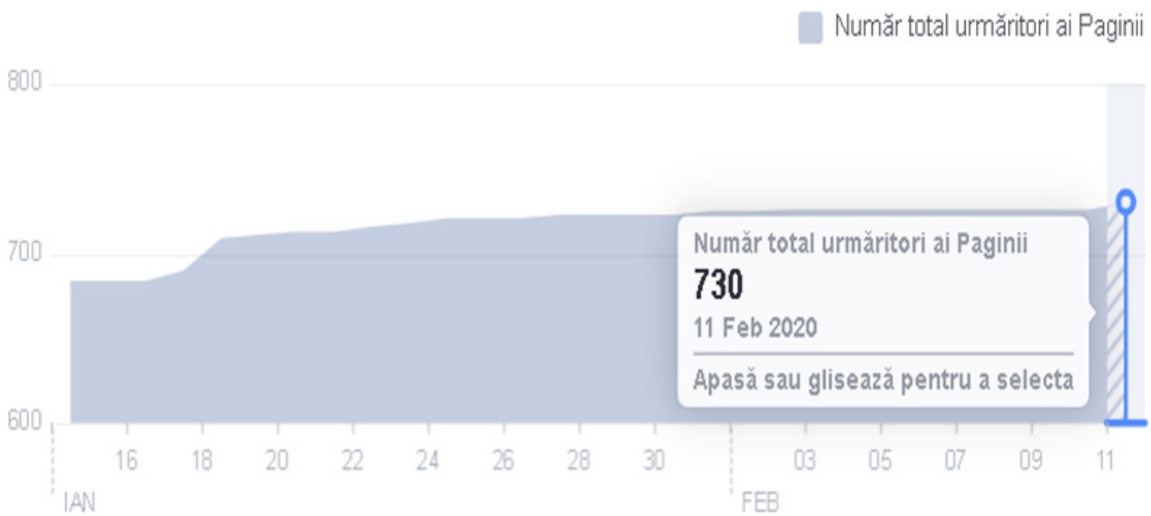
CSH's Instagram profile



CSH's Website

Results

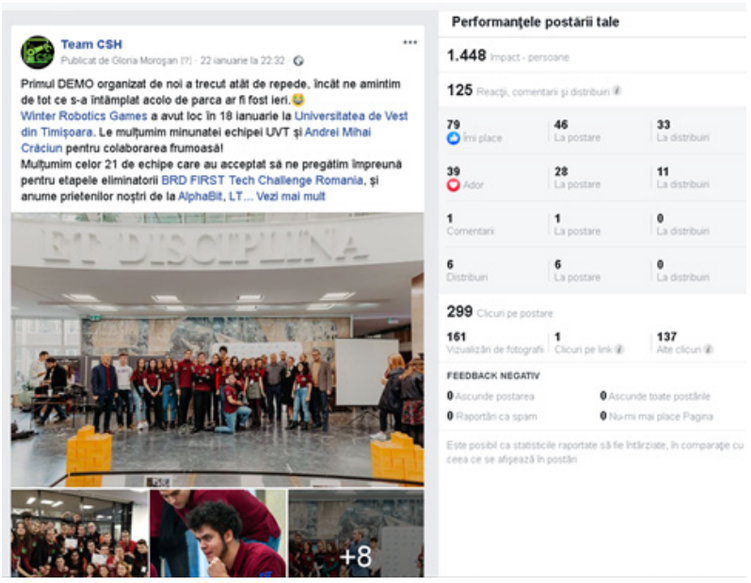
Social media has helped us a lot with making ourselves known to the public and keeping in touch with the ones passionate about the same field as us and with the sponsors that trust us and wish for us to make a great progress during the season.
One of the strongest points of our page is represented by the regular posts that will never leave our viewers without content, keeping them curious about us.
With 605 followers on Instagram and 730 on Facebook and 181 more followers on instagram compared to last year and 187 more on facebook we are proud to say we have a true community that has around us.



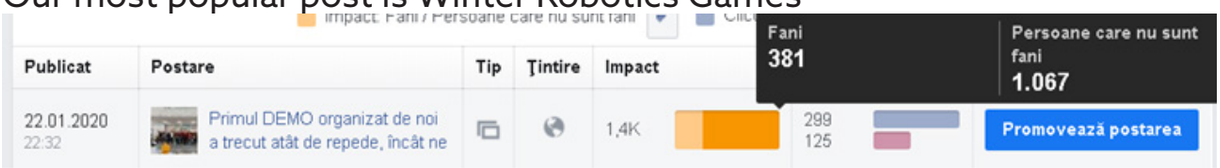
Number of followers on Facebook with the biggest number of viewers during the whole season.

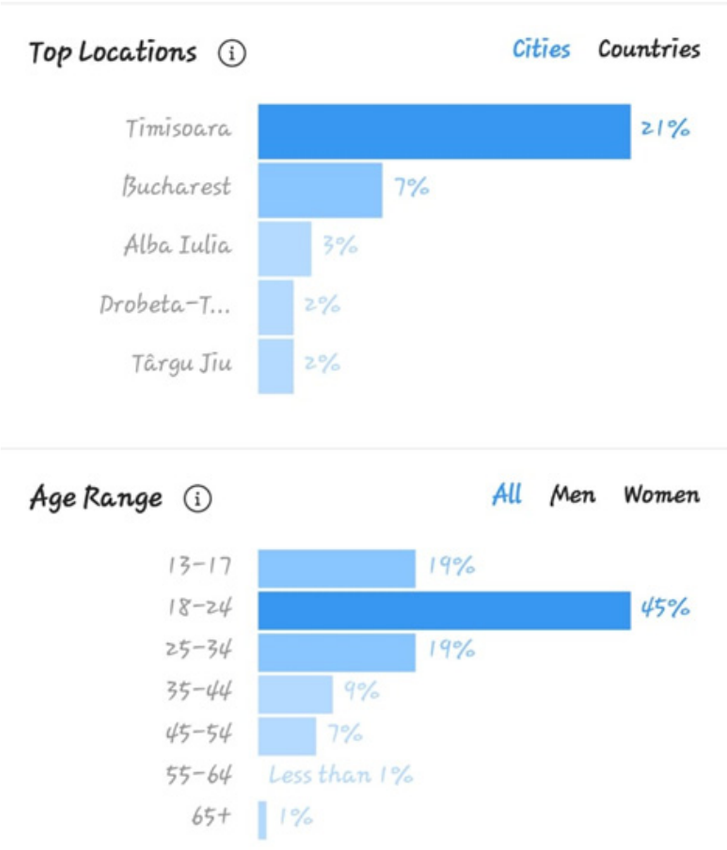
boosting our impact in January

Dream BIG, build BIGGER!

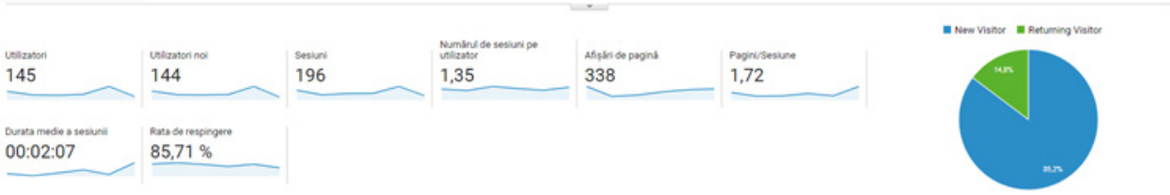


Our most popular post is Winter Robotics Games

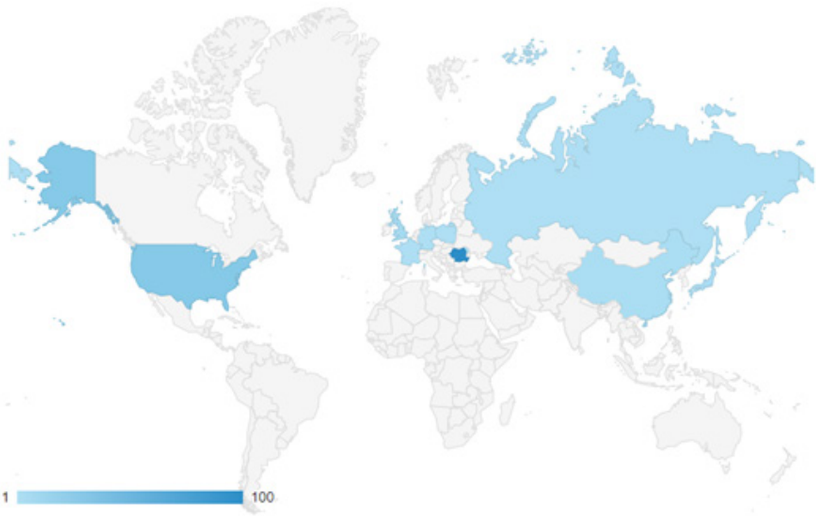




Top Locations and age range on instagram



Statistics of our visitators



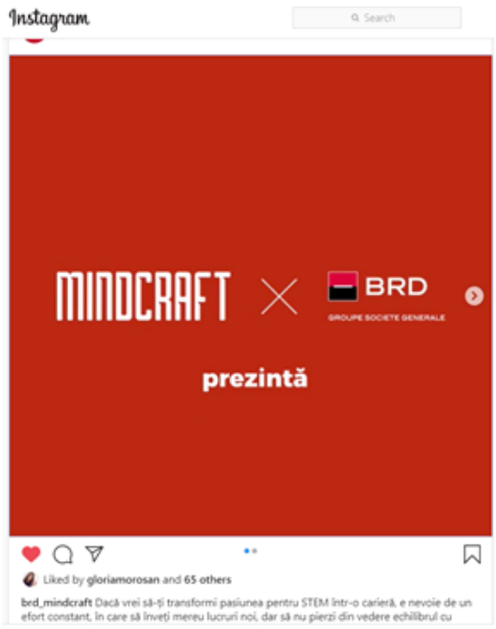
Țară	Achiziție			Comportament			Conversii		
	Utilizatori ↓	Utilizatori noi	Sesiuni	Rata de respingere	Pagini/Sesiune	Durata medie a sesiunii	Rata de conversie a obiectivelor	Atingerile obiectivelor	Valoarea obiectivului
	145 Procentaj din total: 100,00 % (145)	145 Procentaj din total: 100,69 % (144)	196 Procentaj din total: 100,00 % (196)	85,71 % Media pentru vizualizare: 85,71 % (0,00 %)	1,72 Media pentru vizualizare: 1,72 (0,00 %)	00:02:07 Media pentru vizualizare: 00:02:07 (0,00 %)	0,00 % Media pentru vizualizare: 0,00 % (0,00 %)	0 Procentaj din total: 0,00 % (0)	0,00 USD Procentaj din total: 0,00 % (0,00 USD)
1. Romania	100 (68,49 %)	99 (68,28 %)	148 (75,51 %)	84,46 %	1,59	00:01:56	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
2. United States	28 (19,18 %)	28 (19,31 %)	28 (14,29 %)	100,00 %	1,00	00:00:00	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
3. United Kingdom	7 (4,79 %)	7 (4,83 %)	9 (4,59 %)	55,56 %	6,89	00:13:29	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
4. China	4 (2,74 %)	4 (2,76 %)	4 (2,04 %)	100,00 %	1,00	00:00:00	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
5. Japan	2 (1,37 %)	2 (1,38 %)	2 (1,02 %)	100,00 %	1,00	00:00:00	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
6. Germany	1 (0,68 %)	1 (0,69 %)	1 (0,51 %)	100,00 %	1,00	00:00:00	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
7. France	1 (0,68 %)	1 (0,69 %)	1 (0,51 %)	100,00 %	1,00	00:00:00	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
8. Moldova	1 (0,68 %)	1 (0,69 %)	1 (0,51 %)	0,00 %	2,00	00:07:17	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
9. Poland	1 (0,68 %)	1 (0,69 %)	1 (0,51 %)	100,00 %	1,00	00:00:00	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)
10. Russia	1 (0,68 %)	1 (0,69 %)	1 (0,51 %)	100,00 %	1,00	00:00:00	0,00 %	0 (0,00 %)	0,00 USD (0,00 %)

Our visitors from around the word

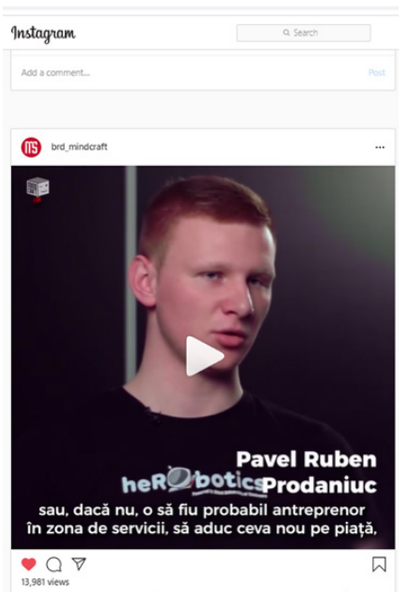
On INSTAGRAM
11th Februafy - 14 February 2020
With a total of 31.5 K Views in 5 days since posting and 461 likes.

Dream BIG, build BIGGER!

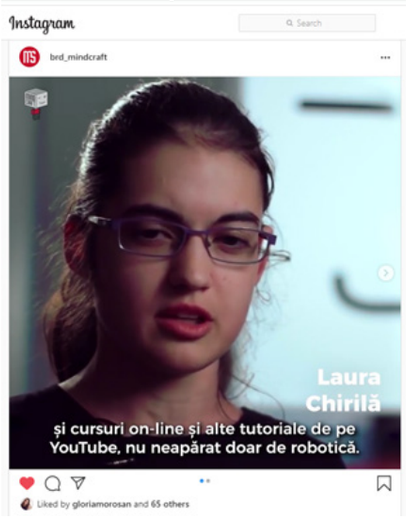
11th February – 15 februarie 2020
17.545 view 215 likes



11 February - 15 February 2020
13.981 view 122 likes



13 February – 15 February 2020 66 likes



14 February - 15 February 2020
58 likes

Promoting in Republic of Moldova

Our event was organised on 18th of December at Luceafărul Highschool from Biruința city. The public was formed of all the 9th grade classes, in a total of 39 pupils. The presentation lasted 45 minutes, and it included general facts about robotics and its impact in the near future. Because the pupils are in their last year of middleschool and they'll have to decide soon the profile the are going to follow during highschool, we talked to them about the importance of STEM studies at a subconcious level (it develops your logical-mathematical inteligence, creating the foundations of a rational way of thinking and efficient problem solving skills), and how volunteering helps you make the right choices for your future (you basically learn what kind of people do you like working with, how should your working environment be like etc.).

Press articles

tion.ro/stirile-judetului-timis/concurs-de-robotica-la-timisoara-winter-robotics-games-

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echipe concurente

Concurs de robotică la Timișoara. Winter Robotics Games va reuni 24 de echipe concurente

De Dan Oancia la 14 ianuarie 2020 16:42

1 Comentarii

Echipa de robotică a Colegiului Național Pedagogic „Carmen Sylva" din Timișoara, în parteneriat cu Universitatea de Vest din Timișoara, găzduiesc sâmbătă, 18 ianuarie 2020, la Universitaea de Vest din Timișoara, cele 24 de echipe, din 11 județe ale României, care participă la Winter Robotics Games. În cadrul evenimentului, echipele își vor prezenta roboții.

Evenimentul face parte din seria concursurilor tip demo organizate la nivel național, în cadrul competiției BRD First Tech Challenge România, organizată de Asociația Națiune prin Educație. Scopul acestei competiții este de a aduce pasionații de robotică împreună, de a stabili legături de colaborare și, mai mult, de a facilita împărtășirea experiențelor, respectiv de a pregăti atmosfera programului FIRST.

Anual, tema este schimbată și optimizată la nivelul de entuziasm și la cunoștințele participanților. În sezonul 2019 – 2020 (SkyStone) sunt abordate generic diverse abilități pe care echipele le înglobează în roboții pe care-i dezvoltă. În timpul unui meci, care durează 1-2 minute, roboții îndeplinesc anumite sarcini pentru a cumula puncte. În primele 30 de secunde roboții se mișcă autonom, urmând să fie controlați un minut de la distanță de către driveri cu ajutorul controllerelor.

Concursul se bazează pe lucrul în echipă, formarea alianțelor și ajutorul reciproc, valoarea de bază fiind „Gracious Professionalism".

ziuadevest.ro/winter-robotics-games-2020-creatorii-de-roboti-din-romania-se-reunesc-la-uvt/

Gmail YouTube Maps

ZIUA DE VEST

ACTUALITATE EVENIMENT ECONOMIC EDITORIAL POLITICĂ ADMINISTRAȚIE SPORT

Acasă › Actualitate › Winter Robotics Games 2020. Creatorii de roboți din România se reunesc la...

ACTUALITATE

Winter Robotics Games 2020. Creatorii de roboți din România se reunesc la UVT

De către **Gheorghe Miron** - 14.01.2020 165

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Timisoara » stiri Actualitate

Winter Robotics Games 2020. Creatorii de roboti din Romania se reunesc la UVT

Echipa de robotica a Colegiului National Pedagogic "Carmen Sylva" din Timisoara, in parteneriat cu Universitatea de Vest din Timisoara, le gazduiesc, sambata, 18 ianuarie 2020, la UVT, pe cele 24 de echipe venite din 11 judete ale Romaniei, care participa la Winter Robotics Games, ca sa isi prezinte robotii.

Evenimentul face parte din seria concursurilor tip demo organizate la nivel national, in cadrul competitiei BRD FIRST Tech Challenge Romania, organizata de Asociatia Natiune prin Educatie.

...citeste toata stirea

allevents.in/sinnicolaul%20mare/winter-robotics-games/200018252685939

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DESCHIDEȚI

Winter Robotics Games

TIME Sat Jan 18 2020 at 09:00 am to 06:00 pm + Add to calendar

VENUE Universitatea de Vest din Timișoara, Blvd. V. Parvan 4, 300086 Timisoara, Romania, Sinnicolaul Mare, Romania

CREATED BY Team CSH + Follow Contact

Organizer? Claim this Event

amosnews.ro/incepe-winter-robotics-games-2020-01-15

Începe Winter Robotics Games

Like 0

Echipa de robotică a Colegiului Național Pedagogic "Carmen Sylva" din Timișoara, în parteneriat cu Universitatea de Vest din Timișoara, găzduiesc sâmbătă, 18 ianuarie 2020, la Universitatea de Vest din Timișoara, cele 24 de echipe, din 11 județe ale României, care participă la Winter Robotics Games, eveniment menit să ofere participanților oportunitatea de a-și prezenta roboții. Evenimentul face parte din seria concursurilor tip demo organizate la nivel național, în cadrul competiției BRD FIRST Tech Challenge România, organizată de Asociația Natiune prin Educație. Scopul acestei competiții este de a aduce pasionați de robotică împreună, de a stabili legături de colaborare și, mai mult, de a facilita împărtășirea experiențelor, respectiv de a pregăti atmosfera programului FIRST.

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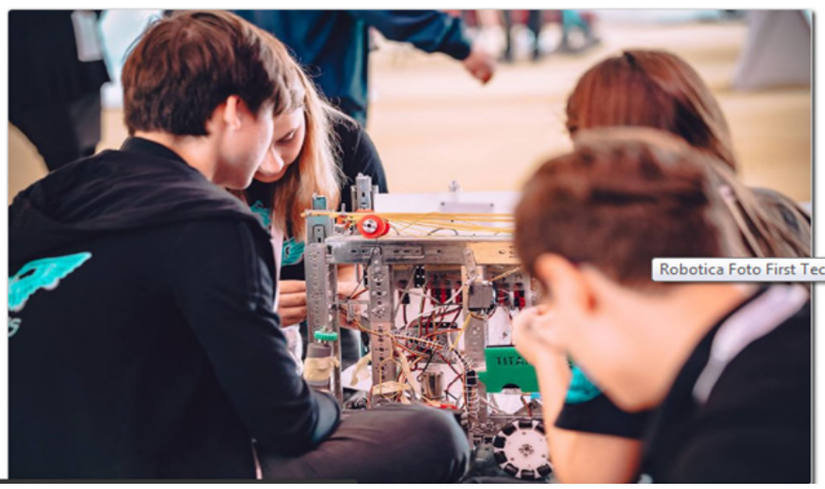
timpolis.ro/concurs-de-robotica-la-universitatea-de-vest-din-timisoara/

Concurs de robotică, la Universitatea de Vest din Timișoara

Publicat marți, 14 ianuarie 2020 | Actualitate | nu sunt comentarii | Scris de Sorin Olaru



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Foto/Video | Etichetează ... | Vizită

Postări

Creative Space
20 ianuarie la 09:54

Felicitari tinerilor de la CSH, locul 1.

5.4. Involvement of the CSH team in the FIRST community through networking with the goal of creating an efficient network of communication that includes at least 50 teams until 29th March 2020.

Results: 15 teams involved in Open Robotics, 3 mentored teams, 4 teams from Timișoara, 15 teams inolved in Winter Robotics, 1 team involved in the event from Alba, 5 teams involved in RobotX HD demo

CSH map

Meeting held	online
Attendance	team CSH & mentor Nusa Cojocaru
Impact	14 institution
Time spent	36 h

Goals:

Because out team experience is incredible, having the opportunity of being part of this competition, we could develop even more scientific, leadership, communication, team-work and some self-confidence abilities. Before we applied the STEM education principles, we proposed ourselves to inspire youth to become innovative leaders in science and technology.

Results:

Contact with 14 school/ 14 teachers, three school CONFIRMED and we mentoring two rocky team in FTC- LTTVF from Faget Timis, TechnoluHas Chisinau Moldova Republic and

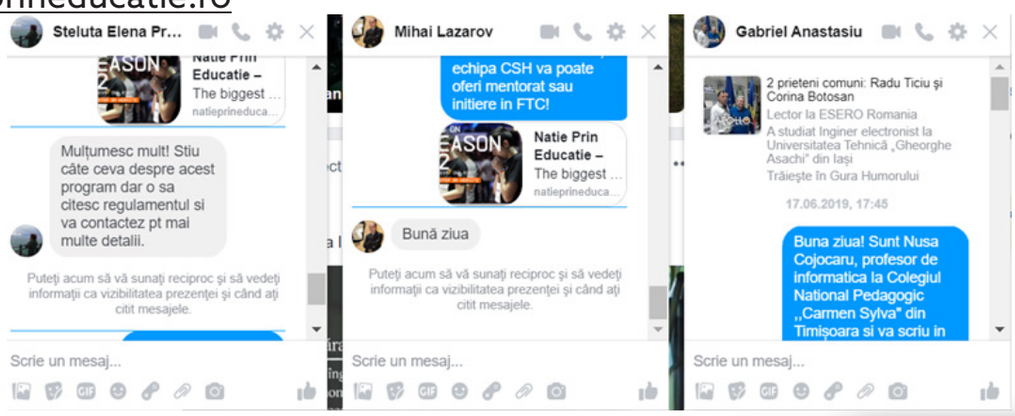
junior team from our school CSH Junior.
With two other school we are in dicussions to the next season.

Description:

With the support of the Coder Dojo communities in Romania, we have gotten our message across the robotics world.

Greetings! My name is Nușa Cojocaru, a teacher of Informatics at the National Pedagogic College "Carmen Sylva" from Timișoara and I'm sending this message as a mentor of the robotics team – CSH
Being aware of your experience and the fact that you have studied in Timișoara, we figured out that we could invite you to form a team with us at a high-school from Odorheiul Secuiesc and be a part a of the biggest robotics competition for high-school students in Romania – BRD First Tech Challenge. What makes this competition unique is the fact that it combines both th technical part as well as the non-technical part. The involved students have a chance to work in pairs and involve their team-work and leadership abilities, and last but not least, build up a robot from scratch that will do certain tasks, gaining points for the alliances. These robots are the students' creations – and they work by themselves as well as controlled from the distance. On the official website of the organizer, Natie prin educație, https://natieprineducatie.ro/ you can find the Registration and participation regulations for the robotics program BRD FIRST Tech Challenge Romania, season 2019/2020 and all of the information regarding the project.
I think that it is a very good opportunity for the students that are interested in developing their skills in the SE domain, as well as learning the values of the competition.
Registration for the new season is already open, and the time limit is October 1st. A team can have between 3 and 15 members. New teams (rookie teams) that join the program for the first time and represent a school unit that hasn't been already signed up for the program can apply for a GRANT. The Grant includes; a basic kit with robotic pieces, game elements, ½ of the game field, 3D printer and a toolkit.
We would be grateful if you would join us in the competition and if you would enter the FIRST community, where you'll be welcomed by people willing to help you, but also learn from your own experience.
If you are interested, the CSH team could help you with initiation in FTC!

Natie Prin Educatie – BRD First Tech Challenge Romania
The biggest Robotics Championship in Romania | More than 1000 students, 55 cities | BRD FIRST Tech Challenge Romania | March 23-25, 2018 - Sala Polivalenta, Bucharest
natieprineducatie.ro



Ovidiu Geambazu

robotica, elementele de joc, ½ teren, imprimanta 3D, trusa de scule. Ne-am bucura daca am aduce in aceasta competiție tineri talentati si atrasi sa invete mereu ceva de nou
Echipa CSH le poate oferi initiere in FTC!

Natie Prin Educatie – The biggest ...
natieprineduca...

Bartók Béla Elméleti ...

siguranta veti fi primiti de oameni dornici sa va ajute, dar si sa invete din experienta cu care veniti.
Daca sunteti interesati, echipa CSH va poate oferi mentorat sau initiere in FTC!

Natie Prin Educatie – The biggest ...
natieprineduca...

✓ Văzut la 17 lun

Birtalan Árpád Zsolt

04.09.2019, 00:26

Bună seara.

Puteți acum să vă sunați reciproc și să vedeți informații ca vizibilitate

Mulțumesc că m-ați cautat cu aceasta oferta.

Îmi cer scuze că așa târziu vă scriu.

Când am primit mesajul lui dumneavoastră deja intrasem în vacanță, și adevărul este că am și uitat să răspund.

Acum că începe noul an școlar, m-am întâlnit cu elevii mei și poate suntem interesați de concurs.

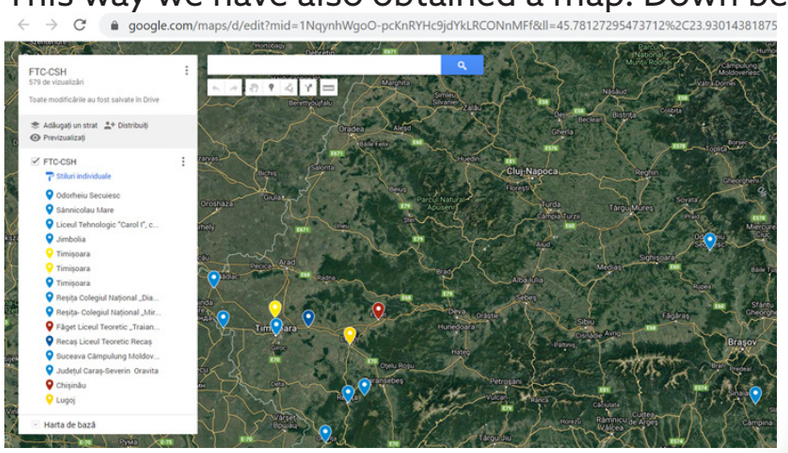
05.09.2019, 08:13

Ma bucur mult ca sunteti interesat. Tema jocului din acest an se lanseaza in 8 septembrie. Putem sa discutam impreuna pt a vedea care ar fi cea mai buna varianta de colaborare. Nr.meu de tel 0744635712

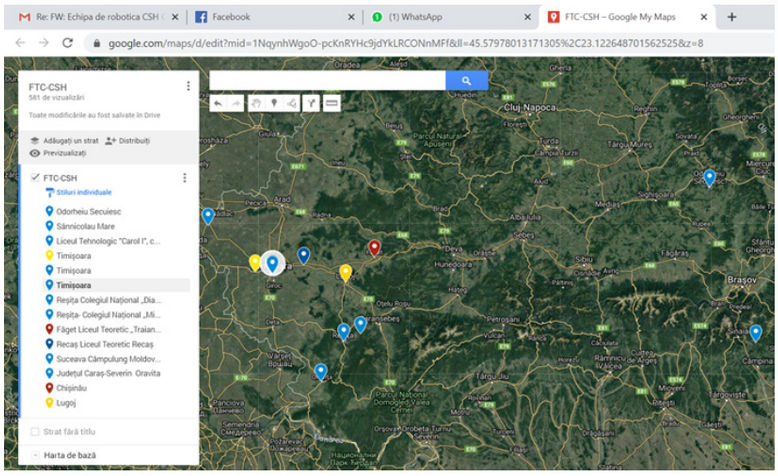
We managed to establish connections with the following school units:

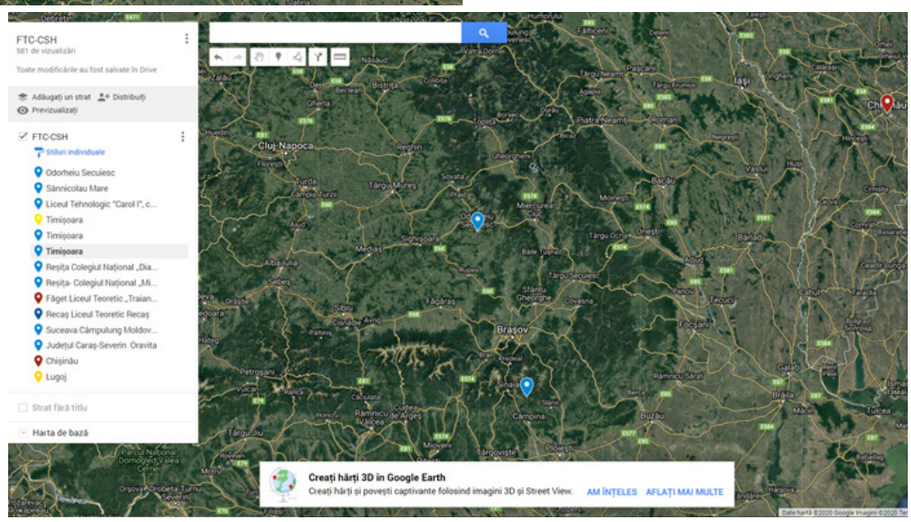
Nr. Crt	School Unit	Town	County	Contact
1	Colegiul Național Bănățean	Timișoara	Timiș	Monica Branga
2	Liceul Teoretic "Nikolaus Lenau"	Timișoara	Timiș	Bianca Trifon
3	Liceul Teoretic "Bela Bartok"	Timișoara	Timiș	
4	Colegiul Național "Diaconovici-Tietz"	Reșița	Caraș-Severin	Cristina Iordachescu
5	Liceul Teoretic "Traian Vuia"	Făget	Timiș	Victor Birău
6	Liceul Teoretic Recaș	Recaș	Timiș	Mioara Fârdă
7	Club al copiilor	Câmpulung Moldovenesc	Suceava	Gabriel Anastasiu
8	Club al copiilor	Odorheiu Secuiesc	Harghita	Birtalan Arpad Zsolt
9	Club al copiilor	Oravița	Caraș-Severin	Mihai Lazarov
10	Liceul Tehnologic "Carol I"	Valea Doftanei	Prahova	Steluța Elena Pralea
11	Club al copiilor	Jimbolia	Timiș	Ovidiu Gheambazu
12	Club al copiilor	Sânnicolau Mare	Timiș	Ghiță Petruș
13	Liceul Teoretic "Coriolan Brediceanu"	Lugoj	Timiș	Beatrice Frantescu
14	Chișinău	Moldova Republic		

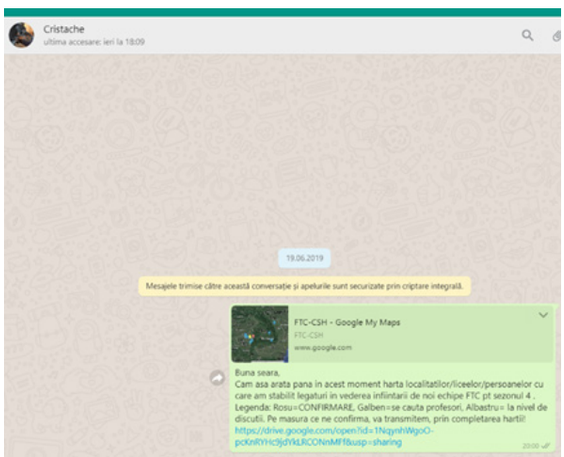
This way we have also obtained a map. Down below is the map's evolution.



Dream BIG, build BIGGER!







The cities/high-schools/people that we have established connections with about the creation of a new FTC team.
Legend:
Red=CONFIRMED
Yellow=seeking teachers
Blue=still in discussion

The map will be updated all the time. It was later sent to the representatives of Natie prin Educatie.

Mentoring new teams: CSH Junior, LTTV Faget, TechnoluHas Chisinau Moldova Republic

Date	September 2019 - present
Meeting held	Nokia IoGarage, "Traian Vuia" Theoretical High School Faget, Timis, online
Attendance	Team CSH, CSH Junior, LTTV Faget, TechnoluHas Chisinau Republica Moldova
Impact	3 teams
Time spent	220 h

Goals:

To contribute to the development of the FIRST community
To inspire our younger colleagues

Results:

Team CSH Junior Award: Enthuziasm
LTTV Faget team participation to the BRD FTC regional competition from Timisoara

CSH Junior- First Lego League 2020

Date	September - February (every sunday)
Meeting held	Nokia IoGarage
Attendance	Sorinica, Carla, Ale M, Cristi, Dani, Mr. Blidar, Mrs. Bors
Impact	team CSH Junior
Time spent	180 h

Goals:

Spread passion

Results:

Team CSH Junior Award: Enthuziasm
The passion from our younger colleagues eyes

June 2019
A quiet long time after winning the Think Award at the national competition, we scheduled a team meeting discussing what can we improve about ourselves so that we can reach higher than ever: to Inspire. So, what's the best way to actually have a

great impact on other people directly? Teaching!
And that was it. This is when the idea of CSH Junior gave birth.

CSH Jr.'s official logo

September 2019
We decided that summer should be just for recovery and just a break, so that in September we get back fresher than ever.

At the beginning of September, as you well know, we organized the Open Grid summer camp, in partnership with UVT (West University of Timisoara). There we had the pleasure to invite Team Xeo and Esentza, both already training FLL Teams. We started documenting about what it takes to actually participate in the FIRST Lego League Competition, the expenses, the rules and so many more. At the end, we exchanged numbers and started being, in our turn, mentored by these wonderful people.

At the end of September, we started searching for mentors first and foremost. We may be the ones with the initiative, but still need to have at least a coordinator that is a professor. One rule of the competition is to have a maximum of 2 official trainers and as many as we want mentors, so we decided that Sorinica should be one of the trainers, and Mr. Blidar, physics teacher, the other one.
Here's the list of the CSH behind the CSH Junior:

- Alexandra Sorinca- official trainer, member of CSH
- Blidar Virgiliu- official trainer, physics teacher
- Carla Dumitrescu- nontechnical mentor, member of CSH
- Alexandra Munteanu- assembly mentor, member of CSH
- Cristi Daescu- programming mentor, ex-member of CSH

And now, we have to search for our members. With the help of the student's council, we organized a school circular that targeted middle school students. In the end, there were 6 children from our school and 2 others from different ones, that heard about us and desired to join.
Here are our amazing tadpoles:

(All of the pictures you see are taken from their official poster as a team and presentation at the regionals. They had to look like 1951's most wanted gangsters.)

RARES

Varsta: 11 ani

Ocupatie: NETWORER

De ce CSH Jr.?: "Am multa experienta in domeniul tehnic, si imi place spiritul de competitie."

Hobby: Gaming, fizica

Motto: WAKANDA FOREVER

MATEI (Pateu)

Varsta: 11 ani

Ocupatie: DRIVER

De ce CSH Jr.?: "Am vrut sa invat, nu am mai lucrat niciodata cu roboti. De altfel, nu ma deranjeaza sa lipsesc de la unele ore"

Hobby: Minecraft + Muzica= LOVE, sa fac oamenii sa rada

Motto: "There are 164 genders and mine is Dr. Pepper"

ALEX (Bogda)

Varsta: 14 ani

Ocupatie: ANALYST

De ce CSH Jr.?: "Fac programare de cativa ani, dar niciodata nu am aplicat un program pe un robot si mi s-a parut interesanta ideea.

+Am vrut sa ma laud ca sunt intr-o echipa de robotica"

Hobby: Jocuri video, Anime

VLAD C.

Varsta: 14 ani

Ocupatie: QUESTIONEER

De ce CSH Jr.?: "Am vrut sa imi dezvolt gandirea practica, skill-urile in programare si people skills."

Hobby: Istoria cinematografiei, design, arta in general

Motto: "Oamenii sunt pasari cu aripile crescute pe dinauntru."

VLAD S. (Vlaji)

Varsta: 12 ani

Ocupatie: FINISHER

De ce CSH Jr.?: "Sora mea este in echipa mare CSH, si mi-am dorit foarte tare sa fiu si eu membru. Cand am aflat ca se infiinteaza CSH Jr., am fost foarte incantat, este prima mea experienta cu programarea."

Hobby: Gaming, sa petrec timp cu animalele.

Motto: "I have the high ground"

ADRIAN (Adrul)

Varsta: 12 ani

Ocupatie: INNOVATOR

De ce CSH Jr?: " Imi place sa lucrez intr-o echipa, iar acum un an am mers la un centru de excelenta pentru robotica unde am descoperit ca imi place acest domeniu"

Hobby: Fotbal

Motto: "Inspiratia exista, dar trebuie sa te gaseasca muncind."

VLAD P.

Varsta: 12 ani

Ocupatie: CO-ORDINATOR
De ce CSH Jr?: "Fratele meu a reprezentat o inspiratie pentru mine, deoarece si el este intr-o echipa de robotica"
Hobby: jocurile video, sa ma joc cu cateii
Motto: HAKUNA MATATA

STEFAN

Varsta: 11 ani

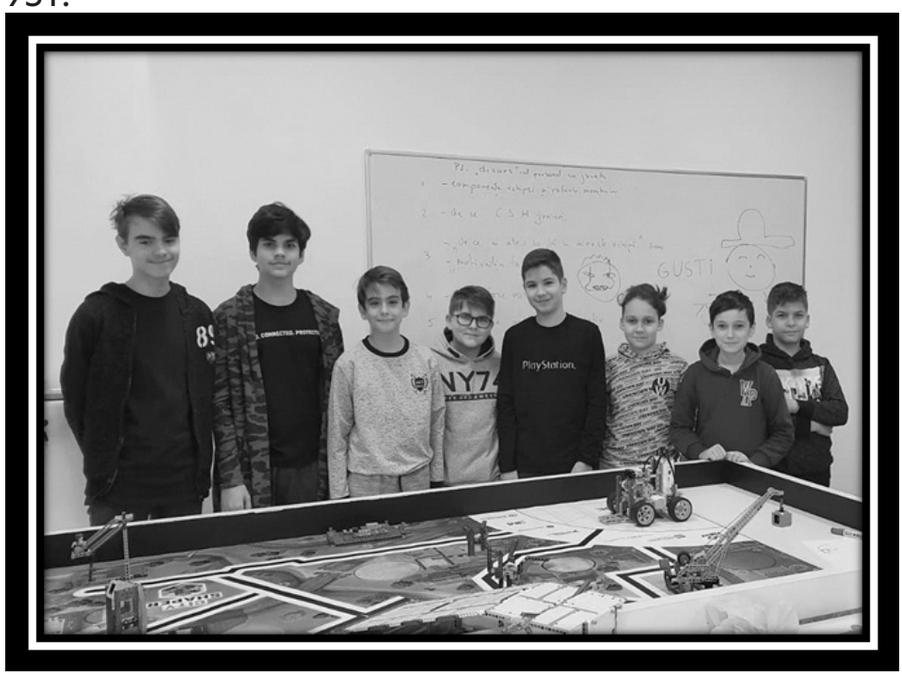
Ocupatie: SUPPORTER

De ce CSH Jr?: "Imi place programarea, iar dupa ce am auzit ca se cauta membrii pentru a se forma o echipa de robotica, m-am gandit sa incerc."

Hobby: imi place sa ameliorez conflictele intr-un grup, sa petrec timp cu animalele

Motto: "You find it offensive? I find it funny."

Our number as a team is 1951, so we decided to bring up a theme related to the year 1951.



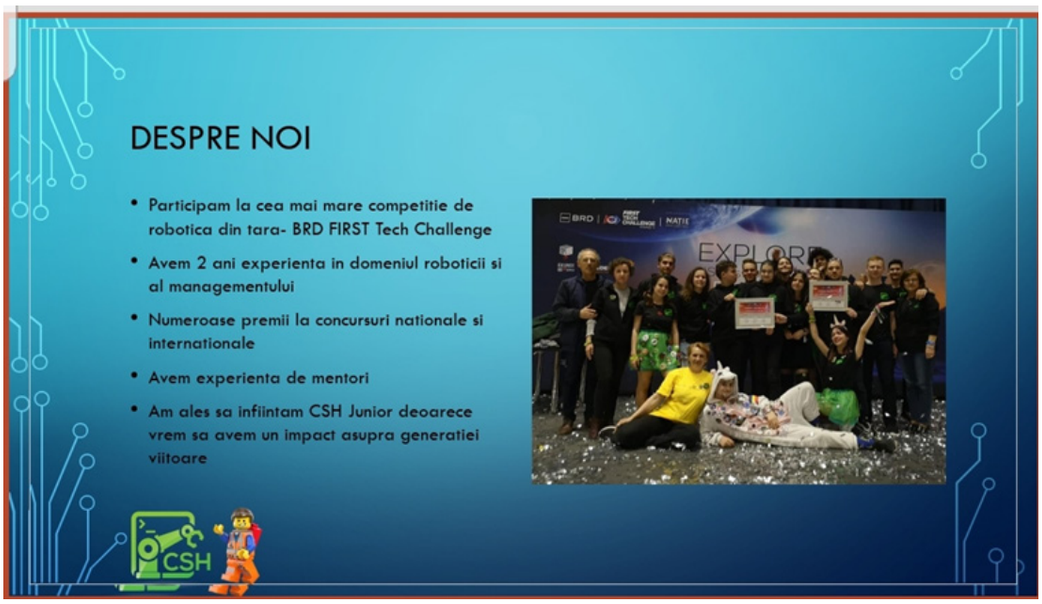
October 2019

Academy (late September) in our school (see at page...), we made a public announce about the beginning of CSH Junior. Later that week, we singed up for the competition and that was it. Team CSH Junior is official.

In October we had our first meeting with the parents. We created a power point presentation and we discussed about our roles in the team, our goal for them, this year's theme, the missions of the robot and what should their innovative project include. It

was a short one, less than 30 min, but we wanted to ensure every parent that their child is in good hands. Most of them actually helped us during the whole season, searching for sponsors, buying materials for the innovative project, actually working with us and helping with engineering details, which we are very glad for. Without you, dear parents, we would have never reached this high.

A FLL Trainer Guide. We had 2 guides like this and 10 Engineer's Guides for the kids



A screenshot from our presentation in front of the parents: here we introduced ourselves

In October we started to work, being provided with workspace from Nokia's headquarter. First lessons were about public speaking and presentation, which were held by Tanti Doamna Mama lu' Carla, official judge for FTC. Having such an experience, she wanted to teach the children what do judges want to see when they meet us, and I'm pretty sure she made a good job, thinking about the our results, CSH Junior Award: Enthuziasm.

It took quite a long time until we got the Lego Mindstorms kit, so we had to wait until the end of Octo-

ber to start working for the robot.

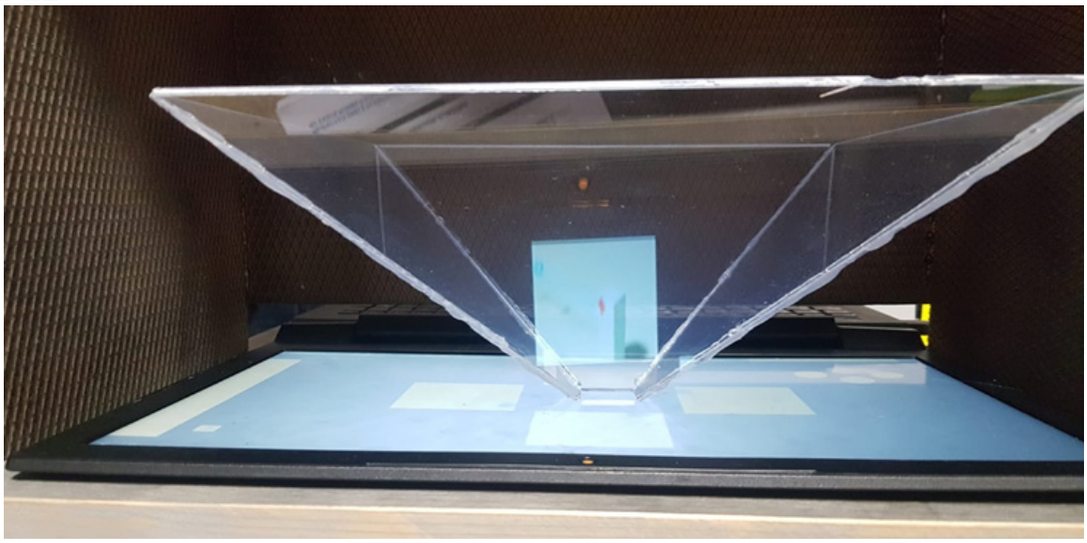
November 2019

November was mostly all about the robot. But at the end of it, Sorinica, Carla, Ale M and Tanti Doamna Mama lu' Carla went on a short trip to Hunedoara, attending RobotX HD Medieval Demo. There we met the Robomoon and RobotY Junior FLL Teams. Participating in this competition for the second time, we asked them to help us with some information, then we asked for a mobile number of one of the team member, for our children and theirs to get into contact and help each other.

December 2019

In the middle of December, we had a special guest, Daniel Stoica, ex-member of CSH, currently a Com-

puter Science student at University of Birmingham. Daniel attended all of our meeting until he left back to UK, at the middle of January.
He came here to help us with the innovative project, and after first meeting, we already had the idea: CAILE CAPSULARE EXPRESS, HOLOGRAMA AND MODEL



Vlad P explaining Stefan about the concept of CCE

The following months are only preparations according to the theme+one team building activity, when we met and watched a movie together, ordering McDonalds.

February 2020

Our number as a team is 1951, so we decided to bring up a theme related to the year 1951. So we went for gangsters: black hat, a jacket, and confident attitude.

In the end, our boys achieved the Judge's Award for Enthusiasm, and you can read about the whole

competition at Judge's Award page.

Being mentors and teaching others from our experience has been a wonderful journey, and we can all say that mentorship has been better than we ever expected. We're already looking forward for the next season, which we are very sure it's going to be even more amazing!

Official meeting of First Lego League trainers and The national conference of stem education

Date	December 2019
Meeting held	Institute of Atomic Physics at Magurele
Attendance	Sorinica, Carla, Ale M, Carla's mother
Impact	20 trainers
Time spent	3 h

Goals:

To interconnect with First Community

Results:

Networking with FLL trainers and Stefan Radulescu the organizer of FLL

On 6th of December, Sorinica, Carla, Ale M and Tanti Doamna mama lu' Carla attended the official meeting of FLL trainers at the institute of Atomic Physics at Magurele, a town near Bucuresti. Stefan Radulescu, the organizer of FLL in our country held a presentation about the rules of the competition, the core values and the purpose of it. There we had the pleasure to meet at least 20 other trainers, most of them being professors, so we had a lot to learn from them. The whole event took about 3h, time in which the organizers also spoke about FLL Junior.

During lunch break, we had the surprise to meet

our school director, Miss Valentina Udrescu, also a physics teacher, a that happened to be there for another event that took place in parallel. The national conference of STEM education is an event dedicated exclusively for science teachers all over the country. The teachers are debating about what new sciences related lectures they could include into the school programme, how to make it attractive and interacting for their students.

The place where the meeting was held: The Institute of Atomic Physics

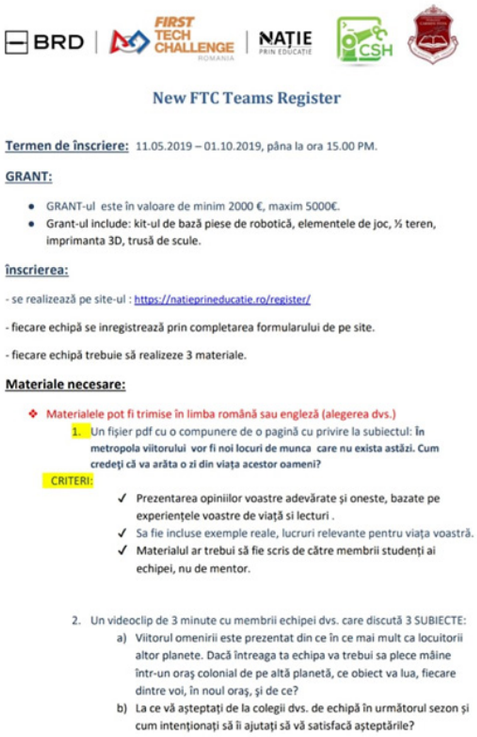
Relaxing at the end of our trip

LTTV Faget TEAM

LTTV Team RO174 is the team that we are mentoring in season 4. Also, this is the team we motivated to enter the competition. We explained what was the joining procedure and helped them join. We told them about the teams, the Facebook group with the team and the announcements that are shown there.

Dream BIG, build BIGGER!

We invited them to our demo and, even though they told us they weren't able to come the night before the event, one of the members of the team, Dariu, came to see how it was, to meet the teams that were there and to get to know the atmosphere of the competition.
He left feeling really excited and motivated to tell his colleagues how beautiful is the FIRST community.
We explained the structure of the technical notebook and gave them a few tips & tricks about writing the notebook. Also, we're answering all of their questions that come along the way and we frequently ask them how are they doing and with what can we help them.



BRD | FIRST TECH CHALLENGE ROMANIA | NAȚIE PRIN EDUCAȚIE | CSH

New FTC Teams Register

Termen de înscriere: 11.05.2019 – 01.10.2019, până la ora 15.00 PM.

GRANT:

- GRANT-ul este în valoare de minim 2000 €, maxim 5000€.
- Grant-ul include: kit-ul de bază piese de robotică, elementele de joc, ½ teren, imprimanta 3D, trusă de scule.

Înscrierea:

- se realizează pe site-ul : https://natieprineducatie.ro/register/

- fiecare echipă se inregistrează prin completarea formularului de pe site.

- fiecare echipă trebuie să realizeze 3 materiale.

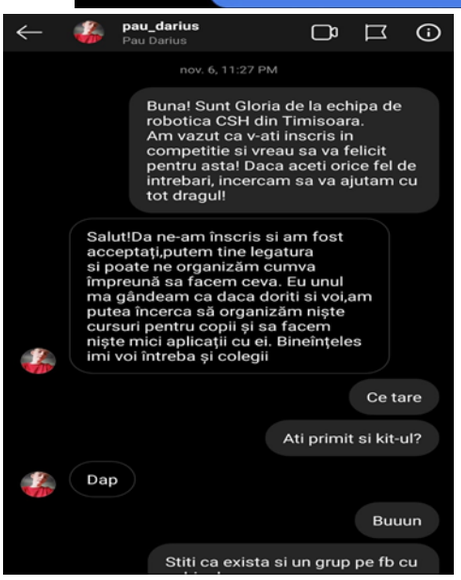
Materiale necesare:

- Materialele pot fi trimise în limba română sau engleză (alegerea dvs.)
  1. Un fișier pdf cu o compunere de o pagină cu privire la subiectul: În metropola viitorului vor fi noi locuri de munca care nu exista astăzi. Cum credeți că va arăta o zi din viața acestor oameni?

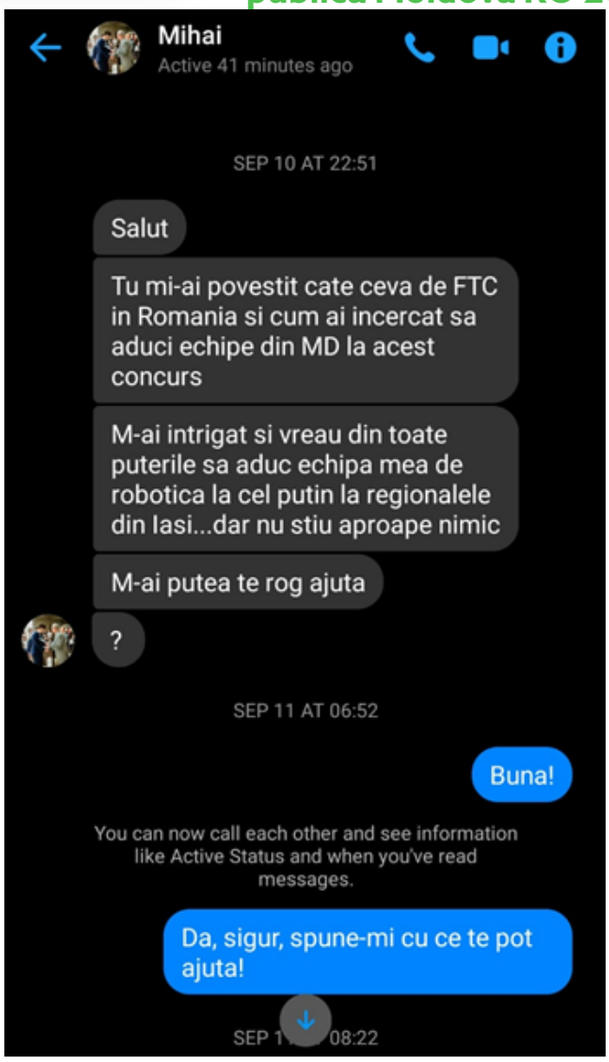
  CRITERII:

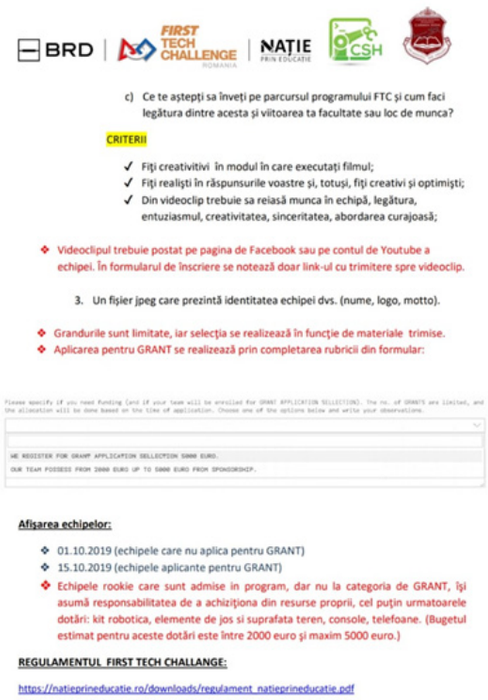
  - ✓ Prezentarea opiniilor voastre adevărate și oneste, bazate pe experiențele voastre de viață si lecturi .
  - ✓ Sa fie incluse exemple reale, lucruri relevante pentru viața voastră.
  - ✓ Materialul ar trebui să fie scris de către membrii studenți ai echipei, nu de mentor.

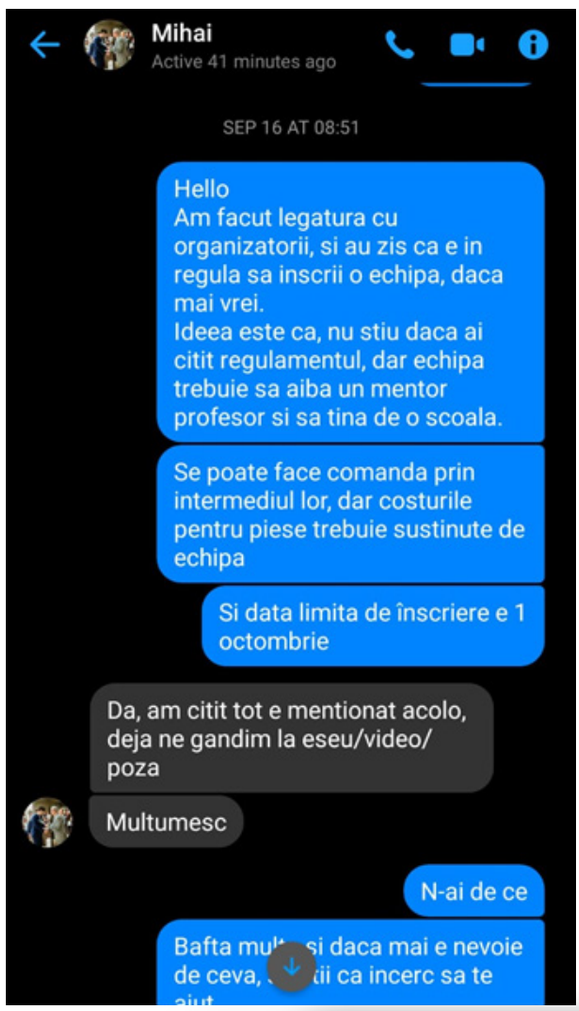
  2. Un videoclip de 3 minute cu membrii echipei dvs. care discută 3 SUBIECTE:
     a) Viitorul omenirii este prezentat din ce în ce mai mult ca locuitorii altor planete. Dacă întreaga ta echipa va trebui sa plece mâine într-un oraș colonial de pe altă planetă, ce obiect va lua, fiecare dintre voi, în noul oraș, și de ce?
     b) La ce vă așteptați de la colegii dvs. de echipă în următorul sezon și cum intenționați să îi ajutați să vă satisfacă așteptările?



TechnoluHas Chisinau Republica Moldova RO 202



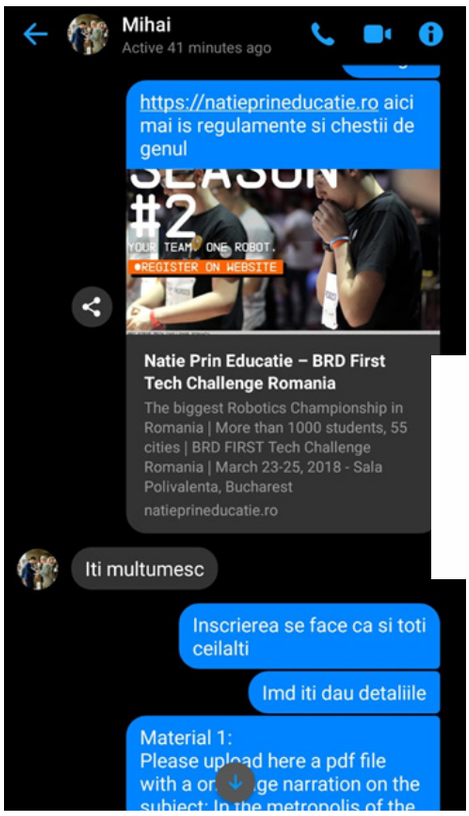




TechnoluHas from Republic of Moldova

We have convinced them to create their own team through Mihai, one of them that had participated at the Youth Elite schools' summer section of Open Robotics Intelligent Grid. After spending a week at Timisoara with the robotics teams, Mihai was very pleased by the idea to form a team in Chisinau. We helled him to sign up, we helped them reach the organizers and we answered their questions about technology, sponsors, events and other information.

Throughout the season we have helped them anytime they needed us.



RO 202	TehnoIu Has	Liceul Teoretic Iulia Hasdeu	Chisinau - Republica Moldova

CSH-Networking

Networking with Other Teams

Throughout this year's season, we have had the chance to interact with a lot of teams from our country and from around the globe. However, there are a few that stood out to us because we had the chance to actually get to know them.

We believe the following teams have been impacted by our FIRST attitude and we hope we will be able to help them develop further.

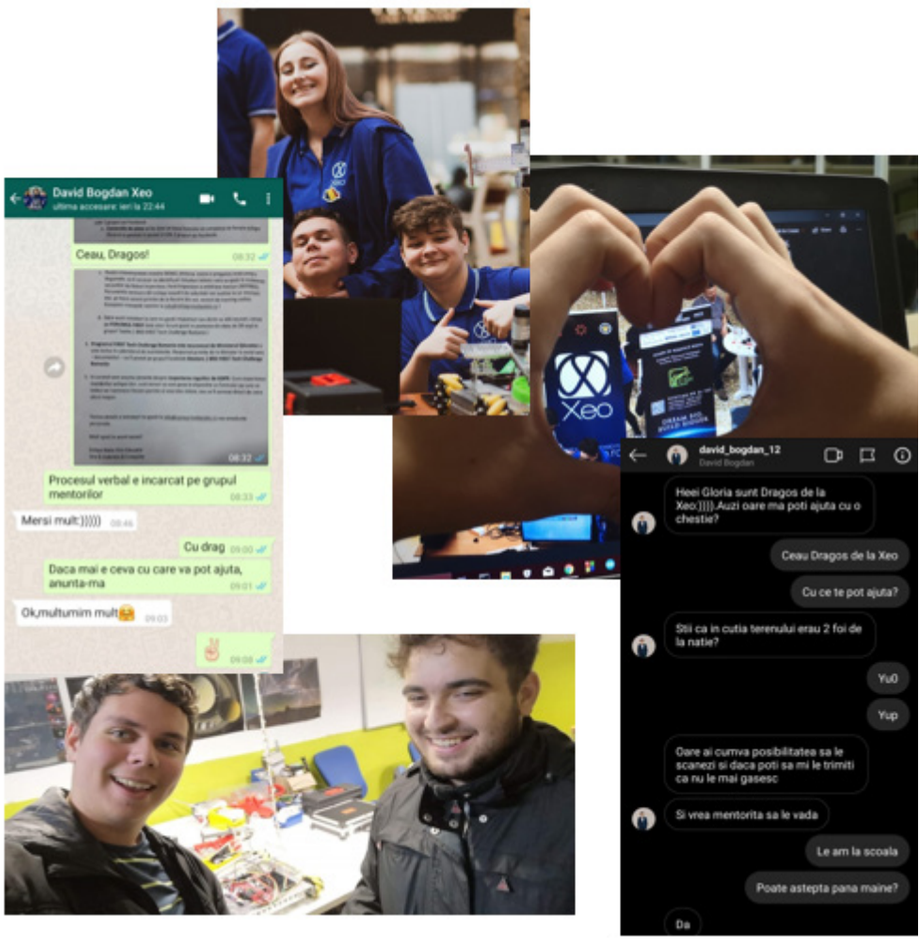
Some teams we helped

Helping Xeo- Ro001:

Our collaboration with Xeo started to become closer at Flight Festival, an event I attended with them. Then we made an agreement that once a month we would meet with them. We maintained this tradition by meeting at the demo on December 1, then on January 18 at Us at the Demo and we will see you again until the national one from March 21 to 23.

- Our relationship with those from RO001 exceeded a purely "professional" one and related only to robots (although we usually formed that before the common event we would meet and work with robots together either at their workshop in white fei chair at the homes of some Xeo members) this has become a unique friendship, bringing us and offering them accommodation at their home, once we go to Alba Iulia, and we return their favor if they come to Timisoara.

- From physical exits when we see up to short video calls while each working at our workshop we maintain a close connection with Xeo and support each other regardless of distance between us because we know well that: Robotica Uneste Romania.



Helping Velocity Ro058:

Team Velocity contacted us knowing that this year we formed a FLL team. By contacting the first per-

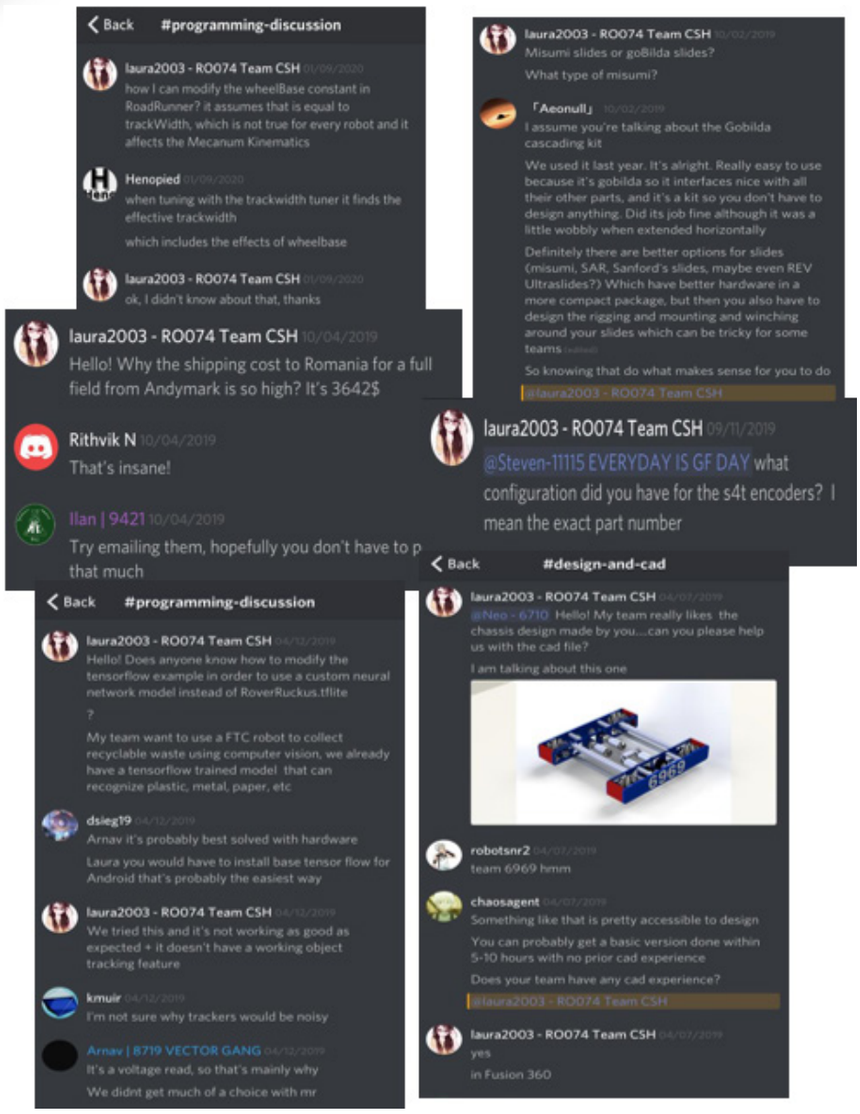
son you know from the team, they got to get in touch with Sorinca, our main FLL mentor. They talked on the phone about how Velocity wanted to form a FLL team. Sorinca told them what this year was like for us, our opinions about organization, about working with children, our whole adventure. He gave them some tips if they want to form the team for next year.

Interacting with RobotX RO 038:

We met RobotX at our Open Robotics Grid camp. Although we were shy at first, we managed to make friends with them.
We realized that we knew each other before from Discort when we were talking about assembling the robot. They told us their experiences and since then we have tried to keep in touch
At the demo at Medieval Days we borrowed cables for motors and servos and also helped us to discover that the arm did not work properly (the problem was that the servo blade that rotated the cube after we collected and hit it the slider that raises the cube so that we can rotate the cube in the ideal position) The solution discovered with those from RobotX consists of mounting an "L" shaped profile so that enough slider servo is rotated to rotate to the ideal position.

Helping Harambe Cartel:
Team Harambe Cartel came to our demo and told us that they need a perimeter field to their demo that will be on 24 january at Arad.
We gave them the perimeter field.

Interacting with more people on Reddit:
Reddit was the platform that helped us interact with different people for questions on the programming, assembly or 3D design side.



5.5 CSH Team spreads the spirit of Gracious Professionalism in order to inspire anyone that collaborates with us in any way, or crosses our path in the eight months of the season.

Results: 1 event, 2 nominalizations, 11 awards

TedxOpenUniversity – The next generation of digital makers
In one of his public lectures Philip Connigan, the founder and Chief Executive of Raspberry Pi Foundation talked about the projects and achievements of our colleague Laura Chirila
(youtube link : https://www.youtube.com/watch?v=yxSe2svMk1Q&t=4s)
A couple of years ago Laura personally presented her work to Philip: a mind controlled robot hacked together with an EEG brain
sensor, that she hopes to become a wheelchair for

paralyzed people that helps them move. Philip was curious to try this and within a few minutes he was able to train the robot to move right and left, forwards and backwards, just with his mind.

A screenshot from his TEDx, showing a picture of him and Laura, while he was testing the mind-controlled robot

Then he talked about us, Team CSH, and how Laura is working with a group of friends on an autonomous waste recycling project (an upgraded version of last season's robot), and how our idea is to combine robotics and machine learning software. That robot would solve the problem of littering while also increasing recycling. It's an ambitious project, as the robot must navigate in an urban environment autonomously. This robot must find, categorize and sort the waste that he finds. Laura used a neural network and machine learning software. She personally had to categorize 3000 images of recyclable waste to train the neuronal network.

He was amazed by the incredible journey Laura had, from web sites to advanced robotics and machine learning in just a few short years. And throughout these years Laura also learned the importance of team working.

Another screenshot, where he is showing the audience a picture of them, while Laura was showing him the robot's mechanisms

International Competition- Coolest Projects

Date	May 5th 2019
Meeting held	Dublin, Ireland
Attendance	Laura, Robi, Spiri, Bogdan, Peto
Impact	500 people
Time spent	30h for preparations, 8h activity

Preparation:

In our team meeting where we discussed our participation in this competition 5 members were chosen to participate in the Dublin stage. According to the competition rules the participants needed to have the maximum age of 17 years, and it was our team unanimous agreement that only the technical part of our team should participate; therefore Bogdan, Spiri, Laura, Peto and Robi were chosen.

In our effort to present a more interesting and innovative project we tried to assign our robot more uses so that besides being an autonomous waste recycling robot it can also serve as a guide for blind people.

The 5 chosen member left from Timisoara by car to Budapest, where they took the plane to Dublin. At the airport they had the pleasure of meeting other Romanian competitors which also participated at Coolest Projects. For Laura and Spiri, this wasn't their first participation within this contest for, so upon arrival they met a few acquaintances from their previous year.

In this contest, each competitor in Coolest Projects has their own stand where they exhibit projects, to be observed by the jury, other competitors and the public. We tried to make our project as interactive as possible, so besides answering to the questions from the jury and the public, we also encouraged them to try to see for themselves how our robot was working.

During the day, we presented our project to various jurors: a robot with two functions: it autonomously finds, categorizes and sorts recyclable materials, and at the same time, it can be a robot that guides blind people. Our project sparked the public's interest and also the jury's. They were impressed, and at the end of the contest we won the Runner Up Award in the Hardware category.

MINDCRAFT platform – development hub by BRD

Date	11.02- 14.02.2020
Meeting held	Instagram platform - BRD Mindcraft brd_mindcraft
Attendance	Laura, Pavel, Dani, mentor Nusa Cojocaru, CSH Team members that also are members of the heRObotics Team
Impact	31.526 people
Time spent	14 preparations, 6 h process

Goals:

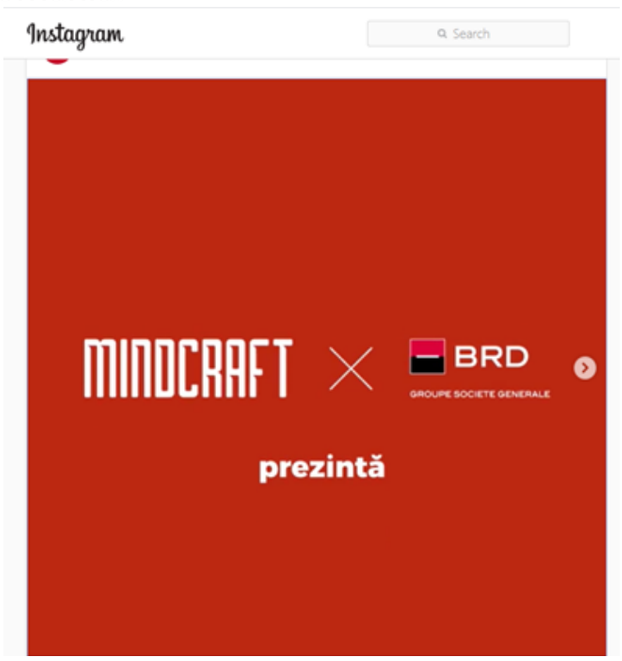
CSH Team Spread the spirit of Gracious Professionalism to inspire anyone that collaborates with us in any way

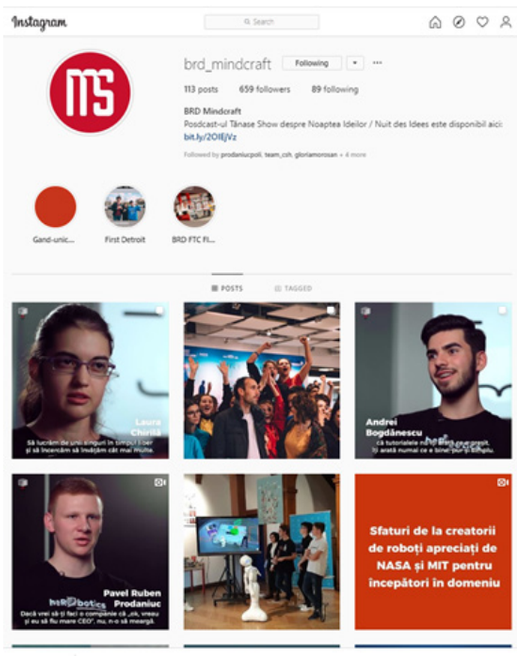
Results:

- 4 videos of 1 minute each with impact titles, which would include the most important aspects from the conversations that the team had while filming, giving advices to the youth interested in the STEM programs trough the MINDCRAFT platform — development hub by BRD on Instagram
- 31.5k views, 461 likes between 11 and 15 February 2020
- posted on https://www.instagram.com/brd_mindcraft/

Description:
Bucharest, 22nd January 2019

B**RD – Groupe Société Générale** is financing the participation of the heRObotics team in the finale of the international competition Zero Robotics, organised by NASA, MIT and ESA. "For the second year running, we are supporting the robotics team, heRObotics, to have access to a pragmatic world-class learning context. BRD is investing in the education of Romania's future leaders, in technology, in culture and in other development areas; the robotics competition organized by NASA is an incredible experience for the Romanian young roboticist. As the latest BRD communication campaign states, the future belongs to those who bet that the world would change trough them and that the world would still exist because students passioned by robotics, just like the ones in the heRobotics team, won't let anything stop them and they would keep on creating a future for themselves.", Roxana Milos stated as a Brand Communication Manager BRD - Groupe Société Générale.
BRD believes in innovation and in the capacity of youth to change the future with the help of technology (the MINDCRAFT platform - development hub by BRD, the biggest national robotics competition - BRD FIRST Tech Challenge, the robotics lab opened at the Universitatea Politehnica in Bucharest). At the same time, BRD's pledge can be also found in programs that help young people's entrepreneurship develop, in partnership with Innovation Labs, one of the biggest business pre-acceleration programs in Romania.



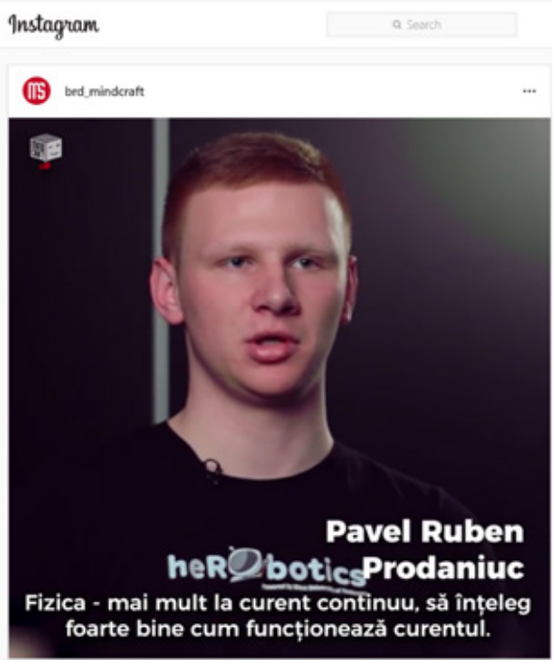


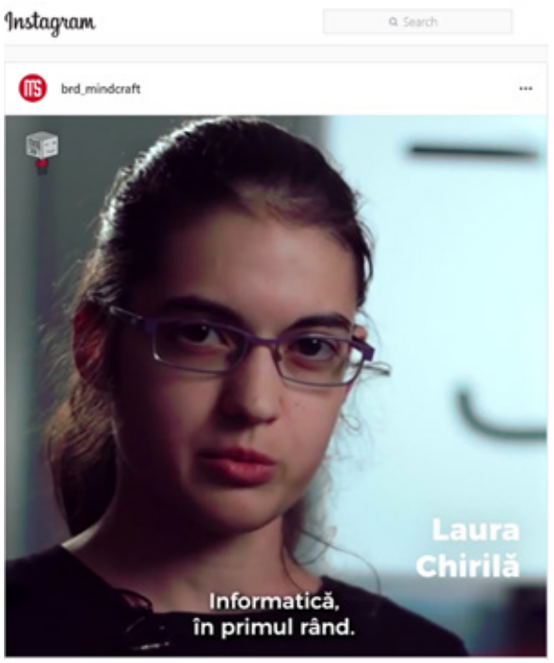
The first video posted on February the 11th, 2020, containing tips from the creators that designed the robots appreciated by NASA and MIT for beginners in this domain.

Dream BIG, build BIGGER!

If you are passioned by STEM but you are still seeking for your right path, then this video is just right for you. :) Pavel, Vlad, Sebastian, Andrei, Daniel and Serban, heRObotics team members from Timisoara, attended, with the help of BRD, the finale of the Zero Robotics competition organized by NASA, MIT and ESA. In this context, the students programmed robots that were on board of the ISS. We have asked them what are the most important things to follow so that you could learn robotics and their answer is in the material down below.

#Robotics #NASA #MIT #BRDMindcraft #Mindcraft #BRDGroupeSocieteGenerale #RobotCreators #STEM #BRDprojects #Education #ISS #SpaceExploration #TuEstiViitorul #heRObotics #ZeroRobotics





The second video posted on February the 12th, 2020

When you're talking about the future, artificial intelligence and cyber security are becoming something normal and even the professional path for the robot programmers from Romania is getting even better. You have already met the team heRObotics members from Timisoara, coordinated by the teacher Gabriela-Nusa Cojocaru, in the episode posted on Monday. Today we're going to find out how the future looks like from their perspective

#Robotics #NASA #MIT #BRDMindcraft #Mindcraft #BRDGroupeSocieteGenerale #RobotCreators #STEM #BRDprojects #Education #ISS #SpaceExploration #TuEstiViitorul #heROboticsics #ZeroRobotics

The third video posted on February the 13th, 2020

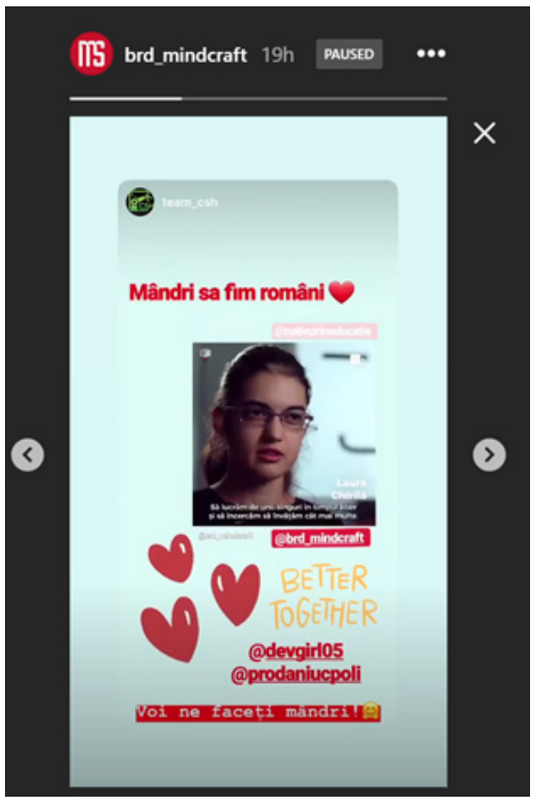
If you want to transform you STEM passion into a career, you need a constant effort, where you will always learn new things but were you don't forget about your other life matters. The heRObotics student members from Timisoara, the ones that represented Romania at the international Zero Robotics competition could already say that the balance between school and robot programming is just right. They have shared their experience. Swipe for the second video.

The fourth video posted on February the 14th, 2020

In the last video about the robot creators from Timisoara, we get another inspirational dose. With the occasion of visiting Boston for the Zero Robotics competition, the students had the opportunity to meet other Romanian people that already have a successful career in the STEM domain at an international stake. Here are some advices that they have received from them.

#Robotics #NASA #MIT #BRDMindcraft #Mindcraft #BRDGroupeSocieteGenerale #Robot-

Creators #STEM #BRDprojects #Education #ISS #SpaceExploration #TuEstiViitorul #heRObotics #ZeroRobotics



"Ce Faci, Te Face"

Date	23rd October
Meeting held	The Faculty of Economics and Administration of Businesses, The West University of Timişoara
Attendance	Gloria
Impact	23 persons
Time spent	2 h preparations, 1 h of process

Goals:

1. To inspire the youth to believe in their own ideas and projects
2. To promote teamwork
3. To present the process of Team CSH
4. To make the robotics competition BRD First Tech Challenge Romania, organized by "Asociatia Natie Prin Educatie" known

Results:

1. We began by working together on projects proposed by students

2. We received positive feedback from the students and support throughout the entire season

3. We began working with them following our internal organizing system

4. Some students became volunteers for our events organized under the name of "Natie Prin Educatie" in the robotics program

Preparations:

We met Ioana Popescu, the organizer of the "Ce FACI, Te FACE!" events, while we were at an Anti-drug-use conference that we attended. After we told her about our team and activities, she invited us to collaborate at the workshop about the making and the process of a project. With the date and the subject planned, we were ready to rock!

The process:

After the daily classes, Gloria went to the Faculty of Economics and Administration of Businesses, The West University of Timişoara to present the "Ce FACI, Te FACE" (program in order to help the growth of youth between the ages of 14 and 24). The "ActivEu" class was divided in different stages, Gloria being invited as an example of the active project made by high-school teenagers.

Gloria talked about teams process and results
She talked about all the teams' aspects: starting with its' formation, its' image and principles, and going along with the issues that occur and finding a solution to fix them, in order

to get to an impressive achievement. “There were wheels falling at our first regional, today we are playing and winning finals, representing Timişoara at a national and international stake – all the work paid off!”
The purpose was, firstly, to show the participants that everything is possible, if there is willing and ambition. What pleased us was to see that before we even started telling them about CSH, the majority already knew what it was all about , following us until then. After that wonderful day, we got some new volunteers that were willing to find out how the CSH team works and how they could be part of the project.
In addition to the theoretical concepts, Gloria practiced with some students how to organize a team; where do we start organizing an event and how do we manage not to get lost in the details. We worked on a true case – the project idea that they wanted to use, was a series of events about personal-development for 10th grade students from 3 high school of Timişoara. The collaboration continued until January 2019, offering support every time it was needed.

Gloria sketching the organizational scheme of an event

It was an event with a huge impact upon the student participants and especially upon us. It helped us to remember all that we went through to get where we are now and it also motivated us to work even more from now on.

The excellence gala in 2019

Date	Friday, 15th November, 10 A.M.
Meeting held	the Capitol room, Symphony hall “Banatul” from Timișoara
Attendance	Laura and the other 55 excellent students from Colegiului Național Pedagogic "Carmen Sylva"
Impact	605 people
Time spent	3 h process

Goals:
To award the excellence and the amazing results that the students have obtained throughout the

year.

Results:

Laura Chirila, a member of the CSH team and the other excellent students have obtained the recognition of the local community with the help of the Excellence Gala.

The Excellence Gala had already become a tradition. This edition began on a Friday at Timisoara with the ceremony of awarding the students that had obtained perfect grades throughout the academic year of 2018-2019

The Excellence Gala in 2019 was opened by Nicole Robu, the mayor, and by Aura Danielescu, the general academic inspector. Both of them wanted to congratulate the students and to wish them the best of luck.

The Town Hall of Timisoara had awarded the excellence this year too. 600 students from the entire city had been awarded for their incredible results, including 56 students from our school. They have received diplomas and books as an award.

Our school's students have also stepped on the stage to be awarded in the Capitol room of the "Banatul" Symphony Hall.

Team CSH Junior Award: Enthuziasm

Cluj Regionals: 2 feb 2020

This was Team CSH Jr's first year in the FIRST Lego League Competition, and our first experience as not only mentors, but also role models and parents.

This whole idea came to life after we decided to spread the FIRST values all over the place, and a junior version of our team seemed like the best thing we could ever do. It was a challenging journey, but definitely a beautiful one.

Judging results:

Innovative Project: 30/36p

Fundamental Values: 29/36p

Robot Construction: 29/36p

Robot score during matches: 250p

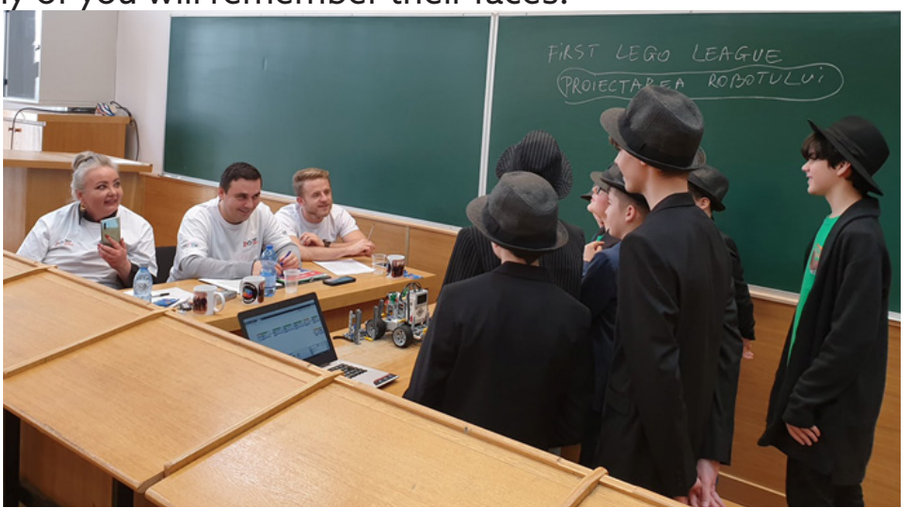
Hi, my name is Alexandra S (mostly known as Sorinica) and I am the main trainer and leader for Team 1951 CSH Junior. Along with Ale Munteanu and Carla, we are the CSH behind the CSH Junior, but we could've never achieved this award without the help of Mr. Blidar (official trainer and physics teacher), Cristi Daescu and Daniel Stoica (ex members of CSH Team, but still willing to help us become the best ever), Miss Nusa Cojocaru (Team CSH's mommy that supervised and corrected us when needed), Tanti Doamna Mama Carlei (translated as: Miss Lady Carla's mom- she has various experience of being a judge and prepared us for the presentation). We would also like to thank all of the parents that got involved and helped us, they are the best, just like their children.

So, how did we do it?

Being an enthusiast even when life is challenging you is not easy to be honest, but that is the exact thing we wanted to teach our children to do: be optimistic in every situation, so we had to share them the vibe that everything is going to be okay in the

end, even though, honestly, there were times when we didn't believe that either.

I'll give you an example: in the day of the competition, our robot simply stopped working. No mission performed. Our kids started crying, became more agitated and angry, so we just said: "SO WHAT?". Sound harsh? "So what if the robot is not working? You're talent and your life doesn't depend on this thing. Better fail now than later and fail even worse. No one here will remember this, and neither any of you will remember their faces."



Turns out that this type of talking gave them a sense of calm that helped them organize better, and in the end we actually had results wayyy better that we expected.

During long breaks, we got our game board and assembled it on corridors so that we could practice. The results were outstanding: we managed to get higher scores (up to 250 p) than we ever did while training in Timisoara!

Appearance:

When it comes to our presentation, we wanted it to be like nothing else, so we had:

-A Theme: Gangsters. We were dressed quite simply and on a budget: black jacket and a hat.

-A hologram: our presentation included a hologram showing an animation with a tube between 2 hospitals (details in the theatre play)

-A layout: 3D presentation of our innovative project.

-A 'treasure hunt': we brought small sized chocolate bars and hide them in the layout. Those who found at least 4 got them all.

-A vintage-vibed poster: the poster showed a part of our evolution as a team, and had some interactive elements

-A theatre play: it showed a deal between 2 foreign gangsters (script on page....). The play was performed in front of the judges, during the presentation of our innovative project.

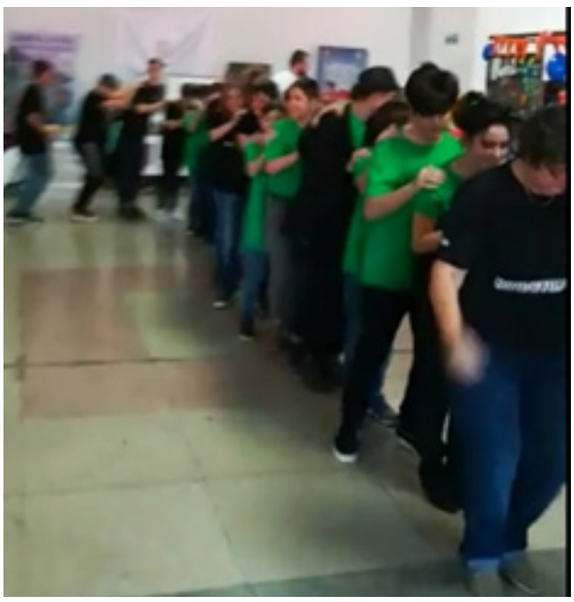
-Music played from a bluetooth speaker. Everyone was free to play anything

-An anthem for Gusti: Gusti is our robot, we love gusti:

"HAIDE, GUSTI, STIM CA POTI SA NE FACI MANDRII PE TOTI!
HAIDE, GUSTI, NU FI LAS, CA ESTI MEMBRU CSH!"

Us and XEO Academy

How we presented ourselves at the regionals



Bonus: For a little extra positivity, we invited everyone for the penguin dance during lunch break and made a huge line of people enjoying the atmosphere with us. We are so glad we managed to spread enthusiasm all over the place!
Bonus 2: here are also some bloopers during our time in Cluj.

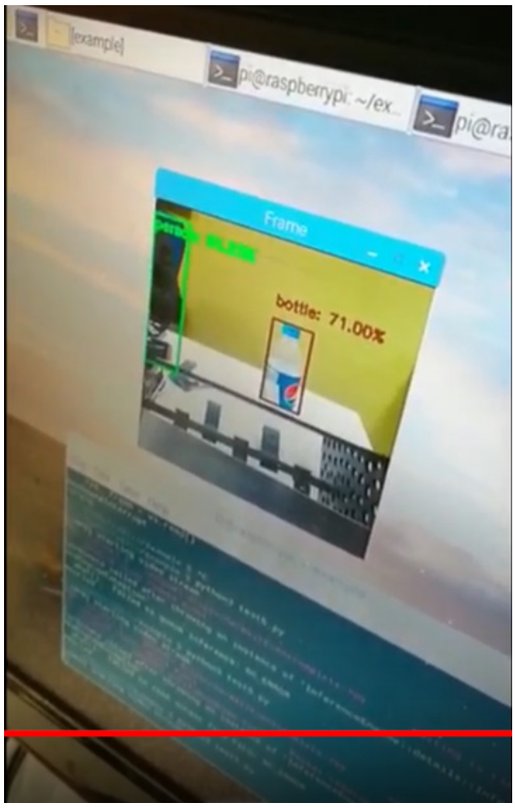
InfoEducatie National Competition- 4th place

Date	August 4th 2019
Meeting held	Gălăciuc, Vrancea county
Attendance	Bogdan
Impact	50 students

Bogdan participated in the national contest: InfoEducatie, where he won 4th place. His project was called "Qubit", and it was a highly upgraded version of the robot we built in our second season within the FTC competition. The whole idea of this project was to reduce the waste in urban areas. Therefore, the robot collected autonomously the recyclable products.

Dream BIG, build BIGGER!

It's an ambitious project because the robot must navigate in an urban environment autonomously. This robot find, categorize and sort the waste that he finds. We used a neural network and machine learning software. We had to categorize 3000 images of recyclable waste to train the neuronal network.



```
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
//  Declar private toate componentele electronice(hardwareMap), modul de
operare(telemetry)si gamepad-urile//
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
   private HardwareMap hardwareMap;
   private Telemetry telemetry;
   private Gamepad gamepad1;
   private Gamepad gamepad2;
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
// Modul operational al robotului: teleMode este controlarea robotului cu
gamepad-uri //
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
   void teleMode() {
      //Functia pentru miscarea robotului
      this.moveRobot();
      //Functia pentru colectarea deseurilor
                                 this.moveSuction();
                                  //Functia pentru miscarea bratului de colectare
```

```
            this.moveCollectorArm();
            //Functia pentru ridicarea sistemului cu re-
cipient
        this.moveLanderArm();
    }
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
// Aici voi declara 2 variabile x si y deoarece urmeaza sa colectez date de la
imagini prin pixeli si //
// a le transpune intr-un sistem xOy                                        //
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
    private double x = 0;
    private double y = 0;
    boolean trashCollected =false;

    public void autonomous() throws IOException, JSONException {
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
// Verific camera pana detectez un deseu //
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
        while(x == 0 && y == 0) {
            getTrashCoord();
            telemetry.addData("X: ", x);
            telemetry.addData("Y: ", y);
            telemetry.addLine("SEARCHING FOR TRASH");
            telemetry.update();
        }
// Miscarea sistemului de colectat//
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
    private void moveSuction() {
        if(this.gamepad1.right_bumper && !this.gamepad1.left_bumper) {
            this.suctionServo.setPower(-1.0);
        } else if(this.gamepad1.left_bumper && !this.gamepad1.right_bumper) {
            this.suctionServo.setPower(1.0);
        } else {
            this.suctionServo.setPower(0.0);
        }

        if(this.gamepad2.x){
            this.dropServo.setPosition(0.7);
            this.telemetry.addLine("AM APASAT X");
            this.telemetry.update();
        }

        if(!this.gamepad2.x){
```

```
        this.dropServo.setPosition(1.0);
      }
    }
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
// Miscarea bratului de colectat//
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
    private void moveCollectorArm() {
      this.armElbowMotor.setPower(-this.gamepad2.right_stick_y * 1.0);
    }
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
// Miscarea bratului ce ridica recipientrul de colectare//
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
    private void moveLanderArm() {
        this.telemetry.addData("armLatching: ", this.armLatching.getCurrent-
Position());
      this.telemetry.addData("y: ", this.gamepad1.y);
      this.telemetry.addData("a: ", this.gamepad1.a);
     if(this.digitalTouch.isPressed() && this.digitalTouch.isPressed() && this.
gamepad1.a && !this.gamepad1.y) {
        this.armLatching.setPower(0.0);
    } else if(this.digitalTouch.isPressed() && this.gamepad1.y && !this.game-
pad1.a) {
        this.armLatching.setPower(-1.0);
      } else {
        if (this.gamepad1.y && !this.gamepad1.a) {
          this.armLatching.setPower(-1.0);
        } else if (this.gamepad1.a && !this.gamepad1.y) {
          this.armLatching.setPower(1.0);
        } else {
          this.armLatching.setPower(0.0);
        }
      }
        this.telemetry.addData("armLatchingPower: ", this.armLatching.get-
Power());
      this.telemetry.update();
    }
//~~~~~~~~~~~~~~~~~~~~~~//
// Functia de autonomie //
//~~~~~~~~~~~~~~~~~~~~~~//
    public void initAutonomous() {
      this.configureLatchingMotorForAuto();
                                this.telemetry.addLine("1");
                                  this.telemetry.update();
```

```
                    this.initializeIMU();
                    this.telemetry.addLine("2");
            this.telemetry.update();
    //this.initializeCamera();
    this.telemetry.addLine("3");
    this.telemetry.update();
  }
```

Detection

```
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
# Import toate librariile de care am nevoie  #
#pentru video stream si prelucrarea imaginilor #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
import cv2
from sys import argv
import matplotlib.pyplot as plt
import numpy as np
from imutils.video import VideoStream
from imutils.video import FPS
import argparse
import imutils
import time
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
# Setez valoarea minima a treshold-ului #
#pentru a evita detectarile gresite     #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
threshold = 0.65;

#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
# Initializez lista de obiecte din MobileNet SSD, ca mai apoi sa ma folosesc de         #
#reteaua neuronala antrenata de mine pentru a recunoaste deseurile si a incadra obiectul #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
CLASSES = ["unlabeled", "person", "bicycle", "car", "motorcycle", "airplane", "bus", "train", "truck", "boat", "traffic", "fire", "street", "stop", "parking", "bench", "bird", "cat", "dog", "horse", "sheep", "cow", "elephant", "bear", "zebra", "giraffe", "hat", "backpack", "umbrella", "shoe", "eye", "handbag", "tie", "suitcase", "frisbee", "skis", "snowboard", "sports", "kite", "baseball", "baseball", "skateboard", "surfboard", "tennis", "bottle", "plate", "wine",
"cup", "fork", "knife", "spoon", "bowl", "banana", "ap-
```

```
ple", "sandwich", "orange", "broccoli", "carrot",
"hot", "pizza", "donut", "cake", "chair", "couch",
"potted", "bed", "mirror", "dining", "window", "desk", "toilet",
"door", "tv", "laptop", "mouse", "remote", "keyboard", "cell", "microwave",
"oven", "toaster", "sink", "refrigerator", "blender", "book", "clock", "vase",
"scissors", "teddy", "hair", "toothbrush", "hair", "banner", "blanket", "branch",
"bridge", "building-other", "bush", "cabinet", "cage", "cardboard", "carpet",
"ceiling-other", "ceiling-tile", "cloth", "clothes", "clouds", "counter", "cupboard",
"curtain", "desk-stuff", "dirt", "door-stuff", "fence", "floor-marble", "floor-other",
"floor-stone", "floor-tile", "floor-wood", "flower", "fog", "food-other", "fruit",
"furniture-other", "grass", "gravel", "ground-other", "hill", "house", "leaves",
"light", "mat", "metal", "mirror-stuff", "moss", "mountain", "mud", "napkin",
"net", "paper", "pavement", "pillow", "plant-other", "plastic", "platform", "play-
ingfield", "railing", "railroad", "river", "road", "rock", "roof", "rug", "salad", "sand",
"sea", "shelf", "sky-other", "skyscraper", "snow", "solid-other", "stairs", "stone",
"straw", "structural-other", "table", "tent", "textile-other", "towel", "tree", "veg-
etable", "wall-brick", "wall-concrete", "wall-other", "wall-panel", "wall-stone",
"wall-tile", "wall-wood", "water-other", "waterdrops", "window-blind", "win-
dow-other", "wood"]
# Se genereaza la intamplare un set de culori pentru fiecare obiect
COLORS = np.random.uniform(0, 255, size=(len(CLASSES), 3))
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
# Se incarca modelul cu ajutorul NEURAL COMPUTE STICK 2 #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
print("[INFO] loading model...")
net = cv2.dnn.readNet('frozen_inference_graph.bin', 'frozen_inference_
graph.xml')
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
# Am setat sa se foloseasca dnn(deep neural network) si sa nu se folosea-
sca de haar(haarcascade) #
# deoarece avand sticul NCS2 procesarea se face pe GPU #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
net.setPreferableTarget(cv2.dnn.DNN_TARGET_MYRIAD)
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~#
# Initializez camera si ii ofer un timp de calibrare pentru un start de frame-uri
mai bun #
# deasemenea initializez si FPS counter ul #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
print("[INFO] starting video stream...")
vs = cv2.VideoCapture(0)
                    vs.set(3, 1920)
                      vs.set(4, 1080)
```

```
time.sleep(2.0)
fps = FPS().start()
x_center = 0
y_center = 0
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
# Cat timp camera este pornita / programul ruleaza #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
while True:
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
# Salveaza local fiecare frame si il trece printr-o serie de filtre  #
# 1. Se face resize la frame pentru a ajunge la 300 pixeli          #
# 2. Roteste imaginea la 90 grade                                    #
      ret, frame = vs.read()
      cropped = frame[60:1080-60, 0:960]
      cropped = imutils.resize(cropped, width=300)
      cropped = imutils.rotate(cropped, 90)
# 3. Dupa ce are imaginea la 300 pixeli o transforma dintr-o matrice intr-un
      (h, w) = cropped.shape[:2]
      frame = cropped
       blob = cv2.dnn.blobFromImage(cropped, size=(300,300), ddepth=cv2.
CV_8U)
# 4. Se trece vectorul prin reteaua neuronala si se obtine o predictie
      net.setInput(blob)
      detections = net.forward()
# 5. Se remodeleaza vectrul ce contine detectarea/detectarile
      detections2 = detections.reshape(-1,7)
# 6. Se reiau detectille pentru o acuratete mai mare
      for detection in detections2:
# 7. Se extrage probabilitatea/predictia
          confidence = float(detection[2])
# 8. Se filtreaza detectarile slabe prin verificare daca 'confidence' este mai
mare
#decat valoarea minima a 'confidence'
          if confidence > threshold:
# 9.Se extrage index-ul clasei din 'detections', apoi se creeaza 'bounding box'
# in jurul obiectului detectat prin coordonate (x, y)
              idx = int(detection[1])
              box = detection[3:7] * np.array([w, h, w, h])
              (startX, startY, endX, endY) = box.astype("int")
# 10. Coordonatele obiectului sunt scrise intr-un fisier cu extensia txt
              if CLASSES[idx] == "bottle":
                 x_center = (startX+endX)/2
                 file = open("testfile.txt","w")
```

```
            file.seek(0)
            file.truncate()
            file.write(str(x_center)+","+str(endY))
            file.close()
# 11. Predictia este scrisa langa 'bounding box'
            label = "{}: {:.2f}%".format(CLASSES[idx], confidence * 100)
         cv2.rectangle(frame, (startX, startY), (endX, endY), COLORS[idx], 2)
          y = startY - 15 if startY - 15 > 15 else startY + 15
         cv2.putText(frame, label, (startX, y), cv2.FONT_HERSHEY_SIMPLEX,
0.5, COLORS[idx], 2)
# 12. Se afiseaza frame-ul de final
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
    cv2.imshow("Frame", frame)
    key = cv2.waitKey(1) & 0xFF
# In caz de eroare tasta Q va oprii programul
    if key == ord("q"):
      break
# Se adapteaza numarul de frame-uri
    fps.update()
# Se opreste timer-ul
fps.stop()
print("[INFO] elapsed time: {:.2f}".format(fps.elapsed()))
print("[INFO] approx. FPS: {:.2f}".format(fps.fps()))
# Se curata datele CACHE pentru a nu influenta urmatoarea detectie
cv2.destroyAllWindows()
vs.stop()
```

Autonomous

```
package org.firstinspires.ftc.teamcode;
import com.qualcomm.robotcore.eventloop.opmode.LinearOpMode;
import com.qualcomm.robotcore.eventloop.opmode.OpMode;
import org.json.JSONException;
import java.io.IOException;
@com.qualcomm.robotcore.eventloop.opmode.Autonomous
public class Autonomous extends LinearOpMode {
  private Robot robot;
  private boolean autonomousFinished = false;
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
// Se initalizeaza toate modulele si componentele electrice //
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~//
                        public void initialize() {
                            this.robot = new Robot(this.hardwareMap, this.
```

```
telemetry);
            this.robot.initAutonomous();
        }
    @Override
    public void runOpMode() {
        this.initialize();
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~~~~~~~~//
//  Dupa ce s-au initializat componentele se asteapta start-ul utilizatorului//
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~~~~~~~~//
        while(isStarted() == false && isStopRequested() == false){
            this.telemetry.addData("Status: ", "waiting for start command... time
= %.02f",getRuntime());
            this.telemetry.update();
            sleep(200);
        }
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~//
// Dupa ce se selecteaza programul robotul incepe sa colecteze deseuri//
//~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~//
        while(opModeIsActive()){
// Functiile folosite sunt mostenite de la clasa Robot pentru un program
mult mai simplu de scris
                try {
                    this.robot.autonomous();
                } catch (IOException e) {
                    e.printStackTrace();
                } catch (JSONException e) {
                    e.printStackTrace();
                }
        }
    }
}
```

Server

```
from flask import Flask
from flask import jsonify
app = Flask(__name__)
@app.route('/')
def index():
```

```
  return ' Qubit a ajuns la etapa nationala la
Galaciuc ! '
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~~~~~~~~~~~~#
# Afiseaza coordonatele citite din fisierul txt intr-un format JSON #
#pe serverul web local                                  #
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~#
@app.route('/coord')
def summary():
   file = open("testfile.txt", "r+")
   string = file.read()
   print(string)
   string.split(",")
   coordX, coordY = string.split(',')
   file.close()
   return jsonify(coordX, coordY)
if __name__ == '__main__':
   app.run(debug=True, host='0.0.0.0')
#~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~#
    # Signed by Qubit (Preda Bogdan)# #~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~#
```

It was an experience that helped us realize how many people are passionate about IT and robots. We also learned how to presenting a product in front of a jury and especially "selling" it to them.

Noi Info, movie section

Date	May 20th 2019
Meeting held	Theoretical high school "Grigore Moisil", Timisoara
Attendance	Leti, Carla
Impact	30 people
Time spent	28h preparations, 30 minutes presentation

Carla came with the idea to make a movie and participate in the "Noi Info" county contest. We took 4th place in the movie section, while the boys took 2nd place in the robotics one. Since she needed someone for acting, she asked Leti to be her partner. Carla already had an idea in her head, a movie about a young girl that lost her mother because of something stupid she did.

The movie starts with the image of a burning rose, and the title "The last sacrifice". Then we can see

the girl, staying on a bench, reminiscing about all of the good times she spent with her mother. Memories come, she starts thinking about the old times, when she was just a kid, with so little problems.

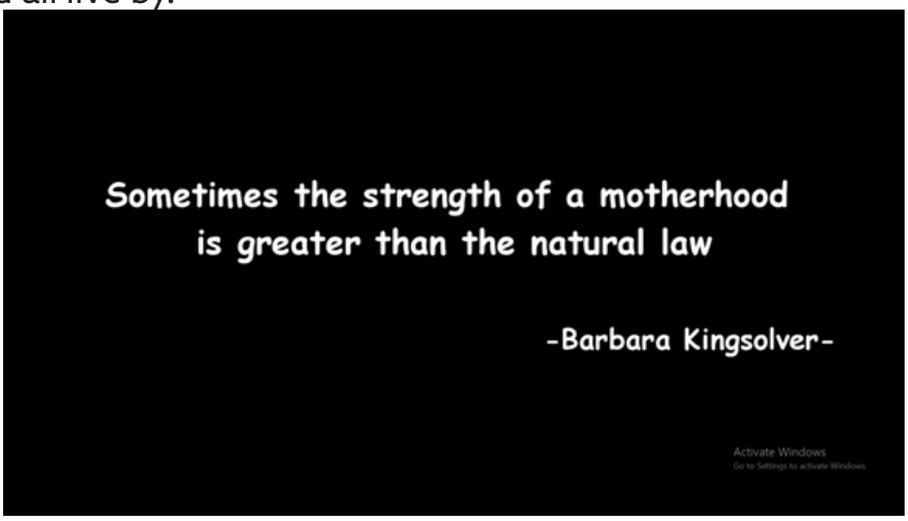
A screenshot from the begging. It has Romanian subtitles since the background voice is in English.

Her mom (played by Leti's mom) sees her smoking with one of her friends, so she rushes home. The girl, without knowing that her mom saw her, pretends that nothing happened. When she goes inside, her mom takes her by the hand and slaps her, without thinking twice. The girl starts to run and her mom follows her. When crossing the road, she didn't notice that a car was coming, and she was petrified when she saw it. Her mom rushed and jumped to save her, pushing her away and getting hit by the car, all for her daughter.

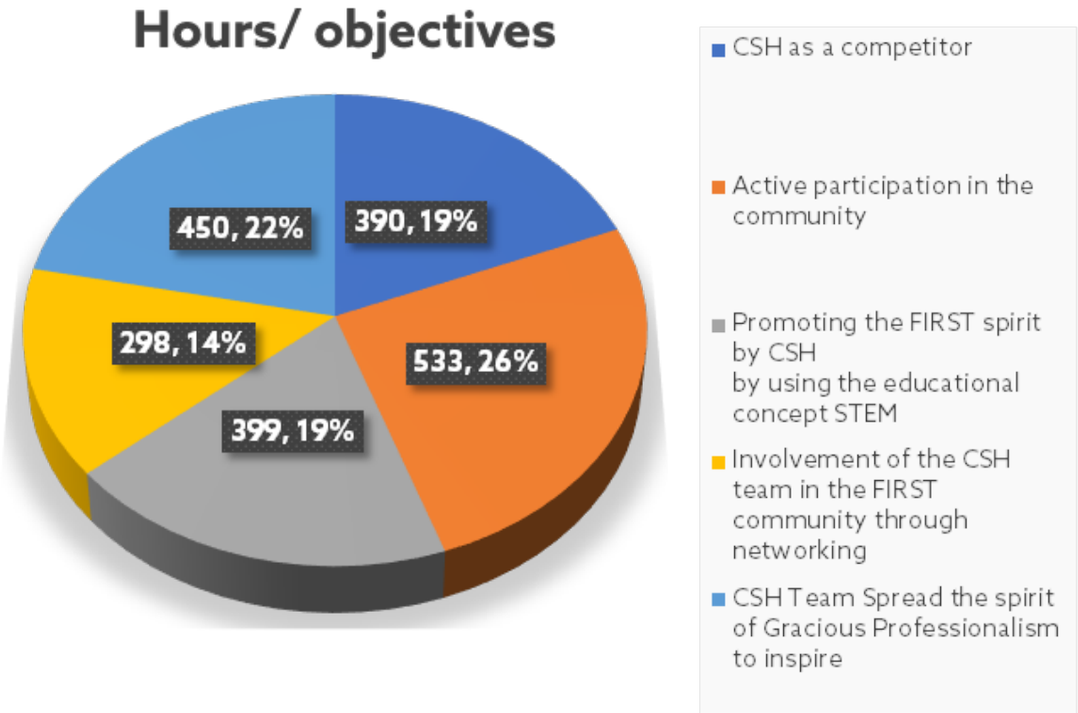
The scene where she is saved by her mom

Dream BIG, build BIGGER!

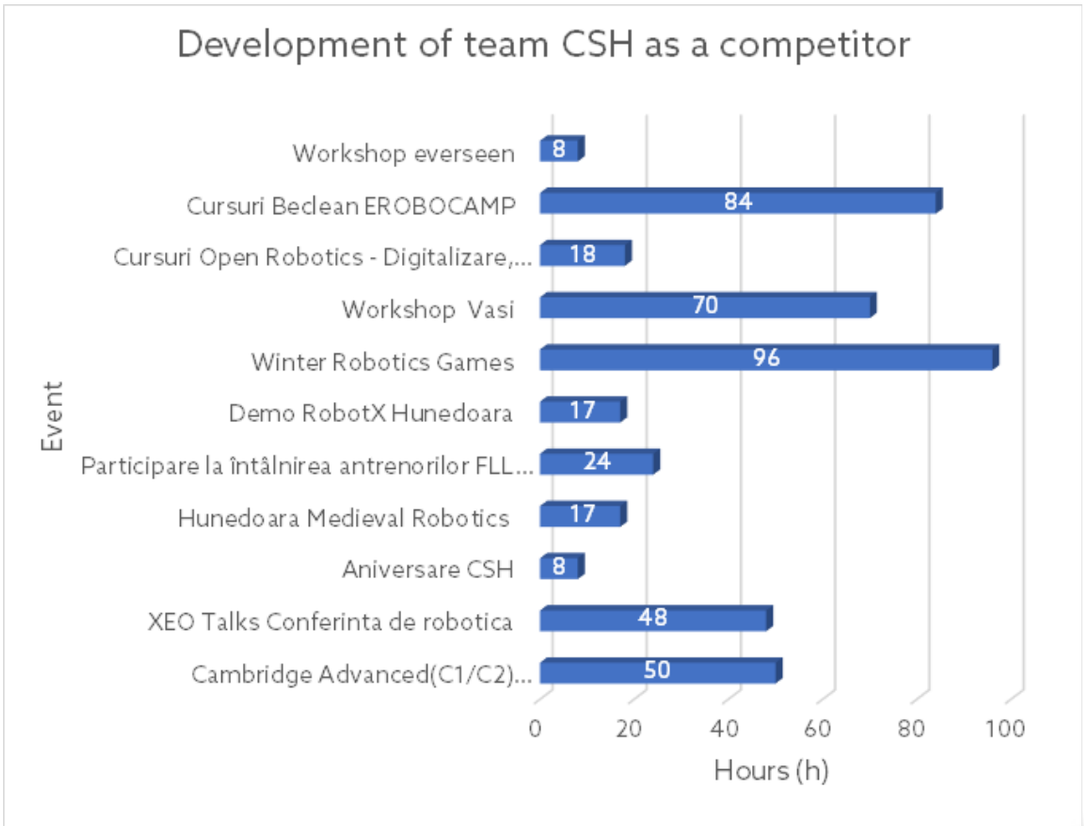
In the end, the girl goes to her mother's grave, telling her that she will make her proud. "Appreciate what you have while you still have it" is something we should all live by.

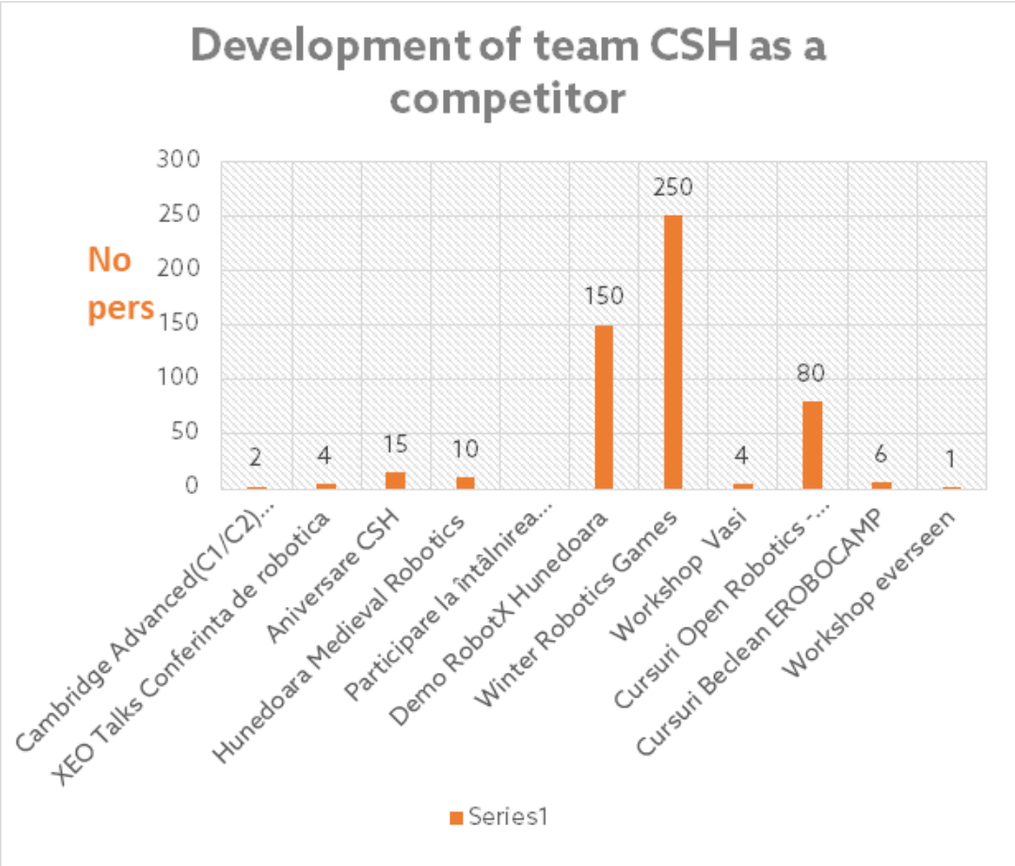


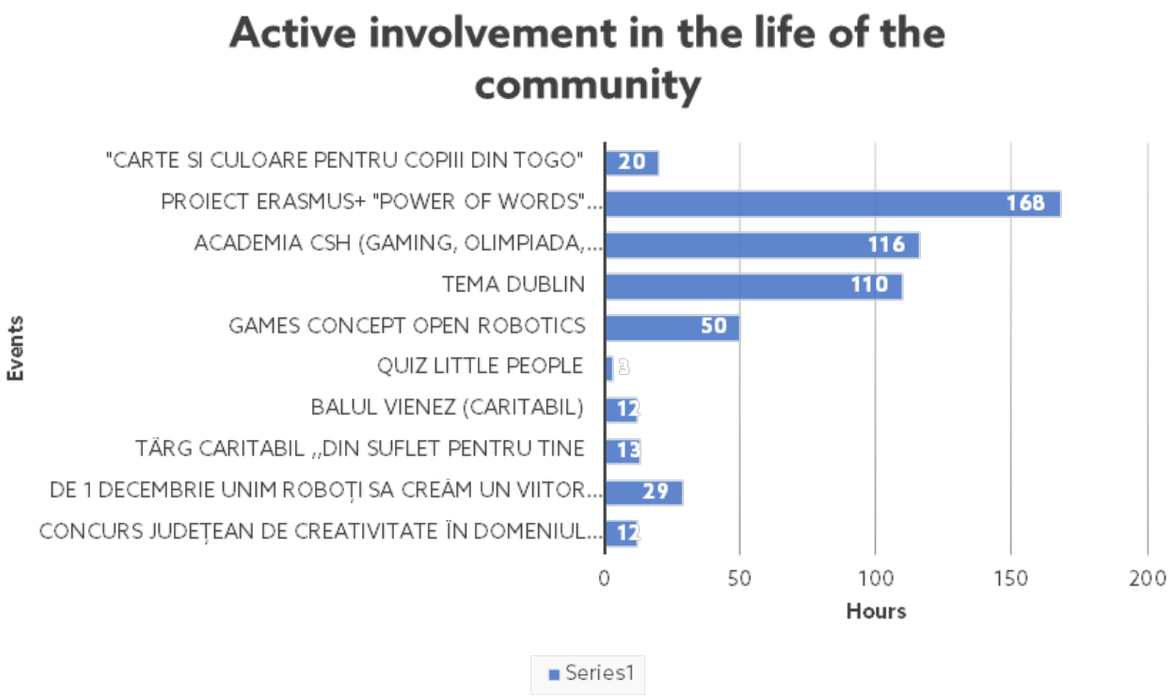
The movie ends with this quote

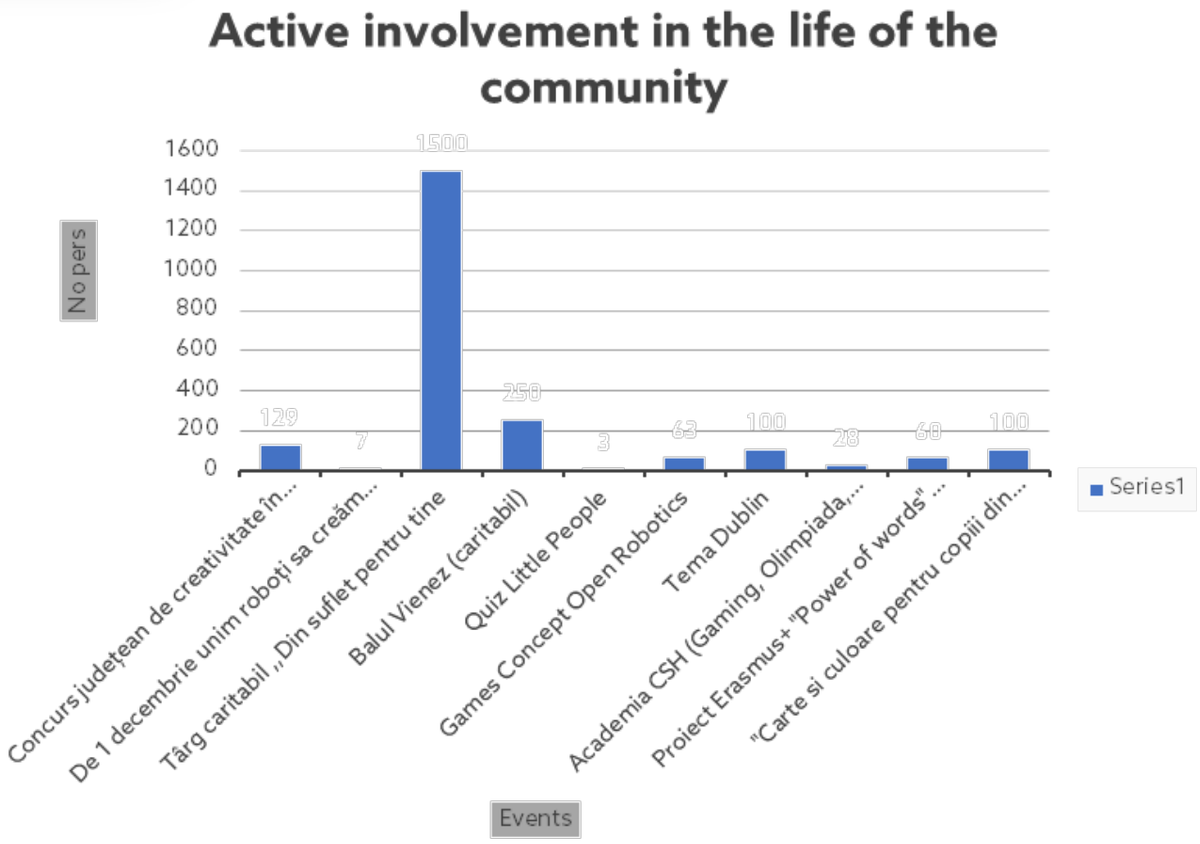



Objectives/No.pers
CSH as a competitor
Active participation in the community
Promoting the FIRST spirit by CSH by using the educational concept STEM
Involvement of the CSH team in the FIRST community through networking
CSH Team Spread the spirit of Gracious Professionalism to inspire
CSH Team Spread the spirit of Gracious Professionalism to inspire
Promoting the FIRST spirit by CSH by using the educational concept STEM
Active participation in the community
In... of...
C... a...


Development of team CSH as a competitor
Event
Workshop everseen
Cursuri Beclean EROBOCAMP
Cursuri Open Robotics - Digitalizare,...
Workshop Vasi
Winter Robotics Games
Demo RobotX Hunedoara
Participare la întâlnirea antrenorilor FLL...
Hunedoara Medieval Robotics
Aniversare CSH
XEO Talks Conferinta de robotica
Cambridge Advanced(C1/C2)...
8
84
18
70
96
17
24
17
8
48
50
0
20
40
60
80
100
Hours (h)


Development of team CSH as a competitor
No pers
300
250
200
150
100
50
0
2
4
15
10
150
250
4
80
6
1
Cambridge Advanced(C1/C2)...
XEO Talks Conferinta de robotica
Aniversare CSH
Hunedoara Medieval Robotics
Participare la întâlnirea...
Demo RobotX Hunedoara
Winter Robotics Games
Workshop Vasi
Cursuri Open Robotics -...
Cursuri Beclean EROBOCAMP
Workshop everseen
Series1


Active involvement in the life of the community
"CARTE SI CULOARE PENTRU COPIII DIN TOGO"
PROIECT ERASMUS+ "POWER OF WORDS"...
ACADEMIA CSH (GAMING, OLIMPIADA,...
TEMA DUBLIN
GAMES CONCEPT OPEN ROBOTICS
QUIZ LITTLE PEOPLE
BALUL VIENEZ (CARITABIL)
TÂRG CARITABIL ,,DIN SUFLET PENTRU TINE
DE 1 DECEMBRIE UNIM ROBOȚI SA CREĂM UN VIITOR...
CONCURS JUDEȚEAN DE CREATIVITATE ÎN DOMENIUL...
20
168
116
110
50
3
12
13
29
12
Events
0
50
100
150
200
Hours
Series1



6.Marketing plan

Branding:
Branding is one of the main components of our marketing strategy and includes ensuring the image of the team that conveys the values and principles of the team.

Our logo:
The team logo is a set of elements that unite the departments between them. The robotic arm represents the assembly department, the code elements are the symbol of the programming department, and the association of the green shades represents the non-technical departments. It is a logo composed of contrasting elements that form a complete image of the CSH team. The shades of green give the logo the state of energy, safety and balance, guiding us to act tactfully and diplomatically with others.

The Motto:
Being a group of young people full of enthusiasm, what gathered us was the common dream we had

- to become better together and to stimulate each other. However, to dream is just the beginning, so the basic principle was not to stop at designing ideas, but to act on them as well. "Dream big, build bigger!" Is the idea with which we started in this competition in 2017 and which will guide us in 2020.

The Slogan:
Although we are the generation that promotes STEM education, digitization and robotization, our main goal is to improve the standard of living and to remain human, even if we interact daily with new technologies. One of the principles of the team is to maintain curiosity for the technical fields while promoting qualities such as cooperation and teamwork. Thus appeared the phrase that is present wherever the CSH team is: "Try to understand this simple function: life ();"

Methods of promotion:
Online: We are present on several platforms, to cover various categories of people interested in CSH team activity. The Facebook page, created in 2017, has 705 likes and followers and is dedicated to announcements regarding upcoming events and reports recent activities.
The Instagram account unravels the energy and daily activities of the CSH members and facilitates communication between FTC teams.
The YouTube channel is dedicated to videos like application videos, for Compass and Promote awards, but also for inspirational videos for students and mentors.
The team's website contains general information about the team (members, mentors, sponsors, mission and vision) and links the team with the business environment.

Offline:
To address as many people as possible, we have already established the type of events we want to run, so that anyone can find a CSH brand event they would like to participate to.
We participated in events organized by the IT community from Timişoara, to present our project to different companies, that later became our team's sponsors, but also to establish links with specialists who could become our mentors. At the same time, we were present at events focused on other fields in order to promote robotics to both art lovers and gourmets (eg Flight Festival 2019). We organized events where we gathered the FIRST community in Timisoara (Summer School "Open Robotics Intelligent Grid", Demo "Winter Robotics Games 2020), but we were present in several schools in order to promote the robotics program and the team.

Promotional materials:

Depending on the role of each category, promotional materials are focused on capturing the attention of certain categories of people.

The team's roll-up captures the CSH logo, as well as the logos of the organizers and sponsors, combined with static elements and contrasting colours to capture the attention of our visitors.
Besides the classic badges with the CSH logo, the team is launching a new model with the quote "I believe in Science. And Unicorns", to symbolize the passion for science and technology is so found in every participant in the FIRST program.

The name and number of the team are smaller in size than the quote itself, to emphasize the message of the badge and to be used both during competitions and off-season, as a symbol of passion for science and technology.

The team's stickers have been updated, introducing a model with the team mascot – The Unicorn - with elements referring to Star Wars, the image of the competition in the 2019-2020 season, capturing the attention of all those passionate about these wonderful films.

The t-shirts of the members are maroon with green elements, specific to the team, combining the colour of the high school we belong to and the image created by CSH during our 3 years of existence.

The team mascot is a unicorn, representing the surprise element of the team. We believe that technology is the "magic" of the present and of the future, so we chose to represent this fantastic character who brings smiles to the faces of all who meet him. The image of the Unicorn is also found in other representative elements, such as on the team stands and on the CSH stickers.

7. The project's sustainability

Through the implementation of the project both the short-term and the long-term effects and results are overseen. At the end of the project all of the objectives will be reached and the results the sponsorships were needed for will be achieved.
The project's sustainability will be assured from three essential points of view: organizational, financial and from the point of view of human resources.
From an organizational angle, the al-

ready-agreed-upon partnerships will be kept, hoping to reduce the ulterior costs of implementing similar activities, seeing how similar collaborations in other projects are desired. Also, the material resources and the equipment will be stocked and managed carefully so they will be usable in the future. The materials that were purchased during the project will remain in the high school's possession. They will be maintained functional, with the purpose of being used in ulterior activities.

The notebook, all the documents, expense accounts and any other similar writings will be archived and kept, making them valuable sources of guidance during later initiatives. Also, in the case that additional costs and expenses will appear, unforeseen after the end of the project, they will be paid from the sponsorships, with the hopes of decreasing or eliminating their impact over the project's sustainability.

From the point of view of human resources, sustainability will be achieved through:

1. The whole team, involved in the progress of the project through:

- the acquired experience; also, in the spirit of Gracious Professionalism we will offer counseling to the rookie teams who will pass the preselection during BRD FIRST Tech Challenge's future seasons in Romania

-dedicated mentoring; our team's lineup will constantly change, as our members will graduate from high school, which is why we are always looking for potential new members, but also actively preparing any interested younger Carmen Sylva students through our program CSH Academy. We also welcome any mentoring or partnership opportunities from other middle schools in Timisoara with open arms.

2. The students who benefitted from the project's services, through:

- developing teamwork abilities, forming their independent life skills and learning how to plan their career;
- activities which stimulate creativity and research abilities;

The community will participate with people who have a direct interest. Those people who supported us during the unfolding of the project have offered us the possibility of collaborating even after the team's participation in the nationals in Bucharest.

Future plan:

We want to inspire anyone that collaborates with us in any way, or crosses our path in the eight months of the season.

Our goal is to share CSH Team's passion for science and technology through CSH Academy. If this season meant organizing EV3 MINDSTORMS robotics workshops for middle school students, our future wish would be to lean our project towards primary

school students giving them the opportunity to take part in our CSH Academy workshops that would suit their age. This would be possible with the help of the former team members, now students.

We want to continue the projects we started this season- "Open Robotics Intelligent Grid" featuring the West University of Timisoara, with the purpose of getting to know new and emerging technologies, and transforming Timisoara in a hub of new ideas and showing off the development of technology and Creative Space, aiming to form a "makers" community in Timisoara.

7.1. Financing Sources-Team CSH's Sponsors

The cost of purchasing any additional robot components the team considers necessary, ordering any custom-made promotional materials, organizing events, traveling to the competition sites or to any events organized by the FIRST community will be taken care of through the sponsors the team will find. These funds will be ran through A.I.C.I Association and West University Foundation from Timisoara.
In order to make a successful business, the team needs funds, and to get those funds the team required all the previous well-structured plans: we needed a good robot, a good notebook and to be known to the public so that we could impress the possible sponsors. After we ensured that we own all the resources, we need to know how to contact them. Our responsible for Marketing & PR, made a list of steps that need to be followed in order to contact a potential sponsor:

Steps to contact with a possible sponsor

1) Make sure your email has not been sent or your business has not been contacted yet. In drive you can find "fundraising documentation" (in season 3 for documents sponsorship) with the companies that have been contacted already

2) Required materials to be sent to the potential sponsor:

- Letter of sponsorship (It's on the drive, season 3, sponsorship documents, September 2018)

The letter has certain things underlined with yellow you'll need to fill (it's specified what to write in that space). Before sending the letter, read it first because there may be paragraphs which do not match the required business and need to be changed. If the change is necessary, contact the head of the Fundraising departament and request permission.

- The sponsorship project (Find it all on the drive beside the letter, it's in pdf and word format.)

If you approach a robotics knowledge-based sponsor, read the project.

- Sponsorship contract

You only use it if the sponsor responds positively to the request.

3) Complete the "fundraising documentation" on drive with all the data now known no matter whether the response is positive or not. (for evidence)

4) If you have received a positive answer, please contact the department head.

5) After the money had entered in the account, write the response in the "fundraising documentation", but also complete the Sponsors list (in season 3 - sponsorship documents - sponsors list)

Dream BIG, build BIGGER!

Maintaining the connection with the sponsors

- letters of gratefulness
- greetings for the holidays
- visits
- activity reports every 2 months

Doamnei Elena Megan,

Aptiv Technology Services & Solutions SRL

Stimată doamnă Elena Megan,

Suntem încântați să vă mulțumim pentru încredere, sprijin și pentru că ne ajutați să creștem frumos!

Am reușit să facem comanda de piese de care mai aveam nevoie, robotul pentru sezonul 4 al competiției BRD First Tech Challenge România deja începe să prindă contur și se pregătește pentru meciurile demonstrative care vor avea loc în perioada imediat următoare și la care povestim cu mândrie despre cei care ne susțin.

Nu am fi reușit fără sprijinul dumneavoastră, ne faceți să înțelegem că ceea ce facem noi contează și că viitorul este în mâinile noastre, de aceea ținem să vă mulțumim încă o dată!

Mai avem multe de arătat, the best is yet to come!

29 noiembrie 2019

Cu drag, echipa de robotică CSH!

Colegiul Național Pedagogic „Carmen Sylva" Timișoara

Bună dimineața,

Aflându-ne la sfârșitul unui an plin de reușite, ne îndreptăm gândurile către dumneavoastră. Bucuria este cu atât mai mare cu cât o împărțim cu dumneavoastră, așadar mai jos regăsiți câteva dintre activitățile din toamna aceasta, cu care ne mândrim și pe care nu am fi reușit să le derulăm fără sprijinul dumneavoastră:

Implicare în viața comunității cu scopul de a inspira tânăra generație:

- **Școala de vară *Open Robotics Intelligent Grid* 2019**: *15 echipe de robotică din țară, 45 de elevi, 15 mentori, 40 de voluntari,* ediție inaugurală, eveniment organizat de Universitatea de Vest din Timișoara în colaborare cu echipa de robotică CSH, cu scopul de a face cunoscute participanților, tehnologii noi și emergente, precum și de a transforma Timișoara într-un hub de abordări inovative în promovarea și dezvoltarea tehnologiilor https://dci.uvt.ro/youth-elite-timisoara-2019/ ;
- **Caravana CSH – FTC:** *95 copii*, de la Școala Gimnazială Sânmihaiu Român și de la Grădinița Pygmalion, care au participat la demostrații cu roboțelul nostru Qubit, noi având ca scop inspirarea copiilor/tinerilor să fie atrași de știință și tehnologie, aplicând educația STEM și principiile FIRST;
- **Mentorarea echipelor nou intrate în competiția de robotică:** *2 echipe*: LTTV TEAM - Liceul Teoretic *Traian Vuia* Făget și o echipa internațională din Republica Moldova;
- **Noaptea Cercetătorilor Europeni 2019:** *3500+ de vizitatori*, eveniment dedicat cercetării, finanțat de Comisia Europeană, organizat de Nokia Timisoara Careers, iar echipa CSH a avut calitatea de partener local și expozant, este locul în care oamenii pasionați de știință și tehnologie se întâlnesc și inspiră o întreagă generație de tineri;
- **Flight Festival 2019**: *25000 participanți*, am prezentat roboții în cadrul bastionului tehnologiei Hamilton Central Europe, alături de echipa XEO a Colegiului Național ,,Horia, Closca si Crisan" Alba Iulia, la acest festival în care muzica, arta și tehnologia au fuzionat;
- **Academia CSH**: *50 participanți*, eveniment organizat cu ocazia Centenarului Colegiului National Pedagogic ,,Carmen Sylva" Timișoara, în cadrul căruia a fost prezentată echipa CSH Junior, care va participa la competiția FIRST Lego League 2020 și are în componență elevi de gimnaziu, mentorați de membrii echipei CSH;
- **CodeCamp_Timișoara**:*600+ participanți*, am participat la Universitatea Politehnica Timisoara, în calitate de expozanți, împreună cu echipa de robotică FlipFlopsRobotics, a Liceului Teoretic *Grigore Moisil* din Timișoara;
- **XEO Talks:** *29 echipe*, am participat la Conferința de robotică organizată de echipa XEO a Colegiului „Horea, Cloșca și Crișan" Alba Iulia, având ca scop schimbul de experiență cu liceenii robotiști din țară;
- **Conferința Națională a Comunității Educație pentru Știință**: participare la întâlnirea antrenorilor First Lego League pe platforma de cercetare de la Măgurele, Ilfov, cu scopul unei bune informări cu privire la pregătirea echipei CSH Junior pentru competiția de robotică First Lego League;
- **Medieval Robotics Day- Castelul Huniazilor Hunedoara**: *9 echipe de robotică din țară,* eveniment organizat de echipa RobotX Hunedoara, în care au existat meciuri demonstrative cu roboții echipelor participante;
- **Concurs județean de creativitate în domeniul informaticii „InfoGim", editia a XVI-a:** am participat în calitate de elevi evaluatori (4 membri ai echipei) și voluntari (2 membri) în organizarea concursului.

Implicare în viața comunității prin participarea echipei CSH la evenimente cu scop caritabil:

- **De 1 decembrie unim roboții să creăm un viitor mai bun pentru toți**: *4 echipe*- Team CSH, Team XEO, Rubix, CyberPunk Robotics, la Alba Iulia, cu ocazia Zilei Naționale a României, s-au organizat meciuri demonstrative de robotică într-un eveniment caritabil cu strângere de fonduri pentru Centrul de Consiliere Și Sprijin Pentru Părinți și Copii „Sfânta Maria" Alba Iulia;
- **Târg caritabil „Din suflet pentru tine":** echipa CSH a participat la târgul organizat de colegiul nostru cu scopul strângerii de fonduri pentru persoane aflate în suferință.

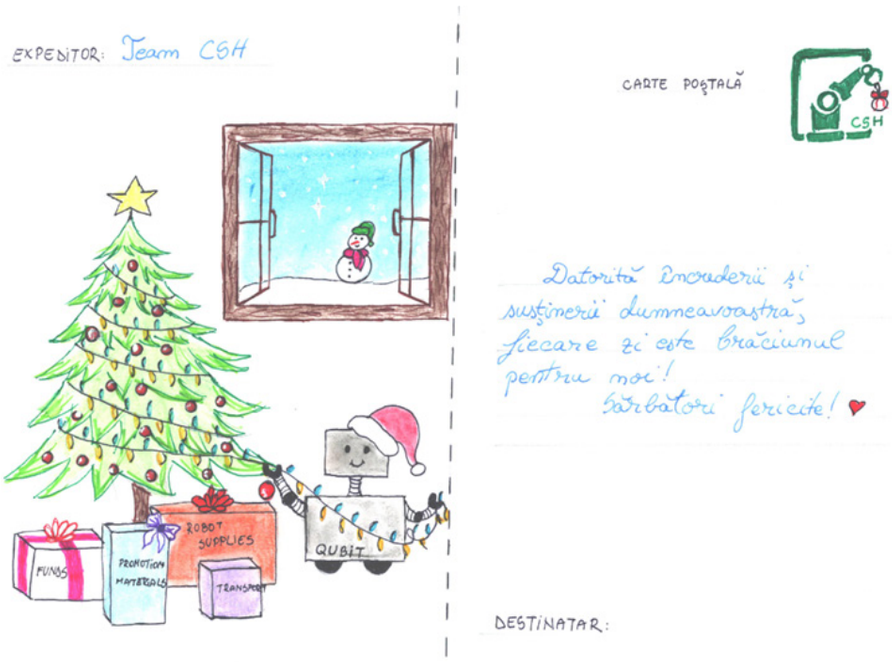
Nominalizări internaționale:

- **Laura Chirilă** membră a echipei CSH, nominalizată la "The next generation of digital makers | Philip Colligan | TEDxOpenUniversity" https://youtu.be/yxSe2svMk1Q .

În pragul sărbătorilor de iarnă, vă mulțumim pentru suportul pe care ni l-ați oferit și pentru toată bunătatea de care ați dat dovadă!
Fie ca magia Crăciunului să vă aducă pace sufletească și să ne reîntâlnim în Noul An cu noi puteri!

Echipa CSH, vă mulțumește și vă urează **SĂRBĂTORI FERICITE!**


SNOWMAN
YOU ARE ON THE LIST OF GOOD PEOPLE
În pragul sărbătorilor de iarnă, vă mulțumim pentru suportul pe care ni l-ați oferit și pentru toată bunătatea de care ați dat dovadă pe parcursul anului! Fie ca magia Crăciunului să vă aducă pace sufletească și să ne reîntâlnim în Noul An cu noi puteri! Sărbători fericite! La mulți ani, 2020!
Cu drag, Echipa CSH


EXPEDITOR: Team CSH
CARTE POȘTALĂ
CSH
ROBOT SUPPLIES
QUBIT
FUNDS
PROMOTION MATERIALS
TRANSPORT
Datorită încrederii și susținerii dumneavoastră, fiecare zi este Crăciunul pentru noi!
Sărbători fericite!
DESTINATAR:


eltrex

This year we managed to obtain the amount of 21,640.84 USD.

Thanks to our sponsors!

APTIV

APTIV TECHNOLOGY SERVICES & SOLUTIONS SRL - A technology company that is transforming mobility with its portfolio of safe, green and connected solutions for a diverse array of global customers, established in western Romania since 1996 (Delphi Packard Romania SRL).

intel

Intel Corporation is an American multinational corporation and technology company headquartered in Santa Clara, California. It is the world's second largest and second highest valued semiconductor chip manufacturer based on revenue. Intel supplies processors for computer system manufacturers such as Apple, Lenovo, HP, and Dell. They sponsored us with the needed robot parts.

HAMILTON

Hamilton Company specializes in the develop-

ment, manufacturing and customization of precision measurement devices, automated liquid handling workstations, and sample management systems. Hamilton Company has been a leading global manufacturer for more than 60 years.

Universitatea de Vest din Timişoara

West University Timisoara has been around for 76 years. It has 11 universities that offer a large variety of classes and programs. West University Timisoara offers students the necessary training to contribute to the development of society. With their help, we made possible our summer camp and our demo.

CREATIVE SPACE

Creative Space is a marketplace sustained by a community of people that are interested in technology and design. Through this project they want to support the concept of "maker" in Timisoara,Romania. Creative Space offers people access to a large variety of equipment such as 3D printers, laser cutting, lathe and tools. We can freely use their facilities so we can build our robot.

NOKIA

Nokia Corporation is a Finnish multinational telecommunications, information technology, and consumer electronics company, founded in 1865. Nokia is a major contributor to the mobile telephony industry, having assisted in the development of the GSM, 3G and LTE standards (and currently in 5G), and was once the largest worldwide vendor of mobile phones and smartphones. They gave us a workspace where we can meet up and work.

DUC VERDE automation & advertising

National Pedagogical College "Carmen Sylva", Timisoara is an educational unit that's knows for its professional competency and high-level education. Their mission is to make sure that the pupils are well prepared for their future. All of our team members are part of this high school. They bought us t-shirts for our team, the FLL team and for volunteers.

Vista Vision is an ophthalmology clinic founded in 2006. They have 4 clinics in Romania: Timisoara, Arad, Baia Mare and Deva. The diagnostic and treatment are exposed clearly, so that everyone can understand their eye health condition and the needed steps to improve it.

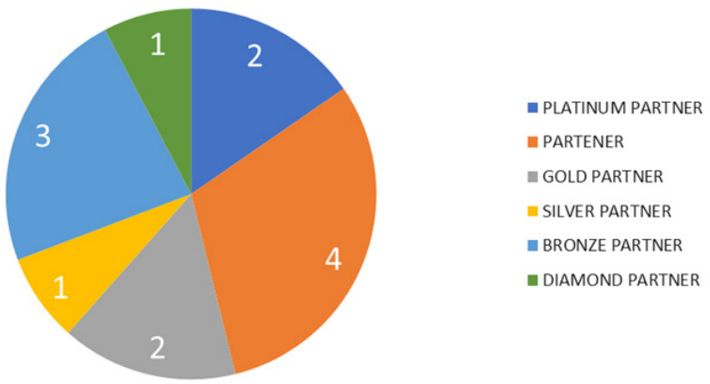
Eltrex was founded in Timisoara, in 1999, with the clear objective of providing our customers with expeditious services and quality products. Designing and creating "turnkey" solution for the industrial sector represents their daily challenge. They analyze, design, build and test so when they deliver a project, the customer will be able to benefit from a maximum of effectiveness.

Aquatim provides water supply and sewerage services in Timisoara and more localities from Timis county. Their main responsabilities are the clients' security and comfort and enviroment protection.

7.2. Team CSH's budget

Category	Team Income	Income Notes
Sponsors		
Aquatim SA	1.000 lei	
APTIV Technology Services & Solutions S.R.L	20.000 lei	
INTEL SOFTWARE DEVEL-OPMENT SRL	26.521,05 lei	
HAMILTON CENTRAL EU-ROPE S.R.L.	20.000 lei	
Colegiul National Pedagogic Carmen Sylva Timisoara	10.607,9 lei	Promotional Materials
Sim Vision Optics SRL	1.000 lei	
Vista Vision SRL	6.000 lei	
Eltrex SRL	4.000 lei	
S.C. Constructim SA	5.000 lei	
UVT		partner
SC DueVerde SRL		partner
NOKIA NETWORKS S.R.L		work space
Creative Space		work space
Total income for 2019 (lei)		**94.128,95 lei**
Total income for 2019(dollars)		**21.640,84 USD**

Expenses	Actual Cost(lei)	Actual Cost($)	Rationale/ Explanation
Category: ROBOT SUPPLIES			
Pieces Order -12th of july 2019	2.986,44 lei	$ 686,60	
Pieces Order -12th of july 2020	1.033,38 lei	$ 237,58	
Pieces Order 2- 12th of september 2019	4.996,81 lei	$ 1.148,80	
Pieces Order 3- 21th of oct 2019	4.793,32 lei	$ 1.102,01	
FLL	1.600,00 lei	$ 367,85	
Mechanical parts	4.483,40 lei	$ 1.030,76	
Mechanical gear	1.080,58 lei	$ 248,43	
Driver controller - electronic	2.227,14 lei	$ 512,03	
Gears and mechanical parts	5.795,94 lei	$ 1.332,52	
Gears and mechanical parts	7.133,85 lei	$ 1.640,12	
3D printer filaments	809,89 lei	$ 186,20	
3D printer	3.275,59 lei	$ 753,08	
Screws nuts, and a drilling machine	969,84 lei	$ 222,97	
Servo wheel	374,83 lei	$ 86,18	
Mobile phone	370,00 lei	$ 85,07	
Square pipe 10x10/ garou	109,00 lei	$ 25,06	
Comanda Gobilda	2.780,00 lei	$ 639,14	
TOTAL	**44.820,01 lei**	**$ 10.304,40**	



	Description	First participation 2017-2018	Second participation 2018-2019	Third participation 2019-2020
1	Total income	23.000 lei	46.878,70 lei	94.128,80 lei
2	Total Expenses	21.802,3 lei	45.893,32 lei	94.128,80 lei
3	Net result of the program	1.197,70 lei	985,38 lei	0 lei

8.Team's strategy plan

Our strategic plan provided for the period 2017-2022 the following directions:

1. Developing the teamwork skills of students and the mentors by interconnecting team roles based on FIRST principles over the course of the project

2. Stimulate creativity and develop the research skills of the team's students in order to build a robot which performs the required functions and contains innovative elements

3. Developing an effective marketing strategy to

promote FIRST project and principles by conducting outreach activities and co-opting volunteers.

4. Attracting funds to achieve team goals

Targets	**Results achieved at the February 2020**
1.Developing the teamwork skills of students and the mentors by interconnecting team roles based on FIRST principles over the course of the project based on activity management	The 19 team members/ students participating actively at the program (over the 18th month)have- scientific and technological competencies - in 3D design, mechanical and assembly, communication skills / public speaking, social skills, through involvement as volunteers, computer skills / programming, mathematics, language skills (in Romanian,in English), the technique of learning to learn, entrepreneurial competitions, appropriate skills / job-specific skills, networking, conflict resolution and teamwork, result orientation / solutions in times of crisis, personal efficiency, self-development, initiative, organizational / management / marketing skills, fundraising
2.Stimulate creativity and develop the research skills of the team's students in order to build a robot which performs the required functions and contains innovative elements with a technical and technological base	Last season: 1. the gear-based transmission, found in the collecting arm's shoulder and elbow joints; 2. the single autonomous period code, which works in any possible position and with any randomization on the playing field This season: Hardware: - Custom suction mechanism - Scissor lift - specific for stacking stones, impoves speed and stability compared to normal linear slides

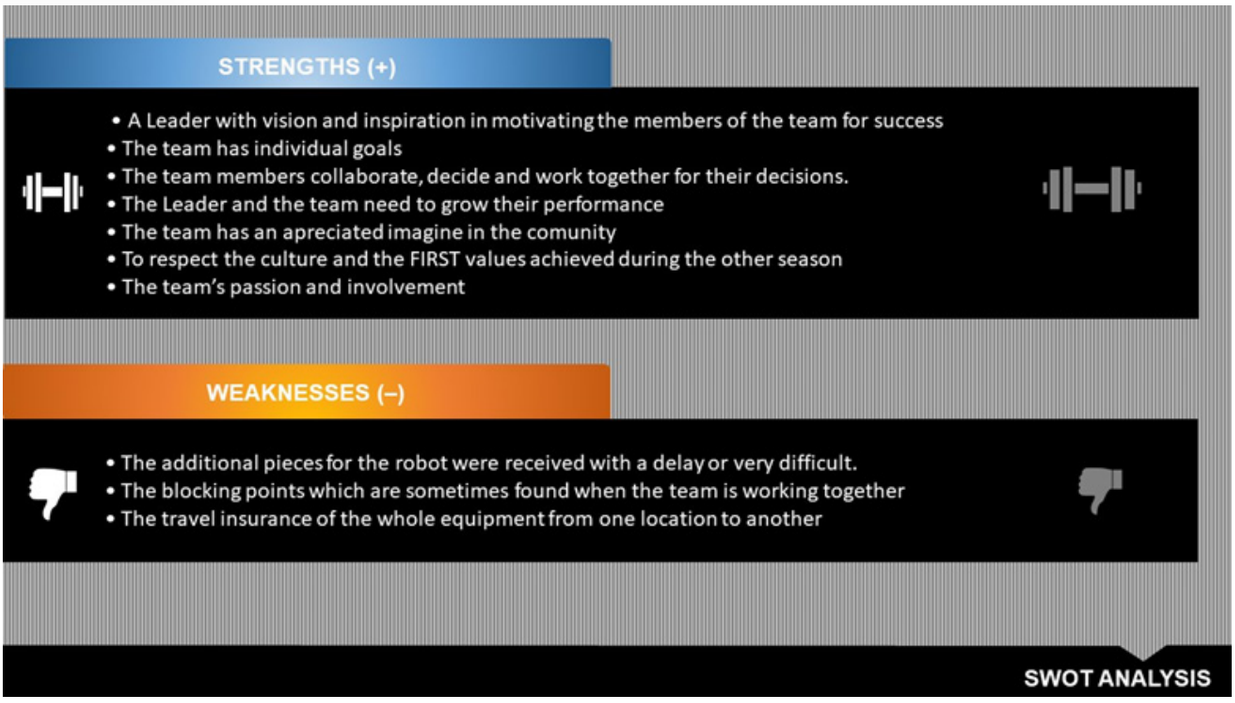
	- Clear designed mechanum chassis with good cable management - Modular design for whole robot - Software - Use of Road Runner library for motion profilling and odometry - Modularity, reusability of code
3.Developing an effective marketing strategy to promote FIRST project and principles by conducting outreach activities and co-opting volunteers.	Running a campaign to promote the FIRST phenomenon to the teachers from our town or from other contrys (Republic of Moldova, Italy) Attracting volunteers Actions aimed at interconnection with the FTC network Running a campaign to promote the FIRST phenomenon of the BRD FTC competition, interactive presentations with the robot for inspiring children and young people Involvement in the battle of organizations and associatios that come in support of disadvantaged categories of the community, getting involved in the community through volunteering, or by joining city-wide Promotion of the team, the competition, the FIRST principles in the Gracious Professionalism spirit in the media Mentoring new teams (LTTVF, CSH Junior, TechnoluHas Chisinau Republica Moldova)
4.Attracting funds to achieve team goals	Maintaining the connection with the sponsors through letters of thanks, greetings for the holidays, visits, activity reports at 2 months

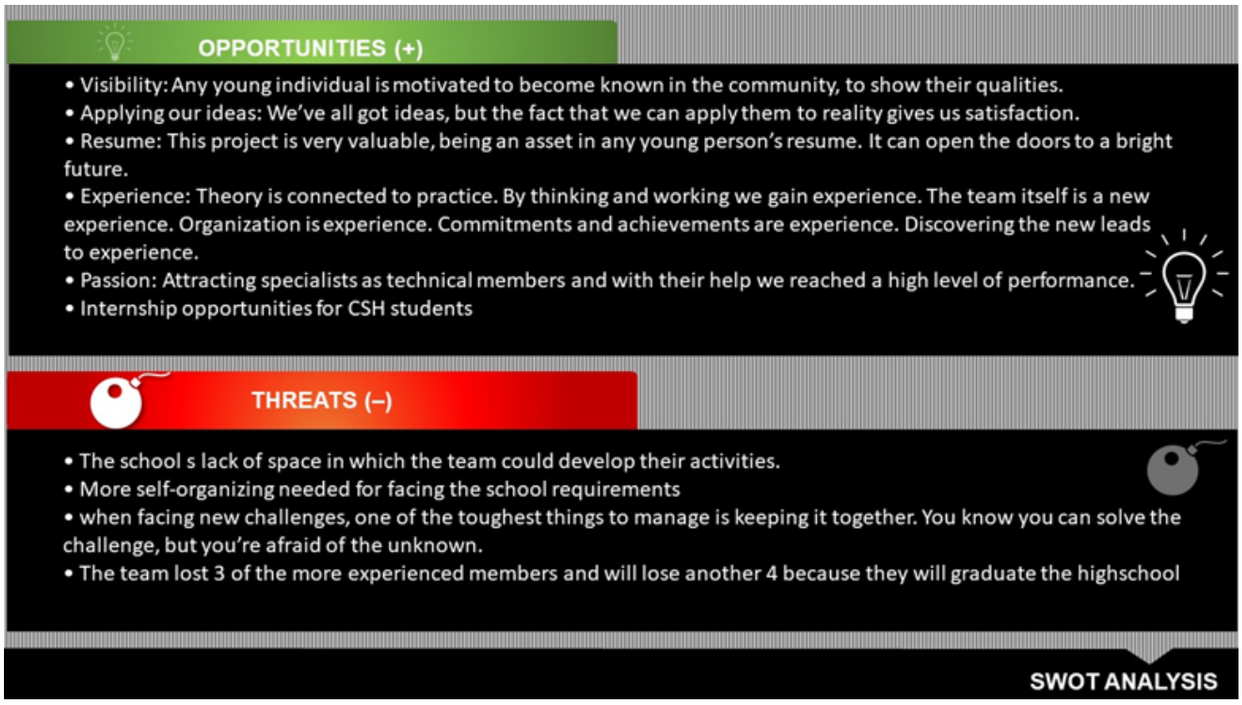
8.1. Action plan

Action	Period	Responsibles	Performance indicators
1. Developing the teamwork skills of students and the mentors by interconnecting team roles based on FIRST principles over the course of the project			
Creating a Business Plan	sep-oct	Mentors Team Leader Head of department	• Business plan • Gantt Diagram
Adapting/developing throughout the business plan season	sep- apr	Mentors Team Leader Head of department	• Conclusions of the periodic evaluation • Scrum -Trello
Training students	sep- nov	Mentor	• Training
2. Stimulate creativity and develop the research skills of the team's students in order to build a robot which performs the required functions and contains innovative elements			
Training students	aug -feb	Mentor	• Training
Studying and improving our programing skills	oct-feb	Mentor	• Workshop
Identification of the constructive solution accepted by all team-members	sep-oct	Leader	• Debate about this season's theme and possible mechanism • List of required parts
Making Robot design	oct	Head of Hardware & 3D Design	• Sketches • Prototypes 3D models
Assembling the robot	nov-apr	Leader Head of Hardware & 3D Design	• chassis • scissor system • suction system
Programming the robot	nov- apr	Leader Head of Programmer	• code on the robot
Writing the engineering notebook	aug- july	Head of engineering notebook	• Engineering notebook

3. Developing an effective marketing strategy to promote the FIRST project and principles by conducting outreach activities and co-opting volunteers.			
Elaborating a marketing strategy	sep	Head of Marketing & PR	• Marketing plan
Holding Outreach activities to promote the FIRST spirit to inspire anyone that collaborates with us in any way	aug-july	Head of Marketing & PR	• Outreach activities • Awards • Nominations
Co-opting volunteers	aug-july	Head of Marketing & PR	• Volunteers list
4. Attracting funds to achieve team goals			
Contact sponsors to achieve team goals	Team	permanent	• List of steps to contact with a possible sponsor • Contracts • List of sponsors
Maintaining the connection with the sponsors	Head of Marketing & PR	permanent	• letters of gratefulness • greetings for the holidays • visits • activity reports every 2 months
Realizing the project's sustainability	Mentor	permanent	• the project's sustainability • Budget

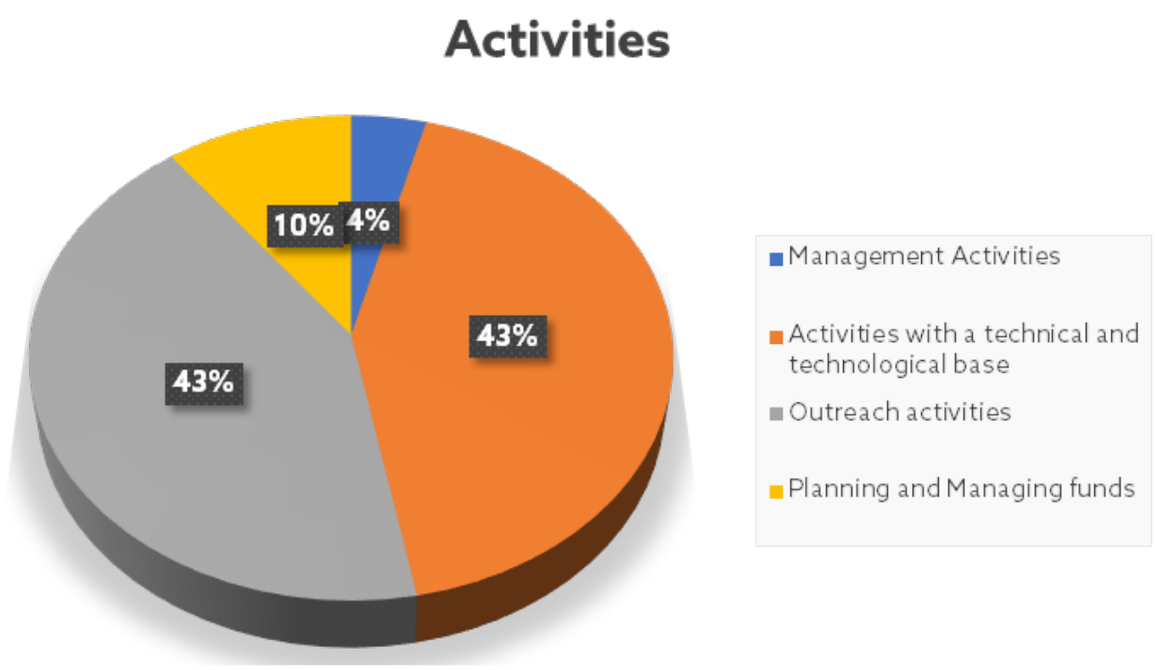
8.2. SWOT Analysis





Below is a statistic of every department's activity, measured in hours.

	Activity	2017-2018	2018-2019	2019-2020
1.	Management activities	356 h 30%	204 h 30%	200 h 10%
2.	Activities with a technical and technological base	687.5 h 30%	1433 h 24%	2080 h 10%
3.	Outreach activities(FTC community, events, media, community volunteering, fundraising)	356 h 67%	650 h 29%	2070 h 10%
4.	Planning and managing funds	100.5 h 80%	500 h 40%	500 h 10%
	TOTAL/AVERAGE	**1500** **51,75%**	**2787** **31%**	**4850** **10%**



BRD | FIRST TECH CHALLENGE ROMANIA | NAȚIE PRIN EDUCAȚIE

ENGINEERING SECTION

2019-2020

Dream BIG, build BIGGER!

HARDWARE SECTION

SOFTWARE SECTION

HARDWARE

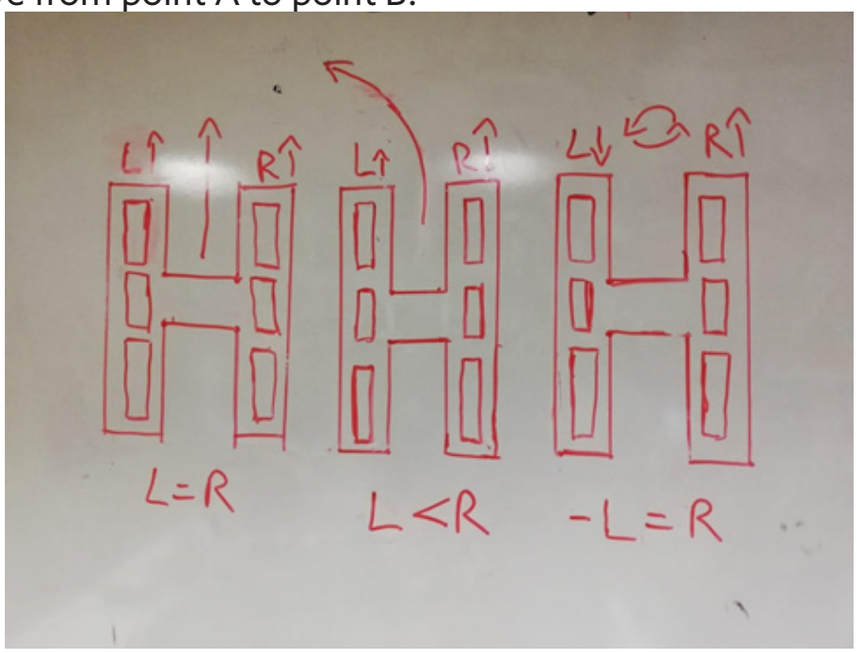
1. Drivetrain

1.1 Drivetrain Options

This year we wanted to research more options for our drivetrain. In Skystone we observed that we need to be precise so a good drivetrain will make a difference.

1.1.1. Differential Drive

In the last season we used a differential drive with the chassis TileRunner. We observed that it was sturdy and you could use odometry very easily because the wheels don't skid. The downside is that it has limited movements and if you wanted to go sideways you would have to make a lot of actions just to move from point A to point B.



Advantages:

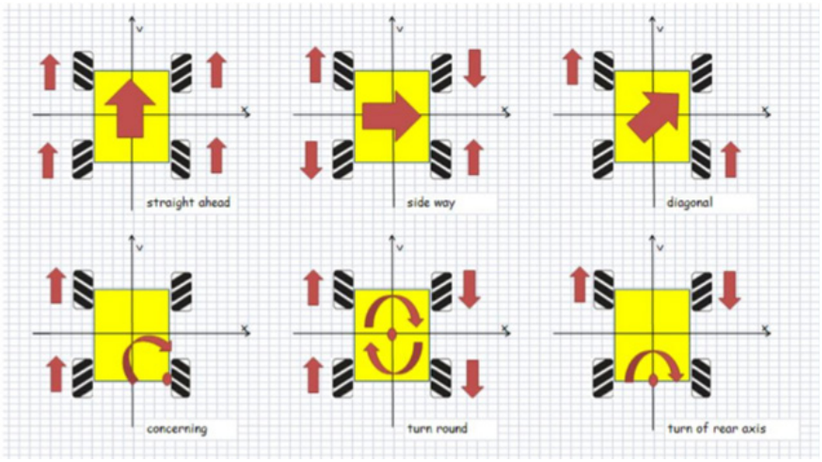
- It's easy to program
- More durable

Disadvantages:

- A big disadvantage is that it needs a lot of movements for simple tasks

1.1.2. Mecanum Drive

This season we wanted something different so we bought the goBILDA Strafer Chassis kit to try working with the mecanum wheels. These wheels have the ability to do a sideways movement which gives us less actions to do. The only thing is that it's slightly harder to program and it's harder to calibrate the position because of how the wheels skid sometimes.



Advantages:

• You can strafe and because of that we can precisely and easily stack stones into a tower

Disadvantages:

• It's hard to program

• The wheels skid at higher speed

1.1.3. Conclusion

In conclusion we decided to go with the mecanum drive because it was the most reliable for the Skystone tasks. Our chassis for that type of drive is a model after the goBILDA Strafe Chassis kit and it's a simple chassis but sturdy who gives us a lot of work space.

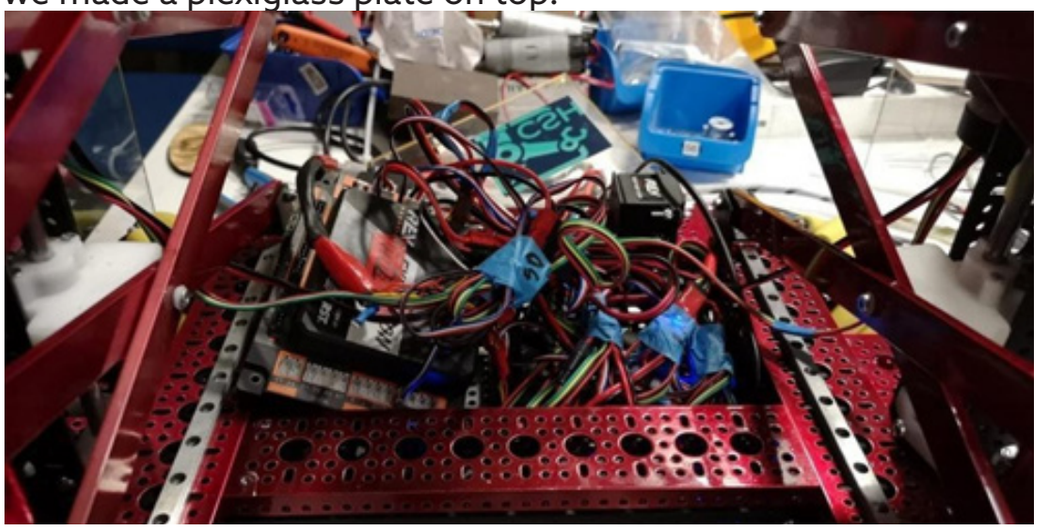
2. Power transmission

Since the chassis that we used this year is a model after the Strafer Chassis Kit the transmission was done with Bevel gears. At first we used the goBILDA Planetary Gear Motor 3.7:1 1620 RPM and with the multiplication of the bevel gears (2:1 ratio) we get 7.4:1 ratio. That meant that we were very fast but at the same time we couldn't put much weight on the robot, since the torque of the motor is low. Also because it was that fast the mecanum wheels constantly skid and we couldn't tune the PID very well because on short distances the motors couldn't reach the maximum speed. To fix this problem we mounted the goBILDA Planetary Gear Motor 19.2:1 312 RPM and with the multiplication of the bevel gears we get 38.4:1 ratio. With them we could now tune the PID very easily and the important part is that the mecanum wheels would not skid anymore.

3. Electronics

When we first saw the chassis we thought that we

could put the Rev Expansion Hubs in the chassis, leaving us more room for things to put on the robot. And because we need to have the electronics at sight we made a plexiglass plate on top.



4. Mechanisms

4.1. Lifting

In this season, the most important thing is stacking the stones to make a tower for a lot of points. For us to stack as many stones as possible we need a fast and stable vertical linear motion. Another criteria that we had to keep in mind is that the robot needs to be as compact as possible for it to fit under the alliance bridge . For that we thought of two kinds of mechanisms that will help us accomplish that type of task.

4.2. Scissor Lift

In our brainstorm about what type of linear motion we should use, Spiri came with an idea about scissor lift. It's a mechanism that is compact but can reach very high heights. One of the disadvantages is that you need to be very careful with the manufacturing because if you misplace a hole it can disorientate the hole mechanism which could make it not work.

Advantages:

- Compact
- It can reach high heights

Disadvantages:

- You need to be precise with the manufacturing
- You need a lot of torque for it to work

4.3. Linear Slides

Another topic that we discussed was the use of the linear slides. Their advantages are that it's easy to build and it's fast. The Disadvantages of this season is that for them to reach higher heights you need to stack a lot of them to reach the desired height.

Advantages:

- Easy to build
- It's fast

Disadvantages:

- You need to stack a lot of linear slides to reach the desired height

Conclusion

After discussions we decided that we should have a scissor lift mechanism, since it's a lot more compact and we could fit under the bridge.

4.4. The construction of the scissor lift

Following the discussions we began to construct the prototypes for the scissor lift. To see how it works we build several types of scissor lifts of different materials to see how it behaves.

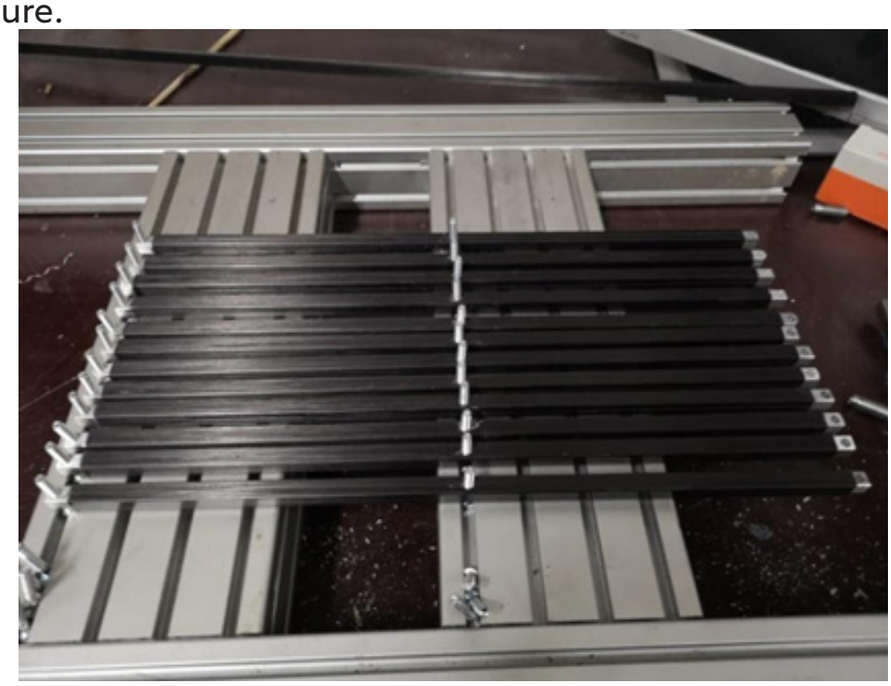
4.4.1. POM (Polyoxymethylene)

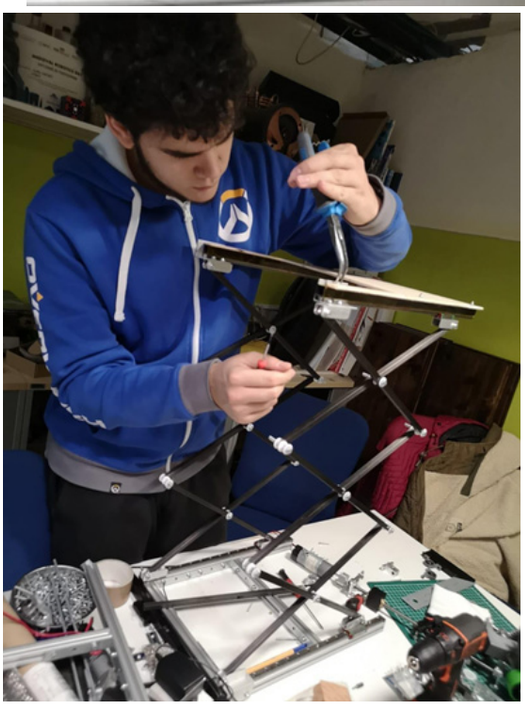
POM is a plastic that's durable and sturdy, it can sustain high tensions and because of that it's a perfect material for the scissor lift. After we built it we observed that it's a bit heavier than it looks, so we did some calculations and found out that it needs a lot of force for it to be driven.
Because of that we tossed away the idea that we should make it from POM. So we searched for a different material that was lightweight and also durable. But from this prototype we learned how the mechanism works and how it should work.

4.4.2. Carbon Fiber

The first thing that we thought of when we needed a lightweight material which is also durable was the carbon fiber. Carbon is a material which has a

high strength to weight ratio because of its low density. Since it's so lightweight it's an ideal material for the mechanism. When it arrived, we began the manufacturing, we needed to be very careful with it because if not maneuvered well it could break into pieces. Also if the carbon powder is inhaled it can produce bad health problems. To mount the arms we decided to plastic weld a block of aluminum in each extremity of the arm. It worked smoothly until we decided to mount the arms on the chassis. It seems that the plastic weld could not stick the fiber well to the aluminum. We gave up on the idea and set it aside because it was complicated and it needs a long time to manufacture.





4.4.3. Aluminum Square Tube

After we failed with the carbon fiber we worked on the second material that we knew that it was lightweight and durable, aluminum. We bought some aluminum square tubes and started to cut them and to mount them on the chassis. When we tested it out it worked well but it had a little problem, when weight was put on the arms, it lowered, so to fix that we tied some chirurgical tubes to the arms to create more stability. Even if we solved this problem, at our demo before our first match the scissor lift arms broke because of the weight of the platform where it was the suction system. We found out that it broke because of the structure, since it's hollow on the inside.

4.4.4. Aluminum profiles

Since our last scissor lift arm broke because of the pressure, we thought that we should have a whole aluminum profile to increase the integrity of the build, so began cutting the new profiles that were a lot more stronger that the previous ones.

4.5. The power mechanism

When we decided that we wanted to use the scissor lift we needed to come up with an idea

of how we would power it. We did a bit of research and we found out that there are 3 methods of scissor action:

4.5.1. Horizontally:

A screw bound to an extremity of an arm that's mobile and the other one motionless. A motor powered and connected to that screw which when in tension it would move the arm thus extending the scissor lift upwards.

Advantages:

- More space because it's on the bottom

Disadvantage:

- because it's a single screw the durability is not that high
- A little bit slow

4.5.2. Diagonally

A screw bound to the first intersection of the scissor lift. A motor powered and connected to that screw which when in tension it would move the arm thus extending the scissor lift upwards.

Advantages:

- A little bit faster that the horizontal one

Disadvantage:

- It occupies more space
- because it's a single screw the durability is not that high

4.5.3. Vertically

Two screws each bound to the first intersection of each scissor. The extremities of the arms are both mobile, since the intersection needs to be always in the center and aligned with the screw. A motor powered and connected to that screw which when in tension it would move the arm thus extending the scissor lift upwards.

Advantages:

- The fastest one, because it has the lowest course
- It has a screw for each scissor, so it has more durability
- It doesn't occupy much space because it's mounted on lateral

Disadvantage:

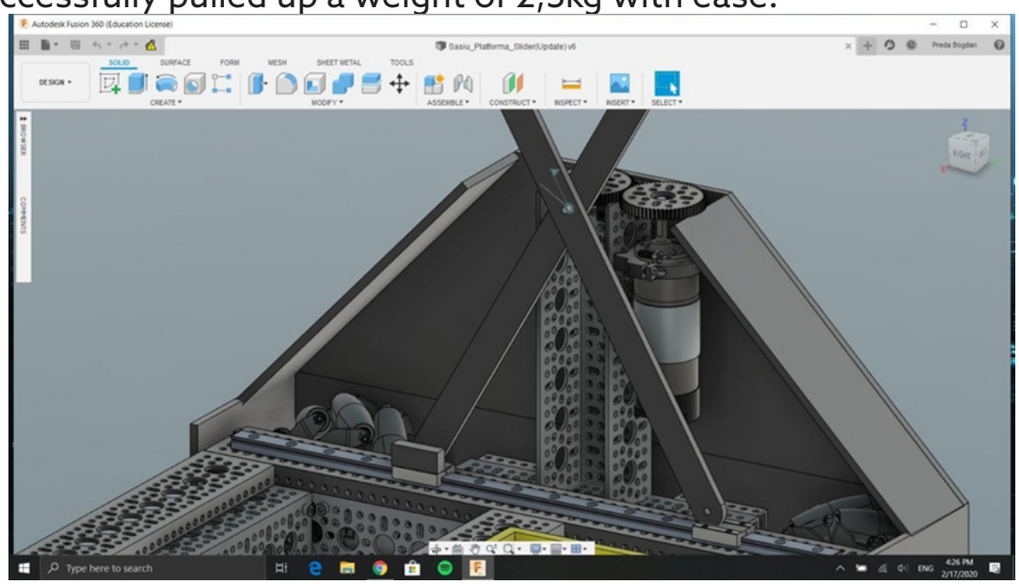
- It's hard to build
- The screw needs to remain vertical

4.5.4. Conclusion

After discussions we decided that we should go with the vertically driven mechanism. We began prototyping to search for the problems that we would encounter during the testing phase.

For our first prototype, we put the screw inside an

U-channel goBILDA aluminum profile with a quad block mount on each extremities. On each quad block we mounted the bearing that will hold the screw inside the U-channel. At the top of the screw we would put the gear that would be driven by the motor. When we first tried it, we tested it with a screw that was cut then the top was turned at the precision lathe to be able to mount the gear. When we first drove the scissor lift it was with an Andymark 60:1 Neverest motor and with a demultiplication of 3:1 ratio because of the gears at the top we got an 20:1 ratio. We did it just because we wanted torque but also we wanted to have some speed. We observed that even though we had that demultiplication the mechanism moved very slowly. The cause is that the screw that we used wasn't perfect because when we turned it at the lathe we compromised its integrity. So we ordered online a screw that was perfect for our tasks. When we first tested it it worked very well, and this time we used the Neverest 20:1 motor with a gear ratio of 1:1, we successfully pulled up a weight of 2,5kg with ease.

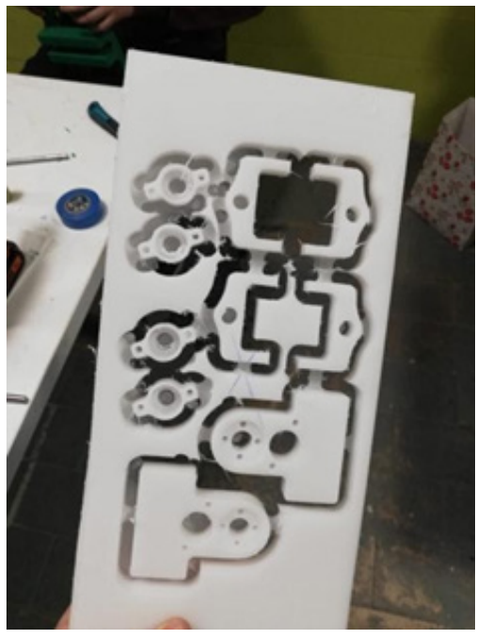


The engagement system for our scissor lift

4.6. The nut

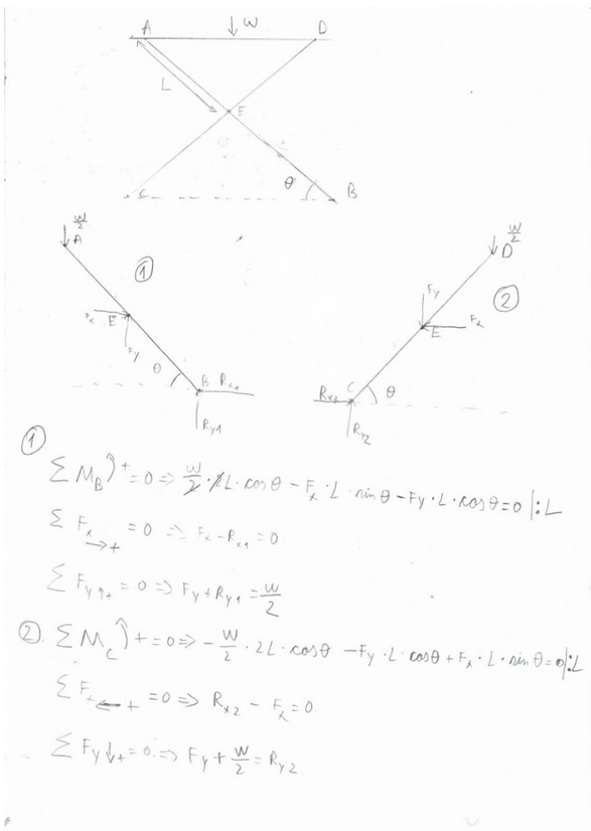
We needed a jacket for the nut of the scissor lift, because we had to somehow mount the screw to the first intersection of the scissor lift. We thought that we could 3D print that jacket so we began modelling that piece. When we tested that prototype we saw that the PLA filament couldn't withstand that pressure of the scissor lift. So we decided that we should use POM (polyoxymethylene) which it's a durable material and it's ideal for this kind of task. We began modelling and we made the components at the CNC at our workshop. Also we thought that we should increase the integrity of the screw so we put a shaft parallel to the screw to maintain it's verticality. Because of that the mechanism improved a lot and it increased the durability and the integrity of the

screw.

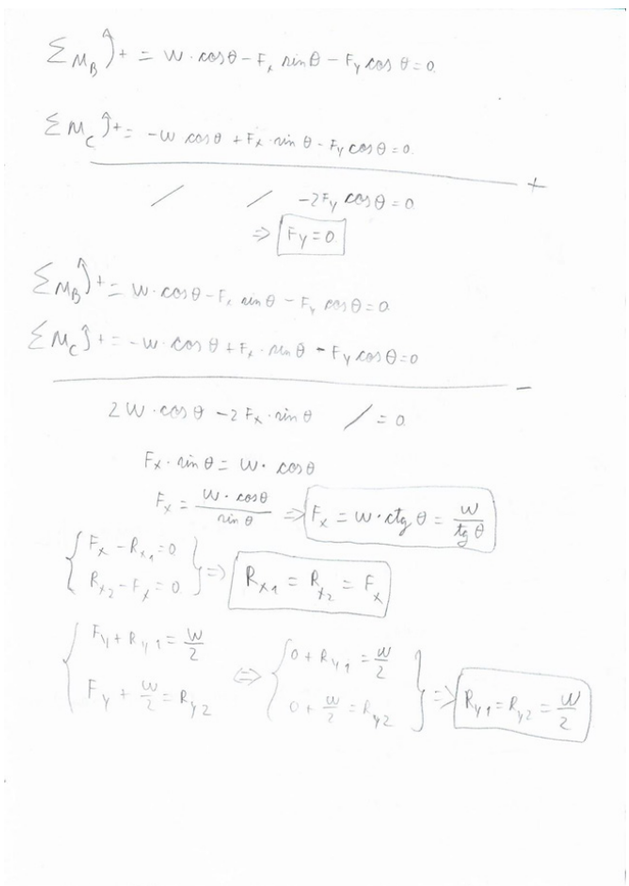


4.7. Physics section

We wanted to see how the scissor works and how the force is distributed on it so we seeked help from our physics teacher. She was delighted to help us, so together we came up with some formulas that will help us in the future. We calculated the static momentum of the scissor lift.



The components for the nut.



4.8. Intake

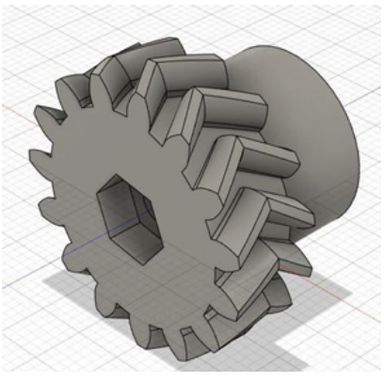
At first we wanted to have the intake mechanism to be different from the outtake. So we created a prototype for the Hunedoara Medieval Robotics event. The idea that we tested it worked but was not that good, so we had a brainstorm session and came up with an innovative idea. We combined the intake with outtake, meaning that we had the wheels who did the intake, after that we would grasp that block and then we will stack it on the foundation.

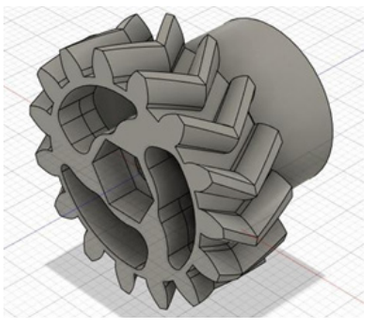
4.8.1. The herringbone gears

We don't want our gear's teeth to slip, so we researched on the internet a type of gear that is perfect for this task, the herringbone gear. The herringbone is basically a gear composed of two opposed helical gears that will create a arrow pattern on the gear, because of that the gears would never slip and they will always remain in the same position.

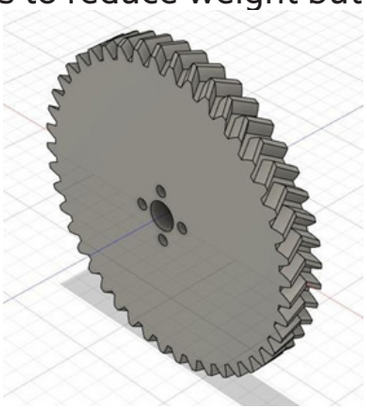
On our suction system we have 3 types of herringbone gear with 15,30 and 45 teeth.

The 15 and 45 tooth gears we use for our suction mechanism, since it gives a multiplication of 3:1 ratio that will give us speed. The 45 tooth gear is mounted on the Rev servo motor which is then transmitted to 2 gears which both have 15 teeth.





The first version of the 15 tooth gear (left) and the second version which has holes to reduce weight but also to remain the same integrity (right)

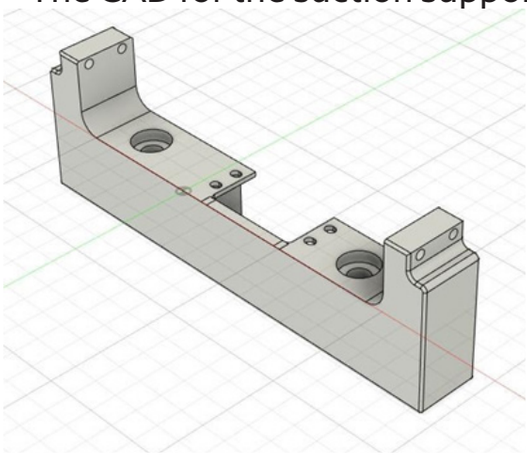


The first version of the 45 tooth gear (left) and the second version which has holes to reduce weight but also to remain the same integrity (right)

4.8.2. Suction

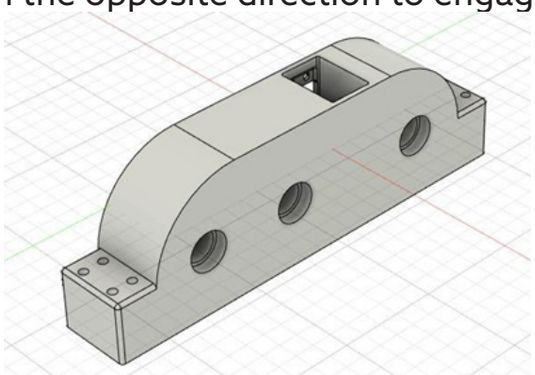
For the suction system we thought to have a continuous servo motor that would engage the two 2 Inch stealth wheels that would pull the stone inside the intake. We knew that the Rev Servo motors aren't that fast so we did a 1:3 multiplication ratio to gain some speed. It worked when we did the tests.

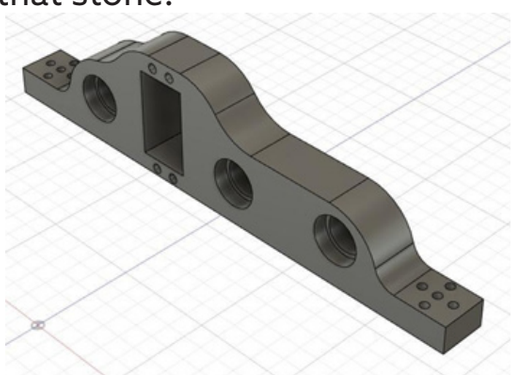
The CAD for the suction support of the wheels



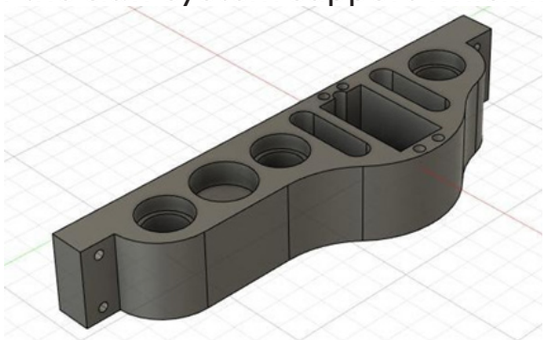
4.8.3. The claw system

The claw system is powered by one servo that would engage 2 gears both with a multiplication of 2:1 ratio to gain more torque because we need a lot of force to pinch that stone into place. Every gear would have an 8 mm shaft that would go into them. We needed a fourth gear just to make the shafts go in the opposite direction to engage that stone.





The first version of the claw system support which is heavier and bulky(left), the second version of the claw system support which is slim and more light.



And the third version which is a lot more lightweight and slimmer because of the holes that we made.

4.8.4. The wheels

For the suction we wanted to use the compliant wheels but because they are heavy we couldn't make them work with our system, and because they occupied a lot of space.

So we thought of using the 2 inch Stealth because they had the same properties as the compliant wheels but they were smaller. When we tested we found out that they could easily pull the stones inside.

The wheels that we use for the suction.

We also tried to make a custom wheel made out of flex filament but it didn't work because it doesn't have adherence.

The custom flex wheel

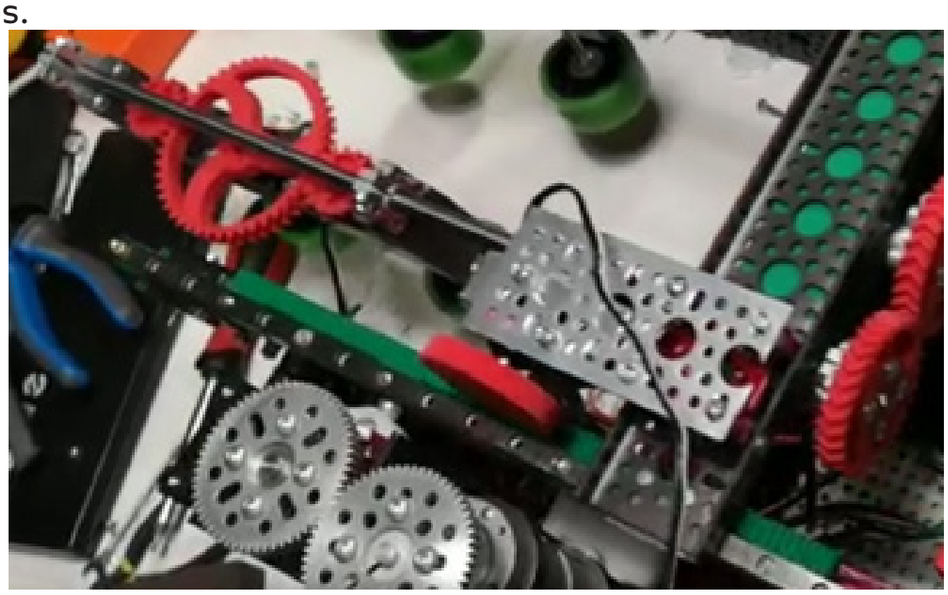
4.9. The extension system

We have a system that it intakes stones but all it does is that pulls the stones into the robot so we needed to come up with an idea to extend all of the suction system to be able to put the stones on the foundation. We tested out two ideas for the extension system.

At first we put a mini goBILDA cascading kit on the scissor platform for it to extend the suction forward. The first thing that we observed is that the cascading was too heavy for

our lifting mechanism and it broke our scissor arms. So we tossed this idea away and began thinking about another way to extend the system.

The second idea is to use a rack. Our suction system is mounted to a C-channel profile that is also mounted to 2 rail slides. So we fixed a servo motor on that channel and we 3D printed a rack that was mounted between the two rail slides.



The rack that is mounted on the scissor platform.

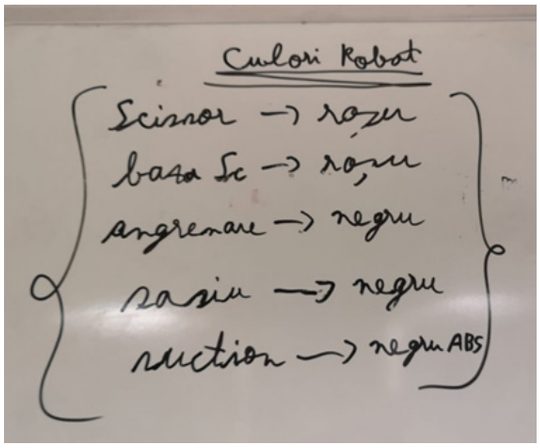
4.10. Foundation Claws

For moving our foundation we made a simple mechanism that will engage the foundation. We mounted 2 servo motors on the back of the robot each one with a 3D printed L block. When engaged the servos would grasp the foundation to be able to move it.

4.11. Color Design

We wanted to give our robot some color so our Mentor Cristi helped us with painting our robot. We used the powder coating pistol and began painting. The scissor lift was painted with the color candy apple red and the chassis was painted with black color.

The scissor lift that was painted with Candy apple red



In the Photo: "Scissor -> Candy apple , Scissor Base -> candy apple , Engagement -> black , chassis -> black , suction -> ABS Black".

SOFTWARE

1.Arhitecture

Our codebase is designed to be modular and reusable. This makes the creation of OpMode easier without the problem of putting every method into a single superclass.

1.1 Hardware Abstraction Layer

To help facilitate our modular design, each robot subsystem (e.g., the Scissor lift mechanism) has its own class. This class abstracts the "low-level", Input/Output operations (e.g., setting motor power, reading encoders) and has functions for every operation.

Our subsystems are:

- Drivetrain
- Scissor Lift

```
1.  public class ScissorLift{
2.      //declaring all motors
3.      public DcMotorEx liftLeft;
4.      public DcMotorEx liftRight;
5.
6.      //declaring operating modes for the motors
7.      public static final int FORWARD_REVERSE = 0;
8.      public static final int REVERSE_FORWARD = 1;
9.      public static final int FORWARD_FORWARD = 2;
10.     public static final int REVERSE_REVERSE = 3;
11.     public static final int POSITION = 0;
12.     public static final int ENCODER = 1;
13.     public static final int NO_ENCODER = 2;
14.
15.     //hardware map initialization and setting the operating mode
16.     public ScissorLift(HardwareMap hardwareMap, int encoderSetting, int motorDirection)
    {
17.         liftLeft = hardwareMap.get(DcMotorEx.class, "liftLeft");
18.         liftRight = hardwareMap.get(DcMotorEx.class, "liftRight");
19.
20.         switch (motorDirection) {
21.             case FORWARD_REVERSE:
22.             liftLeft.setDirection(DcMotor.Direction.FORWARD);
23.             liftRight.setDirection(DcMotor.Direction.REVERSE);
24.             break;
25.             case REVERSE_FORWARD:
26.             liftLeft.setDirection(DcMotor.Direction.REVERSE);
27.             liftRight.setDirection(DcMotor.Direction.FORWARD);
28.             break;
29.             case FORWARD_FORWARD:
30.             liftLeft.setDirection(DcMotor.Direction.FORWARD);
31.             liftRight.setDirection(DcMotor.Direction.FORWARD);
32.             break;
33.             case REVERSE_REVERSE:
```

```
34.             liftLeft.setDirection(DcMotor.Direction.REVERSE);
35.             liftRight.setDirection(DcMotor.Direction.REVERSE);
36.             break;
37.
38.         }
39.         switch (encoderSetting) {
40.             case POSITION:
41.                 liftLeft.setMode(DcMotor.RunMode.RUN_TO_POSITION);
42.                 liftRight.setMode(DcMotor.RunMode.RUN_TO_POSITION);
43.                 break;
44.
45.          case ENCODER:
46.                 liftLeft.setMode(DcMotor.RunMode.STOP_AND_RESET_ENCODER);
47.                 liftRight.setMode(DcMotor.RunMode.STOP_AND_RESET_ENCODER);
48.                 liftLeft.setMode(DcMotor.RunMode.RUN_USING_ENCODER);
49.                 liftRight.setMode(DcMotor.RunMode.RUN_USING_ENCODER);
50.                 break;
51.
52.             case NO_ENCODER:
53.                 liftLeft.setMode(DcMotor.RunMode.RUN_WITHOUT_ENCODER);
54.                 liftRight.setMode(DcMotor.RunMode.RUN_WITHOUT_ENCODER);
55.                 break;
56.
57.         }
58.
59.     }
60.
61.     //init function called in the initialization of an OpMode
62.     public void init(){
63.         liftLeft.setMode(DcMotor.RunMode.STOP_AND_RESET_ENCODER);
64.         liftRight.setMode(DcMotor.RunMode.STOP_AND_RESET_ENCODER);
65.
66.     }
67.     //function for moving the scissor lift up
68.     public void liftUp(){
69.         liftRight.setPower(1.0);
70.         liftLeft.setPower(1.0);
71.     }
72.     //function for moving the scissor lift down
73.     public void liftDown(){
74.         liftRight.setPower(-1.0);
75.         liftLeft.setPower(-1.0);
76.     }
77.     //function for stopping the scissor lift
78.     public void liftStop(){
79.         liftRight.setPower(0.0);
80.         liftLeft.setPower(0.0);
81.     }
82. }
```

- Extend mechanism

```java
public class Extender{
    //declare servo
    public CRServo extend;

    //hardware map initialization
    public Extender(HardwareMap hardwareMap){
        extend = hardwareMap.get(CRServo.class, "extend_suction");

        extend.setDirection(CRServo.Direction.REVERSE);
    }

    //init function called in the initialization of an OpMode
    public void init(){
        extend.setPower(0.0);
    }

    //extend function
    public void extend(){
        extend.setPower(1.0);
    }

    //retract function
    public void retract(){
        extend.setPower(-1.0);
    }

    //stop function
    public void stop(){
        extend.setPower(0.0);
    }

}
```

- Foundation Grabber

```java
public class GrabFoundation {
    //declare servos
    public Servo grabLeft, grabRight;

    //declare positions for servos
    private double closePos=0.8;
    private double openPos=0.0;

    //hardware map initialization
    public GrabFoundation(HardwareMap hardwareMap){
        grabLeft = hardwareMap.get(Servo.class, "grabLeft");
        grabRight = hardwareMap.get(Servo.class, "grabRight");

    }

    //init function called in the initialization of an OpMode
    public void init(){
        grabLeft.setPosition(openPos);
        grabRight.setPosition(openPos);
    }

    //release foundation function
    public void release(){
        grabLeft.setPosition(openPos);
        grabRight.setPosition(closePos);        }

    //grab foundation function
    public void grab(){

        grabLeft.setPosition(closePos);
        grabRight.setPosition(openPos);
    }
```

• Suction

```
1.  public class Suction{
2.      //declare servos
3.      public CRServo suctionLeft, suctionRight;
4.      public Servo grab;
5.
6.      //declare positions for the grabber
7.      private double closePos=0.5;
8.      private double openPos=0.55;
9.
10.     //hardware map initialization
11.     public Suction(HardwareMap hardwareMap){
12.         suctionLeft = hardwareMap.get(CRServo.class, "suctionLeft");
13.         suctionRight = hardwareMap.get(CRServo.class, "suctionRight");
14.         grab = hardwareMap.get(Servo.class, "grab");
15.
16.         suctionLeft.setDirection(CRServo.Direction.FORWARD);
17.         suctionRight.setDirection(CRServo.Direction.REVERSE);
18.     }
19.
20.     //init function called in the initialization of an OpMode
21.     public void init(){
22.
23.         grab.setPosition(openPos);
24.     }
25.
26.     //function for setting the claw to open position
27.     public void openGrab(){
28.         grab.setPosition(openPos);
29.     }
30.
31.      //function for setting the claw to close position
32.     public void closeGrab(){
33.         grab.setPosition(closePos);
34.     }
35.
36.     //function for collecting the stone
37.     public void collect(){
38.         suctionLeft.setPower(1.0);
39.         suctionRight.setPower(1.0);
40.     }
41.
42.     //function for releasing the stone
43.     public void release(){
44.         suctionLeft.setPower(-1.0);
45.         suctionRight.setPower(-1.0);
46.     }
47.
48.     //function for stopping the suction
49.     public void suctionStop(){
50.         suctionLeft.setPower(0);
51.         suctionRight.setPower(0);
52.     }
53. }
```

2.Autonomous period

2.1. Summary

Main autonomous

• 43 points auto, sampling 2 skystones starting from loading zone

Steps:

1. Detecting the position of skystones with OpenCv using the phone camera
2. Using the drive motor encoders and the REV Expansion Hub IMU, the robot follows a preplanned trajectory to collect and deliver 2 skystones, correcting for errors with two PID controllers.
3. Place each skystone on the foundation
4. Move foundation in the building site
5. Park under bridge

In case of system breakdown, we have a 2 backup autonomous programs.

First backup

• 15 points auto

Steps:

1. Move foundation in the building site
2. Park under bridge

All of them using a preplanned trajectory with two PID controllers.

Second backup

• 5 points auto

Steps:

1. Park under bridge, in a chosen position based on where the alliance partner park

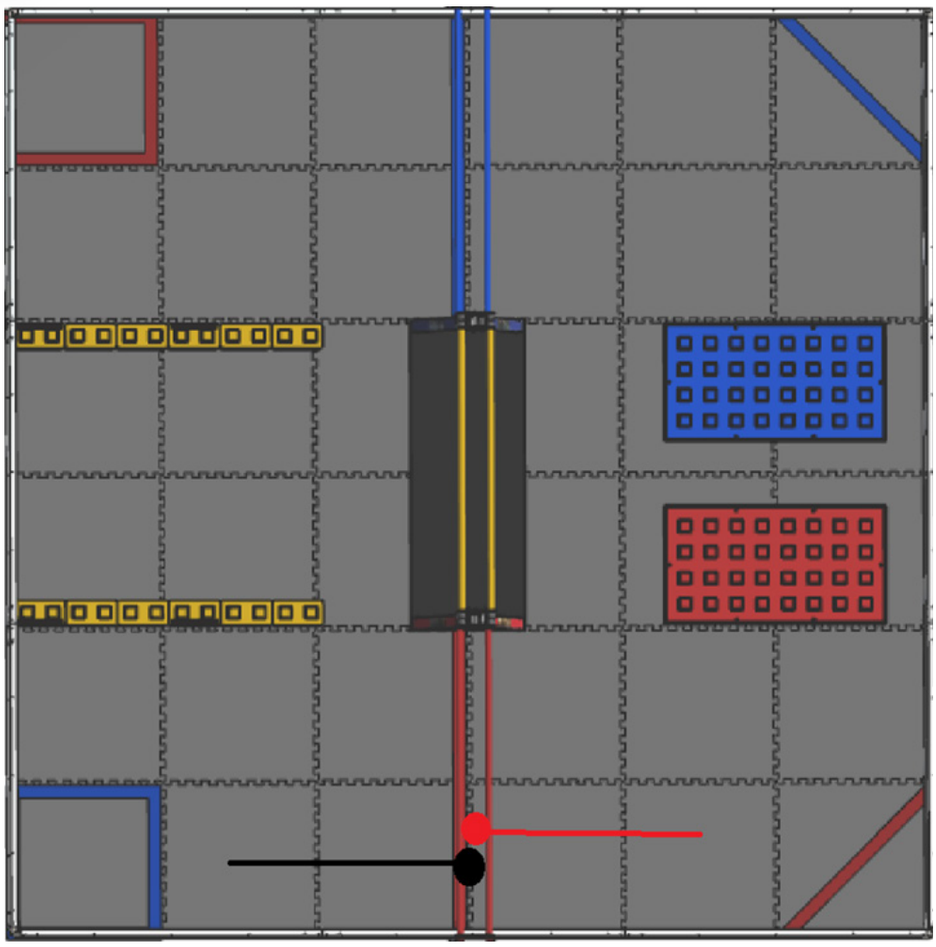
2.2.Sensors used

• Bosch BNO055 IMU — The internal IMU inside of a REV hub is used to accurately measure the robot's heading. This heading is critical to maintaining a dead reckoning estimate of the robot's pose in the autonomous routine and applying appropriate corrections to keep a desired heading over time.

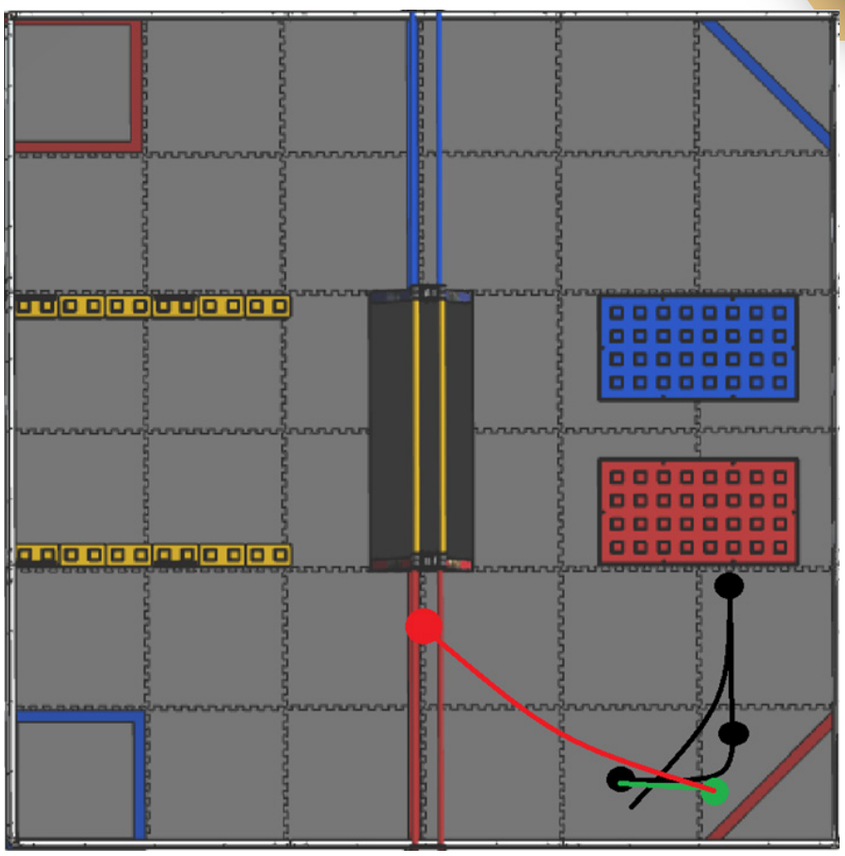
• Motor Encoders — All four motors on the drivetrain have encoders that keep track of the motors' rotations. This data is combined with the heading to fully estimate the robot's pose (i.e., its XY-position and heading). These same encoders are also used internally by the REV hub for closed-loop velocity control. Plus the encoders of the 2 motors from the scissor lift mechanism which we use to make the lift go to a specific level.

• Distance sensor – used to determine if the skystone is inside the suction mechanism during autonomous period

2.3.Autonomous Diagrams

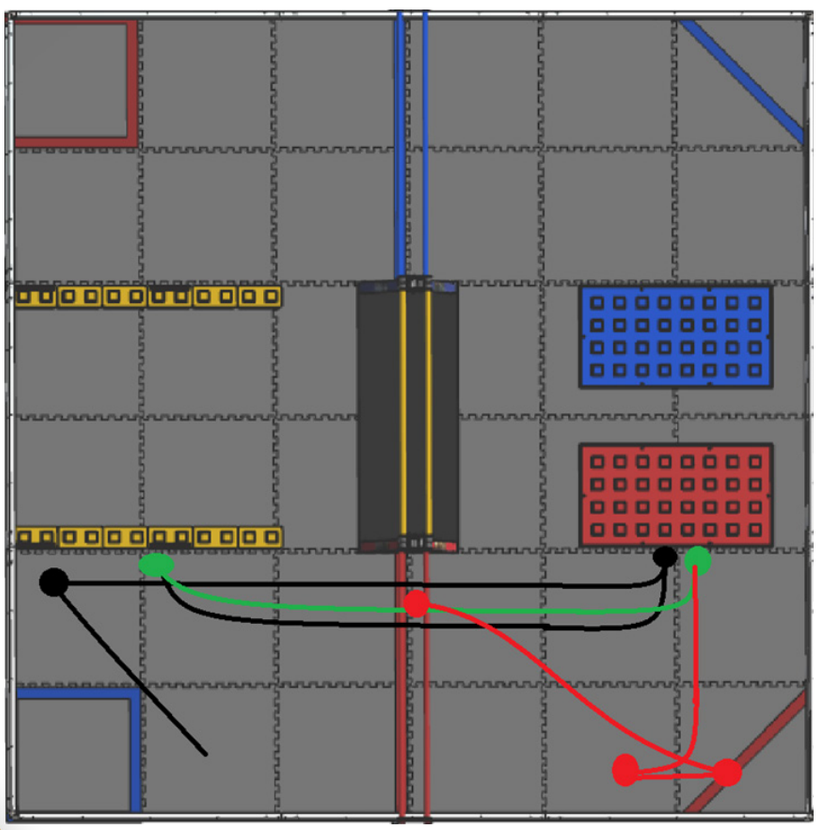


The first autonomous being the most simple, it represents the parking beside the wall
This autonomous representing only the forward movement for us to be able to obtain the parking points



The second autonomous is for moving the foundation and parking under the bridge.
The black line represents the beginning, and the red line, the end(parking).

In the third autonomous, the robot's route will be :
1.Collecting the first stone (black line) and stacking it on the foundation
2.Collecting the second stone (Green line) and stacking it on the foundation
3.Moving the foundation(red line)
4.Parking under the bridge(red line)



3.Navigation

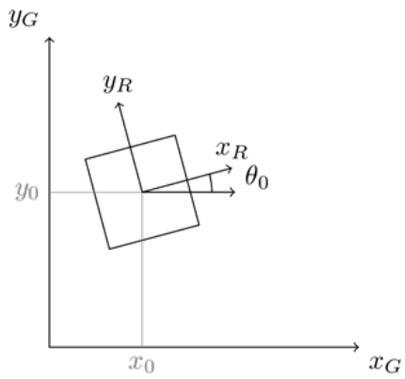
Navigation is the robot ability to localize itself and follow paths.

We use Road Runner – a wheeled mobile robot motion planning library designed for navigation and motion profiling
Next we are going to explain what concepts and functions we use for the navigation of our robot

3.1. Coordinate System

In order to describe 2D motion, we need a consistent global coordinate frame. Within this global frame, the robot's position can be described using typical Cartesian (x,y) coordinates. In addition to the linear position, the robot has a heading 0 defined as the angle between the front of the robot and the global x axis. The position and heading together constitute the robot's pose.
2D vectors and poses are built into the library and serve as primitives for many other classes.

```
1.  Vector2d position = new Vector2d(x, y);
2.  Pose2d pose = new Pose2d(position, theta);
```



In addition to the global coordinate frame, there is a robot coordinate frame that moves along with the robot. Paths are more conveniently described in the global frame while robot velocities are more conveniently described in the robot frame. To accommodate this, Road Runner constantly switches between frames.

3.2. Localization

Localization is the robot's ability to effectively estimate its position over time. Currently, the software relies primarily on dead reckoning with encoder and IMU sensor data.
Since we have a mecanum drive, the kinematics are a little more complicated.

3.2.1 Mecanum kinematics

Figure 1 shows the configuration of a robot with four omnidirectional wheels.

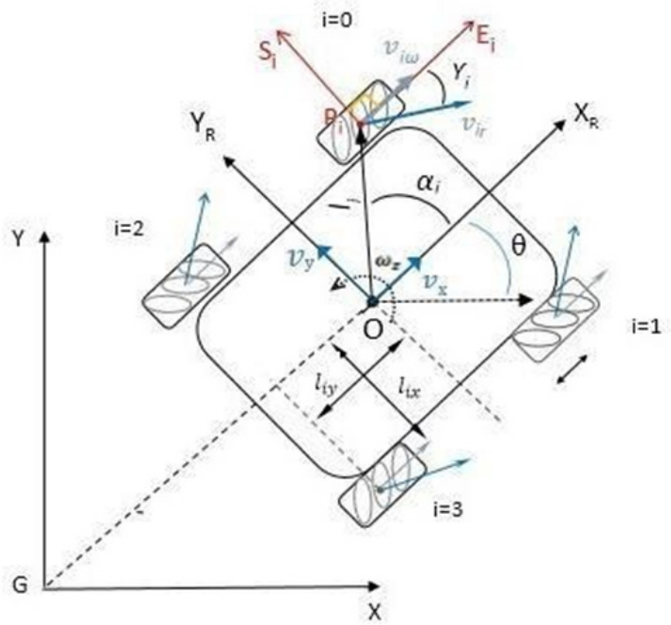


Fig 1: Wheels Configuration and Posture definition

The configuration parameters and system velocities are defined as follows:
· x, y, θ, robot's position (x, y) and its orientation angle θ (The angle between X and XR);
· X G Y, inertial frame; x,y are the coordinates of the reference point O in the inertial basis;
· $XROYR$, robot's base frame; Cartesian coordinate system associated with the movement of the body center;
· $SiPiE$, coordinate system of ith wheel in the wheel's center point Pi ;
· O, P , the inertial basis of the Robot in Robot's frame and $Pi = \{XPi, YPi\}$ the center of the rotation axis of the wheel i ;
· OP , is a vector that indicates the distance between Robot's center and the center of the wheel ith;
· li , liy , lix , half of the distance between front wheels and liy half of the distance between front wheel and the rear wheels.
· l , distance between wheels and the base (center of the robot O);
· r , denotes the radius of the wheel i (Distance of the wheel's center to the roller center)
· r , denotes the radius of the rollers on the wheels.
· α , the angle between OPi and XR ;
· β , the angle between S i and XR ;
· γ , the angle between vir and Ei ;
· ωi [rad/s], wheels angular velocity;
· $vi\omega$ $[m/s]$, $i = 0,1,2,3 \in$, is the velocity vector cor-

responding to wheel revolutions
· vi , the velocity of the passive roller in the wheel i;
·. [wsi wEi ωi]T, Generalized velocity of point Pi in the frame $SiPiE$;
· [vSi vEi ωi] T , Generalized velocity of point Pi in the frame $XROYR$;
· vx , vy [m/s] - Robot linear velocity;
·ωz [rad/s] - Robot angular velocity;
Typical Mecanum four system shown in Figure 1; the parameters of this configuration are shown in table 1. In this configuration wheels sizes are the same.

Table 1. Robot Parameters

i	**Wheels**	α_i	β_i	γ_i	l_i	l_{ix}	l_{iy}
0	1sw	$\pi/4$	$\pi/2$	$-\pi/4$	l	l_x	l_y
1	2sw	$-\pi/4$	$-\pi/2$	$\pi/4$	l	l_x	l_y
2	3sw	$3\pi/4$	$\pi/2$	$\pi/4$	l	l_x	l_y
3	4sw	$-3\pi/4$	$-\pi/2$	$-\pi/4$	l	l_x	l_y

By replacing the parameters of Table 1 we have come up with:

$$T = \frac{1}{r}\begin{bmatrix} 1 & -1 & -(l_x + l_y) \\ 1 & 1 & (l_x + l_y) \\ 1 & 1 & -(l_x + l_y) \\ 1 & -1 & (l_x + l_y) \end{bmatrix} T+ = \frac{r}{4}\begin{bmatrix} 1 & 1 & 1 & 1 \\ -1 & 1 & 1 & -1 \\ -\frac{1}{(l_x+l_y)} & \frac{1}{(l_x+l_y)} & -\frac{1}{(l_x+l_y)} & \frac{1}{(l_x+l_y)} \end{bmatrix}$$

Forward and Inverse kinematics are:

$$\begin{bmatrix} \omega_1 \\ \omega_2 \\ \omega_3 \\ \omega_4 \end{bmatrix} = \frac{1}{r}\begin{bmatrix} 1 & -1 & -(l_x + l_y) \\ 1 & 1 & (l_x + l_y) \\ 1 & 1 & -(l_x + l_y) \\ 1 & -1 & (l_x + l_y) \end{bmatrix}\begin{bmatrix} v_x \\ v_y \\ \omega_z \end{bmatrix}.$$

$$\begin{cases} \omega_1 = \frac{1}{r}(v_x - v_y - (l_x + l_y)\omega), \\ \omega_2 = \frac{1}{r}(v_x + v_y + (l_x + l_y)\omega), \\ \omega_3 = \frac{1}{r}(v_x + v_y - (l_x + l_y)\omega), \\ \omega_4 = \frac{1}{r}(v_x - v_y + (l_x + l_y)\omega). \end{cases}$$

And

$$\begin{bmatrix} v_x \\ v_y \\ \omega_z \end{bmatrix} = \frac{r}{4}\begin{bmatrix} 1 & 1 & 1 & 1 \\ -1 & 1 & 1 & -1 \\ -\frac{1}{(l_x+l_y)} & \frac{1}{(l_x+l_y)} & -\frac{1}{(l_x+l_y)} & \frac{1}{(l_x+l_y)} \end{bmatrix}\begin{bmatrix} \omega_1 \\ \omega_2 \\ \omega_3 \\ \omega_4 \end{bmatrix}$$

Longitudinal Velocity:

$$v_x(t) = (\omega_1 + \omega_2 + \omega_3 + \omega_4) \cdot \frac{r}{4}$$

Transversal Velocity:

$$v_y(t) = (-\omega_1 + \omega_2 + \omega_3 - \omega_4) \cdot \frac{r}{4}$$

Angular velocity:

$$\omega_z(t) = (-\omega_1 + \omega_2 - \omega_3 + \omega_4) \cdot \frac{r}{4(l_x + l_y)}$$

The resultant velocity and its direction in the stationery coordinate axis (x, y, z) can be achieved by the following equations:

$$\rho = \tan^{-1}\left(\frac{v_y}{v_x}\right)$$

and

$$v_R = \sqrt{v_x^2 + v_y^2}$$

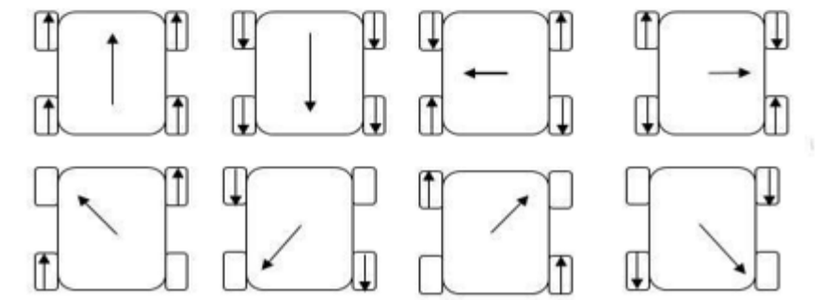


Fig 2: Motions of Omnidirectional platform

3.3. Parametric Paths

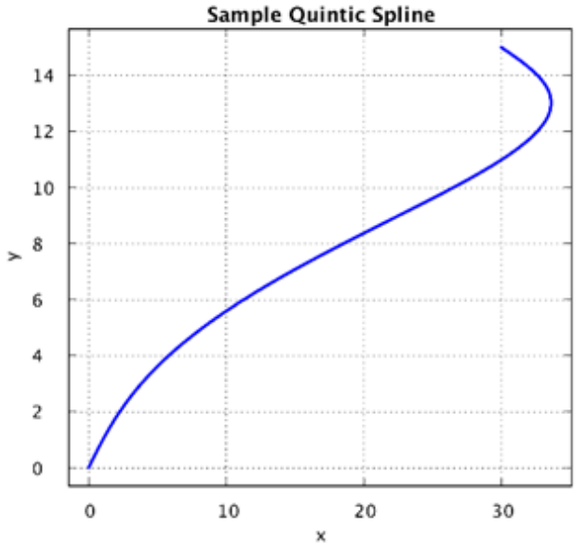
With the coordinate transformations, paths can be specified at the global level (i.e., not 'go forward 60 inches and turn 45 degrees right'). Complex, abstract paths can now be devised without having to explicitly consider the robot velocities necessary to execute them.

3.3.1.Lines

To describe these paths, we will use parametric curves. For our purposes, these curves are composed of two single variable functions x(t) and y(t) that together determine the path shape. Parametric lines take the form, x(t)=x0+vxt , y(t)=y0+vyt. This can be represented more conveniently in the notation of vectors:

r(t)=x0+vt (there is an intimate relationship between parametrics and vectors; they're often called vector-valued functions). Lines and other parametric functions are often defined over the whole t domains; however, for the purposes of constructing finite paths, the domain is constrained. Road Runner assumes parametric curves are only defined on [0,1].
To create a LineSegment, simply provide a starting vector and an ending vector.

```
1.  LineSegment line = new LineSegment(
2.      new Vector2d(0, 0),
3.      new Vector2d(50, 100)
4.  );
5.  Vector2d position = line.get(0.5);
```



3.3.2.Splines

In addition to lines, there are built-in quintic splines. Unlike lines, splines can assume a variety of curved shapes. The shape of the spline is controlled by waypoints on either end that specify the desired position, first derivative, and second derivative.

The quintic spline above was generated with the following code:

```
1.  QuinticSpline spline = new QuinticSpline(
2.      new QuinticSpline.Waypoint(0, 0, 20, 20),
3.      new QuinticSpline.Waypoint(30, 15, -30, 10)
4.  );
```

3.3.3.Heading Interpolation

For tank drives, specifying the (x,y) position of the robot at every point along the path is sufficient to determine the full pose. In the literature, this is called the nonholonomic constraint and mandates
that the robot most be oriented tangent to the path.

However, for so-called holonomic drives, the heading is independent of the translational velocity, enabling more complex manuevers. For instance, a holonomic may traverse a spline while rotating or maintaining a constant heading (relative to the global frame).

Road Runner was designed with first-class holonomic support and provides a number of HeadingInterpolators. The default (and only option for non-holonomic drives) interpolator is TangentInterpolator. Of the rest, the two most commonly used are ConstantInterpolator and LinearInterpolator for strafing and efficient pose-to-pose movements, respectively. The combination of a ParametricCurve and a HeadingInterpolator constitute a PathSegment. A number of distinct PathSegments can be strung together into a single Path.

Here's an example demonstrating the construction of a Path from lower-level abstractions:

```
1.  LineSegment line = new LineSegment(
2.      new Vector2d(0, 0),
3.      new Vector2d(56, 24)
4.  );
5.  LinearInterpolator interp = new LinearInterpolator(
6.      Math.toRadians(30), Math.toRadians(45)
7.  );
8.  PathSegment segment = new PathSegment(line, interp);
9.  Path path = new Path(segment);
```

3.3.4.Path Builder

Now this process of creating Paths is a bit tedious, and there is often duplicate information required to connect the segments. To make things easier, the PathBuilder class provides a more streamlined interface for Path construction.

```
1.  Path path = new PathBuilder(new Pose2d(0, 0, 0))
2.      .splineTo(new Pose2d(15, 15, 0))
3.      .lineTo(new Vector2d(30, 15))
4.      .build()
```

3.4.Motion Control

3.4.1. PID Control

Proportional-Integral-Derivative (PID) Control is an extremely popular method for controlling various actuators on hobbyist and industrial robots alike. Its popularity is due both to its simplicity and effectiveness for a wide range of systems. As such, it is an important stepping stone to more sophisticated techniques.

3.4.1.1.Basics

Before we dive into the mechanics of PID, it is useful to define some terminology. Every control problem

arises from a real world mechanism or system with inputs and outputs. These systems are often referred to as plants. While a particular system may have multiple inputs and outputs, we will restrict our attention to single-input, single-output (SISO) plants. In this context, the objective of PID control is to adjust the input variable to yield the desired output (often also called the setpoint). PID control is a form of feedback control which simply involves using measurements of the output to determine the input (we'll see the complementary technique of feedforward control in the next section). This is accomplished by minimizing error (the difference between the current output and the setpoint).
To see this in action, consider the problem of controlling the position of a linear slide actuated by a spool attached to a motor. In this example, the linear slide system is the plant, the single input is the motor voltage, and the single output is the linear slide position.

As the acronym suggests, the output of a PID controller is composed of three distinct components. The proportional term produces a control input in direct proportion to the error signal. That is, if the error doubles, the control input will also double. Mathematically, this is expressed by the equation u=kp·e where u is the control input, kp is the proportional gain, and e=xsetpoint−x is the error. The proportional gain is a tunable parameter that determines the aggressiveness of the control action.
While purely proportional (P) control is sometimes sufficient, it is not capable of handling every plant. To supplement it, one can use integral (I) control, derivative (D) control, or a combination of both. The integral term maintains a sum of the past errors that allows small errors to accumulate into bigger errors. The derivative term measures the change in error to mitigate rapid fluctuations in the control input. To compute the total response, simply add the individual ones together:

$$u = k_p \cdot e + k_i \int e\,dt + k_d \frac{de}{dt}$$

With Road Runner, all of this is conveniently packaged in PIDFController (yes, there is indeed an F for feedforward --- more about that in the next section)

```
// specify coefficients/gains
PIDCoefficients coeffs = new PIDCoefficients(kP, kI, kD);
// create the controller
PIDFController controller = new PIDFController(coeffs);

// specify the setpoint
controller.setTargetPosition(setpoint);

// in each iteration of the control loop
// measure the position or output variable
// apply the correction to the input variable
double correction = controller.update(measuredPosition);
```

3.4.1.2.Tuning

The real art of PID control is tuning the gains. This is traditionally done manually using a graph of the error over time or merely observing the plant's behavior directly. Conventionally, one starts with a pure P loop. With a high enough gain, the output should oscillate around the setpoint. If the controller is unable to reach the setpoint over a long period of time (this is called steady-state error), it may help to add more integral action. This is often the case with static friction or inertia. Once the oscillations are centered around the setpoint, a larger derivative gain can dampen the oscillations while still reaching the setpoint in the same amount of time.

Here's a chart summarizing the effects of each gain on the response:

TABLE 1 **Effects of independent P, I, and D tuning on closed-loop response. For example, while K_I and K_D are fixed, increasing K_P alone can decrease rise time, increase overshoot, slightly increase settling time, decrease the steady-state error, and decrease stability margins.**

	Rise Time	Overshoot	Settling Time	Steady-State Error	Stability
Increasing K_P	Decrease	Increase	Small Increase	Decrease	Degrade
Increasing K_I	Small Decrease	Increase	Increase	Large Decrease	Degrade
Increasing K_D	Small Decrease	Decrease	Decrease	Minor Change	Improve

3.4.2.Feedforward Control

While PID control works well for many plants, we can do better. One of the biggest advantages of PID control is its ignorance of the underlying plant. The same three control actions are employed regardless of the relationship between the input and output variables. In retrospect, it's somewhat remarkable that PID in all its simplicity is so effective. Nevertheless, there are situations in which knowledge of the plant dynamics can help supplement PID control alone.

3.4.2.1.Gravity Feedforward

For example, consider the problem of controlling the position of an elevator. A simple P controller may help to get close to the desired position. However, close to the septoint, the elevator will oscillate or stop short with a significant steady-state error. This could be addressed by adding some integral action to the controller. In theory, it will provide the necessary boost to reach the target position. Though as we know, integral terms can easily cause instability and need to be carefully tuned to prevent amplified oscillations.

There is a better solution to this problem. For a minute, consider the cause of this error. The culprit is clear from our physical intuition: gravity. When the elevator is in use, gravity is always exerting a constant downward force given by F=mg. Instead

of letting an integral term do the work, we can directly compensate for the gravitational force. This can be achieved by adding a constant factor kG to the voltage that is sent to the motors.

This can be accomplished using a PIDFController with a custom feedforward term:

```
1.  PIDFController controller = new PIDFController(coeffs, 0, 0, 0, new Function1<Double, D
    ouble>() {
2.      @Override
3.      public Double invoke(Double position) {
4.          return kG;
5.      }
6.  });
7.  // or more concisely with lambdas
8.  PIDFController controller = new PIDFController(coeffs, 0, 0, 0, x -> kG);
```

That's the essence behind feedforward: design your control inputs using a model of the plant.

3.4.2.2. DC Motor Feedforward

In the realm of wheeled mobile robots, DC motors are important actuators on the drivetrain and various end effector. To a good approximation, DC motors are linear in normal operating ranges and ignoring friction. Assuming negligible inductance, the voltage necessary for a given velocity and acceleration is $V_{app}=k_v \cdot v+k_a \cdot a$. (A keen reader will notice that v may be more aptly replaced by ω to better represent the rotary motion of a conventional motor. While this may be true, simple plants with DC motors often involve linear motion, and it's more convenient to fit a single constant for the whole transmission than convert for each transfer of energy. The concern is more pedantic than pragmatic.) Finally, it is useful in practice to add a final term for friction: $V_{app}=k_v \cdot v+k_a \cdot a+k_{static}$.

! kstatic should match the sign of the sum of the other two terms as the friction will always oppose the motion (it isn't a purely additive constant).

This DC motor feedforward is directly integrated into PIDFController and the Drive classes:

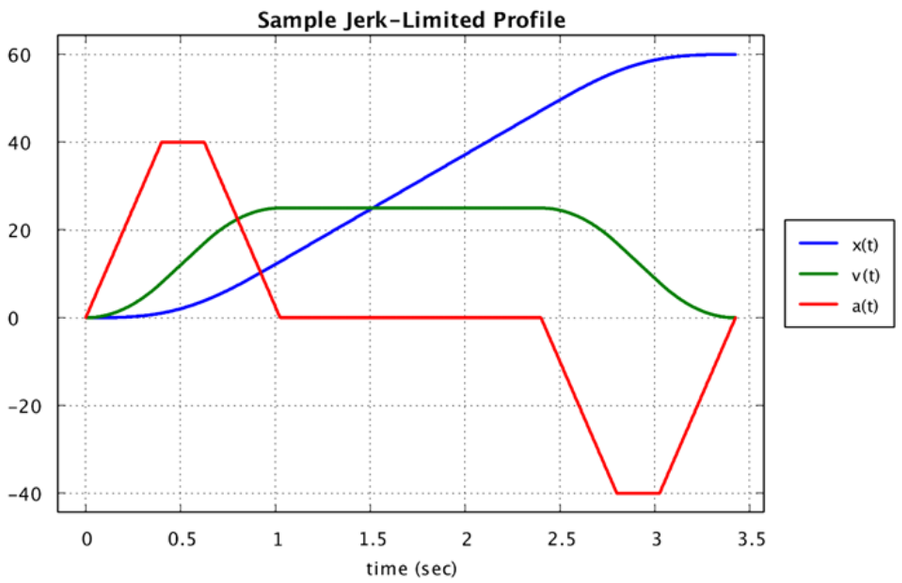
```
1.  PIDFController controller = new PIDFController(coeffs, kV, kA, kStatic);
2.
3.  double correction = controller.update(position, velocity, acceleration);
```

Returning to the first example, it makes more sense to counteract gravity with a constant acceleration feedforward than a custom feedforward as before:

```
1.  PIDFController controller = new PIDFController(coeffs, kV, kA, kStatic);
2.
3.  double correction = controller.update(position, velocity, acceleration + g);
```

3.4.3. Motion Profiling

For a moment, let's return to the elevator example. While the addition of a gravity feedforward in the last section improves the position control, the PID controller is still doing the majority of the work. When a new position is commanded, the error immediately spikes and the controller saturates, sending the carriage at the mechanism's maximum acceleration. Soon the carriage slows down and overshoots the setpoint a little before settling around the commanded position. While efficient, the sudden acceleration causes unnecessary mechanical and electrical strain. For drivetrain movements, there are additional issues with wheel slippage. Furthermore, the final overshoot wastes time.
The most common solution to this problem is quite simple: put a low cap on actuator speed. This ad-hoc solution only partially addresses the issue at hand and cripples the robot. A better solution is to consider the full kinematic constraints of the system. Instead of just limiting maximum velocity, one should also limit maximum acceleration and maximum jerk (jerk is the derivative of acceleration). Before the motion even begins, the control system pre-plans a "motion profile" that describes the robot's position, velocity, etc. over time.



Jerk-limited 60-inch motion profile
(vmax = 25 in/s, amax = 40 in/s^2, jmax = 100 in/s^3)

Instead of instantly trying to reach the setpoint, the PID controller now tracks the profile. The heaving lifting is now done by the motion profile instead of the PID loop.
The profile above was generated using the following code:

```
MotionProfile profile = MotionProfileGenerator.generateSimpleMotionProfile(
    new MotionState(0, 0, 0),
    new MotionState(60, 0, 0),
    25,
    40,
    100
);
```

3.5. Trajectories

Now it's time to combine paths with the motion profiles from earlier. Road Runner calls this combination a trajectory. Trajectories are very similar to paths, except they use a motion profile to map time to displacement along the path to compute the robot's kinematic state. Trajectories also have slightly different constraints to limit angular velocity along paths (this is a function of path curvature which can vary greatly). The base DriveConstraints does general limitting although its drive-specific subclasses (e.g., MecanumConstraints) actually limit wheel velocity (as opposed to just robot velocity).

Here's a sample for planning a Trajectory from a Path:

```
DriveConstraints constraints = new DriveConstraints(20, 40, 80, 1, 2, 4);
Trajectory traj = TrajectoryGenerator.generateTrajectory(path, constraints);
```

Once a trajectory is finally generated, one of the TrajectoryFollowers can be used to generate the actual DriveSignals that are sent to the Drive class (and finally to the HAL motors).

Following a trajectory is as simple as creating a follower, calling TrajectoryFollower.followTrajectory(), and repeatedly querying TrajectoryFollower.update():

```
PIDCoefficients translationalPid = new PIDCoefficients(15, 5, 3);
PIDCoefficients headingPid = new PIDCoefficients(5, 0, 0);
HolonomicPIDVAFollower follower = new HolonomicPIDVAFollower(translationalPid, translat
ionalPid, headingPid);

follower.followTrajectory(traj);
// call in loop
DriveSignal signal = follower.update(poseEstimate);
```

4.Driver Controlled Period

4.1. Strategy

Due to the fact that we have a fast drivetrain and a scissor lift capable of stacking towers up to 12 stones + capstone, our robot can have 2 roles in a match:

• Feeder – brings the stones from loading zone to building zone

• Stacking bot – waits in the building zone to receive stones from the feeder and just stacks them in order to make a skyscraper as tall as possible in the given time limit.

In case of failure of alliance partner's robot we can do both.

4.2. Driver Controlled Enhancements

Our TeleOp enhancements are:

• Different velocity for translational movement and heading of the drivetrain based on driver's preferences.

• Go to specific level function for the scissor lift, that auto increments after every stone placed, allowing for a faster operation of the lift.

4.3. Controller Mapping

4.3.1. Gamepad 1

4.3.2. Gamepad 2

Technical MEETINGS

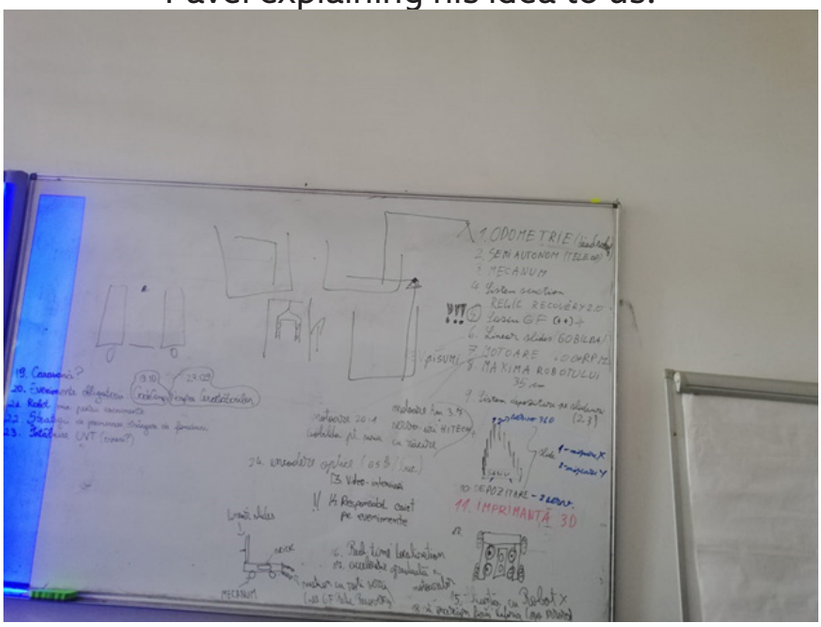
Meeting after a long time

Date	11th September, at 1:00 p.m.
Meeting held	"Carmen Sylva" HighSchool
Attendance	Ale, Bianca, Bogdan, Carla, Laura, Leti, Pavel, Robi, Sorinica, Spiri, Unguru, Mr. Cojocaru, Mrs. Cojocaru

Today we gathered after our summer camp "Open Robotics" to discuss the new season of FTC entitled Skystone. Together we watched the game reveal to gain an insight of what we can do this season. Before we talked about our mechanism, we discussed our visions for the next season. We want to use odometry to have a semi-autonomous drive for TeleOp. We want to have mecanum wheels for a smooth drive. Some of us from our Technical Department already came up

with some ideas for our robot. Pavel brought up an idea in which the stone will be sucked in the robot then a cage will lift up the stone with a linear slide then another slide will move it horizontally to the platform. Laura's idea was about the suction mechanism, that we should do it like Gluten Free in Relic Recovery, the stone to be sucked in the robot with the help of compliant wheels.

Pavel explaining his idea to us.



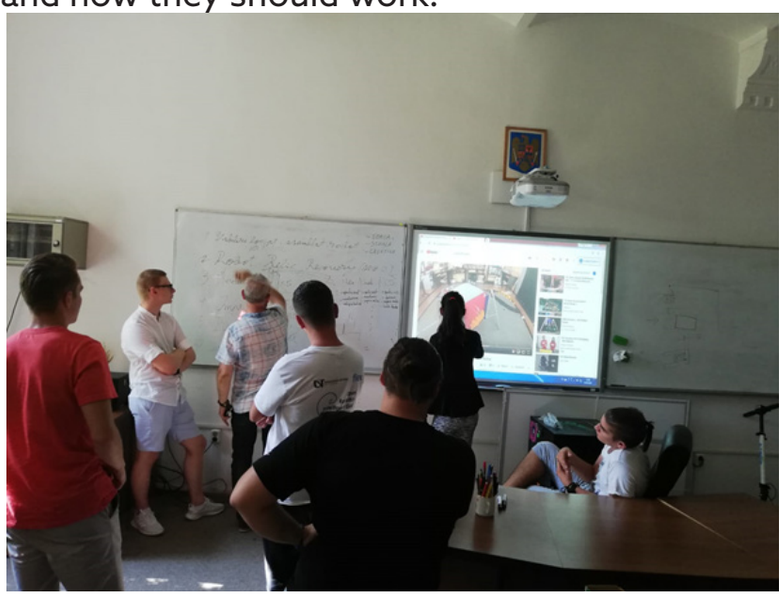
Our board full of ideas and visions for the next season.

Meeting

Date	16th September, at 2:00 p.m.
Meeting held	"Carmen Sylva" HighSchool
Attendance	Bogdan, Dani, Laura, Pavel, Robi, Sorinica, Spiri, Unguru, Mr. Cojocaru, Mrs. Cojocaru, Mr. Cristi

Today we welcome our new mentor Mr. Cristi who is an engineer. He will help us with the technical

problems we will encounter on the course of this season. We showed and explained him this season's game and what we want to build for this theme. Also, Dani and Pavel are on their last meeting because they will be moving in England to continue their studies. Pavel explained to Mr. Cristi what mechanism he thought of . Then we all gathered at the board to discuss the mechanisms and how they should work.



The technical department with Mr.Cristi that is sketching some mechanism for our robot

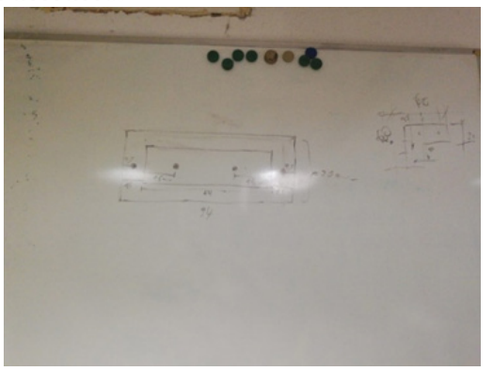
Another subject we discussed was the making of a Relic Recovery robot for Flight Festival, an event that we attended because Team Xeo invited us. We have a week to build robot that is functional and can do the Relic Recovery tasks. So we launched the robot in 5 days challenge were we worked for 5 days continuously to finish the robot.

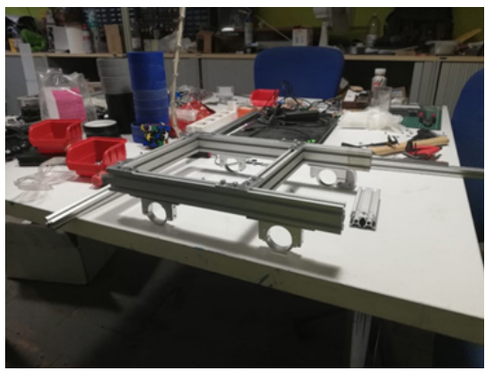
Us, during the meeting while Bogdan is explaining his ideas to us.

2 robots in 5 days

Date	21stSeptember, at 12:00 p.m.
Meeting held	Creative Space
Attendance	Alex, Bogdan, Carla, Laura, Robi, Spiri, Unguru, Mr. Cojocaru, Mr. Cristi, Mr. Petolea

Today our tehnic departament met to brainstorm and to build our robots for Flight Festival and Researcher's Night. This is the first time for some of us to work here at Creative Space. Our first idea was to use other materials for our Flight's robot because most of our parts are used for the Researcher's Night robot. We decided to use aluminum extrusions profiles for our chassis. Bogdan supervised by our mentor, Mr Cristi, cut profiles to the exact measurement.



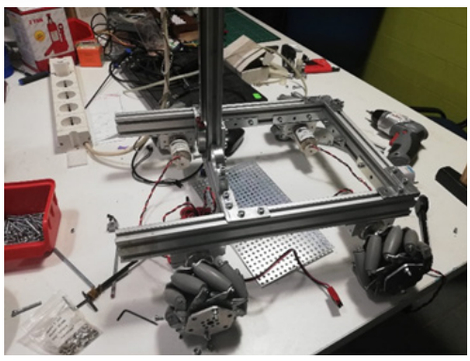
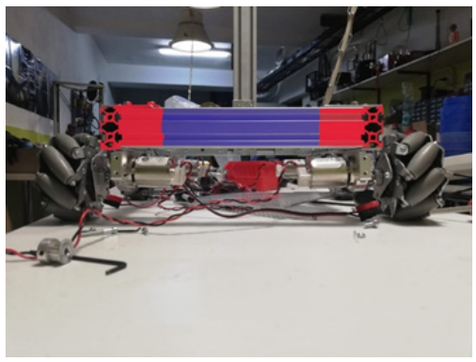


Also, Robi used for the first time the CNC, Grinder and the electric saw. Bogdan went to Dedeman to buy 5x6 screws. Until the end of the day we sucsessfully made a custom made chassis with the help of our mentor, Mr. Cristi.

2 robots in 5 days 2

Date	22ndSeptember, at 12:00 p.m.
Meeting held	Creative Space
Attendance	Bogdan, Carla, Spiri, Unguru, Mr. Cristi

We gathered again to build our robot for flight festival. Today we put our mecanum wheels and we saw that our chassis wasn't stable so we put some inside corners to have more reinforcement. Another thing that we did today was to install our linear slide for the lifting mechanism. Spiri discussed with Mr. Cristi how we're gonna make our claw for collecting the Relic Recovery cubes. At the end of the day Unguru noticed that he mounted the wheels wrong, so he had to mount them again correctly. Later that night, Spiri wrote a part of the code.

The evolved version of the custom made chasssis (left). The red zones points out where is the biggest pressure put on the frame (right).

2 robots in 5 days 3

Date	23rd September, at 2:00 p.m.
Meeting held	Creative Space
Attendance	Bogdan, Spiri, Mr. Cristi

After some discutions with Mr.Cristi, Bogdan came up with a method to fix the belt to the aluminium sheet, just using some zip ties.
The role of the sheet:

- To unite the belt in a single piece
- To offer support for the collecting plier.

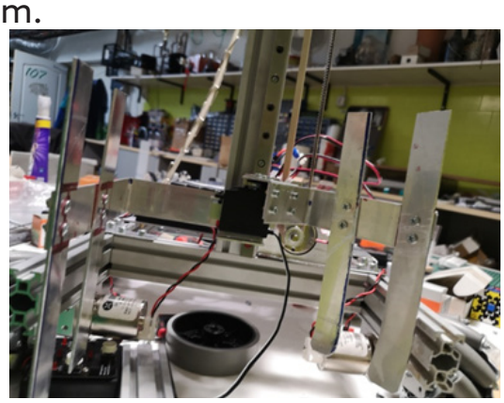
Spiri mounted the servo and designed a sketch for the plier. He cut the aluminium sheet,polished it and then assembled the piece. After finishing the system, he tested it with the help of the REV servo tester.

The finished system at the end of the day.

2 robots in 5 days 4

Date	24th September, at 2:00 p.m.
Meeting held	Creative Space
Attendance	Robi, Spiri

Today Spiri and Robi finished the claw, which in theory can collect 2 cubes at once. Also, we did 90% of our electronics part of the robot without the cable management, because we're missing 2 connecting cables for DC motor to Rev ExpansionHub. Spiri called a guy from team Davos to borrow us some cables from them.



The finished claw

Today we did the cable management for our electronic part of our robot. Spiri borrowed some cables from team Davos for our electronics. We did a little bit of testing but unfortunately one of our wheels fell off. Because it was late, when we did the testing the repairing of the wheel remained for the next day meeting.

2 robots in 5 days 5

Date	25th September, at 2:00 p.m.
Meeting held	Creative Space
Attendance	Robi, Spiri, Unguru

Robi doing the cable management while Spiri is playing with the electric screwdriver in the back.

Date	26th September, at 2:00 p.m.
Meeting held	Creative Space
Attendance	Bogdan, Carla, Gloria, Robi, Spiri, Unguru

Unguru and Robi locked a little bit tightly the wheels to withstand the force of the future inevitably impacts that the robots will suffer. Spiri also finalized the code for this robot. After that, they transported the toolbox and robot to our school for futher transportation.

The materials for our 2 events: Researchers Night and Flight Festival

Another helping hand

Date	5th October, at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Spiri, Unguru, Mr. Cojocaru, Mrs. Cojocaru, Mr. Petolea, Mr. Vasi

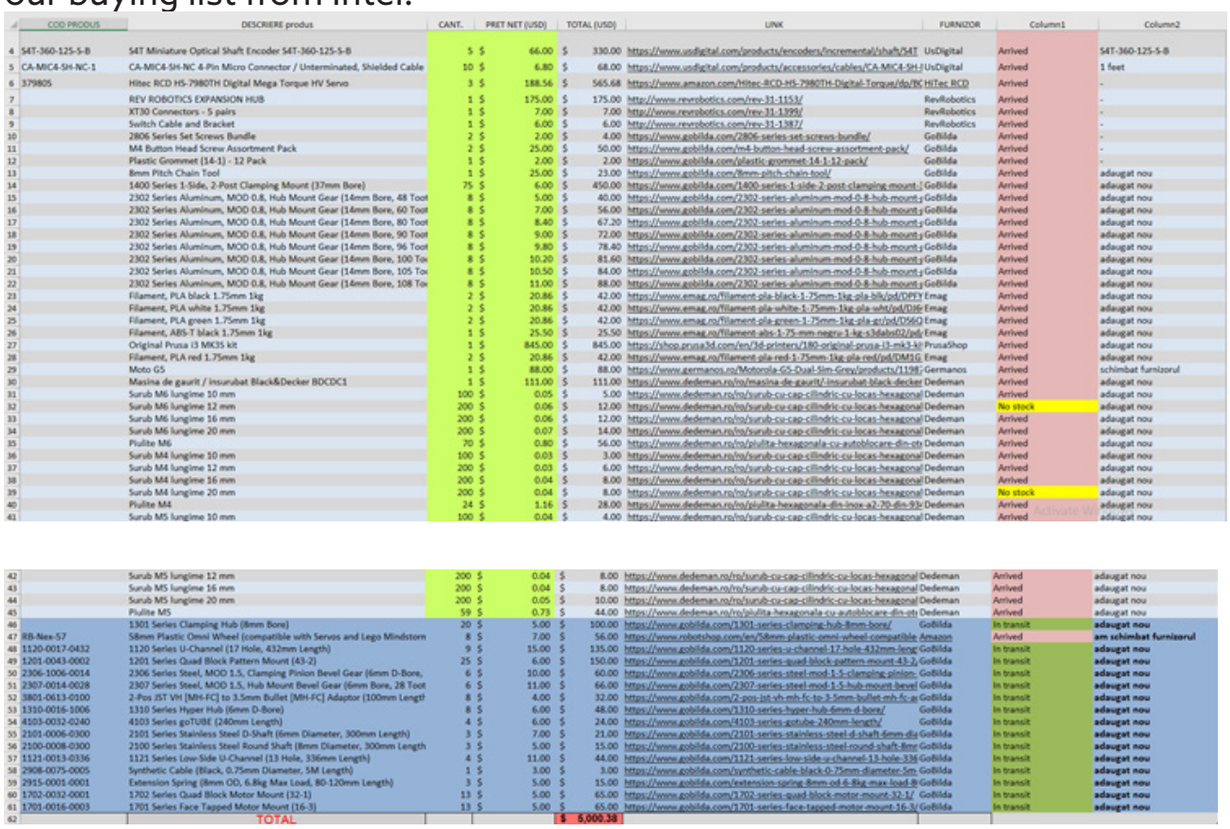
Today we've got a visitor, Vasi, an engineer who can help us with our idea to use odometry for our semi-autonomous drive TeleOp. We presented this season's game, then we showed him what idea we've got for our robot. We told him that we want to use optical encoders for odometry and asked him to give us some tips for it. He had a lot of ideas, one of them being that we should use diferential drivetrain because the wheels will always be on the ground and the encoders will be more precised in measurement which is easier for odometry. As an example he showed us a video with the Amazons warehouse robots which are based on odometry and diferential drive. We later showed him our

idea to use mecanum drivetrain because we can move sideways and diagonally. For the odometry we will be using the optical encodersa attached to some lego omniwheels . He said that it is a good idea that we would attach the encoders to the omnis, because If we attach them to do mecanum sometimes the measurement won't be right. At the final of the meeting Vasi requested a list with all the information required for the competition.

Meeting

Date	12th October, at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Robi, Spiri, Unguru, Mr. Petolea

Today we presented to our mentor Mr. Petolea what ideas we came up with. We showed him the suction mechanism we want to make and what kind of linear motion we want to use. Also Spiri came up with the idea to use scissor lift for our stacking mechanism. Later we added a few more things to our buying list from Intel.

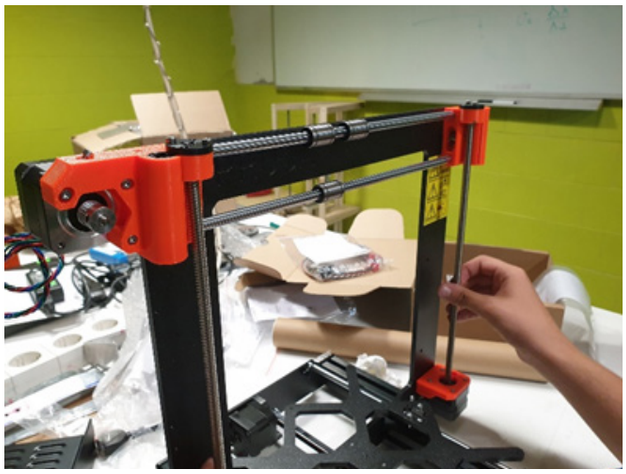


	COD PRODUS	DESCRIERE produs	CANT.	PRET NET (USD)	TOTAL (USD)	LINK	FURNIZOR	Column1	Column2
4	S4T-360-125-S-B	S4T Miniature Optical Shaft Encoder S4T-360-125-S-B	5	$ 66.00	$ 330.00	https://www.usdigital.com/products/encoders/incremental/shaft/S4T	UsDigital	Arrived	S4T-360-125-S-B
5	CA-MIC4-SH-NC-1	CA-MIC4-SH-NC 4-Pin Micro Connector / Unterminated, Shielded Cable	10	$ 6.80	$ 68.00	https://www.usdigital.com/products/accessories/cables/CA-MIC4-SH-I	UsDigital	Arrived	1 feet
6	379805	Hitec RCD HS-7980TH Digital Mega Torque HV Servo	3	$ 188.56	$ 565.68	https://www.amazon.com/Hitec-RCD-HS-7980TH-Digital-Torque/dp/BC	HiTec RCD	Arrived	-
7		REV ROBOTICS EXPANSION HUB	1	$ 175.00	$ 175.00	http://www.revrobotics.com/rev-31-1153/	RevRobotics	Arrived	-
8		XT30 Connectors - 5 pairs	1	$ 7.00	$ 7.00	http://www.revrobotics.com/rev-31-1399/	RevRobotics	Arrived	-
9		Switch Cable and Bracket	1	$ 6.00	$ 6.00	http://www.revrobotics.com/rev-31-1387/	RevRobotics	Arrived	-
10		2806 Series Set Screws Bundle	2	$ 2.00	$ 4.00	https://www.gobilda.com/2806-series-set-screws-bundle/	GoBilda	Arrived	-
11		M4 Button Head Screw Assortment Pack	2	$ 25.00	$ 50.00	https://www.gobilda.com/m4-button-head-screw-assortment-pack/	GoBilda	Arrived	-
12		Plastic Grommet (14-1) - 12 Pack	1	$ 2.00	$ 2.00	https://www.gobilda.com/plastic-grommet-14-1-12-pack/	GoBilda	Arrived	-
13		8mm Pitch Chain Tool	1	$ 25.00	$ 23.00	https://www.gobilda.com/8mm-pitch-chain-tool/	GoBilda	Arrived	adaugat nou
14		1400 Series 1-Side, 2-Post Clamping Mount (37mm Bore)	75	$ 6.00	$ 450.00	https://www.gobilda.com/1400-series-1-side-2-post-clamping-mount-	GoBilda	Arrived	adaugat nou
15		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 48 Toot	8	$ 5.00	$ 40.00	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
16		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 60 Toot	8	$ 7.00	$ 56.00	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
17		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 80 Toot	8	$ 8.40	$ 67.20	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
18		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 90 Toot	8	$ 9.00	$ 72.00	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
19		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 96 Toot	8	$ 9.80	$ 78.40	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
20		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 100 To	8	$ 10.20	$ 81.60	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
21		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 105 To	8	$ 10.50	$ 84.00	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
22		2302 Series Aluminum, MOD 0.8, Hub Mount Gear (14mm Bore, 108 To	8	$ 11.00	$ 88.00	https://www.gobilda.com/2302-series-aluminum-mod-0-8-hub-mount-g	GoBilda	Arrived	adaugat nou
23		Filament, PLA black 1.75mm 1kg	2	$ 20.86	$ 42.00	https://www.emag.ro/filament-pla-black-1-75mm-1kg-pla-blk/pd/DPFY	Emag	Arrived	adaugat nou
24		Filament, PLA white 1.75mm 1kg	2	$ 20.86	$ 42.00	https://www.emag.ro/filament-pla-white-1-75mm-1kg-pla-wht/pd/DJ6	Emag	Arrived	adaugat nou
25		Filament, PLA green 1.75mm 1kg	2	$ 20.86	$ 42.00	https://www.emag.ro/filament-pla-green-1-75mm-1kg-pla-gr/pd/DS6	Emag	Arrived	adaugat nou
26		Filament, ABS-T black 1.75mm 1kg	1	$ 25.50	$ 25.50	https://www.emag.ro/filament-abs-1-75-mm-negru-1-kg-s3dabs02/pd/	Emag	Arrived	adaugat nou
27		Original Prusa i3 MK3S kit	1	$ 845.00	$ 845.00	https://shop.prusa3d.com/en/3d-printers/180-original-prusa-i3-mk3-kit	PrusaShop	Arrived	adaugat nou
28		Filament, PLA red 1.75mm 1kg	2	$ 20.86	$ 42.00	https://www.emag.ro/filament-pla-red-1-75mm-1kg-pla-red/pd/DM1G	Emag	Arrived	adaugat nou
29		Moto G5	1	$ 88.00	$ 88.00	https://www.germanos.ro/Motorola-G5-Dual-Sim-Grey/products/1198	Germanos	Arrived	schimbat furnizorul
30		Masina de gaurit / insurubat Black&Decker BDCDC1	1	$ 111.00	$ 111.00	https://www.dedeman.ro/ro/masina-de-gaurit/-insurubat-black-decker	Dedeman	Arrived	adaugat nou
31		Surub M6 lungime 10 mm	100	$ 0.05	$ 5.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
32		Surub M6 lungime 12 mm	200	$ 0.06	$ 12.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	No stock	adaugat nou
33		Surub M6 lungime 16 mm	200	$ 0.06	$ 12.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
34		Surub M6 lungime 20 mm	200	$ 0.07	$ 14.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
35		Piulite M6	70	$ 0.80	$ 56.00	https://www.dedeman.ro/ro/piulita-hexagonala-cu-autoblocare-din-oto	Dedeman	Arrived	adaugat nou
36		Surub M4 lungime 10 mm	100	$ 0.03	$ 3.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
37		Surub M4 lungime 12 mm	200	$ 0.03	$ 6.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
38		Surub M4 lungime 16 mm	200	$ 0.04	$ 8.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
39		Surub M4 lungime 20 mm	200	$ 0.04	$ 8.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	No stock	adaugat nou
40		Piulite M4	24	$ 1.16	$ 28.00	https://www.dedeman.ro/ro/piulita-hexagonala-din-inox-a2-70-din-93	Dedeman	Arrived	adaugat nou
41		Surub M5 lungime 10 mm	100	$ 0.04	$ 4.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
42		Surub M5 lungime 12 mm	200	$ 0.04	$ 8.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
43		Surub M5 lungime 16 mm	200	$ 0.04	$ 8.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
44		Surub M5 lungime 20 mm	200	$ 0.05	$ 10.00	https://www.dedeman.ro/ro/surub-cu-cap-cilindric-cu-locas-hexagonal	Dedeman	Arrived	adaugat nou
45		Piulite M5	59	$ 0.73	$ 44.00	https://www.dedeman.ro/ro/piulita-hexagonala-cu-autoblocare-din-oto	Dedeman	Arrived	adaugat nou
46		1301 Series Clamping Hub (8mm Bore)	20	$ 5.00	$ 100.00	https://www.gobilda.com/1301-series-clamping-hub-8mm-bore/	GoBilda	In transit	adaugat nou
47	RB-Nex-57	58mm Plastic Omni Wheel (compatible with Servos and Lego Mindstorn	8	$ 7.00	$ 56.00	https://www.robotshop.com/en/58mm-plastic-omni-wheel-compatible	Amazon	Arrived	am schimbat furnizorul
48	1120-0017-0432	1120 Series U-Channel (17 Hole, 432mm Length)	9	$ 15.00	$ 135.00	https://www.gobilda.com/1120-series-u-channel-17-hole-432mm-leng	GoBilda	In transit	adaugat nou
49	1201-0043-0002	1201 Series Quad Block Pattern Mount (43-2)	25	$ 6.00	$ 150.00	https://www.gobilda.com/1201-series-quad-block-pattern-mount-43-2/	GoBilda	In transit	adaugat nou
50	2306-1006-0014	2306 Series Steel, MOD 1.5, Clamping Pinion Bevel Gear (6mm D-Bore,	6	$ 10.00	$ 60.00	https://www.gobilda.com/2306-series-steel-mod-1-5-clamping-pinion-	GoBilda	In transit	adaugat nou
51	2307-0014-0028	2307 Series Steel, MOD 1.5, Hub Mount Bevel Gear (6mm Bore, 28 Toot	6	$ 11.00	$ 66.00	https://www.gobilda.com/2307-series-steel-mod-1-5-hub-mount-bevel	GoBilda	In transit	adaugat nou
52	3801-0613-0100	2-Pos JST-VH [MH-FC] to 3.5mm Bullet [MH-FC] Adaptor (100mm Length	8	$ 4.00	$ 32.00	https://www.gobilda.com/2-pos-jst-vh-mh-fc-to-3-5mm-bullet-mh-fc-a	GoBilda	In transit	adaugat nou
53	1310-0016-1006	1310 Series Hyper Hub (6mm D-Bore)	8	$ 6.00	$ 48.00	https://www.gobilda.com/1310-series-hyper-hub-6mm-d-bore/	GoBilda	In transit	adaugat nou
54	4103-0032-0240	4103 Series goTUBE (240mm Length)	4	$ 6.00	$ 24.00	https://www.gobilda.com/4103-series-gotube-240mm-length/	GoBilda	In transit	adaugat nou
55	2101-0006-0300	2101 Series Stainless Steel D-Shaft (6mm Diameter, 300mm Length)	3	$ 7.00	$ 21.00	https://www.gobilda.com/2101-series-stainless-steel-d-shaft-6mm-dia	GoBilda	In transit	adaugat nou
56	2100-0008-0300	2100 Series Stainless Steel Round Shaft (8mm Diameter, 300mm Length	3	$ 5.00	$ 15.00	https://www.gobilda.com/2100-series-stainless-steel-round-shaft-8mr	GoBilda	In transit	adaugat nou
57	1121-0013-0336	1121 Series Low-Side U-Channel (13 Hole, 336mm Length)	4	$ 11.00	$ 44.00	https://www.gobilda.com/1121-series-low-side-u-channel-13-hole-336	GoBilda	In transit	adaugat nou
58	2908-0075-0005	Synthetic Cable (Black, 0.75mm Diameter, 5M Length)	1	$ 3.00	$ 3.00	https://www.gobilda.com/synthetic-cable-black-0-75mm-diameter-5m	GoBilda	In transit	adaugat nou
59	2915-0001-0001	Extension Spring (8mm OD, 6.8kg Max Load, 80-120mm Length)	3	$ 5.00	$ 15.00	https://www.gobilda.com/extension-spring-8mm-od-6-8kg-max-load-8	GoBilda	In transit	adaugat nou
60	1702-0032-0001	1702 Series Quad Block Motor Mount (32-1)	13	$ 5.00	$ 65.00	https://www.gobilda.com/1702-series-quad-block-motor-mount-32-1/	GoBilda	In transit	adaugat nou
61	1701-0016-0003	1701 Series Face Tapped Motor Mount (16-3)	13	$ 5.00	$ 65.00	https://www.gobilda.com/1701-series-face-tapped-motor-mount-16-3/	GoBilda	In transit	adaugat nou
62		TOTAL			$ 5,000.38				

The buying list we made for Intel.

Prusa Day 1

Date	19th October, at 12:00 p.m.
Meeting held	Creative Space
Attendance	Ale, Laura, Spiri



After we participated at CodeCamp, a small part of the team headed off to our working place, Creative Space. There we unpacked our new Prusa 3d printer, opened the installation guide and got to work. This is the 3d printer incomplete at the end of the day.

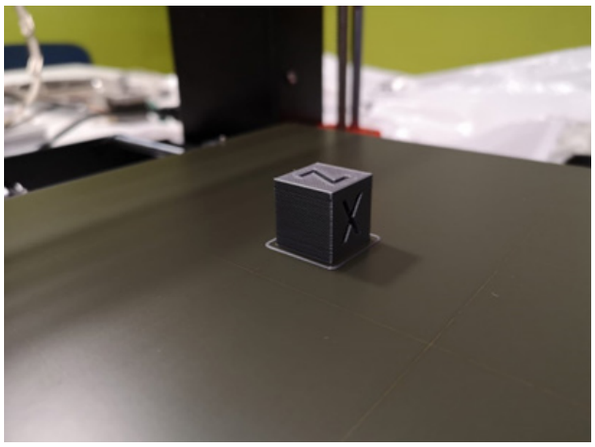
Prusa Day 2

Date	20th October, at 12:00 p.m.
Meeting held	Creative Space
Attendance	Spiri, Unguru

Spiri mounting the electronic parts (left) and Unguru doing the cable management.

Today we are gonna finish our Prusa 3D printer. All that was left was the hardest part, mounting the electronics to the printer. Unguru and Spiri managed to mount them correctly. The remaining thing was to do the cable management which is a little complicated.

After we finished the assembly we test it out. We had to do some calibrations for it to be more precised.

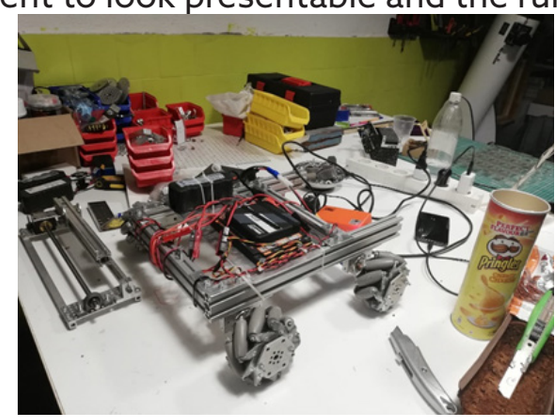


The test cube we made.

Pygmalion Robot

Date	9th November, at 12:00 p.m.
Meeting held	Creative Space
Attendance	Robi, Spiri, Unguru

At Xeo Talks, Mihai Mermezan told us that after Flight Festival he was contacted by a kindergarten director. She told him that a kid came to kindergarten and began to tell them about the robots she saw at Flight Festival. All the other kids were enthusiastic about it and told their parents, who requested the director to contact us. So today we gathered at Creative Space to modify our events robot for this special event. We've put 2 servos with aluminum pad to help our robot clap. After we finished it, we began to do the cable management to look presentable and the run some tests.



Our events robot

Pygmalion Robot

Date	16th November, at 12:00 p.m.
Meeting held	Creative Space
Attendance	Sofrac, Spiri

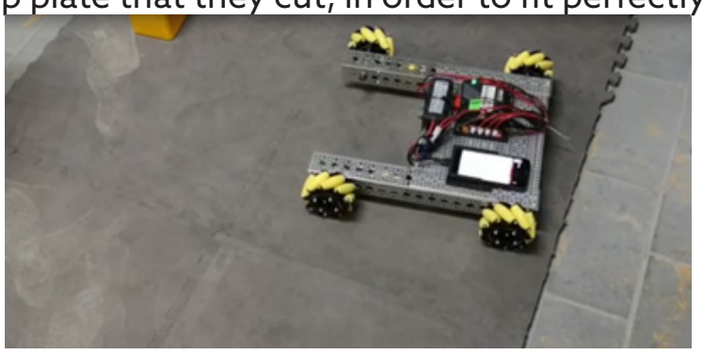
Because the GoBilda chassis was unavaible for buying, because the motors were not in stock, we

decided to get the chassis parts and made it ourselves. Spiri assembled the chassis according to the assembly guide that he found online. In the evening, Sofrac came to accompany Spiri and help him arrange the cables. Sofrac is an ex-member of XEO that graduated last year and came in Timisoara after.

Spiri and Sofrac smiling for the camera with the almost finished chassis in the background.

Date	17th November, at 9:00 a.m.
Meeting held	Creative Space
Attendance	Peto, Spiri, Mr. Petolea

Spiri wrote the code for mecanum wheels and tested it. Mr.Petolea and Spiri made some cable management and hid the cables and expansion hubs underneath the grip plate that they cut, in order to fit perfectly on the chassis.



The chassis that is tested on the little field.

Date	27th November, at 9:00 a.m.
Meeting held	Creative Space
Attendance	Peto, Spiri, Mr. Petolea

Peto finished the assembly of the linear slide. After some debate, we came to the conclusion that an only pair of suction wheels are not enough to as-

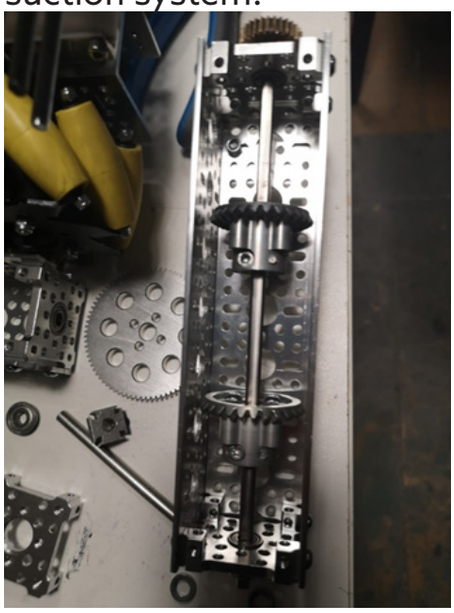
cend the sky stone, so we put 2 pair of wheels with chain transmission.

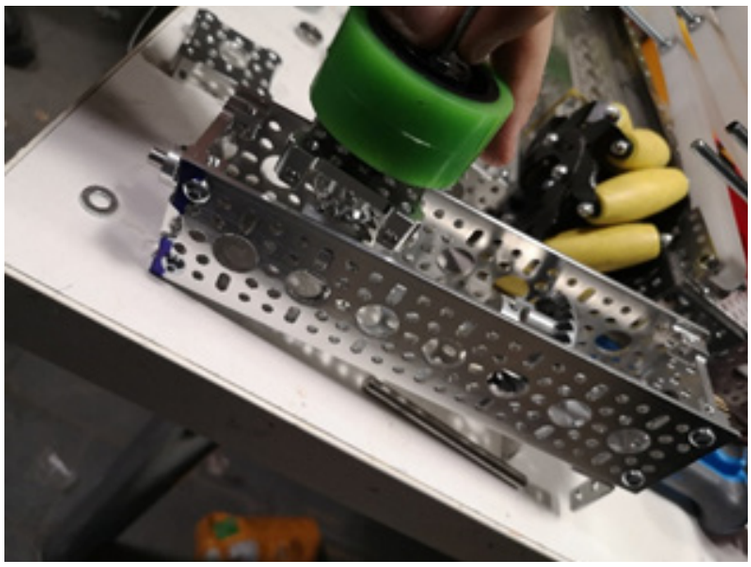
Date	28th November, at 9:00 a.m.
Meeting held	Creative Space
Attendance	Peto, Spiri, Mr. Petolea

After we discused with Mr. Cristi, we came up with a solution for the stone ascending on the slope. The ideea was to put the profiles and the wheels at the right angle to help the stones to climb the slope. From a peace of aluminium, we bend it to make a plate and then mounted it on the robot.

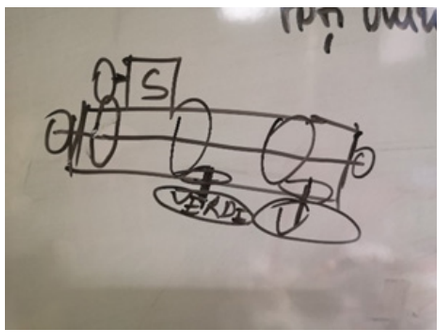
Date	16th December , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Peto, Spiri, Mr. Petolea

After we discussed with Mr. Cristi, Bogdan got an idea for the suction system. Spiri and Bogdan assembled the cascading kit from GoBilda that will be used for the suction system. Laura made some research for the autonomous period for this year and about the odometry. Spiri started to build the suction system.





The cascading kit from GoBilda (left), the suction mechanism (up) and the sketch we made representing the suction system (below).



Date	17th December , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Peto, Spiri, Mr. Petolea

We made a scissor lift prototype made of POM to see how it will go and our conclusions are that the scissor lift is to heavy, so in this case, we decided to calculate the force that need to be used to lift the entire scissor lift and the suction system that will be attached to it. Looking at the calculations that Unguru made we decided to change the material the scissor lift will be made of.

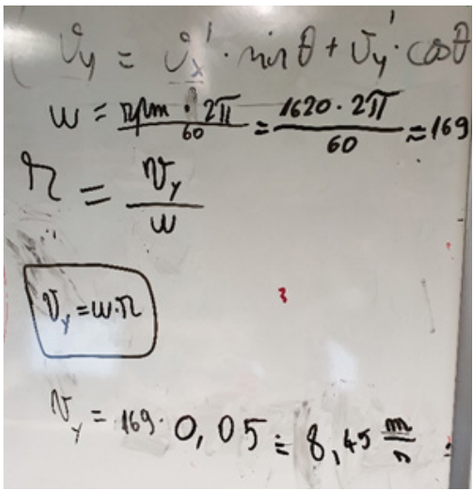
Spiri playing with the scissor lift (up). Unguru making some calculations regarding the scissor lift (left).

Date	23th December , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Carla, Spiri, Unguru, Mr. Cristi

Spiri made a suction wheel in Fusion and we needed to print it, but after some time he realised that the dimensions were wrong, so he had to change it from 4mm to 3mm.

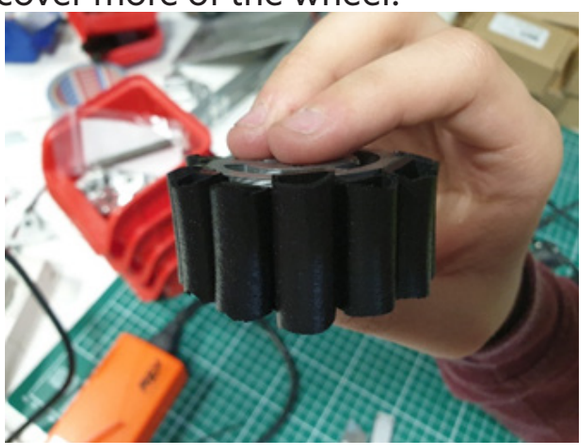
Dream BIG, build BIGGER!

Bogdan arranged the cables from the chassis motors in the space between the aluminium profiles where are the expansion hubs. Unguru made some calculations related with the maximum speed using the motors with 1620 rpm.



The calculations made by Unguru.

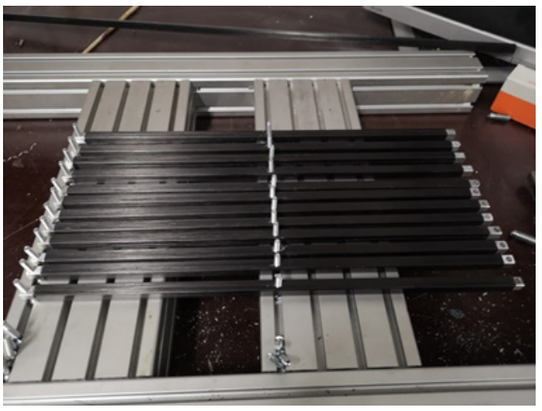
After the 3d prind was done, we began to find ways to wrap the suction wheel with rubber. The first time we wraped the wheel with 2 pieces of rubber, then we realised we can do that with a longer peace. Mr. Cristi came up with the idea to cut the pieces shorter, in order to cover more of the wheel.



The final version of the suction wheel.

Date	30th December , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Peto, Spiri, Unguru, Mr. Cristi

Spiri made in fusion a engagement suction system that was 3d printed and assembled today. After our failed scissor lift made of POM that was too hard we decided on a material that was both strong and light, the carbon fiber. We finished processing the carbon fiber into the



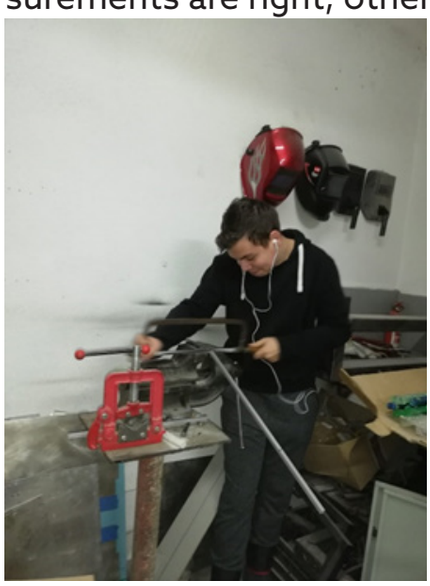
right measurements and then sticked the profiles together.

Date	6th January , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Laura, Spiri, Unguru, Mr. Cristi

Today we tried to mount the carbon fiber scissor lift, but the aluminium pieces didn't stick on the carbon fiber and all tipes of glue didn't work. After we managed to mount them, the profiles broke so we had to give up on the carbon fiber idea. Then, after some thinking, came up with the idea to try using aluminium instead of carbon fiber, because most likely it wouldn't break and it's not that heavy of a metal.

Date	7th January , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Spiri, Unguru, Mr. Cristi, Mr. Petolea

Since we decided to do the scissor lift from aluminium profiles, we need to measure the profiles, then cut them and to drill them where the profiles meet. The procedure takes awhile beause we need to make sure the measurements are right, otherwise the scissor lift won't fold completely.



Spiri cutting the aluminium profiles for the scissor lift (left). The scissor lift assembled at the end of the day (right).

Date	7th January , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Spiri, Unguru, Mr. Cristi, Mr. Petolea

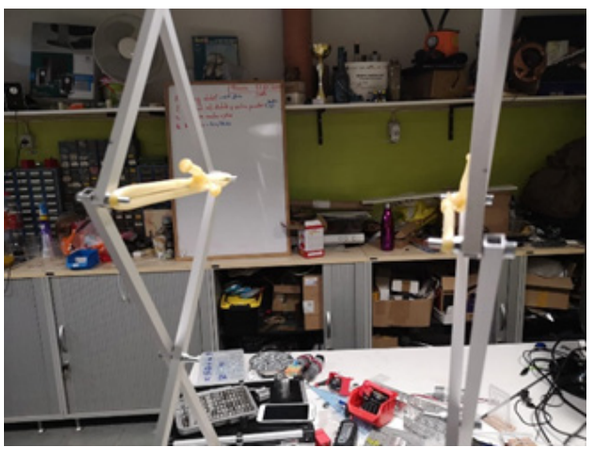
Now that we finished the scissor lift, we mounted

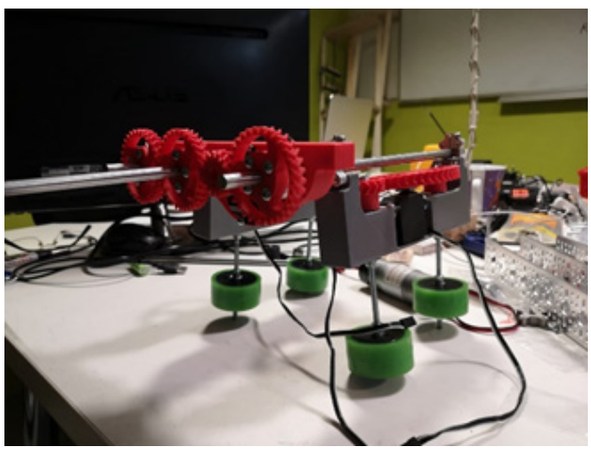
it on the chassis and began to test it. After some tests, we noticed that it rises to the top, but if there's any weight put on, the scissor lift sinks down and go back to the initial position.

Unguru fixing the scissor lift on the chassis.

Date	14th January , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Robi, Sofrac, Spiri, Mr. Cristi

Because of the less of strenght of the scissor lift we thought what could strengthen it without putting too much weight on it. After a lot of thinking we came up with the idea to put surgical tubes to improve both the rezistance and strenght. Meanwhile, the second version of the slim suction is being printed and then assembled taking after the 3d model Bogdan made on Fusion.

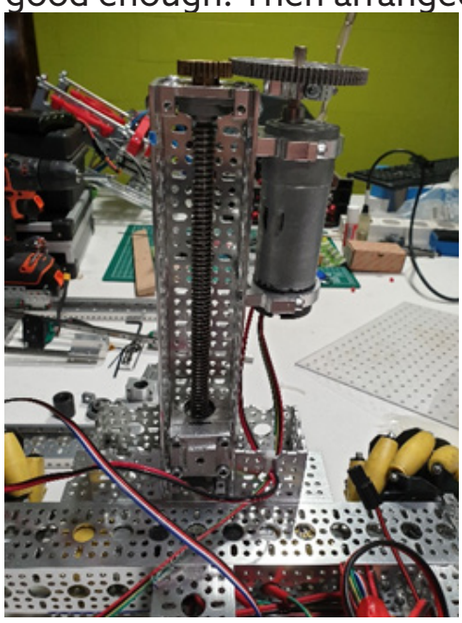


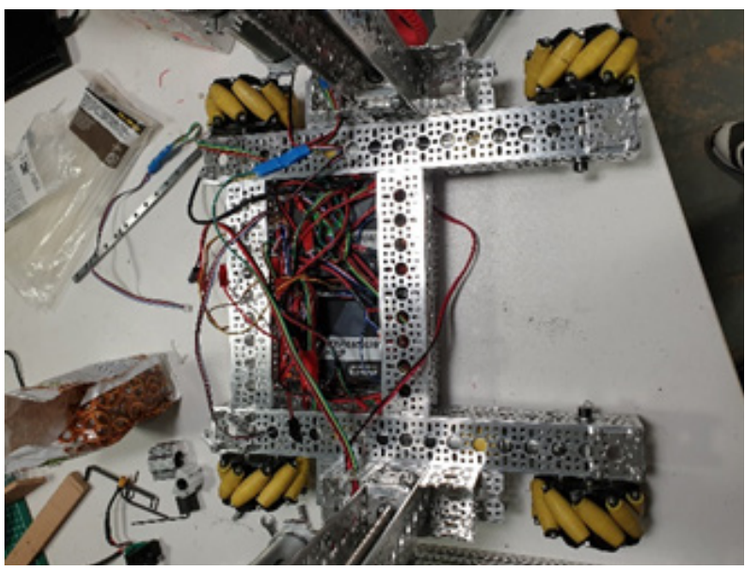


The scissor lift with the surgical tubes (left).
The new suction system (right).

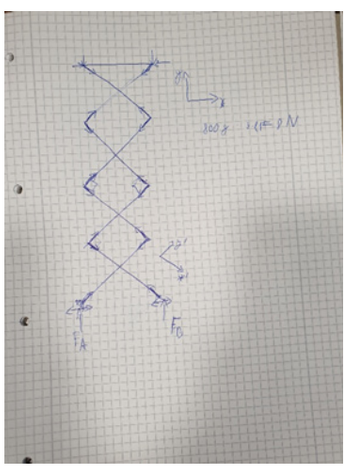
Date	14th January , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Robi, Sofrac, Spiri, Mr. Cristi

We mounted the other engagement part, that is exactly like the other but in mirror, on the chassis so we can finally see if the system comes out to be good enough. Then arranged the cables that were all over the place.





The engagement part of the scissor lift (left). The cables before cable management.



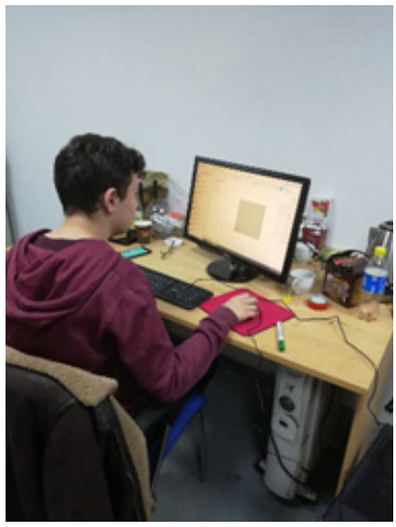
The sketch made by Sofrac, representing the scissor lift.

Date	1st February , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Spiri, Unguru, Mr. Cristi, Mr. Petolea

Since the green wheels from our suction system are not really the best we started to think of alternative solution for re-

placing them. Bogdan designed in Fusion a wheel and then printed it with ABS filament that has greater flexibilty than the PLA filament that we normally use to the other 3d printed parts of our robot. After some tests, we have found that the wheels don't have adherence and cannot contain the sky stones.

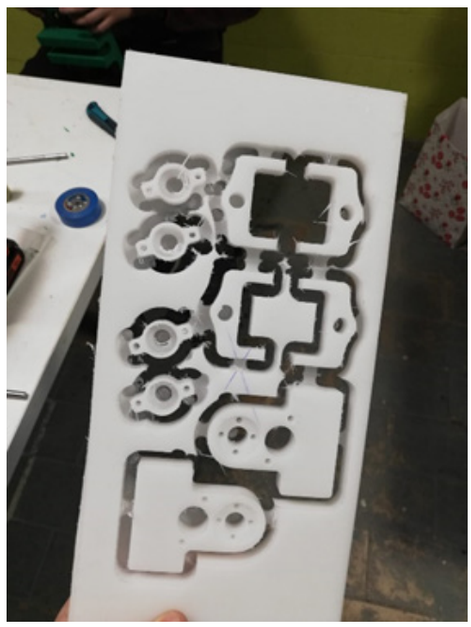
The 3d printed suction wheel from ABS filament (left). Spiri designing the phone support (below).



We realised that the suction claw mount was too heavy and the shafts couldn't be mounted and rotated for the gathering of the sky stone.

Date	2nd February , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Spiri, Unguru, Mr. Cristi, Mr. Petolea

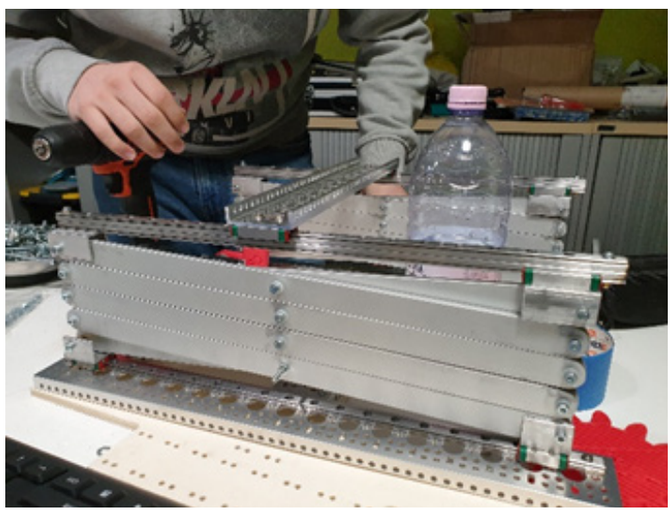
To offer more resistance for the scissor lift, we thought to put a shaft in the engagement part of the scissor lift. Bogdan designed the envelope of the bearing where the shaft will get through to be steady. The envelope of the bearing would be attached to the scissor lift with a screw. We decided that these parts would need to be made with the CNC because of the more resistant material. After the pieces were finished we mounted them on the system.



The pieces made with the CNC.

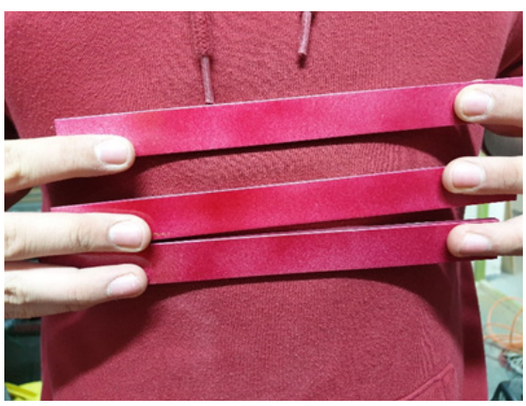
Date	2nd February , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Spiri, Unguru, Mr. Cristi, Mr. Petolea

Today we (mainly Peto) cleaned up our work table and put the screws, motors, 3d printed stuff etc in their place. Now, we have a new filament, an ABS one and we tested it by printing an easy 3d print, the xyz cube. The print turned out to be okay so we printed a new phone stand that most likely wouldn't break. Mr.Cristi suggested to disassemble the scissor lift, in order to improve it in every way, for example to get rid of some sharp edges that can affect the overall performance of the robot.



The phone support (left). The scissor lift before it's disassembly (right).

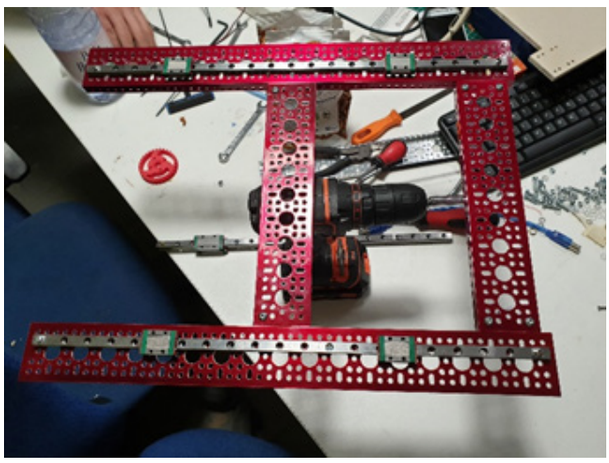
The final scissor lift would be powder coated. To see what the scissor lift would look like, we got the same aluminium profiles we used for the scissor lift and powder coated them. The powder coating gun was stuffed, so the aluminum profiles were not so coloured.



The tests we made with the powder coating.

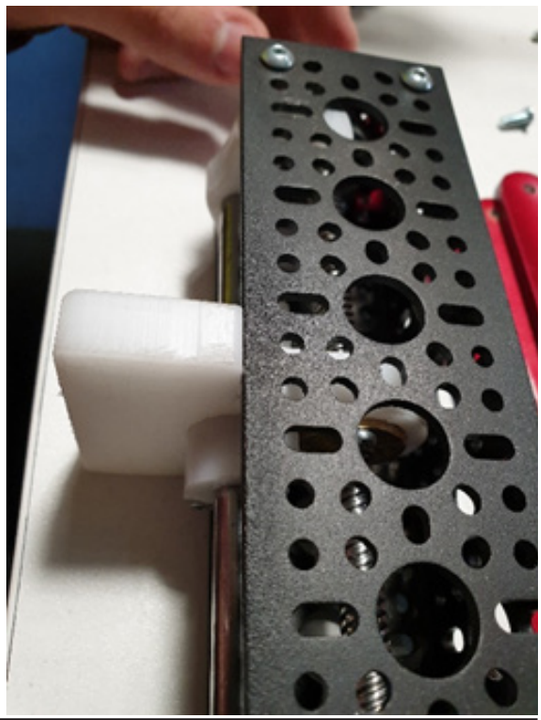
Date	2nd February , at 9:00 a.m.
Meeting held	Creative Space
Attendance	Bogdan, Laura, Spiri, Unguru, Mr. Cristi, Mr. Petolea

After we dismounted the entire scissor lift and powder coated it, we began to assembly it, starting with the scissor frame that contains the sliders. There are 16 aluminium profiles, and they need to be on 2 sides to be a scissor lift, so 8 of them are not matching with the other 8 that are on the other side. After we powder coated the profiles, the markings that we drew on them are no longer visible. So, we have to find out how they were put before.



The scissor lift frame (left). Spiri trying to figure it out (right).

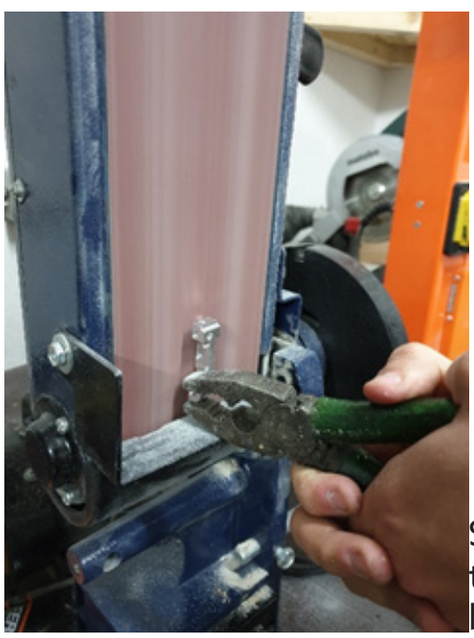
Our robot was divided in 2 parts: the chassis that is at Nokia for autonomous tests and the scissor lift and the suction system are at Creative Space. We don't have a chassis to put the scissor lift on so we made a wooden plate that is an exact replica of the place where the scissor lift is mounted.
While Spiri assembled, we realised that because of the extra layer (the powder coat), the envelope of the engagement part of the scissor lift rubbed the aluminium profile. After we polished the engagement part of the scissor lift, we assembled the gear system of the scissor lift and did the same to the other part. The next part we had to do was to assemble the aluminium profile that is between the other 2 that sustains the scissor lift. We destroyed the fillet from the dual block mounts, because it got stuck when we put the quad block on the other side for fixating the system on the robot. But, it didn't worked out, because we couldn't grip them at all. After this we decided to head home to not mess up anything else.



The place of friction (left). The finished engagement part of the scissor lift (up).

Date	6th February , at 8:00 a.m.
Meeting held	Creative Space
Attendance	Ale, Spiri, Unguru, Mr. Cristi

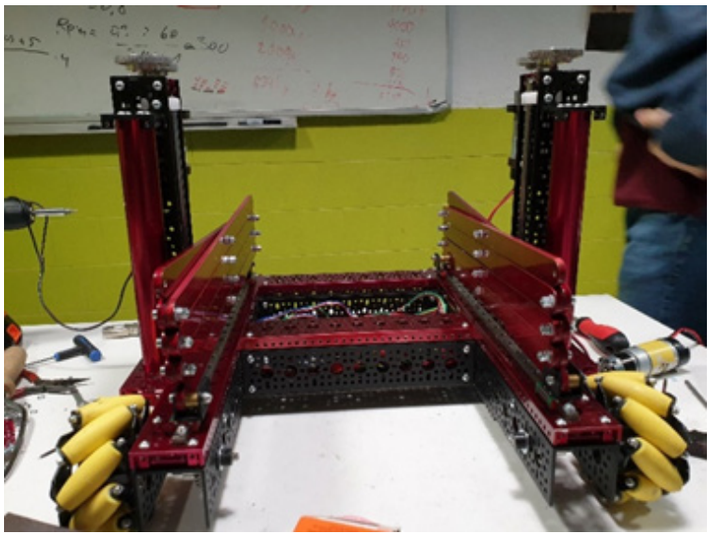
To solve the problem we encoutered yesterday, we came up with a solution, taking one quad block and cutting only the parts we use to grip the profiles. Bogdan thought of another suction system, and today we printed it. The chassis was brought back to Creative Space by Laura, with this occasion the chassis was disassembled to be powder coated by Mr. Cristi. Meanwhile, Spiri put a bearing in the newly printed part of the suction system, or as we call it "the Leaf".



Spiri measuring for the cut (up). Spiri polishing the custom made dual block (left).

Dream BIG, build BIGGER!

The newly printed "Leaf" (left). The profiles are back from powder coating, YEEEY! (right)



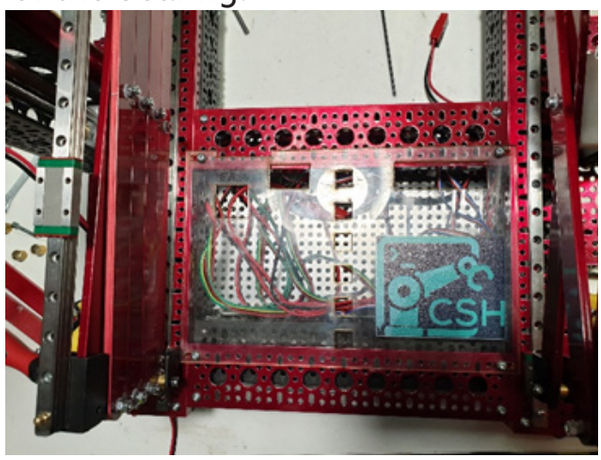
We found out there might be a little problem with the syncing of the engagement part of the scissor lift, because even though the motors have the same ratio (20:1), the motors came from different brands and we don't know if this will influence the overall performance. Spiri and Unguru started to assemble back the chassis with the newly coloured parts. Meanwhile, Ale cleaned up the mecanum wheels to be back to it's original color.

Date	7th February , at 8:00 a.m.
Meeting held	Creative Space
Attendance	Ale, Spiri, Unguru, Mr. Petolea

After some tests with the scissor lift, we realised that the gear from the engagement suction system goes up and down at higher speed because of the motor and that might be a problem if the gear is detached. We tried to screw the screws of the motor to eliminate the clearance inside of it, but it didn't work. The next thing we have to do to complete the design of the robot is to have a plate to cover the place where the expansion hubs and most of the cables are. We made one that was cut at the laser and then printed our logo on it with the help of a printing press.

To make sure everything is perfect, we ran more tests with the scissor lift and had the surprise to find out

that one of the shafts sometimes gets out of the bearing. We fixed the problem by just securing better the envelope of the bearing.



The gear that moves up and down (left). The plate that covers the expansion hub (right).