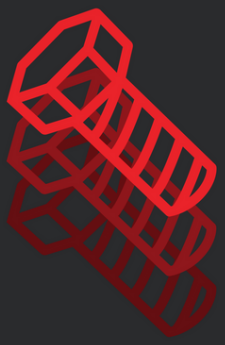


BOLT.M3

Engineering Notebook

Part 1

#22801

Power Play

Table of contents

Getting to know us

MEET OUR TEAM

Who are we?

Bolt.M3 is a dynamic team of passionate STEM enthusiasts who share a common goal of pushing the boundaries of innovation in the fields of robotics, technology, and engineering.

With a name that symbolizes one of the most vital and frequently used parts in the process of building a robot, Bolt.M3 is just as important in the creation of groundbreaking solutions and making a positive impact in the world.

Why 'Bolt M3'?

The history behind this catchy and atypical team name came out of nowhere. Tair, Sultan, Sardar, and Sanzhar - the founders of Bolt.M3 team- noticed that our lab was lacking M3-sized bolts. So when people started asking for a team name, the first thing that came to mind was bolt m3. That was how we got our interesting title.

TEAM LEADERS

Tair

Role Captain/Programmer

Characteristics Reliable, responsible, funny (no), hard-working, extremely smart.

Role Co-Captain/Engineer

Characteristics Mini Steph Curry, enthusiastic, native English speaker, is always funny(Zaki didn't write this), loves competition.

Zaki

SOCIAL MEDIA DIVISION

Zhanel

Role **SMM Manager**

Characteristics Active, productive, and communicative

PROGRAMMING DIVISION

VLAD

Role Programmer/Web Dev.

Characteristics lacks sleep, Computer Science and Psychology major, hackathon activist.

Role Programmer

Characteristics cool, Computer Science and Psychology major, hackathon activist.

DINMUKHAMED

ENGINEERING DIVISION

ALIBI

Role **Head Engineer**

Characteristics a.k.a 'Hard Yakka', life of the party, loyal, creative idea generator.

KADYLBEK

Role **Engineer**

Characteristics Hardworking, an underappreciated comedian, is quiet most of the time.

ASHIM

Role **Engineer**

Characteristics open-minded, overachiever, maths nerd, owns a single hoodie, easy-going.

VAN

Role **Engineer**

Characteristics Very smart, kind, creative, crafty, a great programmer, IJO.

HANDBOOK ENGINEERING DIVISION

Role **Handbook/Portfolio Engineer**

Characteristics Creative, kind, bookworm, great imagination, has a good sense of humor.

Experience: **FLL, FTC, FGC**

Shapagat

ANDREY

Role **Awards CEO/Handbook**

Characteristics Analytical, smart, great researcher, open-minded, always there to help.

Experience: **FGC, FLL - '22**

Mechanical Division	Software Division	Handbook Division	Drivers Division	Business Division
Builders: Alibi, Van, Kadylbek, Ashim	Programmers: Tair, Dinmukhammed	Handbooks: Shapagat, Andrey, Zhanel	Drivers: Ashim, Tair	SMM Manager: Zhanel
Calculations: Zaki, Ashim	Website software: Vlad	Awards: Andrey	Human Player: Alibi	Contacting: Andrey, Tair, Shapagat
CAD/Sketch: Alibi, Zaki	Strategy: Kadylbek			Mobilography: Zhanel

MENTORS

AIDOS

Role Robotics Teacher

Characteristics

the greatest motivator, idea generator, father, responsible, smart, strategic, team angel .

Biography Aidos is an experieced engineer who helped and worked in WRO, FTC, FLL, and FRC Competitions. Besides, he is a social influencer.

Role **Intern from Satpayev Uni.**

Characteristics Fast learner, calm, sarcastic, funny, supportive, helpful

Biography **Dauren is an intern** in FIZMAT school. He has helped organize FIRST competitions and conducting STEM-related programming courses.

DAUREN

OUR SPONSORS

Being supported by local companies plays a significant our team's sustainability as it allows us to supply our team with better resources and hence, do better in our competitions.

Since Bolt.M3 is a school-based team, we are sponsored by our school's endowment fund called "**Fizmat Endowment Fund**" (a special fund aimed at providing a guaranteed non-governmental source of funding for the needs of NSO NSPhM.

FIZMAT ENDOWMENT FUND

Alongside our school, we were sponsored by **Caravan of Knowledge** and **Chevron**.

Those two companies built a lab at our school called **Zertte Studio**, and thanks to them, we now do robotics.

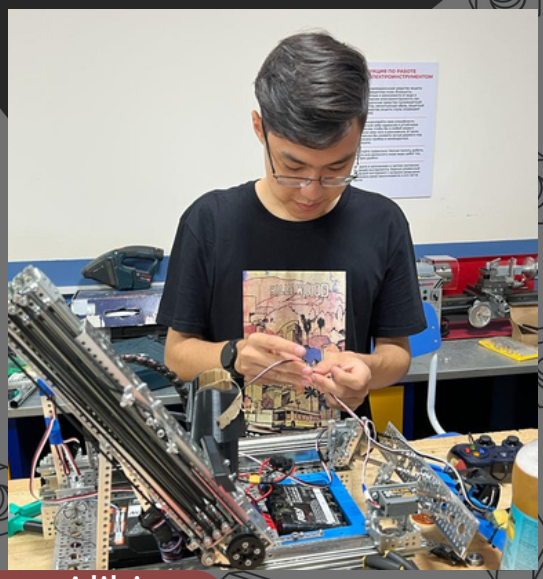
GSC Study is a language school that made a huge contribution to our participation in the *FIRST* Central Asia Championship which later led us to winning a quota to Asia Pacific Championship.

Delta Chip is one of our most influential sponsors who cover all of our pit, merchandise, and typographic expenses.

Last but not least, **investbanq**, a wealth platform which covered all of our accommodation expenses.

INDIVIDUAL GOALS

Our entire team has one cohesive goal. But if you go into detail, each division has its plan to complete. To that end, the Heads of our Team Departments are represented below stating what they are aiming for.



Team Captain, Tair:

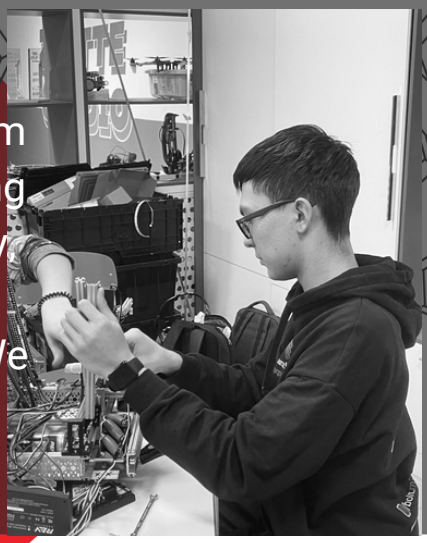
- I want to create a stable platform for the development of the next generation of STEM enthusiasts in Kazakhstan. I need to lead our team, interns, and volunteers into the following lineup to win.

Head Engineer Alibi:

- The most crucial goal is to keep the robot from breaking! Of course, this is a joke, but what matters is that it works efficiently and is easy to fix. Moreover, one of the keys to success is the robot's simplicity and aesthetics. We must make the robot perform as well as possible in terms of functionality.

Head Programmer, Vlad:

-It is important to create a driver-friendly program that can satisfy all possible whims. Another thing is maximizing the autonomous code's efficiency and programming the robot to score maximum points during the first 30 seconds of a match. We also want to create a convenient website for mass usage.



Head Handbook Engineer, Shapagat:

-The goal of handbook engineers is to lead our team to victory and represent Kazakhstan on the world stage. Therefore, we need to create the most informative notebook and portfolio. More precisely, we have to make them well-structured and worthy of the Inspire Award.

Social Media Manager, Zhanel:

- My goal is to keep an aesthetically pleasing account with a good design. It should show our activity and gain much coverage, subscribers, and likes. This is a big part of what we do to spread robotics and get noticed by people. I work a lot because hard work pays off.

As you can see, robotics is more than STEAM for us. FIRST competitions are another way of gaining experience, learning lifelong lessons, and having fun!

Central Asia FIRST Championship - Inspire Award Finalist

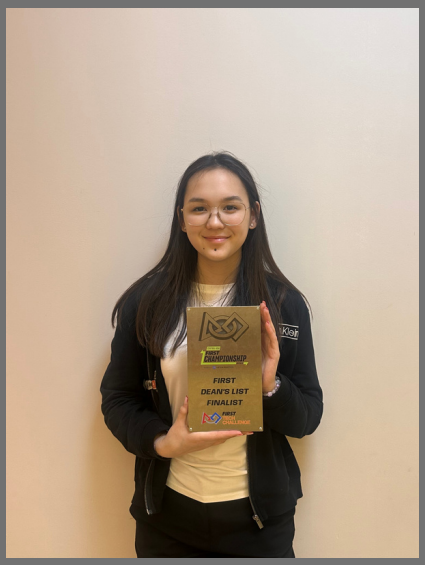
Daryn FIRST Championship - Champions Award (Inspire)

Central Asia FIRST Championship - Inspire Award Finalist

Daryn FIRST Championship - Champions Award (Inspire)

Honors and Awards

Dean's List Finalist



Haileybury FIRst Championship - Connect Award

World First Championship - Motivate Award Finalist for Ochoa Division

Contribution to STEM

Our team actively promotes and supports STEM community by participating and hosting competitions. Here are some achievements of our contribution:

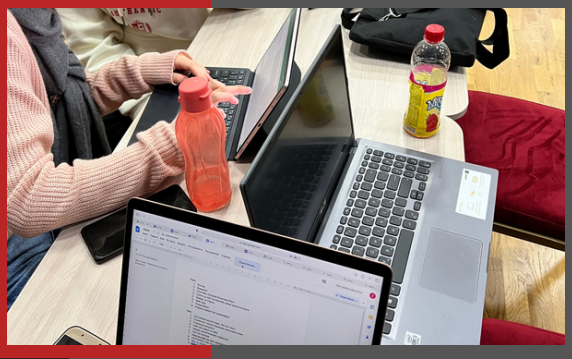
Solve For Tomorrow by Samsung - Finalists

Co-hosted an International Haileybury FIRST Championship

Hosted Science Fair Conference

Fundraised 3245$ to provide humanitarian aid for Turkey

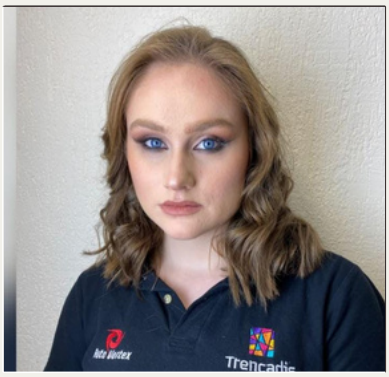
Nasa Space Apps -won 1335$



Fizmat Hackhaton Finalists

Outreach

Connections



SOFIA

Sofia is a mentor of one FLL, two FTC, and one FRC team. Although she is new to the Kazakhstani FIRST community, she is pretty experienced in FIRST competitions and has organized loads of events in the past. Despite being new to us, we managed to establish a special connection. She then gave us helpful advice on our handbook engineering area and even met up with the nb department via Google Meet.

KAZHYMUKHAN

Kazhymukhan is an experienced engineer and a former host of the FIRST competitions. After the Daryn FIRST Championship, he offered to guide us through the robot assembly and often came to our lab to help with the process. Two weeks prior to the nationals, he proofread our notebook and advised us to include more calculations which you can now find on pages 113-115

SULTAN

Sultan is our former team member who is now studying mechanical engineering at Purdue University. He has excellent knowledge of physics, which came right in handy for our engineers. They worked together on the estimation of various physical measurements needed for building the robot.

BAURZHAN

Baurzhan is PhD in IoT. He has made a great impact on our team as a whole. At first, he gave us useful advice regarding the autonomous part of the code. Moreover, he helped us conduct Arduino lessons back in 2021. Generally, it was nice talking to someone who is as passionate about robotics as we are.

SARDAR

Sardar is also a former teammate of ours, who also happens to study at Purdue University. The great news is that he visited Kazakhstan during his winter holidays and came over to the lab, where he managed to point out some of our robot's problems. Thanks to him now we know what to work on.

NURDAULET

Moreover, we appreciate the FIRST Kazakhstan Hosts who helped us throughout our journey - Nurdaulet and Asylbek. They frequently bring people to the laboratory to show them all around the place. While our team captain Tair, guides the guests through the lab, Asylbek and Nurdaulet often give feedback about our robot and preparation. We know that they are always there to help which makes us eternally grateful <3

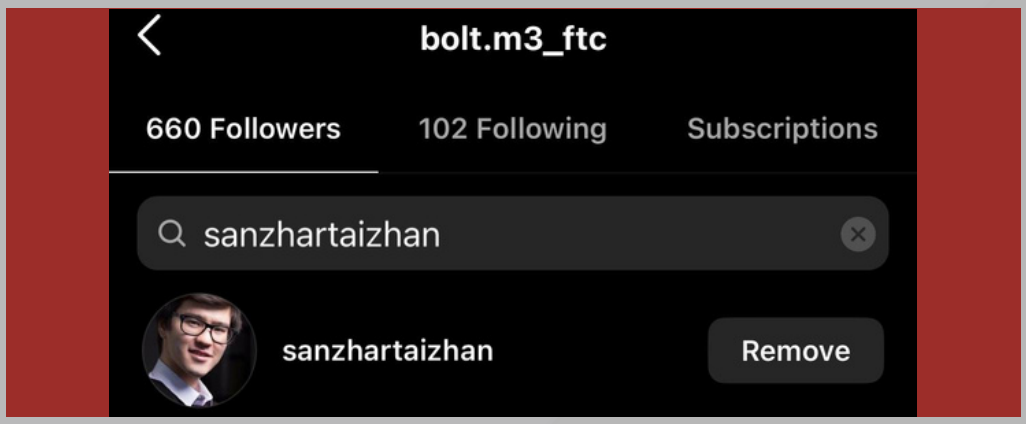
Overall we met over 20 professionals, each of whom could share their experience and give a useful piece of advice.

Vyacheslav Molodykh	no-code, low-code ambassador	Ganibek Bekdaulet	representative of social fund I Teach Me
Yrysdaulet Slambek	digital nomad and IT-evangelist	Nurzhanov Nurlybek	founder and CEO at Alpha Study
Kazhymukhan Reimbaev	IT specialist	Anastasia Victorovna	founder of schools for children
Amir Mediev	Air Astana pilot	Bagdat Musin	Minister of Digital Development and, Innovation and Aerospace Industry
Naizabekov Nurzhan	Deputy Chief at CHP-2		
Zhalyn Kabeken	UCSD graduate, was an intern at NASA	Loginov Danil	physics teacher
Sanzhar Taizhan	Battery engineer, 2 time finalist at Elon Musk Contests, Forbes 30u30, Founder at SpaceX Warwick Hyperloop	Dinara Kalikhan	Forbes 30u30, Technovation Girls semifinalist, founder of table99
Mukhtar Dzhakishev	former head of Kazatomprom, ex-Deputy Minister of Energy and Mineral Resources	Berik Kaniyev	chairman of the board of Directors of Lancaster Group Kazakhstan
Sanzhar Myrzagalym	IT architect at Microsoft	Takhmina Kibirova	PR manager at Astana Motors
Dara Tumenbaeva	WTM ambassador, ex-Amazon Software Engineer, CEO of Black Swan	Leila Aitmukhanova	Social Development Projects Coordinator in Chevron Kazakhstan
Baurzhan Ospanov	enterpreneur and chairman of ZHERSU	Mamyshev Bakhyt	founder of CleverS, math tutor

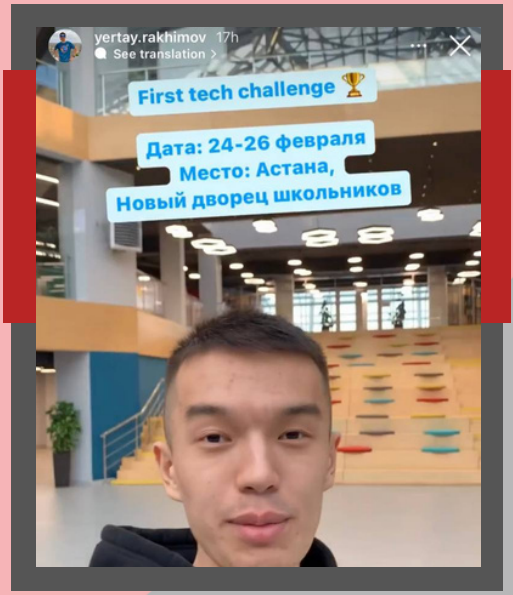
Each person above helped us a lot. Here is their contribution in a nutshell:

- Engineering notebook/portfolio should contain much helpful information, but we should try to make it visually simple and understandable for all people, not just professionals;
- Follow handbooks design and aesthetics; remember that even FIRST say that we should start handbooks at least 14 days before the competitions.
- Let us have many references to mathematical calculations; derived formulas from physics can prove anything.
- The robot should be simple and efficient; we must train a lot because this is a big part of success. Also, we have to remember the development of STEM in Kazakhstan. Let the driver be ready for all situations.
- We also realized that energy is vital nowadays because we are practically made of it.

People who helped us spread awareness about robotics.

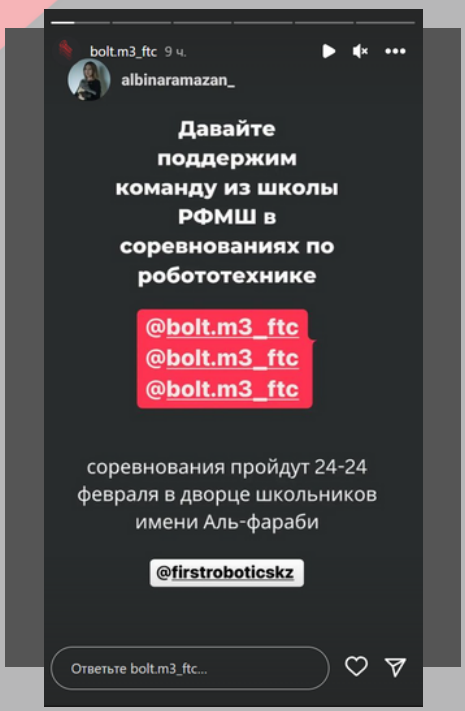


07.02.2023 Sanzhar Taizhan, who works for Elon Musk, learned about robotics. He came with Assylbek and Nurdaulet to our laboratory and was very interested in the process. Now he follows us on social networks.



@yertay.rakhimov

09.02.2023 Yertay Rakhimov - marathon runner. Also, he is a robotics coach, but even so, he learned about the upcoming FIRST competition and published us in his story so everyone from his public on Instagram can know about it

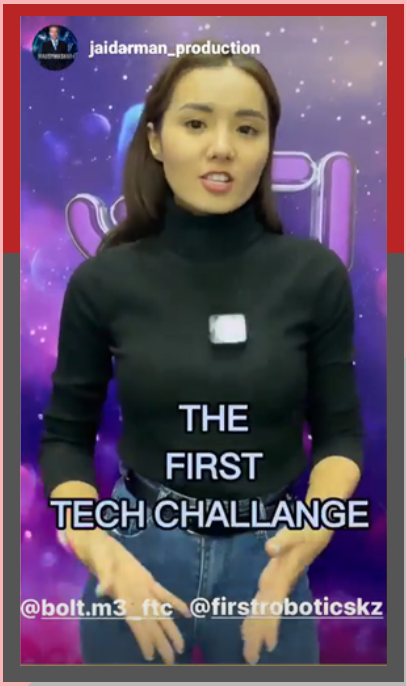


@albinaramazan

10.02.2022 Albina Ramazan - is an Instagram influencer with 4034 followers and lots of fans from Digital Almaty Forum 2023. In her stories, she often mentions youngsters who inspire her. Consequently, on the 10th of January, she posted our team and informed her followers about the upcoming competition.

Berik Kaniev

He is a graduate of our school and the founder of the FIZMAT Endowment Fund (which sponsors our lab). He learned about robotics during one of the tours around the lab.



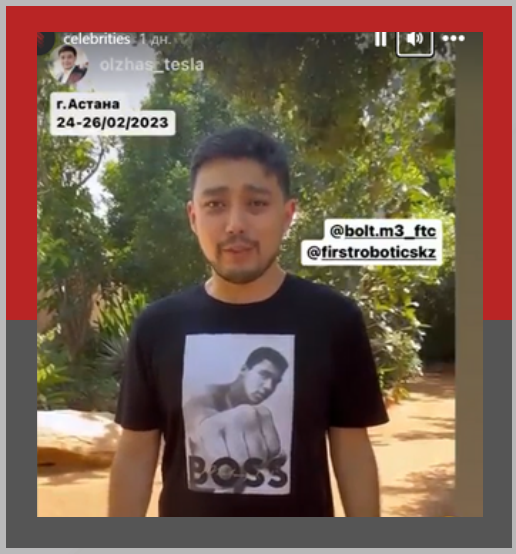
@jaidarman_production

10.02.2022

A hilarious and popular KVN team called Jaidarman Creative Production has posted us on their Instagram! Their account is followed by over 335K people! One of their main members has provided a detailed description of FTC and invited their audience to the Championship.

@olzhas_tesla

Olzhas Zhiyenkul is also a FIZMAT graduate and the founder of Tesla Capital Pte Ltd. He has 50.9K followers on Instagram and on February 16th he posted us on his stories to let his audience know about an upcoming robotics championship.



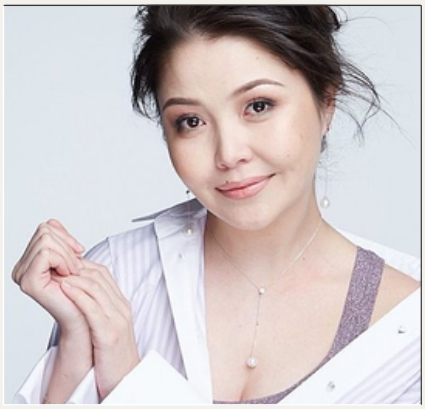
Besides there were a bunch of local famous people, who helped us through publishing us on their social media, which helped us to cover even more people, explaining them essence of FIRST competitions and asking for financial help:

Zhuuzland 130K fol

Hyundaikz 175k fol

BatyrOff 1.1M fol

Ramazan.R 173k fol



Asel.S 1.3M fol

Dzhakishev 122K fol

Teams

Meeting Date: 29.10.2022

Justice Team #21036

The meeting was conducted while some of the current members were in Fizmat Awa team, which has tragically disbanded. The Justice team, a team from Brazil texted us on October 18th.

After discussing some nuances, we chose a date and met up on the 29th of October via Google Meet. At first, we discussed Power Play, and how much energy we consume on daily basis. Then we moved on to discussing our robots and their features. They tried creating a conveyor-like construction that would take the cone to the lift, and then flip it onto a junction which showed their creative approach to the cycling process. All in all, it was great meeting a team from overseas which really shows how FIRST brings people together.

The Midnight Ostrich Runners #11354.

On October 27th, we received a package from the USA team called “The midnight Ostrich Runners”. We want to thank them for their generosity and kindness in providing us with mecanum wheels, Spark Minis and their team merch for free which we

27.10.2022

now are happily using. This is one of the most experienced teams we have connected with. Their actions have shown what real Gracious Professionalism is, and we are looking forward to setting the same example for other teams in the nearest future!

RhinoBots #16310

Meeting date: 08.12.2022

It was nice to communicate with that team from Brookfield for three months, whom we met through their Discord channel. During our meetings, they showed true gracious professionalism. RhinoBots have outstanding collaboration and leadership skills through which they clearly embody the FIRST principles. The experience which they shared with us was priceless and we will be forever grateful for their influence. They even introduced us to field of programming in AI. Moreover, they gave us beneficial tips about our robot. The Bolt.m3 team highly appreciates their responsiveness and responsibility. We are more than confident that RhinoBots have a great passion for robotics with hard work and curiosity to explore new things.

Rhinobots team is a sample of excellent inspiration work that encouraged us to present a recommendation letter. Recently, they won the toom Inspire Award in their State Competitions. That is why we are confident that their tips will help us prepare for the Astana Competition.

The Tau Manifesto #5628

Meeting date: 25.12.2022

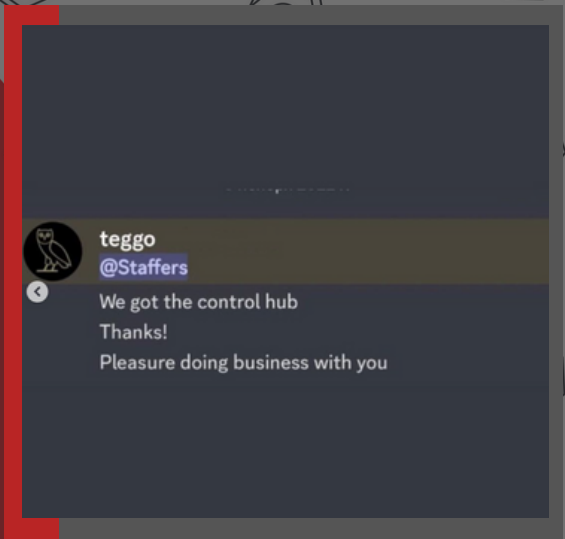
We reached out to a team from the US called "5I" which stands for 5 Indians on December 5th. After a successful negotiation, we created a Whatsapp group to discuss everything. They were highly supportive and communicative from the very beginning.

Another thing about them is that they passed on participating in FTC this year and chose FRC instead. However, that did not stop them from helping us better prepare for the season. We could tell that they were experienced since they almost instantly cleared our confusion concerning mecanum wheels which were not moving evenly. The problem was in the gear mesh. Their advice has helped us identify one of the most nerve-wracking issues of the robot, for which we are eternally thankful.

NMHS Robotics #5628

The date: 27.12.2022

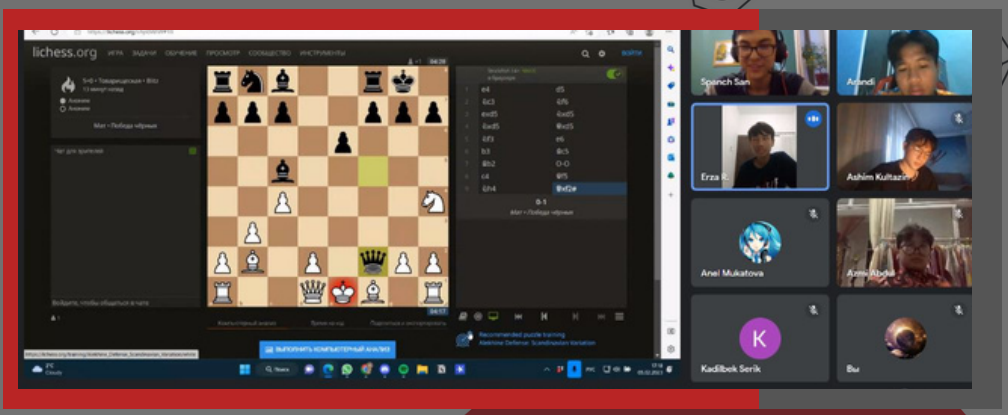
While desperately searching for an expansion hub, we contacted nmhs.robotics via Instagram, an FTC team from NMHS, based in Newark, California. As a result, we successfully made a deal to exchange our control hub for a brand-new expansion hub and some additional payment.
The interaction happened really fast which saved some time and left us satisfied with American delivery services :)



Java troopers #19960

This is the team from Indonesia. All of them are currently in 8th grade, but that did not stop them from competing in FTC. In that meeting, we do not talk about the robot much. Instead, it was a cultural exchange, which was very funny. Sanzhar talked about doners, Kazakh people's attitude, bragging, and the environment.

This experience again taught us that robotics is not only STEAM. You can use strength connections not only by talking about robots but also by exploring each other's cultures



As is our tradition, Ashim and Vlad played chess with Arandu. They were very excited. Java Troopers said that it was the best meeting that they had. Ashim failed in 5 minutes, and then they played with Vlad.

Green machine #15458

Meeting Date: 6.02.2023

This team from Texas differed from others because they were at school during the meeting and hurried up because of their classes. So the meeting was only about 15 minutes. But, that did not stop us from having s great time and discussing the issues of our robots

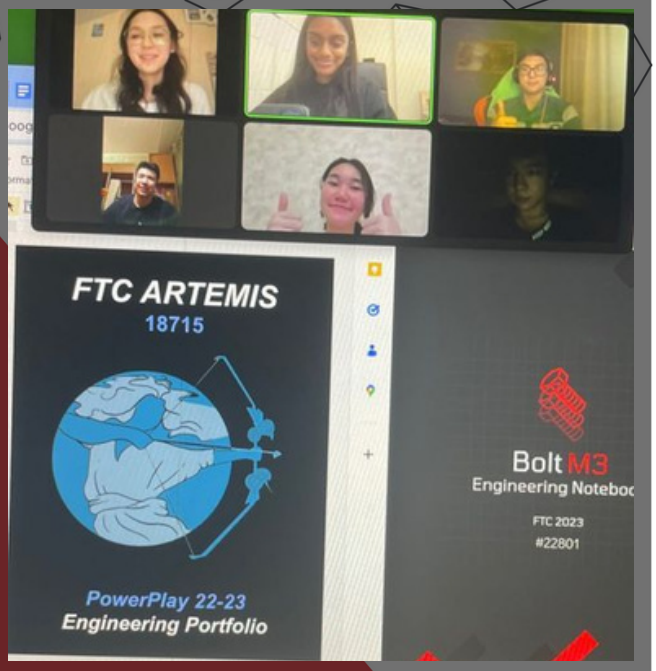
And that time, we did not know our intake idea. So their teammate (see him in the photo) suggested we take a cone and flip it 360 degrees in the intake to hit the basketball at the end. But in the future, we didn't use this method because it took so much time.

ARTEMIS Team #18715

Artemis Team won Inspire Award in their State Championship; We appreciate their help because they gave some feedback about our notebook. Moreover, they shared with us about their outreach section and how they divided it into several parts to clarify it. We also split outreach into four parts, but it was interesting to know their team path.

Then Anel asked them about including the team in the portfolio. They did not but said about the including goals and the difficulties in the season.

Really thankful to that team for helping us.

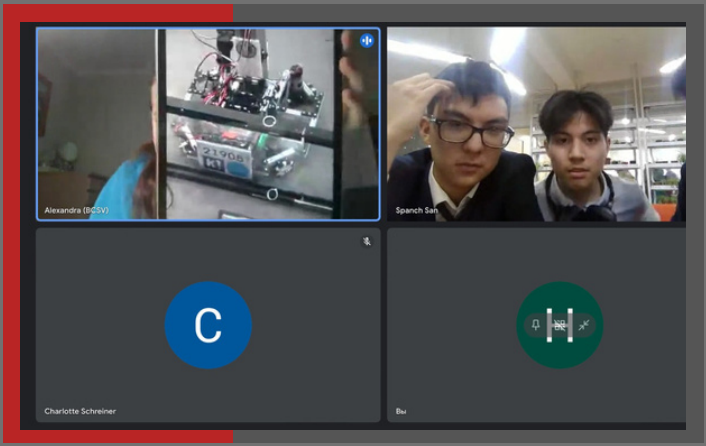


#15083

11.02.2023, We had a meeting with the Antagonists. They asked us how our robot was doing and liked our robot.
Currently, the team is redesigning the robot and has a cycle bot, but in the last competition, they could only do one high cone. For future goals, they are planning to double linear slide. In addition, they upgraded the robot to enormous wheels because they pushed the wrong junction in the last competition.
They asked about our most significant challenge - and of course, it was Intake, as we redesigned it five times. At this time, they had competitions in a week.
Sanzhar asked about a class of motors; they use DC motors. When he used encoders, they fixed the little distance, which stalled for 1-2 seconds; To solve it, he said about the proper function that reduces this.
Antagonists also really answered our question about Linear Lift System. It was about friction. They used the insoles spread among the robot, reducing the conflict by 2mm, GO Bilda and REV.

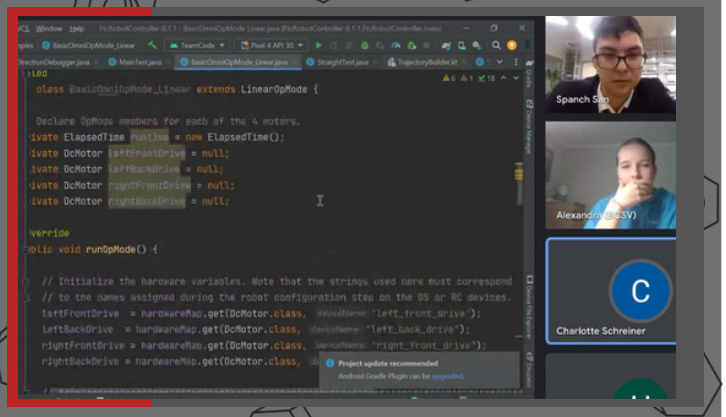
Bsc Vikings #21905

Meeting Date: 06.02.2023



This team needed help with their transmission. Our engineers, Kadylbek and Zaki, didn't notice any issues with it in terms of engineering, so he asked about the code. Then Sanzhar showed them the most sample code for the x-drive and shared the links and documentation from GitHub and Vex forum.

We also found out that this team recently found sponsors and received two Expensh Hubs free of charge. It also helped us to find sponsors, i.e. the better you negotiate and present yourself for the benefit of sponsors, the more chances you have to get feedback from them. By the way this team is from Norway and can speak Russian.



Surface #22345

Meeting Date: 11.02.2023

This one is a United States Rookie Team that asked us to mentor than as our team has experience in FTC. In these meetings, they wondered about the apps we use for 3D CAD, Linear Lift Mechanism with Chain.
Also, we asked them about notebooks, and they were doing it well and documenting everything daily. We liked to help them.

Enigma #13835

Meeting Date: 11.02.2023

Enigma is a team of just only three people! Despite that fact, this team has a cool robot. They tell Anel, Nurai and Kaylbek about their CAD and that it is essential to make it before the robot construction. Moreover, they speak about their notebook structure: team plan, team information, and engineering process.

They found sponsors by writing to everyone and waiting for someone to responsible. Finally, they They have a few sponsors from the state. From that team, we understood the importance of doing the CAD before the robot construction. Unfortunately, we had this mistake at the beginning of the season, but now we always do the CAD models of some parts of the robot first and foremost.

Haileybury School Teams

The start date: 01.02.2022

They participated in FRC as part of the same team and are generally great guys. However, this season they also have a new team - Invicta - and we took her as a mentor. And in general, we agreed to always be with each other, even if we passed to the next stage of the competition.

We helped build the robot and told her everything about the First, even the rules. But unfortunately, the team broke up.

Infinity team #22956

The start date: 22.09.22

From the start of November, we have collaborated with Infinity Team. Infinity Team differs from other teams with their friendliness and hard-working less. Together Zaki and Bereke held presentations in their school. We like to help Infinity school. For example, They schedule a time when they need to ask us something about the robot, and they come to our lab. They have visited our team 2-3 times. They find our robot lift mechanism compelling, so we tell them about him in this photo. Van, Sazhar, and Tair explained better how to make a lift with the drawer slider and the chain. We explained how to choose an effective drawer slider.

#22949 team

The start date: 06.01.2022

The first time they came to our lab was on the 6th of January. Zertte is very close to us. Even though their team is called the same as the place where we work, we have known them since the last year. This is the youngest team in the FTC Kazakhstan.

As Zertte is a new generation of children in robotics, we support them as hard as possible. Our laboratory is always open for them and our help as well. They have enormous potential. We helped them with robot construction and programming. At the last meeting, we gifted them little mecanum wheels. They thanked our team as well on the Instagram Account.

We supported the entire robot: transmission, lift, spare parts, claw on intake, and the shift from start base to mecanum message. After the meeting, they asked us how to set the mechanum wheels. As you can see, we are happy to help them, especially Tair.

BIL - new team

The meeting date: 31.01.2023

After our presentation at BIL School, they decided to create their team. But first of all, they visited our laboratory, where we held a guided touron our robotics and the place where we work.
09.02.2023, they shared with us that they want to speak with the Head of their School and create a new team. On the afternoon of that day, they said that FIRST Organitors would share the REV Kit for the Start Robot with them.

NIS teams: NIS Kyran #21058, Balga Men Shege #19164, SWB #21094

The dates: 01.01.2023 - 10.01.2023

NIS Teams are one the most experienced and most potent teams. So we also tried to help those teams. When the season started, they kindly asked us to share some cones and come to our laboratory to prepare.
We shared the cones with all three teams: Kyran, SWB, and BMS, and shared the field with SWB and BMS.

Space Vision Team #23011

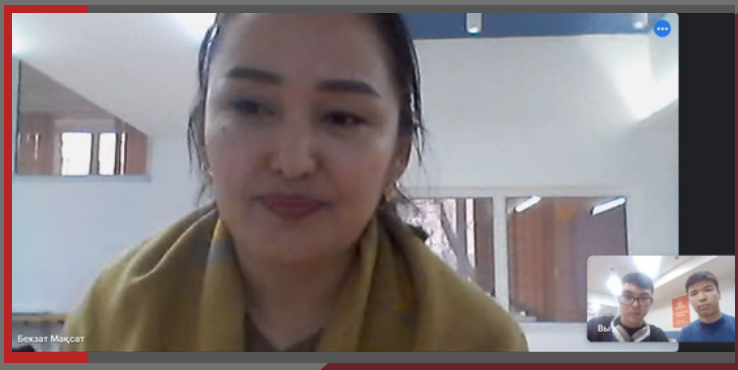
The meeting date in our lab: the end of January and 08.02.2023

The team from a very famous club in Kazakhstan offers free courses. Aspace Vision is an American Space club team that was only recently formed. They have a great sense of humour and analytical thinking because the robot provides an

Option if their elevator breaks down. We gave them some spare parts during our last meeting in February, including 2 REV Sparks Mini and PDP. It was a successful negotiation with the FTC Team. We assisted them with the further steps in base and lift system.

New team from Turkistan

The meeting date: 09.02.23



The team from Turkestan - very impressed. Our programmer Vlad gave them a complete presentation and told them about everything:

how the FIRST works, how they are evaluated, and what points you can get. He also suggested theythey start doing social media work: YouTube, Instagram, etc.

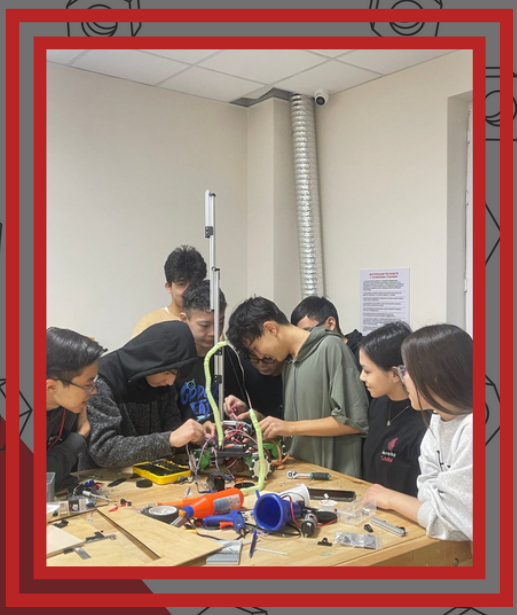
New team from Aktobe

The meeting date: 09.02.23

The guys seemed to our team leader Tair very determined and independent. They understood him at a glance. They prepared for our meeting and before the meeting studied almost all the topics for the team by themselves: even the instal and the handbook. Tair talked to the head engineer of the group.
He shared with them useful programs for programming and the 3D printer and modelling, then advised about the structure of FIRST: what to drive, what to do with it, and so on.

5x1 #21066

5x1 is one of the oldest teams from NSPhM. One of our teammates - Anel, was part of that team in the last year's season. However, there has been a complete change in the group.
Even so, they are new in FTC; they distinguishes by their team work and curiosity. We helped that team during the entire FIZMAT Championship, as it was their first game, and during the preparation for Astana Competition. First of all, handbook engineer - Shapagat shared with them the importance of the strategy.



She shared the list of the most common mistakes that can be made on the field that consequently result in a penalty 10.02.2023 Head Engineer Sat shared our Sparks with 5x1. 14.02.2023 Anel Helps 5x1 with creating the First CAD model in Fusion 369 (downloading the details and the app's functionality).

Avianci

FLL Team. We love them so much. They are so handsome and intelligent as well. They have great potential. Our Teammates Anel and Nurai are always in contact with them and track all of their work so that we can help them. For example, they also had trouble with the app's design and the code,

So we contacted the team lead, Tair, and he suggested to them the best app to do it - Thunkable; it is the no-code platform to build powerful native mobile apps, so FLL Team can also create the simple design as they asked. Artemiy from FLL also helped Anel 10.10.22 ,when she was so exhausted, so she could not arrange the dates in order because of a headache. And he helped her.

AENTA #22940

AENTA participated in FGC, so it is a rookie team in FTC. But we try to help them as much as possible, especially our Team Mate Alibi. This photo represents how we are helping

They with the robot construction. 9.02.2023A Alibi helped them by saying that they misplaced the mecanum wheel. So we replaced them and helped to finish assembling the drivetrain. We have a strong bond with them and like to work with this team.

Moreover, they were searching for good CAD Apps, and Anel recommended they to use Fusion 360 and where they can find Telescopic Slides in GrabCAD

International FTC Forum

After everything we passed through, we decided to gather FTC teams from different countries and discuss with them forum's topic. The main purpose of this forum was talking about differences of FIRST movement in every country and sharing experience. Every team had to show the presentation and describe the history of FIRST in their country. We send official invitations with all the requirements. It was an enormous opportunity to get and share experience with other FTC teams. It was incredible to see that each team listen to others' issues and thought of a solution they can offer. As a team who hosted this event, we were very gratefull that teams responded to our call and were pretty active.

Event Overview

EVENT NAME	Inrenational Forum for FTC teams
DATE AND TIME	18.02.2023 12:00pm in Houston time
VENUE	Google meet : https://meet.google.com/cbx-usfh-qmn
NUMBER OF ATTENDEES	27 teams around the world

Event Description

This event is aimed at learning about how FIRST competitions are held around the world. Our team will select one representative from each country. Each team will prepare a small presentation about themselves and about the history of FIRST in their country.

Presentation requirements

- No more than 12 pages
- The flag and name of your country on first page with FIRST logo
- On English language

The content:

- Your team expirience
- The history of developing FIRST in your country
- The main problems in your contry during the preporation for FIRST championships (optional)
- The main insights that you have gained this season (optional)
- Features of FIRST movement in your country

International FTC Forum

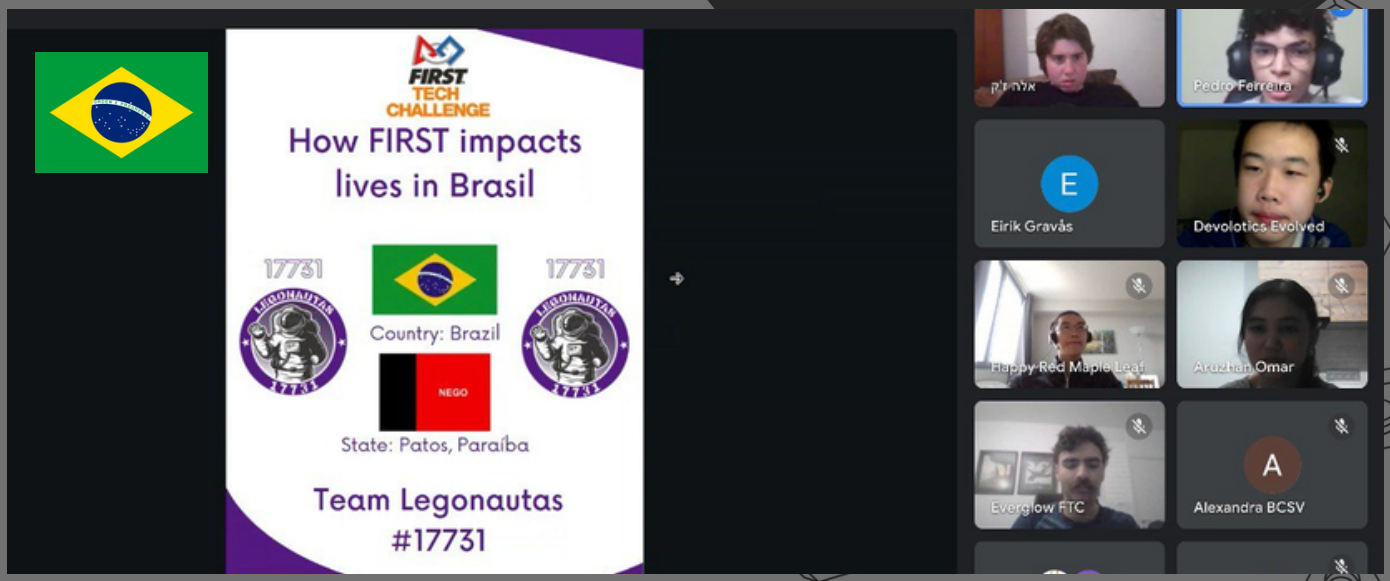
RESULT

The Canadians (Devolotics) said that their school is actively engaged in the robotics field. We found our that it is totally normal for their country to build a school where children will be engaged only in robotics since early career choices are respected in Canada. The speekers were a bit shy, but information was complete and interesting.

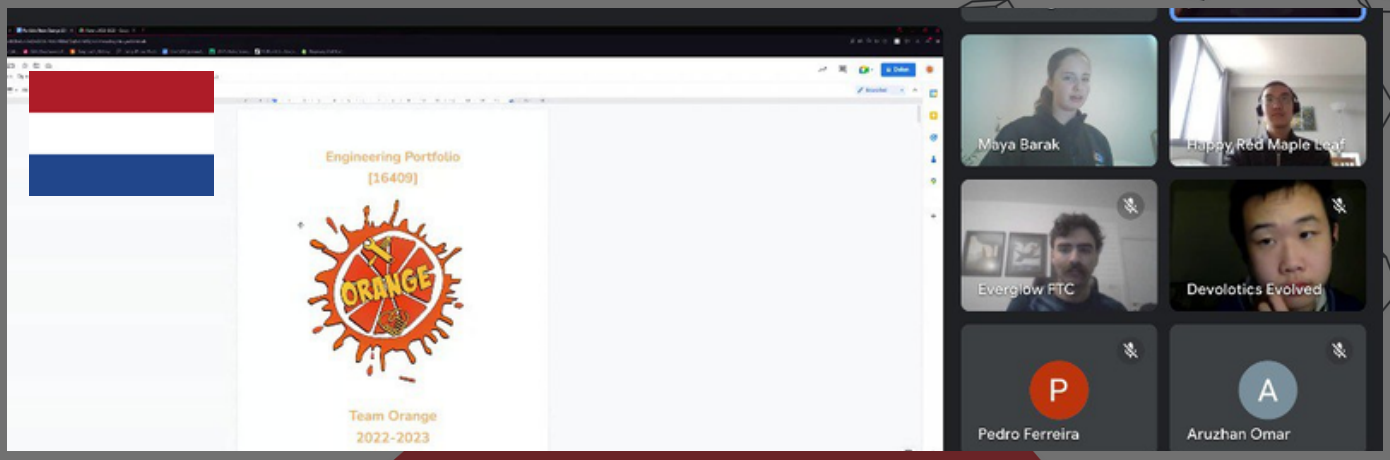
One of the most active team, in our opinion, was Everglow from Jerusalem, Israel. They talked about their troubles caused by boundaries of original rules, also explaining how they came up with the solution.

International FTC Forum

RESULT



Brazilian teams talked about difficulties with finding 3D printers in their country. Those teams that live outside the city do not have a special opportunity to print the necessary parts of the robot, and they do not live close to the city center. But they said that in the near future they will most likely open new premises in which 3D printing will not be such a difficult problem.

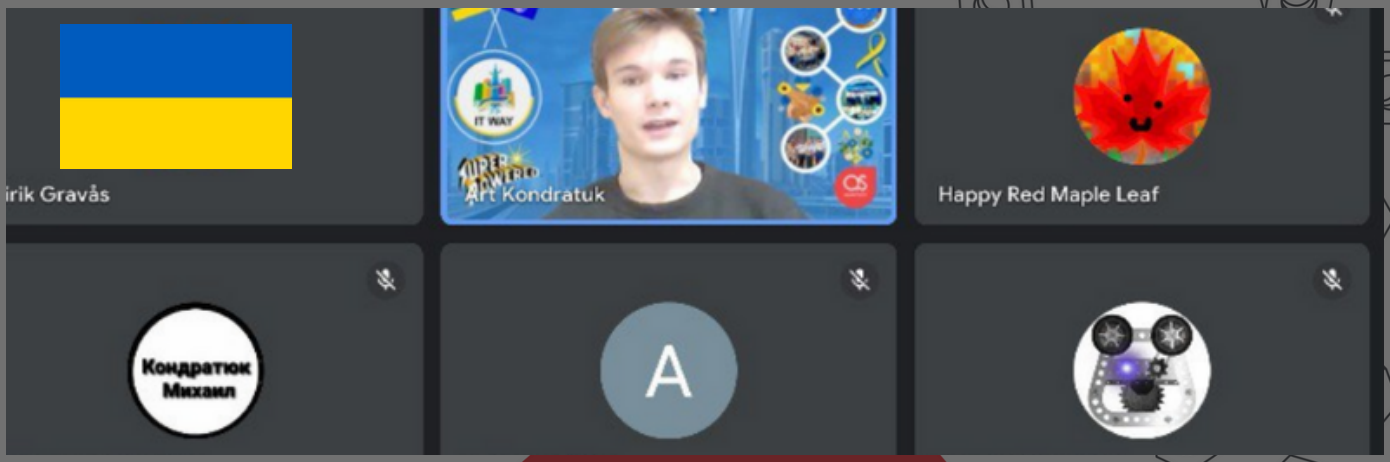


In turn, teams from the Netherlands (Orange) told us about the peculiarities of holding regional matches in their country. In detail, their regional tours are a way to accumulate points as much as possible for passing to the republican stage. Thus, this method of selection was radically different from ours in Kazakhstan.

International FTC Forum

RESULT

Norway said that their main problems are mainly related to taxes for receiving products the USA. This problem is justified by the fact that in Norway there is very strong control in post offices. Therefore, this verification procedure takes a lot of time and money. But talking about positive things, they talked about their unusual and wonderful nature.



The Ukrainian team we called was not a team from the FTC but they wanted to get experience from the senior league. It was also nice for us to listen to the experience of a foreign team from the FLL league. Despite the fact that everyone was talking about difficulties, this team almost did not touch this topic at all. We consider this was a great resilience from their part that despite all the circumstances, they still keep doing what they do and moving forward on the path to the development.

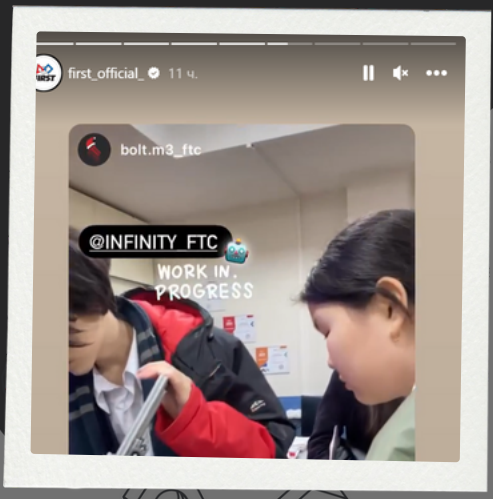
Our team has 4 social medias

Instagram

Since our first FTC Competiton in Kazakhstan, we created our Instagram account one year ago. Nowadays, we use it to publish and check our progress. But what is more, collaborate with other teams, including international ones. You will see more details on the other pages about our team connections.
For example, we participated in the Back and White Challenge at the initiative of one of the foreign teams.

We posted 5 Black and White challenges. Besides, we spread these challenges among all Kazakhstan Teams by marking them under the post. They also started posting. They tagged us under their post, thereby passing on the Challenge, and we didn't interrupt it and continued the Black and White Challenge as well.

We already have 600+ followers on Instagram, and it is a handy platform to be active and keep up with meetings.
The OFFICIAL FIRST account even marked the BoltM3 team. We are the first team in Kazakhstan that they have mentioned.

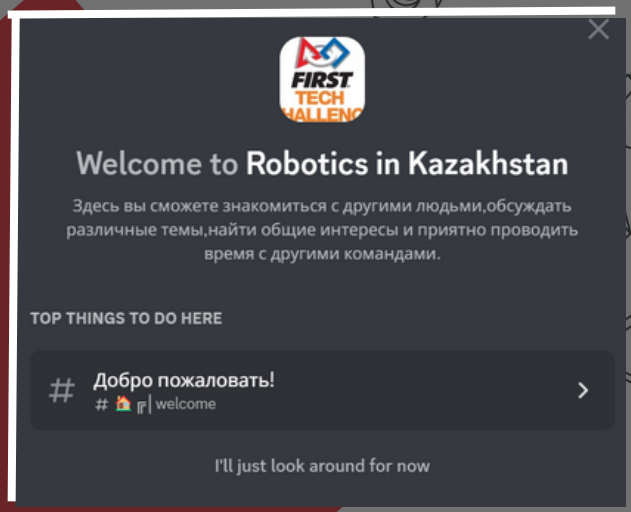


Youtube

One of our latest youtube videos was about Zertte Studio and additional financial aid. We created this youtube channel when FGC Season started. Nowadays, we are planning to use it as an educational platform.

Discord Community

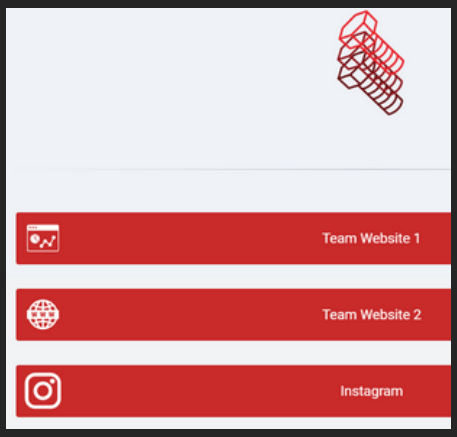
Our discord community contains 59 members. Our programmer Vlad this channel, mailed all teams so they can join the community.



Website

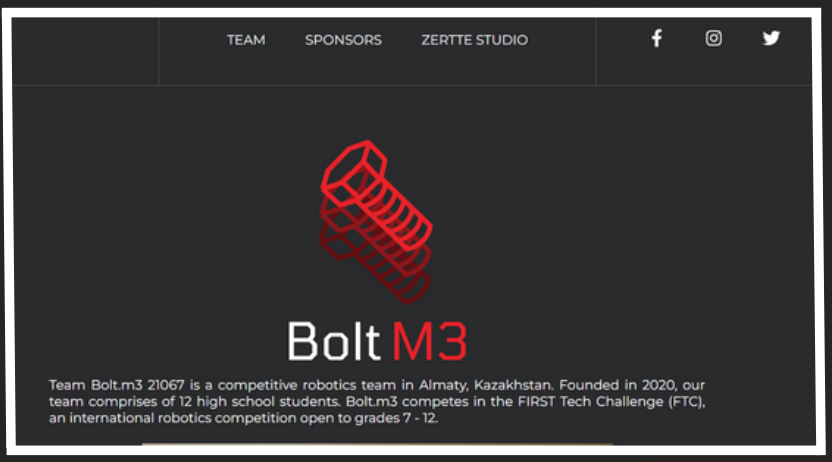
BoltM3 Instagram - Taplink - Website

Vlad are the ones who are doing our websites. They tried to do it as much comfortable and accessible as possible.



Taplink

Our team has its website for a specific reason. Firstly, it is programming courses. Initially, we looked for opportunities to spread robotics and offer children and teenagers courses toto be accessible to everyone. Secondly, sponsorship. They often require team information or contacts. Website is the best option for that reason.



Website 1

Website 2

They did a website design and then used CSC HTML to create it. The app that they used was React. It is proven that it's ideal for web and UI developers to develop highly responsive, beautiful components. React is much loved for its shallow learning curve, time-saving framework, and responsive features.

Community

Inclusive Minority Outreach

Orpahanage #1 (20.11.2022)
Nurai and Andrey were on their way to the Orphanage. Unfortunately, the orphanage administration forbade them to visit our lab, but that didn't stop us from showing them a YouTube video about FIRST. There were primarily teenagers, so we introduced them to robotics and assembled a robot with them.

This Alibi, Nurai, Sanzhar, and Tair visited the same orphanage but took with them a robot. Kids missed them, and we did too. They gave them the drivers so they could try them. Honestly, after we had the broken basket and claw) But everyone was delighted at the atmosphere. For their considerable interest, we bought Chupacups and started talking with our sponsors about new kits for them.

ZhanUya Orphanage

These are children with a great future. They're constantly questioning whether we're returning, but we always try to reach out. The orphanage let us come again on March 1. We also wanted to show them our lab, but unfortunately, the administration at the orphanage wouldn't let us.
Despite that, we visited the different age groups in the orphanage, the oldest and the youngest.

Inclusive Minority Outreach is one of our most essential outreaches because robotics is made for all children, without exception. Our team wants to develop STEM everywhere, especially in such often-forgotten places. In the future, they'll end up on our team or participating as a separate team.

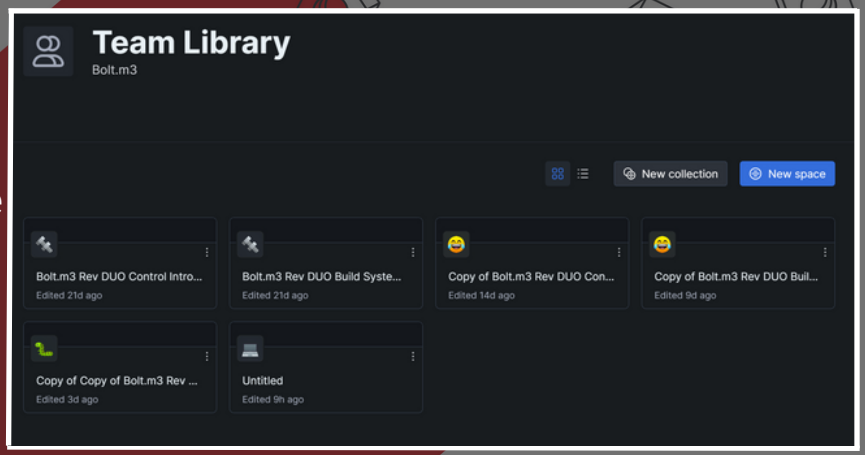
Translation

Being one of the first Kazakhstani FTC teams, we can easily say how spreading information about robotics is vital for us. Year by year, an increasing number of teams are starting to participate in FIRST competitions, and our outreach has contributed to this sudden change.

One of our most significant achievements was the translation of the REV Robotics manual into Russian and Kazakh! On the 31st of January, 2023, we presented the first translation announcement on our Instagram. We frequently faced the problem of no REV Robotics Instructions Translations to Russian and Kazakh as many definitions were unfamiliar to us, making it challenging to understand the concept and build robots.

One day the FIRST organizer, Nurdaulet, suggested translating these documents into our native language, and we gladly agreed.

As an app for our translation, we used GitHub to easily translate the document with the entire team and then share it with other groups. However, there was a limited trial version, so we had to hurry up. As far as you can see, we did it.



Leas.kz (15.07.2022)

There is a team for Leas. kz that now participates in FLL - Play for Energy - a solid team. In the summer, we held a presentation in that place when we participated in FGC. Although this place

Quantum (27.09.2022)

Shapagat and Andrey visited Quantum when they travelled to Astana to the 'Solve for Tomorrow Competition. They Contacted with QUANT Team and went to Quantum School.

They have so an extensive laboratory full of 3D printers. Besides, they showed their school. They talked about their experiences in Fts 2022. How they played what helped them: They said to build a good robot after this experience; we have close relations with Quantum teams.

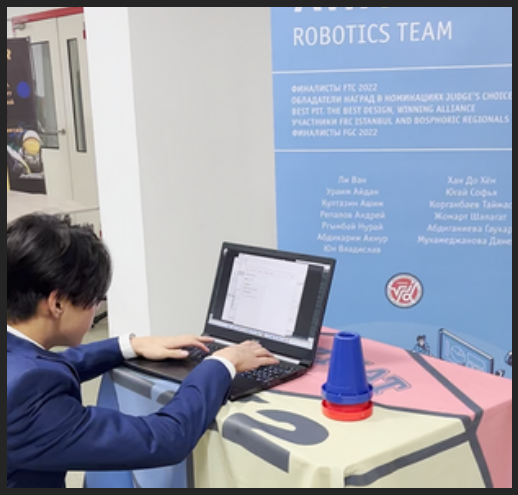
Akpetit (12.10.2022)

We should also develop FIRST Robotics for adults, not the STEM community in Kazakhstan. By the way, we also need robots for military equipment. That is why Kadylbek, Shapagat and Zaki .visited Akpetit - an army school. The audience Their interest has surpassed our expectations, and we believe they now have confidence that we will be able to use more advanced robots in military training

Miras (13.10.2022)

Although only a few students decided to join the meeting, everyone else was curious about FIRST Competitions. Our engineer Zaki presented the robot only in English, as many students need to be fluent in Russian at Miras School. He introduced them to Linear Lift System and Drivetrain part working mechanism while our SMM Bereke familiarized them with the game manual.

FIZMAT Forum(14.10.2022)



We performed at the RFMSH Forum (50th anniversary).
About 90 people looked at us, just looked and left.
On the same day, in Zertte Studio, we gave a tour to representatives of Fizmat Astana.
About 50-60 people.
Representatives of MSF Astana were interested in Zertte Studio's equipment and a new kind of competition: FIRST.

One person, Kuanysh, wanted to bring FIRST to RFMSH Astana. So he suggested to Aydos Agay to exchange knowledge. They are prize-winners of Junior League WRO and wish to develop work at us RFMSH Almaty in exchange for FIRST.

Open house day (15.10.2022)

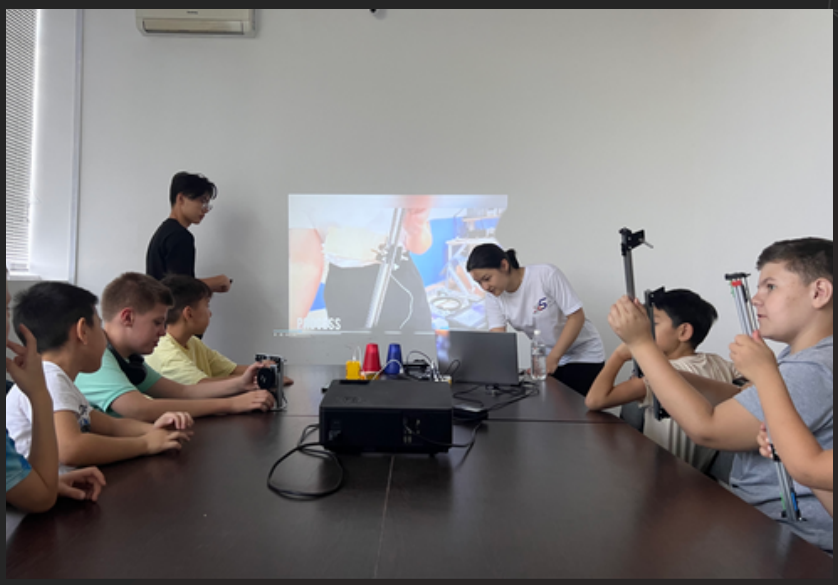
About 70-90 people. Parents, future pupils of the RFMS and alums, and former teachers came.
Parents were delighted with the opportunities of RFMS and wanted to send their children to our school. :)

The alums were interested in how the school had evolved and offered ideas for building robots for competitions.
Former teachers were proud of the school's changes and wished us luck.

Rolab (25.10.2022)

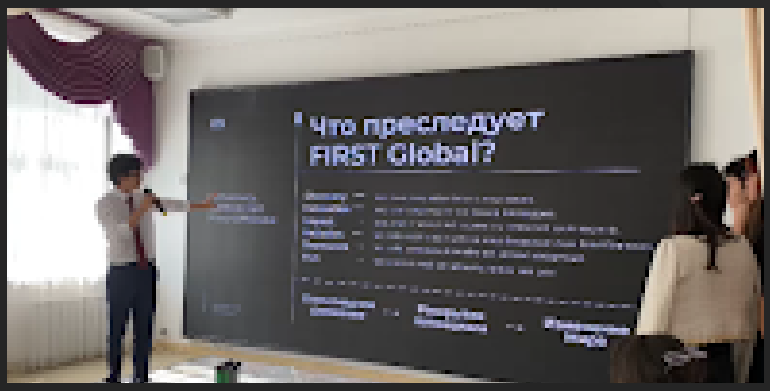
On 25.10, Andrey held a presentation about FIRST competitions (FLL, FTC, FRC, FGC) at Ecolab. Academy and demonstrated FTC kits while explaining the structure of the robot.

We were pleasantly surprised to see the children's eyes burning!
Everyone listened with great interest and was interested in participating in FLL and FTC. The children learned about the robot system: control hub, battery, motors, and driver hub. The young inventors also tested our system of in-tech on their own, adding their fascinating contrivances to the design!



On the photo represented Vlad and Aknur - Fizmat Awa Team Leader. At that moment, Vlad was Fizmat Awa, teammate.

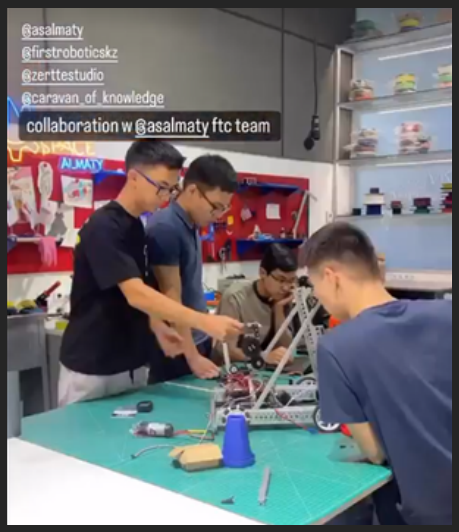
81 (6.11.2022)



The BoltM3 team appreciates the collaboration with the Infinity team. They not only showed us their school laboratory, but we also introduced our team's robot to their school student.

Each Infinity team member has charisma while presenting and hardworkingness in construction robots. It is immediately apparent that the school is trying to improve the STEM sphere in its students because many people have a spark in their eyes. In addition, there were a lot of interesting questions.

American Space (06.11.2022)



We used to do a lot of 3D prints in American Speech when our school ones were broken. We used to come to help American Speech in the first place and give them mini-presentations. They're perfect and very enthusiastic about their work.

Zerdesh (24.11.2022) and Cite.kz (25.11.2022)

Ashim, Shapagat and Vlad Went to the FLL club
And shared their experience with FTC, Told them about the project, the design, and the robot game. Made a presentation about FTC in general and helped them start their project.

Vlad explained the FTC presentation rules, while Andrey gave a presentation on FLL because he had experience in it.
The children had many questions about the robot programming part; however, they finally understood it through his explanations.

Prometheus (28.12.2022)

Bereke and Tair held a guide for Prometheus school in our Lab. After the meeting, others created FLL Team.

BIL (27.01.2023)

Andrey, Nurai, Zaki, and Sanzhar held a presentation in BIL. They were so interested and decided to create an FTC team and participate in that competition. After they visited our school for a little lab guide.

Tamos (09.02.2023)

09.02.2023 we Visited Tamos and they prepared for presentation for the principal so they can participate in FTC

UForce(27.06.2023)

On this day we had a team of rebels from Dubai visiting Kazakhstan. We were very happy to meet them and placed them in the dormitory of our school. They came to participate in the International Haileybury First Championship which we organized and were judges. Since the team is new we helped them in any way we could and allowed them to train in our school laboratory. We also gave them a tour of our school and played basketball. Our time with the Rebels was fun and interesting.

Corporations

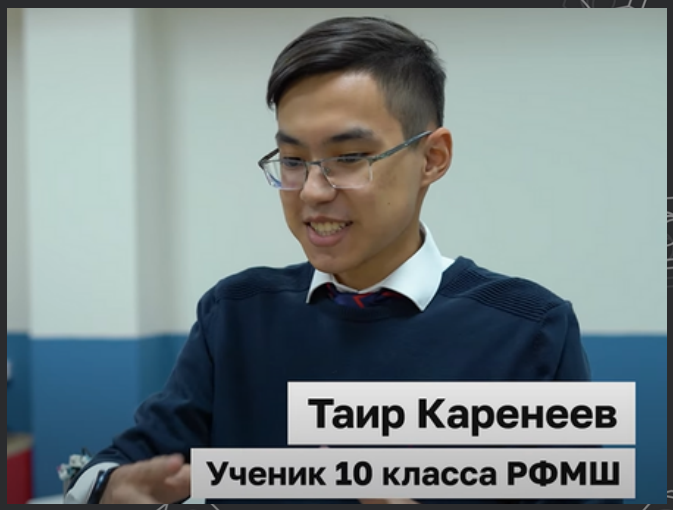
01.06.2022 - Almaty Bala FEST

Our last season teammate - Saradar - presented at the meeting on National Children's day the FIRST Competitions and our robot. More

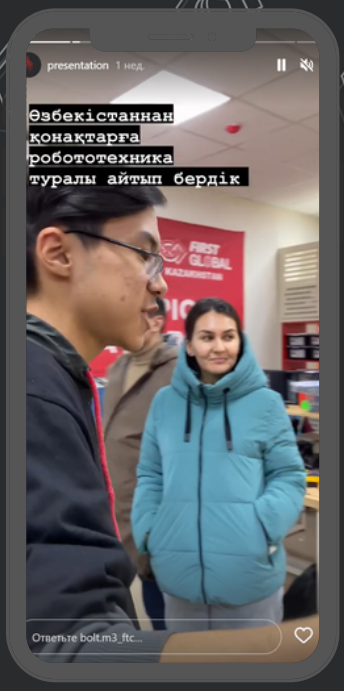
More importantly, he talked about FIRST Values and how they develop skills in students.

26.12.2022 - 8-zero-zero

8-zero-zero is an independent project about education in Kazakhstan. Nera to Fizmath 50th anniversary, they visited our school to learn about robotics. So our Team Leader, Tair, was interviewed by them and told a little about FIRST. The Interviewer, Dasha Bublik, asked him about what we are doing in our laboratory and our goals in this FTC season. So Tair Answered about the FTC Cones gathering, Mecanum Wheels.
Tair is 11th Gradu student, but the video matter made a mistake :) You can watch the video on 8-zero-zero official youtube channel.



04.02.2023 - Uzbekistan guests



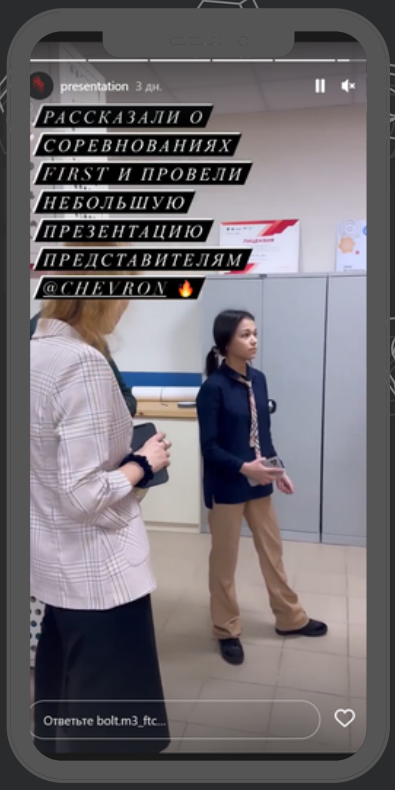
We showed them our lab and the whole experience (how cool and useful it is for students). Most importantly, we advised them not to give up on robotics because they already have a team and kits, so everything is in their hands. Finally, we gave them some advice.

07.02.2023 - KazEngineering Company

Assylbek and Nurdaulet love to invite our interesting laboratory guests. So on the 7th of February, he asked Sanzhar Taizhan and KazEngineering Company. Anel and

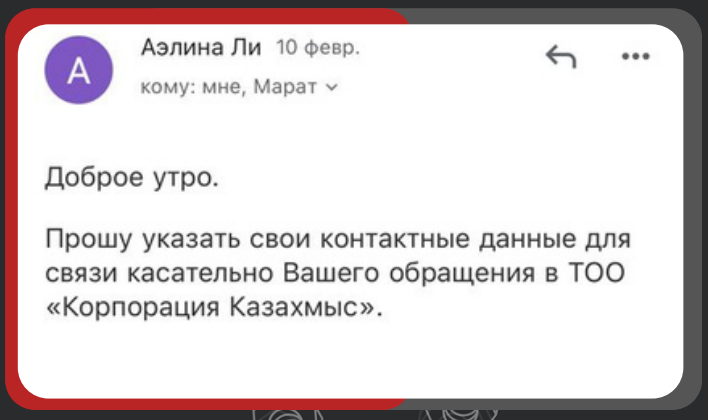
Nurai presented them with Handbooks and their function in robotics. Moreover, Sanzhar and Tair tell them about our laboratory and FIRST itself. Zhanel talked about SMM. KazEnginnerring were so interested and suggested touring our team in their workstation. Also, they said they would be happy to see us performing in their company because we are doing tremendous work, even at school.

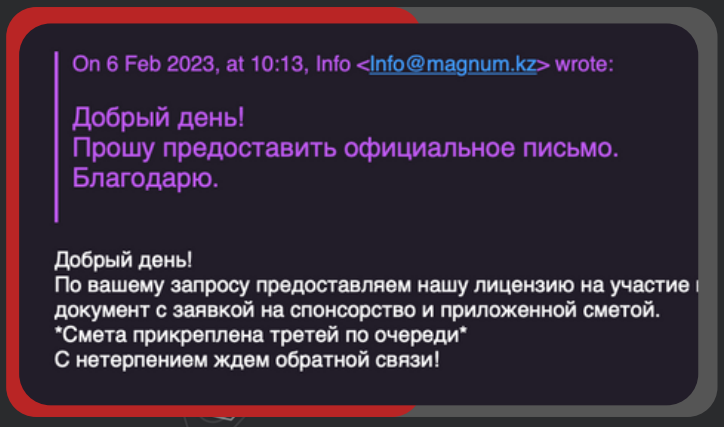
08.02.2023 - Chevron



Representatives from Chevron came to our lab and were very impressed with our robot. They were surprised that such a big job could be done in such a small room. As always, Bereke talked about the importance of introducing social media and how we are capturing everything in this way. Finally, Nurai talked about the laptop, the robot's engineering, and the game's rules. They came for about 30 minutes but wished us good luck in the upcoming competition in Astana.

We are also in talks with companies like Kaspi, Magnum and Kazakhmys. One of the GCS companies has already agreed to sponsor us. These companies needed to learn what FIRST was, and we were happy to tell them about it.





08.02.2023 -Hyundai Trans Kazakhstan

After the Central Asia Championship, we really needed financial help. That is why, we asked for help from different companies, that is how we connected with Astana Motors. Unfortunately, they could not give us any funding, but instead they offered us an expidition in Hyundai Trans Kazakhstan. Some of us did not even know about the existence of the Hyundai factory in Kazakhstan as it was built relatively recently, so it was quite a surprise for us. There were 4 sections and we were introduced to each section by professionals who explained everything in details. As all the experts knew their field, everything was on the highest level. We even had a test drive of their cars, which excited everyone. After observing their factory, we were, then, given a presentation about Hyundai and its history in Kazakhstan. Overall, we were glad that we got a chance to be in Hyundai and get to know all the processes happening there.

11.02.2023 - Microsoft

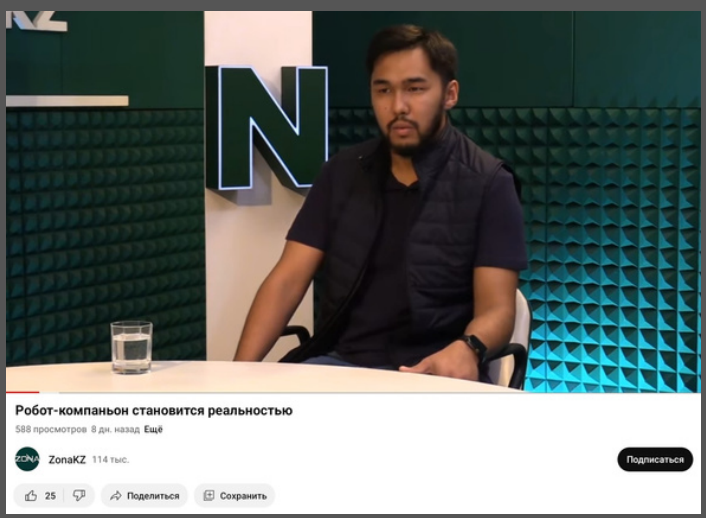
Myrzagalym Sanzhar is an experienced employee of Microsoft. We visited his workplace to tell him more about us and about our activities, and in return, he talked about his experience of working at Microsoft and opinion on robotics. We also have taken an interview, where he described in detail the path of becoming an employee of a large company. But we were very surprised to find out that he was also once connected with FIRST. It was very pleasant and useful to listen to a person who is engaged with artificial intelligence technologies and designing a work program. And it was unforgettable experience for us to visit the office itself.

27.02.2023 - TV Show

Just after the Central Asia FIRST Championship, our team was invited to a show called Tansholpan on our national chanel - Qazaqstan. It was an unbelievable experience since this chanel is translated all over the Kazakhstan, and everyone knows and watches it. The interview went totally spontaneously since we did not have enough time to prepare what to say but in our opinion it was nice. Hopefully, we had enough time to explain all the main aspect of robotics and FIRST competition. As the show is translated early in the morning, nearly 430 people watched it.

27.03.2023 - Zona Kz

Our mentor - Aidos Ordabayev was invited to the interview at ZonaKZ, where he talked about robotics, FIRST competitions, and our team's journey on a way to the win. People were really intersted in the future of robotics and its potential for humanity. Some of our team member have been there too, but they were just listening to it. Despite the anxiety, we think that our mentor could perform well and mention all the main aspects so that the audience will get a full picture.

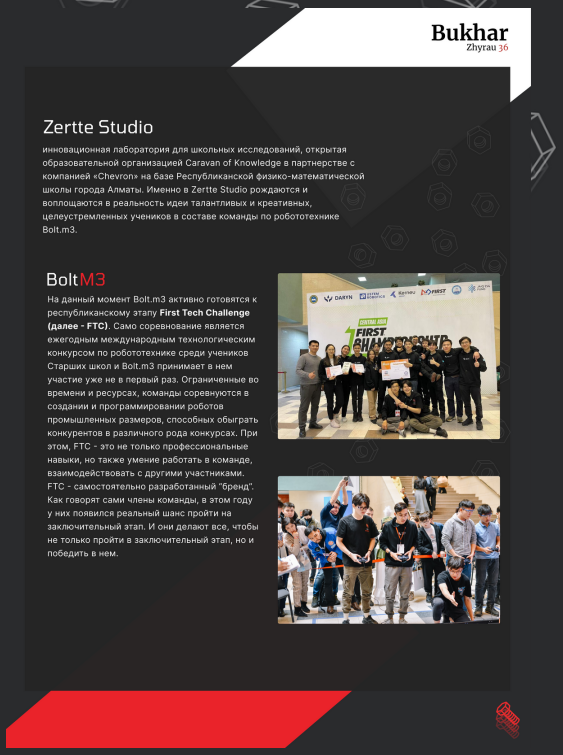


The interview was uploaded to YouTube, and now there are over 580 viewers.

14.04.2023 - Khabar News

After learning about our trip, one of the most popular news channels in our country wanted to personally find out everything from the first mouth. They decided to come to our laboratory to see the environment in which we worked. They were a little confused by the mess, but they understood that the engineering process requires a creative mess. The questions were partly of a personal nature. They learned our opinion about robotics, where it all started and how FIRST influenced our lives. We answered questions very vitally, remembering the whole way that we went. We wondered if they would come to us again if we could show ourselves at the international competition. On the one hand, this has become an additional motivation for us

14.04.2023 - Articles



Bukhar
Zhyrau 36

Zertte Studio

инновационная лаборатория для школьных исследований, открытая образовательной организацией Caravan of Knowledge в партнерстве с компанией «Chevron» на базе Республиканской физико-математической школы города Алматы. Именно в Zertte Studio рождаются и воплощаются в реальность идеи талантливых и креативных, целеустремленных учеников в составе команды по робототехнике Bolt.m3.

BoltM3

На данный момент Bolt.m3 активно готовятся к республиканскому этапу **First Tech Challenge (далее - FTC)**. Само соревнование является ежегодным международным технологическим конкурсом по робототехнике среди учеников Старших школ и Bolt.m3 принимает в нем участие уже не в первый раз. Ограниченные во времени и ресурсах, команды соревнуются в создании и программировании роботов промышленных размеров, способных обыграть конкурентов в различного рода конкурсах. При этом, FTC - это не только профессиональные навыки, но также умение работать в команде, взаимодействовать с другими участниками. FTC - самостоятельно разработанный "бренд". Как говорят сами члены команды, в этом году у них появился реальный шанс пройти на заключительный этап. И они делают все, чтобы не только пройти в заключительный этап, но и победить в нем.

Bukhar
Zhyrau 36

В: Основной критерий отбора в команду? Профессиональные навыки или же бо́льшую роль играют человеческие характеристики?

Анель: Оба критерия равноценно важны. Потому что главная цель FIRST - это не только крутые роботы, но и gracious professionalism - быть толерантным и проявлять в таком виде свой профессионализм.

Ван: Желание работать самое важное.

В: Наблюдаете ли вы за международными соревнованиями? Есть ли команда, которая вызывает восхищение и уважение?

Санжар: Наблюдаю большинство времени за американскими командами. Команда, которая вызывает уважение, - Kooky Botz.

Ван: Да, роботы американских команд очень хороши.

Қадылбек: Удивительно быстрый робот Kooky Botz нас вдохновляет.

В: Что вам нравится в вашей команде и что отличает ее от всех остальных?

Анель: Искренность и легкий подход к решению проблем.

Әлібі: Наша активность в социуме, дружелюбность в отношении к другим командам, креативные решения поставленных задач. Team working. Это вдохновляет меня работать, ведь создается такая крутая рабочая атмосфера. Я думаю, что Bolt.m3 навсегда останется в моей памяти, ведь она изменило многое в моей жизни и познакомило со многими людьми!

Амир: Я) Так у нас очень работоспособная команда.

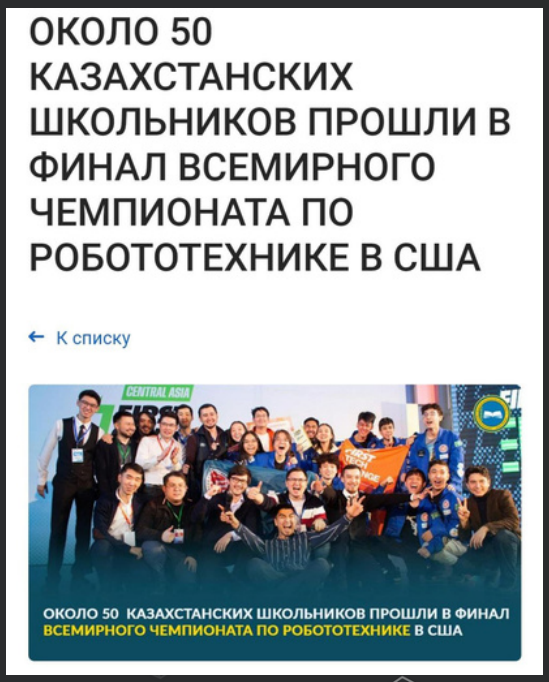
Сәт: Коммуникация и отношение в команде. Юмор.

Владислав: Пошаговое планирование действий наперед. Видеть, что вклад каждого участника дополняет и служит фундаментом для вклада других. Это некое комьюнити, где мы можем бесконечно совершенствоваться и изучать что-то новое, опираясь на чужой опыт. Для меня Bolt.m3 - это больше, чем просто команда.

Ван: Мы круче. Стремление к победе.

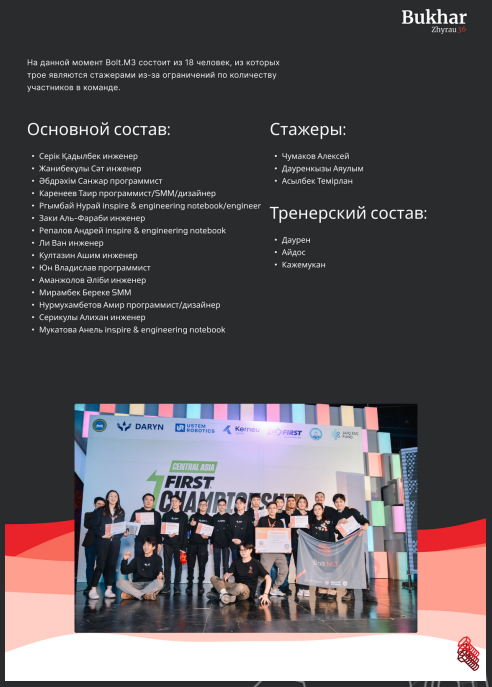
Ашим: Упорство и своеобразные идеи. Сплоченность от начала и до конца.

Санжар: Я думаю, уникальное качество нашей команды - это дух. Каждый из участников команды готов выдавать свой максимум. И все это в атмосфере позитива. Этого я не замечаю в других командах. Bolt.M3 - это команда, которая зародилась, как маленькое общество высоко мотивированных школьников, и которая переросла в команду, которая хочет достичь самых высоких результатов во всех категориях. Я считаю, Bolt.M3 - это команда, которая является чем-то особенным для меня, с которой я преодолел множество трудностей, и узнал множество информации не только о программировании, но и робототехники, людях и олимпиадах в целом.



ОКОЛО 50 КАЗАХСТАНСКИХ ШКОЛЬНИКОВ ПРОШЛИ В ФИНАЛ ВСЕМИРНОГО ЧЕМПИОНАТА ПО РОБОТОТЕХНИКЕ В США

← К списку



Bukhar
Zhyrau 36

На данной момент Bolt.M3 состоит из 18 человек, из которых трое являются стажерами из-за ограничений по количеству участников в команде.

Основной состав:

- Серік Қадылбек инженер
- Жанибекұлы Сәт инженер
- Әбдрахім Санжар программист
- Каренеев Тимур программист/SMM/дизайнер
- Рғымбай Нурай inspire & engineering notebook/engineer
- Заки Аль-Фараби инженер
- Репалов Андрей inspire & engineering notebook
- Ли Ван инженер
- Құлтазин Ашим инженер
- Юн Владислав программист
- Аманжолов Әлібі инженер
- Мирамбек Береке SMM
- Нурмухамбетов Амир программист/дизайнер
- Серикулы Алихан инженер
- Мукатова Анель inspire & engineering notebook

Стажеры:

- Чумаков Алексей
- Дауренкызы Аяулым
- Асылбек Темірлан

Тренерский состав:

- Даурен
- Айдос
- Кажемукан

There were some articles about our team's events and award we got on Central Asia FIRST Championship on some websites, magazines. For instance, in a magazin Bukhar Zhyrau 36, bilikti.kz, nur.kz, Forbes and so on. We hope that these articles could inspire and encourage others to get engaged with our field.etc.

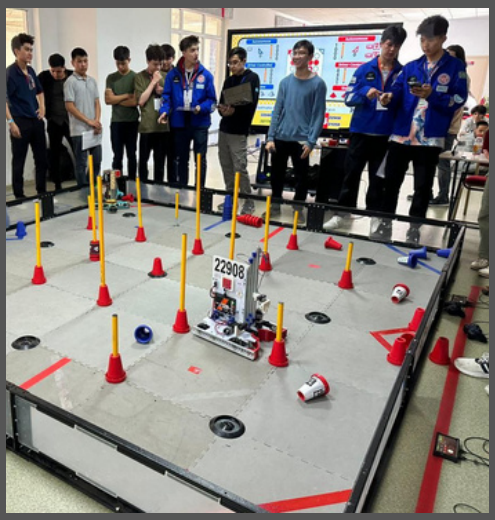
1.05.2023 - AENTA FEST

We decided to help FTC team "Aenta" in organization of event named "AENTA Fest", which included practical master classes on robotics, biology and rocket science, buffet tables, forum with a lot of speakers related to STEAM, robot game and projects and organizations fair. This time, we could gather approximately 300 people consisted of mainly students, parents, teachers and ot

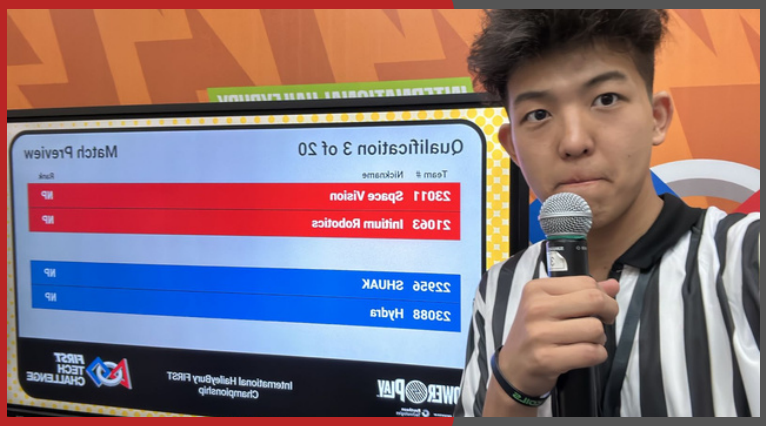
Surprisingly, our event got a chance to be under the auspices of UNESCO, so in the middle of the event representatives of UNESCO visited us. It was an incredible opportunity to talk to them and make them a tour of our school, labarotory and event itself.

1.05.2023 - AENTA FEST

Despite the event went just wonderful, there were some issues. For instance, the weather. At first, we planned to hold an event outdoors, and weather forecast showed a sunny and warm day. However, just the day before, we found out that it is going to be cold and overcast. Everyone started panicking and thinking of possible solutions. Finally, we decided to host it inside the school. Fortunately, our school was eager to help us, and just in a day, we were able to change a lot of things, adapting to a new venue.



28-29.06.2023 - International Haileybury First Championship



On June 28 and 29, we helped the organizers of the International Haileybury First Championship. We were honored to be FLL and FTC judges. We gained a lot of experience in such a short time, and we were glad that we rose from being beginners in robotics to being judges and mentors. We also participated in this event with a 5x1 team that we have been mentoring all season. Our eyes were full of happiness when we realized how much they had grown in such a short time and received the Motivate Award. The two days were very memorable and there was no way to describe the atmosphere of the championship.

Mentorship

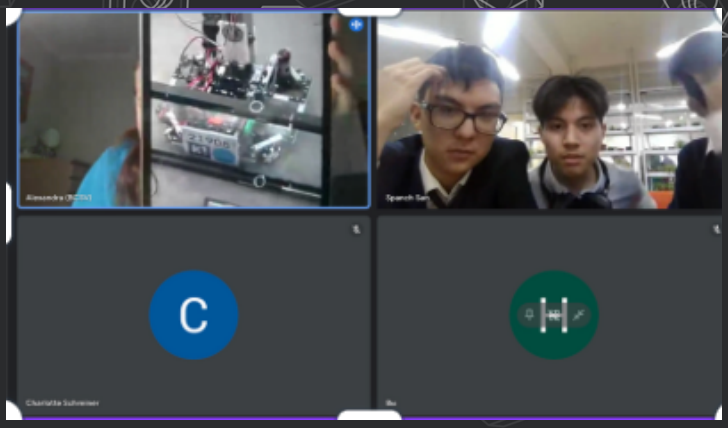
We also decided that it is necessary to mention fate of teams(5x1 and Infinity), which we started and mentored. 5x1 team managed to gather and prepare for the last and very important regional stage of the FIRST in a few days. It is important to say that it depended on this championship whether the team could go to the national stage or not. Therefore, we have invested all our efforts to give them the opportunity to prove themselves at the regional stage. It was very interesting to watch how they prepared and learned new things. And the most surprising thing was that they were able to receive the Judges Choice Award. It was a great celebration for them and for our team.

Our main purpose was to help the team of eager students in any way possible. We helped them not only with the technical part, but also shared our experience in finding sponsors, documentation of work, conducting projects etc. As a gratitude, they sent us a special letter, where they expressed their gratefulness to our team, and made a post.

At one of their performances in schools, a group of teenagers from 81st schools became interested in us. The action took place at the end of October and then they showed a bright desire and desire to develop in robotics, being motivated by our presentation. In fact, as a new team, it was very pleasant for us to help create a new team at an early stage. So we have created a new Infinity team that will get a chance to go to the championship in India in the future.

Here is us in a meeting with the team BSC Vikings. This is a rookie team that claimed to have problems with their drivetrain. Therefore, we asked both our hardware and software divisions to help them out and find the robot's issue. However, the drivetrain was built well, and our programmers realized that it was the code.

Based on our experience, not many teams face issues while building and constructing the robot. Yet many have trouble programming it the proper way. During the course of our meeting out programmers showed the sample of a code for their drivetrain, and shared some resources regarding the software part.



We also mentored several teams not only from our country but from other countries too. We mentored Zertte.kz, QSTEM, Space Vision, 124, Rebels and Shuak from Kazakhstan, and a few international teams.

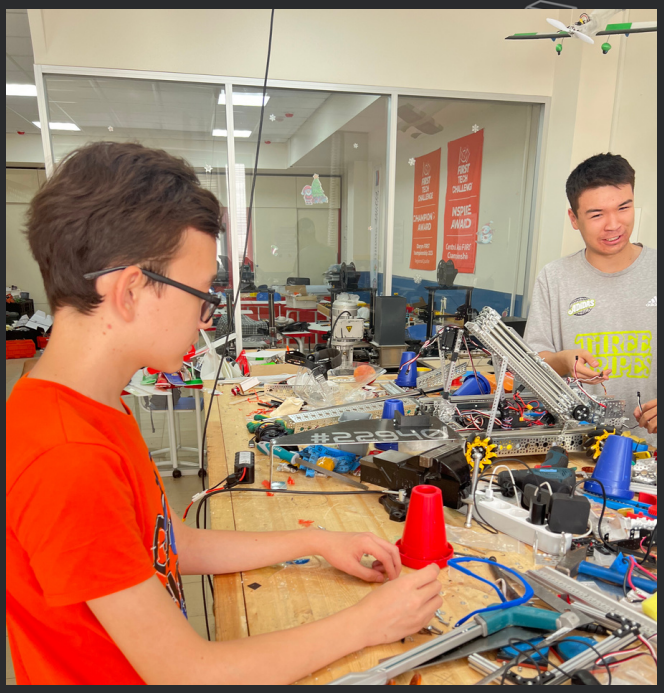
As a rookie team, we never imagined that we would be able to mentor other teams. It was a daunting task, but we were excited to share our knowledge and experiences with others. And after months of mentoring, we can honestly say that it has been one of the most rewarding experiences we have ever had.

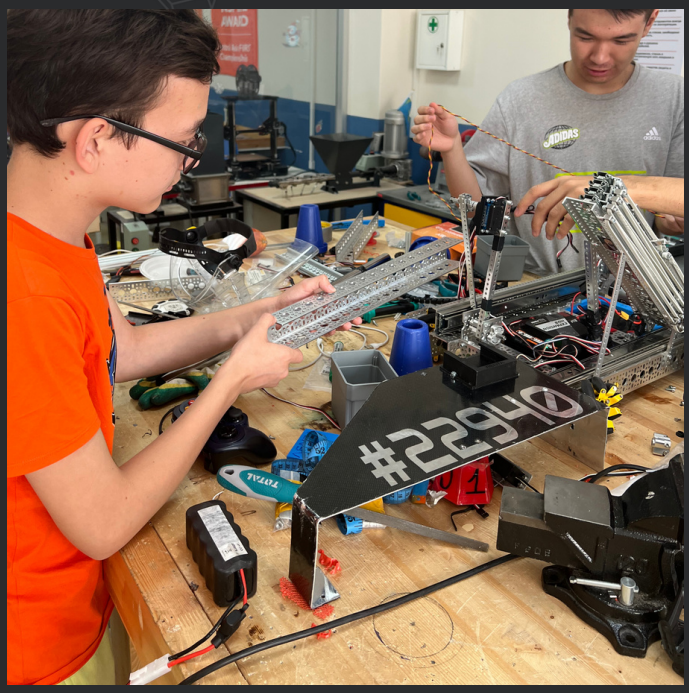
Firstly, being able to mentor other teams has strengthened our own abilities. We went back and revisited the basics of what we know, and in doing so, we found that we had a greater understanding of the material than ever before.

Secondly, mentoring has allowed us to improve our own teamwork skills. As we worked with other teams, we found that we had to adjust our own processes and communication styles to match the needs of the teams we were mentoring. This helped us learn to be more flexible and open-minded, which are essential traits in any team.

Overall, being able to mentor other teams has been an incredible opportunity for us. It has helped us to strengthen our own abilities, improve our teamwork skills, and feel a sense of pride as we watch other teams succeed. We couldn't be more grateful for the opportunity.

Apart from starting teams, we also decided to teach interns. A lot of people asked us if they could join our team, but since we can have only limited number of people, we decided just to help them with the basics so that they can join the next FIRST season.





Our interns came out to be very responsible and passionate - they came to the labarotory almost every day. Overall, WE gained and learned so much, trying ourselves as teachers. For example, we realised that it is sometimes hard to understand something only in words. That is why you should explain something and show it in practice. This way people more easily memorize and understand the process.

Lessons were held on odd days of the week. Each intern could choose what he wanted to do in the laboratory. Since there was no specific goal at the moment, we decided that it would be best if they tried every branch of robotics

Outreach Full Amount of Hours and People In Details:

Presentations: 180.5 hours,
Social Media: 308 hours,
Meetings With Teams: 90.3 hours,
Translation: 131.5 hours,
Volunteering: 89.2 hours,
Helping To Teams/Mentoring: 380.5 hours.

Presentations: 1340 people,
Social Media: 7 000 000 people,
Meetings With Teams: 1120 people,
Translation: 1335 people,
Volunteering: 2500 people,
Helping To Teams/Mentoring: 750 people.

Followers on Instagram + Youtube Discord: 1800+

Team Plan

Team Organizing Structure

Mission *Statement*

To put *robotics in Kazakhstan to a high level.* ***To grow*** *as a team and to grow individually.* ***To maximize*** *our impact and give it back.* ***To solve*** *not only our but others' problems.* ***To enjoy*** *the process.*

Business plan

Our team needs to have fundraising, especially from non-STEM Companies. All we had to do for our business plan was to:

- find all companies that we should write to
- create a business estimate
- write official letters for sponsors

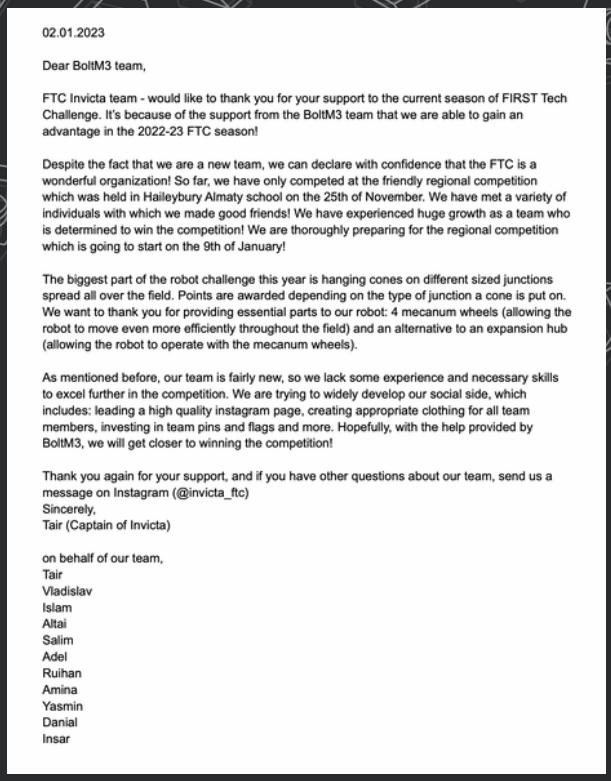
On the Next Pages, you can see the letters that we have written to our potential sponsors.

Our Sponsors and Relationships with them

GCS - are the language courses that have agreed to sponsor us. It was also one of their conditions that we decided to bring their presentation to our school and advertise it on our clothes, pits, and robots. In addition, they are paying us an estimated amount to travel to the competition in Astana.

Caravan of Knowledge/Chevron are the ones, thanks to whom we are now doing robotics in our laboratory/ So they paid for all our REV kits and the lab.

Fizmat Endowment - sponsored by former physics department students who want to contribute considerably to their alums. One of them was Berik Kaniev.



02.01.2023

Dear BoltM3 team,

FTC Invicta team - would like to thank you for your support to the current season of FIRST Tech Challenge. It's because of the support from the BoltM3 team that we are able to gain an advantage in the 2022-23 FTC season!

Despite the fact that we are a new team, we can declare with confidence that the FTC is a wonderful organization! So far, we have only competed at the friendly regional competition which was held in Haileybury Almaty school on the 25th of November. We have met a variety of individuals with which we made good friends! We have experienced huge growth as a team who is determined to win the competition! We are thoroughly preparing for the regional competition which is going to start on the 9th of January!

The biggest part of the robot challenge this year is hanging cones on different sized junctions spread all over the field. Points are awarded depending on the type of junction a cone is put on. We want to thank you for providing essential parts to our robot: 4 mecanum wheels (allowing the robot to move even more efficiently throughout the field) and an alternative to an expansion hub (allowing the robot to operate with the mecanum wheels).

As mentioned before, our team is fairly new, so we lack some experience and necessary skills to excel further in the competition. We are trying to widely develop our social side, which includes: leading a high quality instagram page, creating appropriate clothing for all team members, investing in team pins and flags and more. Hopefully, with the help provided by BoltM3, we will get closer to winning the competition!

Thank you again for your support, and if you have other questions about our team, send us a message on Instagram (@invicta_ftc)
Sincerely,
Tair (Captain of Invicta)

on behalf of our team,
Tair
Vladislav
Islam
Altai
Salim
Adel
Ruihan
Amina
Yasmin
Danial
Insar

03.01.2023

Dear BoltM3 team,

We, Invicta team, are thankful for the opportunity of being able to work together for the upcoming FTC season! Since we are a new team, we needed basic knowledge and skills to build our robot for gaining an advantage in the competition! We are glad that you have helped us and we gave you support and aid in return!

BoltM3 helped us with developing our robot by providing us with mecanum wheels and an alternative to an expansion hub. They have also given us several tips on building the robot, especially related to connecting different parts of the robot together. In return we provided BoltM3 with our facilities to use (such as: several screwdrivers, bolts, etc..). Both of the teams collaborated in each of the laboratories. BoltM3 have also posted Instagram posts, featuring our team.

We are thankful for this opportunity! As a result we have improved our teamwork and spirit!

If you have any other questions about our team, send us a message on Instagram (@invicta_ftc)
Sincerely,
Tair (Captain of Invicta)

on behalf of our team,
Tair
Vladislav
Islam
Altai
Salim
Adel
Ruihan
Amina
Yasmin
Danial
Insar
Aleksander

Sustainabuility

One of our sustainability plans was to call new people from STEM/non-STEM community so they can participate in the FIRST Competitions the Next Year. Moreover, as we can have only 15 members in our team, we had many people seeking to participate there, so now they are our interns.
Rookies: Alibi, Ashim, Alikhan.
Interns: Do Hyun; Dulat; Amanbek; Aisara; Moldir; Amir; Maksat; Aleksey; Shapagat, Zhumbanysh.

Team Development and Growth

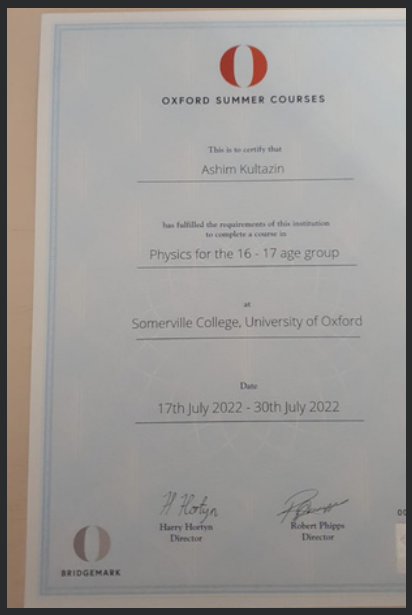
One of the most important things about our team is learning things we need to know. In our case, it's to go through the circles of programmers and engineers, which we were starting in the summer! They include:

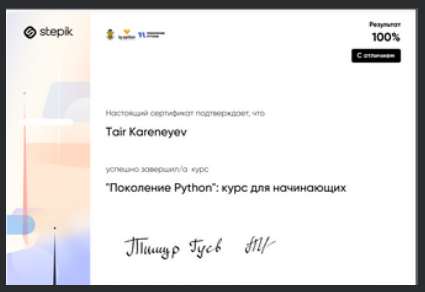
- Stepik, Yandex, Coding Lab Courses
- Free CAD/3D Modelling Courses From Udemy (no certificate)
- Stanford and MIT Engineering courses (no certificate)

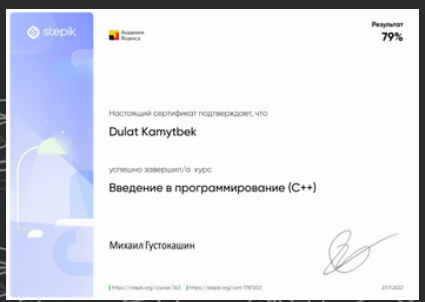
Throughout the build phase, we employ the divide and conquer technique to allocate tasks among team members. Our experienced team members are paired with newcomers to work on specific robot components, providing an opportunity to train and mentor the new members and equipping them with the skills to lead the team in future seasons.

Qualification of the team

Each of our team members has improved their qualifications during the season to make sure that we use our maximal capacity when building the robot (which is also making a huge contribution to the Connect Award.







Goals and Actions

Actions	Strategy
Put Robotics in Kazakhstan in high Level.	• STEM Presentations for non-STEM, STEM communities • Involve Companies that do not know about robotics • Social Media Development • Team Connections
To grow as a team and grow individually.	• STEPIK Courses • Have much time together, enjoying the process • Gave a meetings with each other • Sels-developing on own field • Conduct parent Meetings
To solve not only our but others' problems.	• Helping International and Kazakhstan FIRST teams
To maximize our impact and give it back.	• Mentoring and help create new teams
To enjoy the process	• Refrain from competing with other teams and collaborating with everyone.

Volunteering/Community Service

Our group endeavours to improve the well-being of the people in our neighbourhood. We strive to help FIRST Competition Organizations. For example, we helped to organize FIZMAT FIRST Championship on 29 - 30.2023

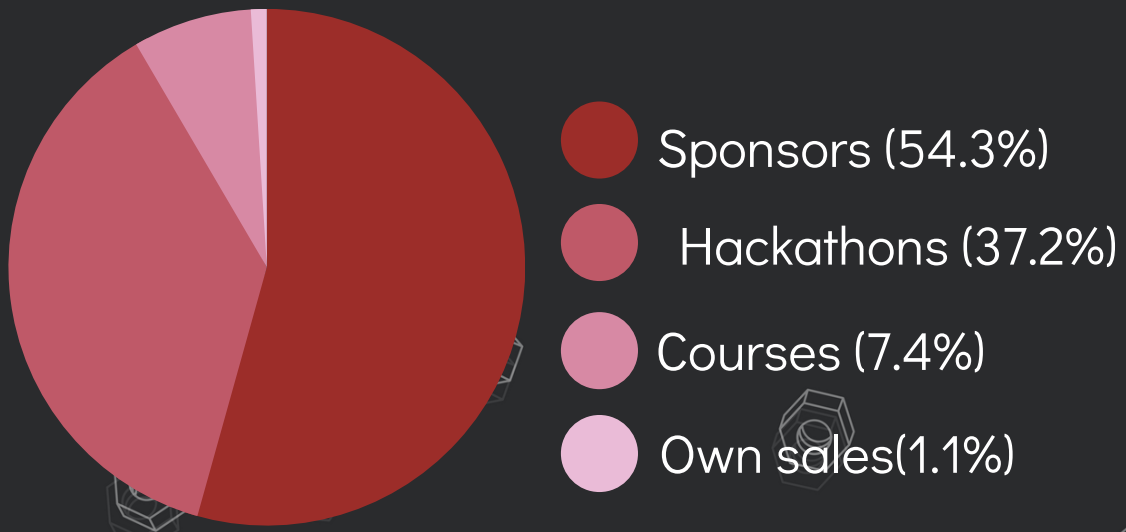
Fundraising

As a group, we collaborate to gather funds and conceive fundraising ideas to ensure that our season progresses as efficiently as possible.

NASA Hackathon, where we had three teams, and all won 600.000 tenges.
1st Place Award (250k kzt prize)- team "IKIGAI".
2nd Place Award (200k kzt prize) - team "Spirited Team".
3rd Place Award (150k kzt prize)- team "NSPM"

Moreover, we provided LEGO and programming courses in Zertte Studio, where we had 15 students. There we raised 120.000 tenges per month, and did own selling by selling souvenirs with our logo (raised 16k kzt)

Team fundraising



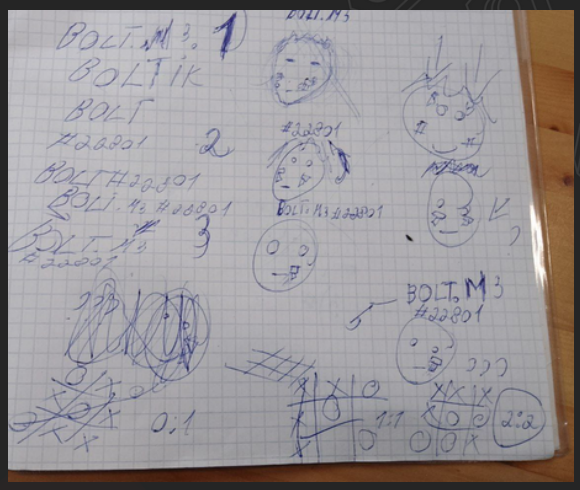
Over All Team Budget - 17 450 000 kzt

We reached our goal of 1mln KZT!

Instagram AR Mask

Example of using mask with our team member

We have been thinking for a long time about what we can do for our Instagram community. After thinking about it, we decided to make an Instagram mask for them where our logo would be applied to the left cheek and the number and name of our team would appear above the person himself. We drew a concept and started developing it



Example of using mask by member from AENTA team

Sometime after we created our Bolt.M3 mask, the FIRST organizers wrote to us and asked us to make them a mask. And so we set about creating it. We decided to use minimalism, aesthetics, and beauty to create it. We used our programmer and several designers to create a high-quality Instagram mask.

How we help teams with pit

Also, we really wanted to show our graceful professionalism to the teams that work with us in the same lab and that we are always ready to help.

The very first were our closest team, AENTA. We offered them a lot of ideas that they could implement on their robot or on their python. Such ideas included creating different badges, creating rulers, creating a creative flag, and so on. We tried very hard so that they could have a very beautiful and unusual pit.

Secondly, we decided to help the 5x1 team. They still have little experience in this area because they entered the competition later than anyone else, but we still helped them understand a lot of things. One of the unusual things we did was to create wooden badges and laser cut their logo on them and distribute them around the area

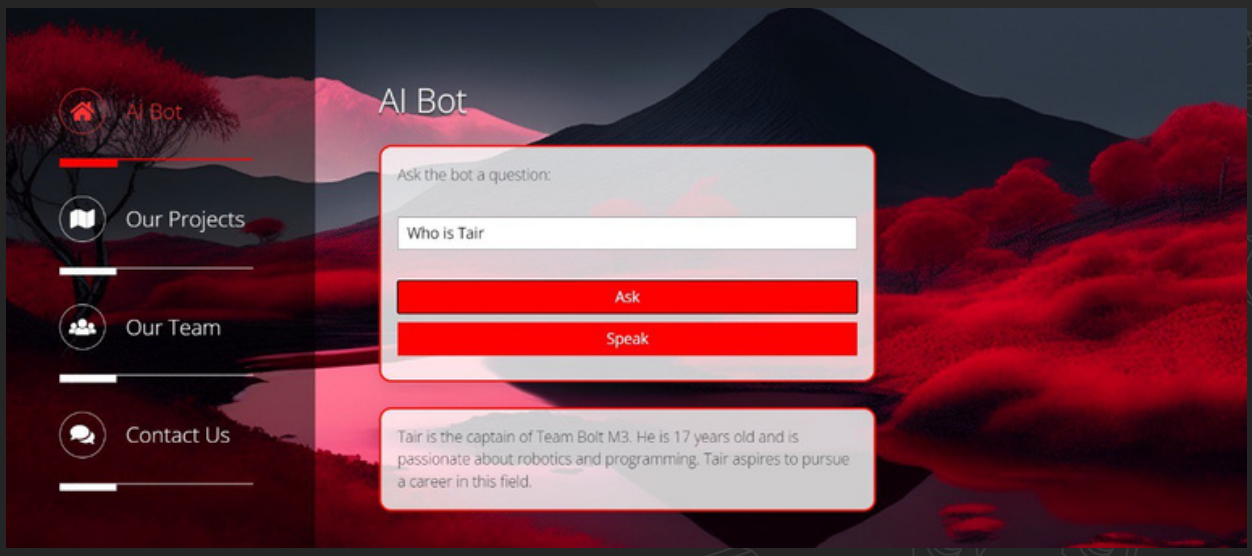
Our 7 days rubric

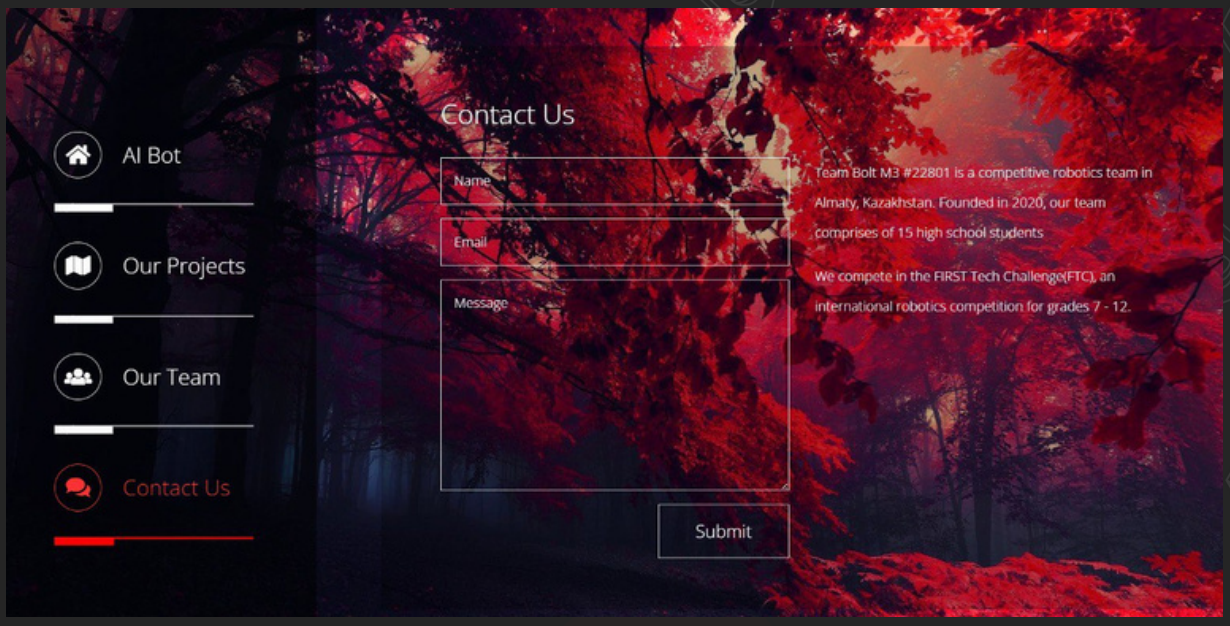
Focusing can be a little challenging when there is only a week left until a very important Championship. Therefore, we launched a rubric called "7 days" to help other FTC teams better prepare for the upcoming event. It aims to remind others of small nuances that might be forgotten in such a rush and keep rookie teams from making the same mistakes as we did in the past. All in all, it is a friendly

Our Uniform

We also have uniforms that were purchased by our sponsors. Above you can see what it looks like from the back and front. First of all we were inspired by the color black. On the front we decided to show our roles and the names of each team member. On the back, we decided to show our sponsors and highlight the school. We also decided to draw the logo of our main sponsor, gsc study, on one of the arms. They helped us a lot and we are very grateful for that, so we decided to put them separately on our uniforms

AI BOT



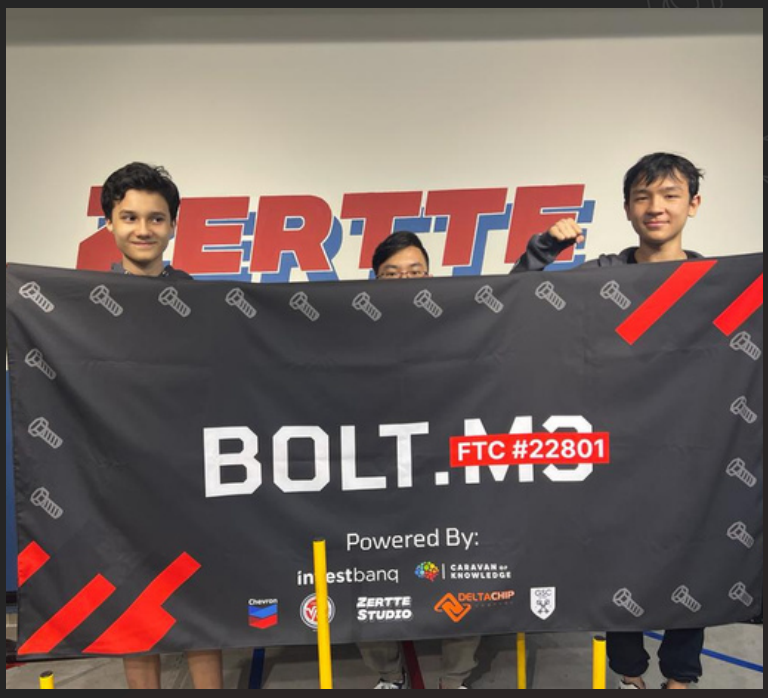


Team Bolt M3's AI bot is a conversational assistant. It provides information, answers questions, and engages in conversations about the team, its members, fascinating riddles, and the FIRST Tech Challenge. Users can interact through text or speech input for a seamless experience.


Pit Prep

Glasses and Flags

We started preparing our pita with some very interesting things. First of all, we decided to solve the problems of people at the competitions. The first problem that came to our mind was the inconvenience with the glasses. A lot of people were very concerned about how to protect their goggles because they don't have side protection. So we decided to make a branded eyeglass protection that is very easy to put on and take off and also has our branding on one side



We also decided to do what we always do - print flags. But this time we had extra big sponsors - gsc study. So we decided to also print their flag, print our flag, and take the school's flag from the principal. So we got 2 printed flags and 1 from the principal. A total of 3 flags.

Lines and Packs

Next, we set about creating also original but still interesting merchandise. We created our own lines. We took wood and used a laser machine to print rulers with our logo on them. We tried to create them as high quality as possible. We also created branded pencils marked Bolt.M3 in the same way. We really liked the final version.

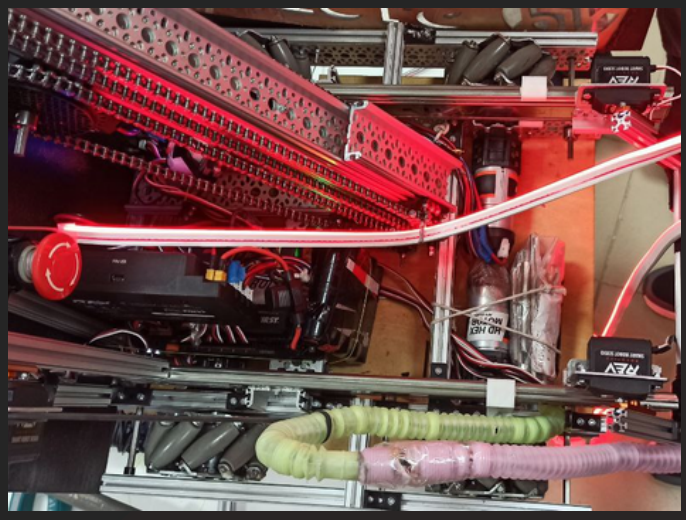
We also created badges and stickers with our logo. But we thought that was too easy. So we created special packs with 1 badge or 1 sticker and some Marshmallows. On the left side you can see how the final version looked like. In our opinion it turned out very beautifully aesthetic and minimalistic

Sticker Packs and etc.

On top of that we made original stickerpacks related to our team and engineering. We tried to make them as beautiful as possible. We put four stickers in one sticker pack. On the left you can see how original and interesting it is

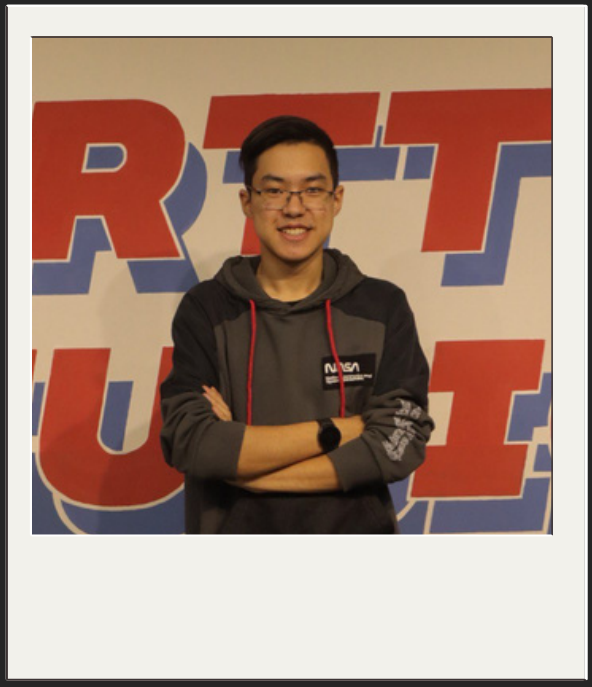
We also created a special board so that people could come up to this stand, take it in their hands and take pictures as if it were an instagram post on our profile. After that we printed out special things in the number of 10 so we could watch the matches and record important details + offline and so on. Since this way it would be easier to see if we need a team in the alliance if we pass in the selection of alliances

Neon Banner + banners



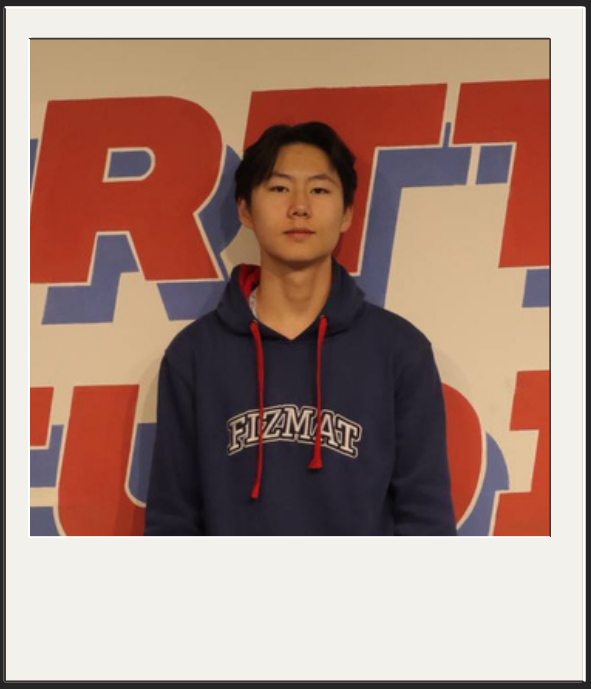
We also decided to make and order a special LED strip to hang it on the robot. In addition, we ordered a special neon banner in the form of a bolt to hang it near the feeder and everything was very nice

Tair (Capitan)



As a team leader, I take great responsibility for almost every action step. Before each competition, we think through a transparent and step-by-step plan, and all the backup plans. According to this template, we move forward, because if we do not know what we are doing in the process, we do not know what we are doing at the moment. The main thing in achieving any goal (whether it's building a job, or pitching a presentation at school) is a clear and structured narrative of sequences and actions that will surely lead us to the ultimate goal. Each participant contributes to supporting the other's contribution, which is what makes our team special. We have only recently come to realize that each contributor and his or her actions hold the future actions of the other contributors in place. As a team leader, I see all the pitfalls that occur. This is one of the only qualities that I have developed. Analyzing current situations, and predicting actions for the future. We are like a real and living neural network, connected by team members. Another thing I'd like to mention is the ability to think critically and logically. As strange as it may sound, building a robot involves a lot of work and intelligence. How are you able to implement all the necessary resources that you have for implementing one item from your huge plan? How will you be able to write an algorithm that perfectly fits the robot and becomes its second brain? What will you do if one of the parts fails but you are short of time?
The ability to solve problems is probably one of the greatest qualities we have in this world. And robotics is an excellent experience for this skill, and probably the best experience.

Vlad (Head Programmer)



To build the robot, we go over a significant number of obstacles. By interacting with each other, we build the robot together and prepare a future plan of action. Consequently, we gain good experience from others. One of the many skills we have learned is problem solving and problem solving.


OXFORD SUMMER COURSES

This is to certify that

Vladislav Yun

has fulfilled the requirements of this institution to complete a course in

Mathematics for 13-15 age group

at

Lady Margaret Hall, University of Oxford

Date

17th July 2022 - 30th July 2022

Having communicated with the other team members, we recreated a kind of neural network where each member serves as a neuron. We carefully go through all the information, and together we pull out only the juice. It should also be mentioned that in the course of our time as a team, we learned to solve problems together, as one person, one organism. Also, we learned how to apply our skills to the maximum for the benefit of society and the country.