



MISSION TO MARS

Team Kriloff



About our Team:

Team members:

- *Ivan Morozov*
- *Zoya Morozova*
- *Alexey Kefer*
- Mentor team: *Victoria Kefer*

We are from Russia, live in the Krasnoyarsk territory, in the city of Krasnoyarsk

Our Robots:

- Cosmonaut
- Martian cat
- Rocket
- The Surface of Mars (5 robots)

RoboCup experience:

- The team participates for the second time in RCAP





Abstract

An important problem on which we had to work is the search of materials in order to design the robots were light and durable.

As a result, we used:

- *plastic*
- *aluminum profiles*
- *polypropylene pipes*
- *foam Boar*
- *foil*



Robots Design and Structure (1 of 4)

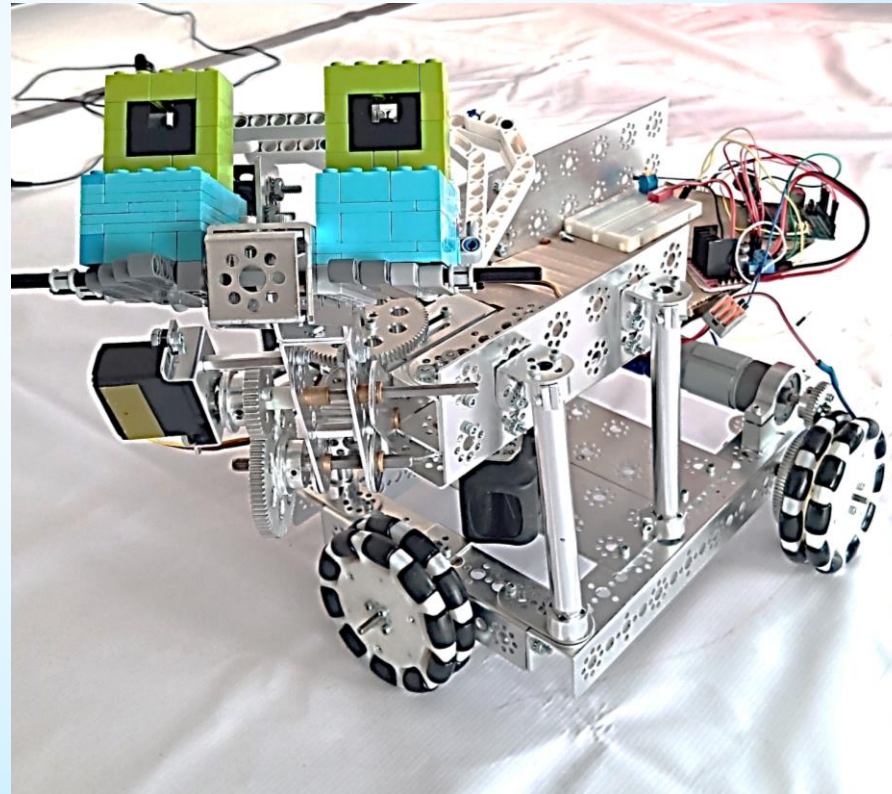
- **The Robot-cosmonaut** is made from Tetrix parts mounted on a base.
- The chassis consists of 2 omniotic wheels, 2 wheels with the formula 2x4, 3 servos and 2 DC motors (one servo was made by the team themselves).
- The covering is made of Pollensa for ventilation shafts.
- The robot is equipped with a distance sensor and a Bluetooth module.
- The robot is controlled using the Arduino Uno micro-controller.





Robots Design and Structure (2 of 4)

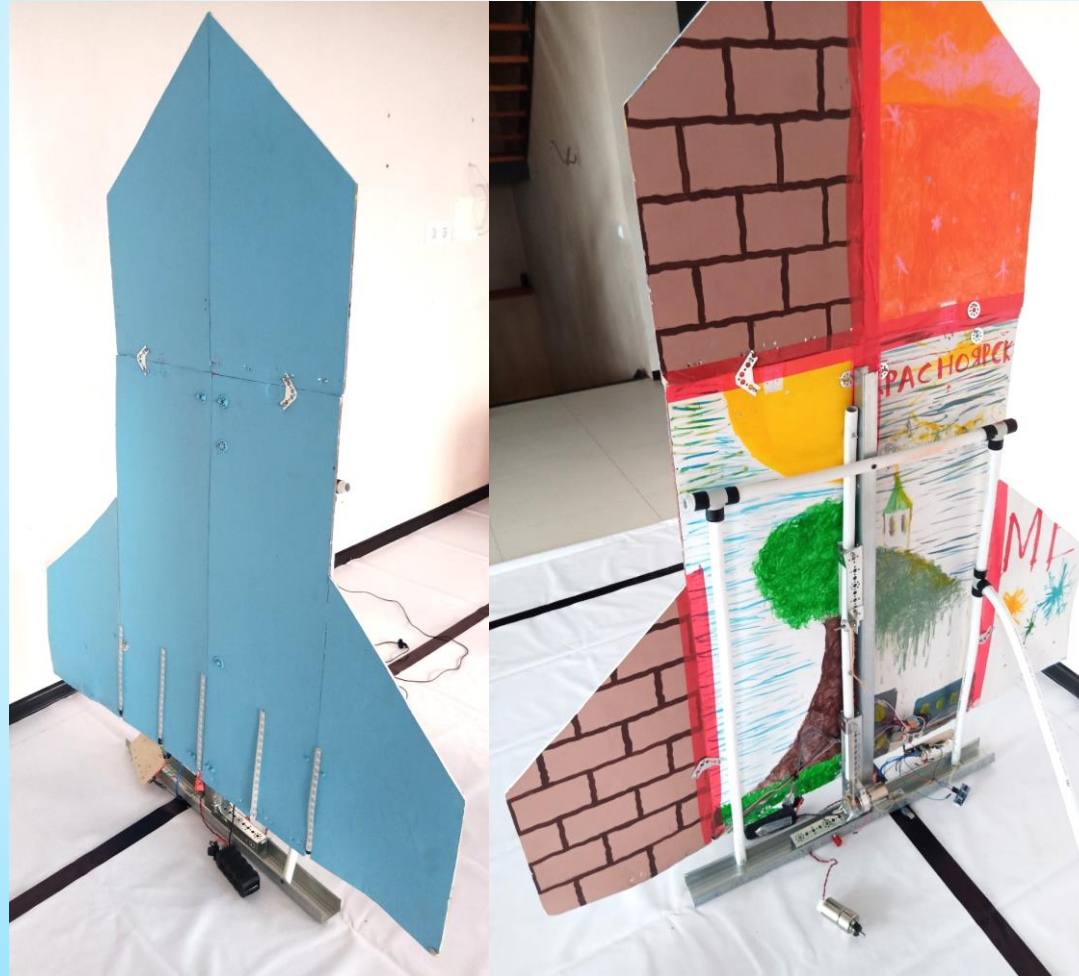
- **The Robot Martian cat** going from elements of Tetrix and LEGO.
- It has 2 motors and 2 servo drives on Board.
- The undercarriage of the robot consists of 3 omniotic wheels with a 2x3 wheel formula.
- The robot is equipped with a distance sensor and a Bluetooth module.
- The robot is controlled using the Arduino Uno micro-controller.





Robots Design and Structure (3 of 4)

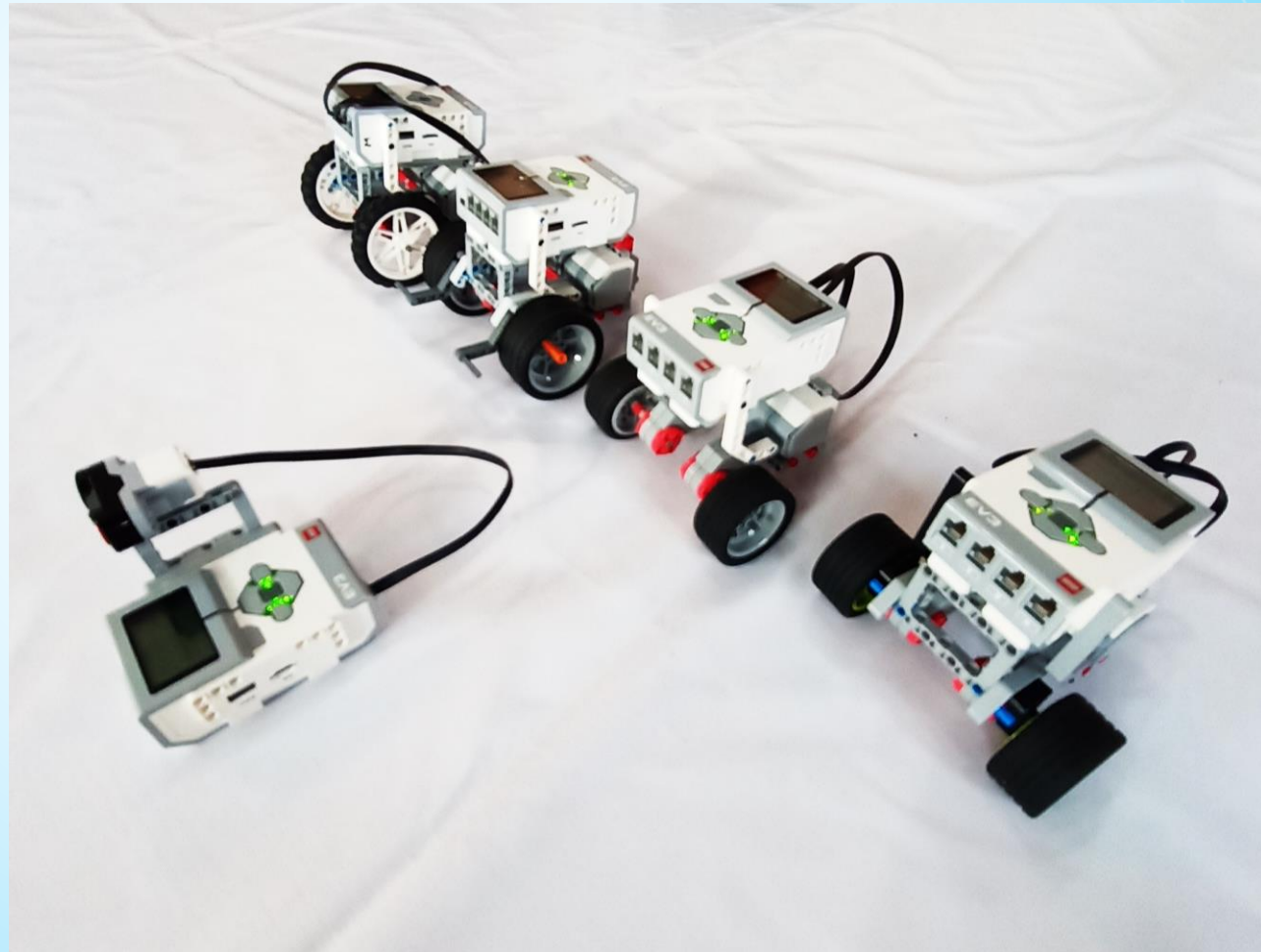
- **The Robot Rocket** is made of polypropylene.
- On Board there is 1 motor for lifting the rocket, 5 segments of SMD 5050 RGB led strip with pixel addressing.
- All elements are controlled by an Arduino Nano micro-controller.





Robots Design and Structure (4 of 4)

- **The Mars Surface robots** are made from LEGO structures and Mindstorm micro-controllers.
- 4 of them are elementary 2-wheel drive bogies.
- One robot controls the movement of others using commands transmitted via the Bluetooth module.





Result & Discussion

- All robot designs were created by the team for 4 weeks. For this purpose, Tetrax and LEGO constructors were used, as well as sensors, motors and servos. The team had to make one servo drive for the Cosmonaut robot on their own.
- We also independently cut out elements for robots from plastic, metal profiles and polypropylene pipes.
- Next, we programmed robots in the Arduino C and Lab EV3 environments.
- The team spent 2 days rehearsing and filming the "Mission to Mars" show at home.





Learning Experience

- ▶ Share your learning experience. Highlight the following:
 - ▶ What have you learnt through the preparation and participation in the Virtual RCAP 2020?
 - ▶ What have you gained through the Virtual RCAP 2020 ?



Presentation Video Guidelines

1. Please answer ALL the questions in the Official Template.
2. Teams should include images and graphics of the team's robots. Images and graphics should be original or should be available for non-commercial reuse with modification as per the creative commons license.
3. Presentation can be in your own language, however, all videos MUST have English subtitles.
4. Please ensure the videos are properly edited for clarity.
5. If you intend to use music, please ensure that the music is Copyright-free and/or Royalty-free.
6. The resolution of the video should be in HD format (1080p or above).
7. Please ensure the video is less than 10 minutes long.
8. Videos that meet the Guideline will be featured on RCAP Academy Official YouTube Channel (www.youtube.com/RCAPacademy)
9. Teams whose presentation videos are featured on the RCAP Academy Official YouTube Channel are eligible for the RCAP Influencer Award (<https://2020.robocupap.org/news/rcap-influencer-award-virtual-rcap-2020/>).
10. Please upload your video onto preferred cloud storage and use sharable link to fill the Google form: <https://forms.gle/4WX129xEeawVbBeC7>



Deadline

September 21, 2020 (Monday) by 23:59GMT

Awards

You are eligible for the VRACP 2020 Awards, for details, please refer to 2020.robocupap.org



Thank You