2019 MAKE X
Robotics Competition

ENGINEERING NOTEBOOK

KVATERNIK

GIRLS

KVATERNIK GIRLS
XE0350L8
MAKEX STARTER
CITY GUARDIAN

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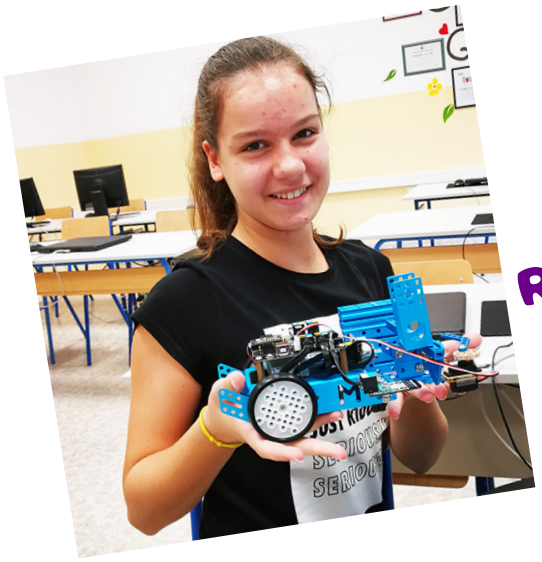
TEAM INFORMATION



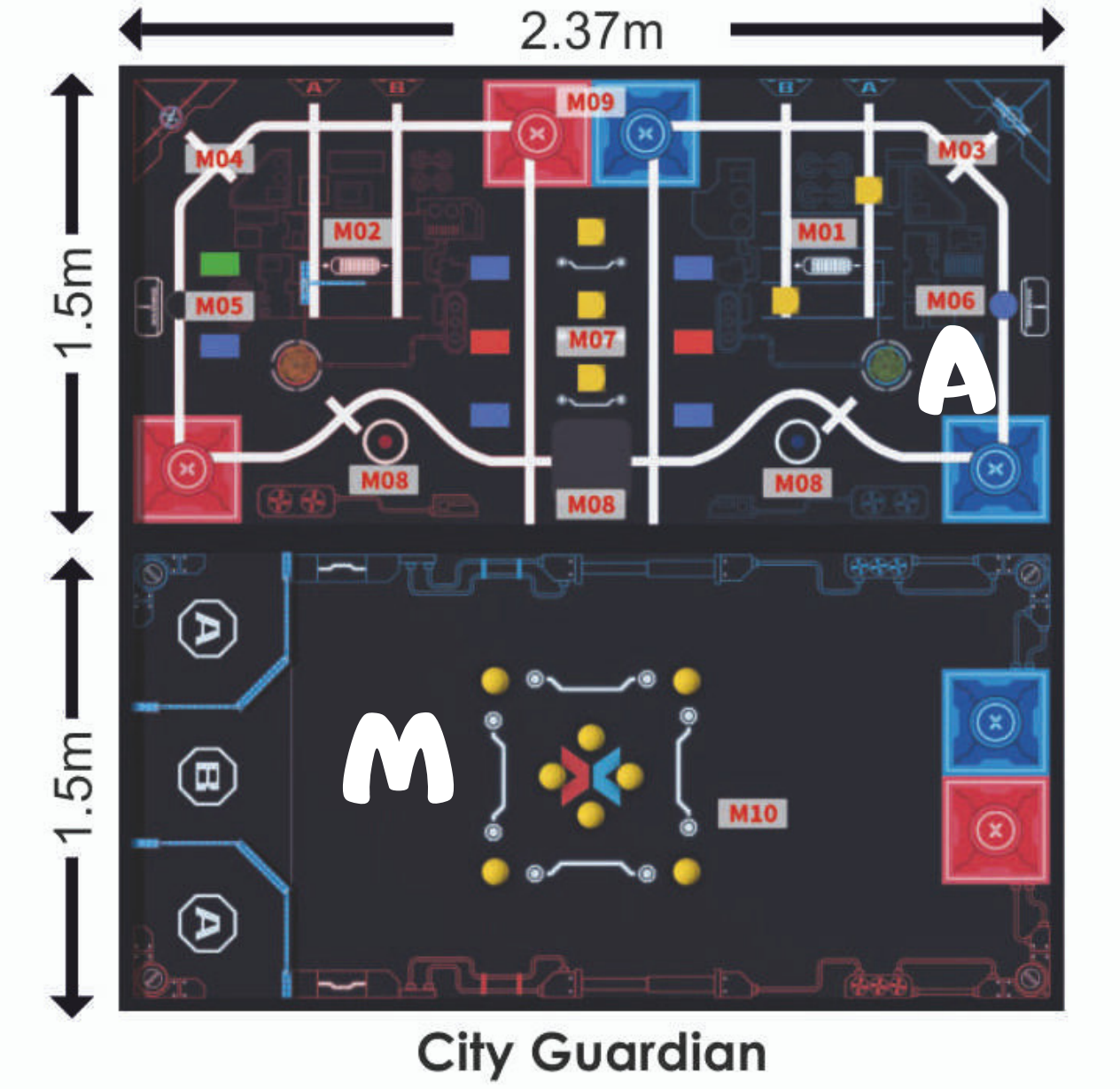
Dora Štrković
13 years old
Team captain
Robot programming

Ema Lesinger
13 years old
Team member
Robot building / structure

Dalia Kager
Team Mentor I

Maja Mačinko
Team Mentor II

GAME OUTLINE



Independent Missions:

M01 Energy-saving Switch

M03 Aging Power Plant

M06 Obstacle Removal

M07 Waste Sorting

M09 City Party

Aliance Mission:

M10 Garbage Recycling

SCORING

Push block A to the same position as the block B	60
Dismantle 3 plants inside the thermal power station	60
Remove obstacle completely out of the designated area	50
Rotate the switch by more than 90 degrees in the specified direction	60
Dismantle chimneys in the arena	60
Correctly recognize the color of two cards	50
Identify the color of card and relocate the garbage in the alliance area	60
Transplanting sapling	30
Both team robots begin the party after returning to the designated area	10
Handling garbage	80

TOTAL: 520 POINTS

GAME OVERVIEW

Both robots (Blue and Red) begin in their starting zone. The team can discuss to choose which task to do first. Score all the tasks within 4:00 minutes. Marks will be deducted if team commit "VIOLENCE". Violence happens if the team break the rule such as touch the robot without judge permission.

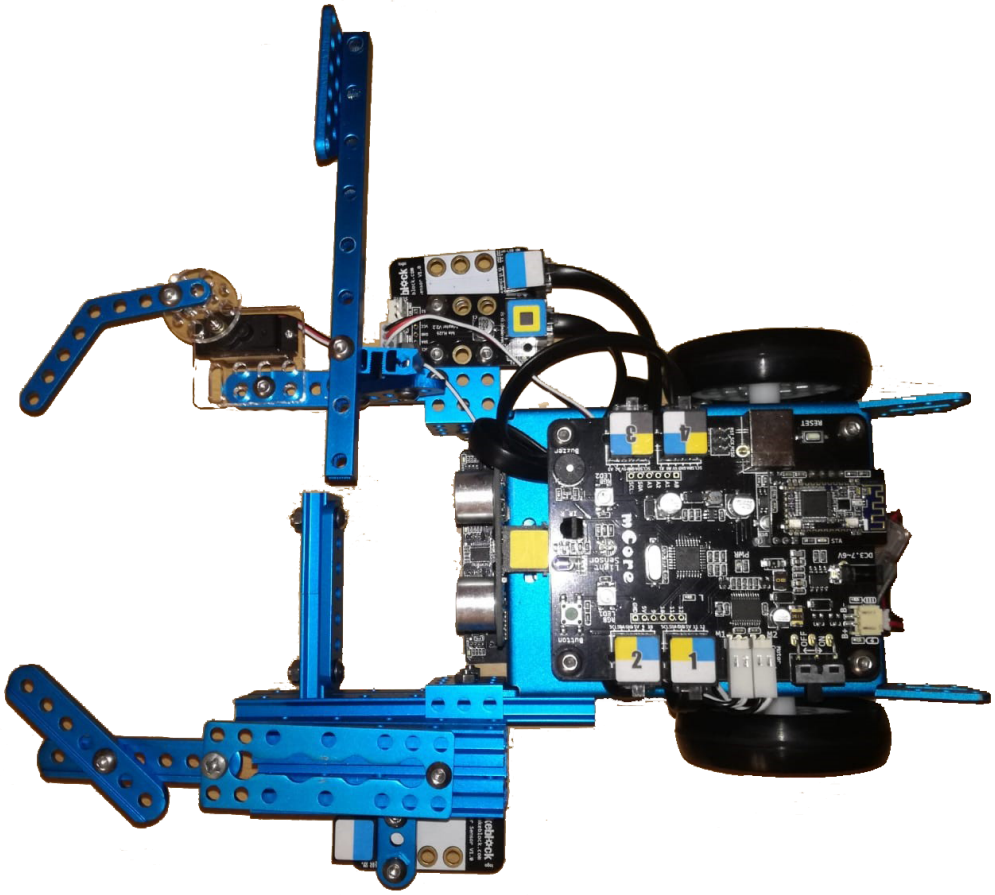
DESIGN STATEMENT

Design, build and complete with other team that can efficiently score all the tasks.

CONSTRAINTS

- Robot size not exceed 280x280x300 mm
- The robot weight not exceed 2000 g
- MakeBlocks material only for structural and mechanical parts
- Other materials without magnetic properties may be used as production weights

ROBOT INTRODUCTION



MASS

0.7 kg

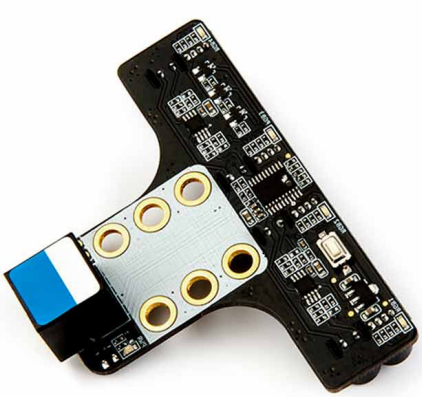
SIZE

258 x 279 x 98 mm

ROBOT PARTS

RGB LINE FOLOWER

- measures light intensity information and convert it into electrical signals
- component used to detect lines



ME Colour Sensor

- detects primary colours - red, green, blue
- can output an analog value of the specific colours

Speaker

- produce sounds from the data in the SD card, such as song and beat

ROBOT PARTS

LED Matrix

- displays data such as RGB values, messages and symbols

Servo motor

- moves parts of mBot designed out of Make Block parts
- used for grabbing things

SCHEDULE

We had meetings from 10th of november 2019.

Problem was that Dora and Ema had extra curricular activities (dance and music school) and we couldn't get together.

But we meet over weekends and communicated via WhatsApp group.

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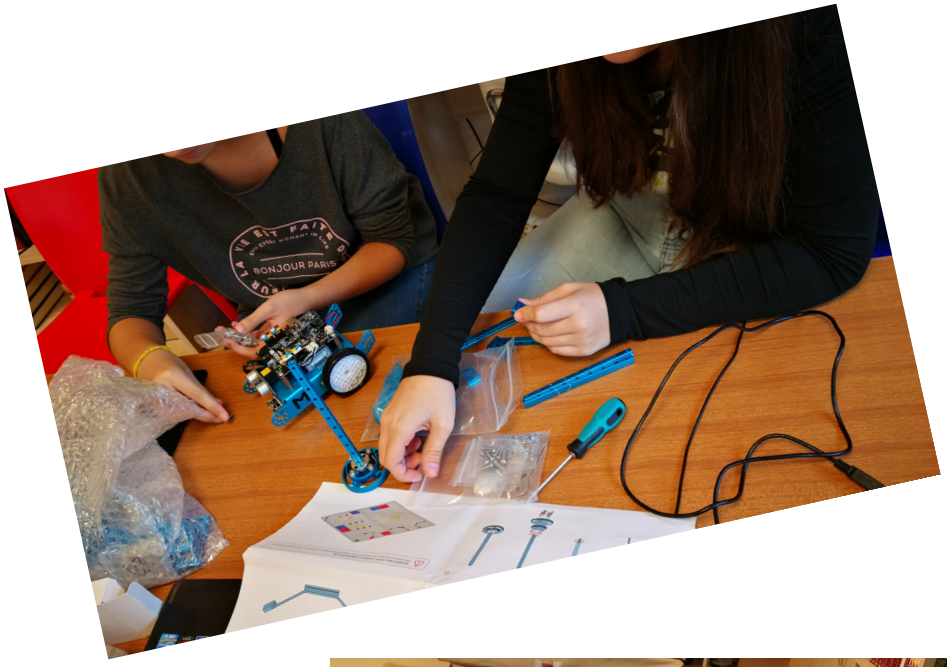
BUILDING STEPS & PROGRAMMING

We cheked out the animation video for this years contest.

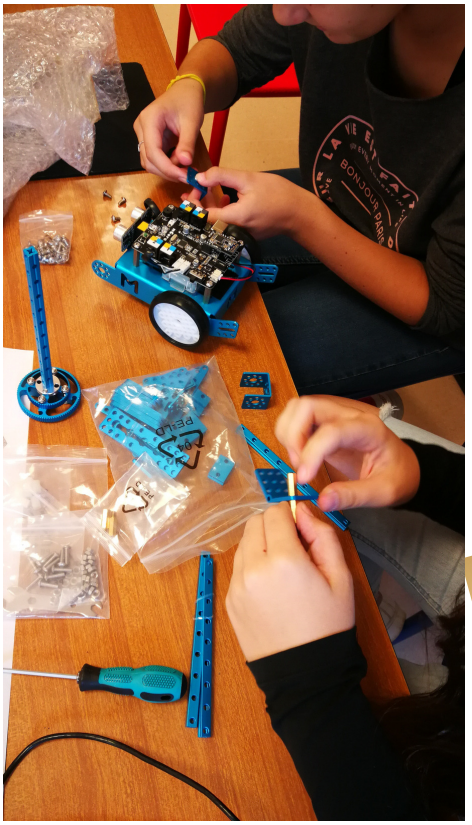
We also studied all important documents.

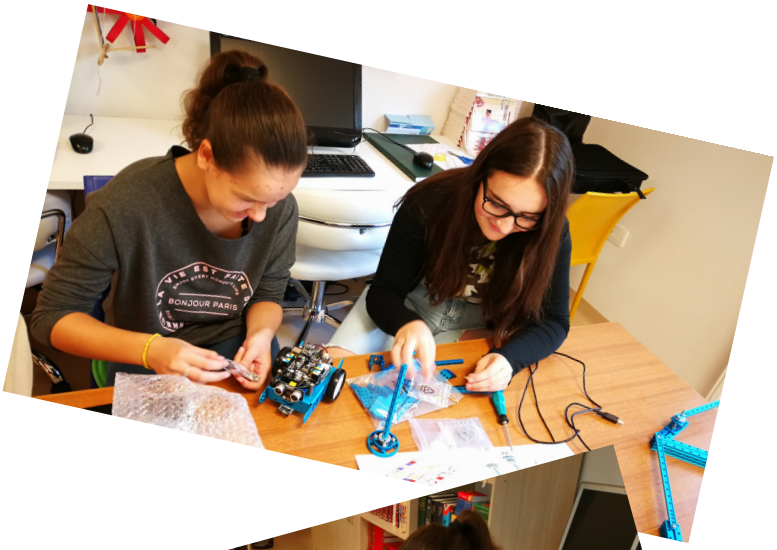
First, we assembled the parts for the arena.

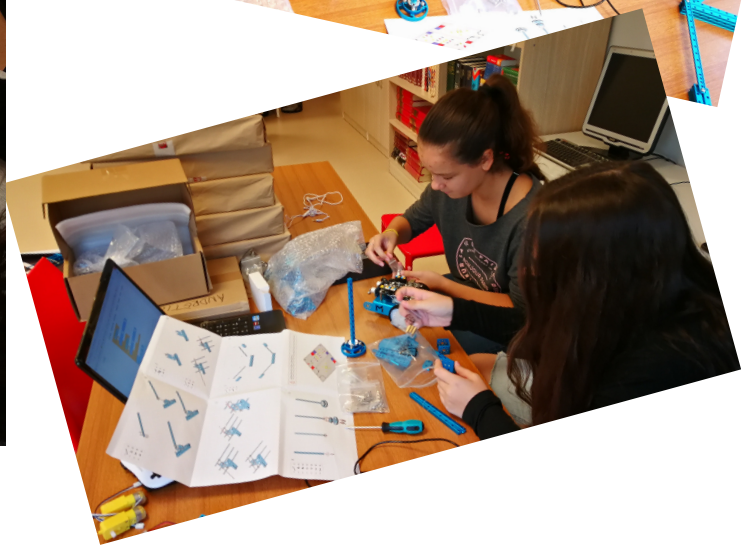
We worked in a school library.



BUILDING STEPS & PROGRAMMING



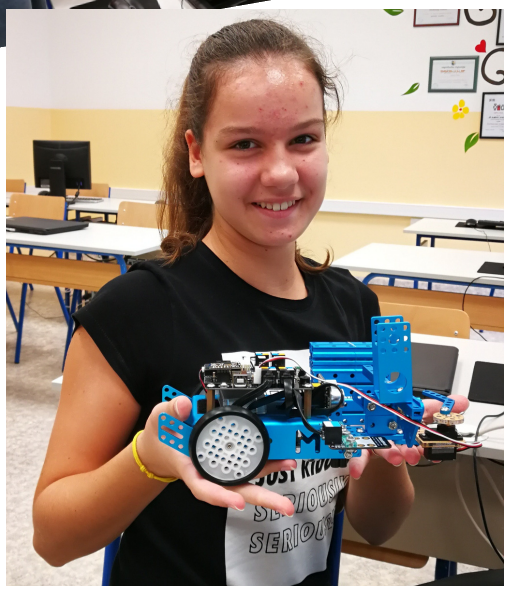




Then we setup the arena.

BUILDING STEPS & PROGRAMMING

Then, we have build the robot. We were lucky because we didn't have to build the whole robot, but just his extensions.



BUILDING STEPS & PROGRAMMING

After that, we made a program for robot.

First we made a program for bluetooth remote controler.

Then we made a robot program, stage by stage.

THOUGHTS AND FEELINGS

We are hoping that we will get a good team to collaborate together on the competition.

We know the importance of team work and collaboration.

It was quite fun and engaging during preparation, but we would be happier if we had a bit more time for this.

But in the end, we learned that is important not to give up easily and to always rely on each other and our mentors!

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