



Challenge

ROBO
~motion


Micromouse

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1. General Information:

- 1.1. The purpose of the competition is to promote robotics, fun and fair-play competition.

2. Definitions:

2.1. General Definitions:

- 2.1.1. Team - a group of people consisting of Participants and Competitors who independently created at least one Robot or its algorithm, participating in the Competition. Due to the multiplicity of the Competition and its categories, the representation of the Team is limited to a maximum of 10 people (not including any guardian).
- 2.1.2. Constructor - the person or people participating in the competition who created the Robot in question.
- 2.1.3. Organizer - a person who supervises and influences the course of the Competition, wearing a name badge with the inscription Organizer.
- 2.1.4. Robot - a mechatronic device powered by electricity that moves autonomously and responds to its environment to a certain, noticeable degree.
- 2.1.5. Identical robots - robots, having a similar design and using similar algorithms. The final determination of the identity of robots is decided by the Chief Judge.
- 2.1.6. Judge - the person who supervises the competition on the day of the Competition.
- 2.1.7. Category Judge - a person who supervises the proper course of the categories entrusted to him, having a decisive vote on issues / disputes that are described in the regulations of the category.
- 2.1.8. Chief Judge - a person who supervises the proper course of the Competition taking place within the XChallenge, having a decisive and final say in issues/disputes both those described in the regulations of a given category and general regulations and those that are not included in the regulations of a given category or general regulations.
- 2.1.9. Participant - a person who takes an active, or passive part in the competition. It can be a competitor, judge, organizer or spectator.
- 2.1.10. For the competitor, see Constructor.

2.2. Category Definitions:

- 2.2.1. Board - the place where the entire category takes place.
- 2.2.2. Trial - the time during which the scored runs take place.
- 2.2.3. Trial Time - the time between the start of the Trial and the end of the Trial.
- 2.2.4. Run Time - the shortest time measured between the Robot starting from the Start Field and reaching the Finish.
- 2.2.5. Labyrinth - a square board on which runs take place.
- 2.2.6. The finish field - an area consisting of 4 fields (without walls and posts). There is only one entrance to the finish field. The goal of the Robot is to reach this field.
- 2.2.7. Starting field - a field located in one designated corner of the maze. It is a field with coordinates (1, 1).

3. Category Specification:

- 3.1. The Competition involves Robots whose goal is to get from the Start Field to the Labyrinth Finish in the shortest possible time.
- 3.2. The competition includes a testing phase and a trial phase.
- 3.3. A section of the Labyrinth will be made available to Contestants during the testing phase.
- 3.4. A Competitor has only one trial ride, lasting no more than 10 minutes.
- 3.5. At any time, a competitor can end his robot's ride.
- 3.6. There is no limit to the number of competing robots of a given Team, however, one robot can participate in a maximum of 4 categories, with the proviso that in one category it can compete in a maximum of 2 competitions (for example, one robot can participate in Drag Race, LF Standard, LF Turbo Enhanced and Micro Sumo, however, it cannot simultaneously compete in Drag Race, LF Standard, LF Turbo and LF Turbo Enhanced).
- 3.7. No two Identical robots are allowed to compete in the competition.
- 3.8. The Organizer provides a table, chair and access to an electrical outlet to the Team. Other needs must be communicated to the Organizer via email by writing to xchallenge@dolinawiedzy.pl. The Organizer is not obligated to meet these needs, but is obligated to notify if they will be met.
- 3.9. The robots can be viewed by participants throughout the competition, and Team members undertake to politely answer Participants' questions.

4. Specifications of the robot and the board:

- 4.1. The maximum dimensions of the Robot are 15 x 15 cm. Height and weight are not limited. However, attention should be paid to the width of the aisles (168mm).
- 4.2. The Robot shall not exceed the allowed dimensions at any time during the run.
- 4.3. The dimensions and weight of the Robot will be verified by the Judge at the Arena.
- 4.4. There are no restrictions on modifications to the Robot's design and software. This means that both the design and software of the Robot can be modified during the Competition, however, it should be noted that the Robot after modifications must also meet all requirements for design limitations (e.g., size limitations, weight limitations). All modifications are prohibited during the testing phase.
- 4.5. The maze consists of square fields of 180 x 180 mm. The number of fields of the maze is a total of 196 fields (14x14 grid).
- 4.6. The fields can be separated from each other by walls 50mm high and 12mm thick.
- 4.7. The walls of the maze are white in color, the floor is black. The floor is made of black furniture boards joined together, the joints of the boards will be masked with black insulation tape.
- 4.8. The maze contains the finish field located in fields with coordinates ([13,13], [13,14], [14,13], [14,14]).
- 4.9. The maze used in the Competition can be completed using both right-hand and left-hand algorithms. Neither route will be the shortest route to the destination.
- 4.10. The tolerance of all dimensions of the board is $\pm 5\%$.

5. Rules of the games:

- 5.1. From the opening of the competition there is a testing phase. Competitors are allowed to run through a section of the maze provided to them. The purpose of the Testing phase is to pre-calibrate the sensors and control system.
- 5.2. After the start of the Testing phase, the Competitors take turns in the Trials. The order of the Trials is determined by the Organizer. During the Testing phase, all Robots competing in the competition must be located in a specially designated place at the maze.
- 5.3. Before the start, the Competitors have 1 minute to calibrate their sensors and choose a strategy for searching the maze.
- 5.4. During the Trial, the Robot's power source may not be changed, the control algorithm may not be affected, and the Robot's design may not be altered. Only minor repairs (e.g. cleaning the wheels, tightening the wheels, etc.) are allowed.
- 5.5. After the sign given by the judge, the Trial begins, and the Robot can start from the starting field.
- 5.6. With the departure of the Robot from the Start Field, the measurement of the Trial Time and the first Run Time begins.
- 5.7. After reaching the Finish, further exploration of the Labyrinth is possible.
- 5.8. The robot may return to the Starting Field and start a new measurement run on its own, or may be set there by the operator without penalty after it has reached the Finish field.
- 5.9. It is allowed to touch, or correct the position of the Robot, but any interference will add 5 penalty seconds to the final time.
- 5.10. In the event of excessive interference of the Competitor in the run of the Robot, disqualification shall occur. However, it must be preceded by a warning from the Judge.
- 5.11. It is not allowed to destroy the Labyrinth.
- 5.12. The Robot must move on the ground.
- 5.13. The result of a given Robot is the final time calculated from the formula:
 - 5.13.1. $\text{RESULT} = \text{trial time}/30 + \text{run time} + \text{number of penalties} \times 5 \text{ [s]}$.

6. Litigation, Liability and Disqualification:

- 6.1. Any disputes related to the category described in these rules shall be decided by the Judge of the category.
- 6.2. Any disputes and situations not described in these Regulations shall be decided by the Chief Judge.
- 6.3. The competitor has the right to appeal the Judge's decision.
- 6.4. Responsibility for all actions of each member of the Team shall be borne by the Team.
- 6.5. In case of non-compliance with the rules of fair-play by one of the members of the Team, the Chief Judge has the right to impose a penalty on the Team in the form of disqualification.
- 6.6. In case of behavior of a member of the Team that violates: moral norms, good manners, human dignity, religious feelings or safety of the Participants, the Chief Judge has the right to impose a penalty on the Team in the form of disqualification.

- 6.7. Disqualification of a Team shall invalidate all results obtained by the Team on the day of the Competition.
- 6.8. The disqualified Team is required to return all prizes won on the day of the Competition.
- 6.9. The decision of the Chief Judge is final.
- 6.10. Preparation of all arenas (and their condition) is the responsibility of the Organizer, who appoints technical staff to maintain the condition of the arenas. The Competitor has no right to interfere with the condition of the arenas or to "clean" the arena on his own. However, the Competitor may request the Judge to clean the arena before his/her approach, then if the Judge finds, in such a situation, the need to clean the arena he/she shall summon the technical service responsible for the maintenance of the arenas. Otherwise, if the Judge determines that there is no such need the Competitor may begin his approach or abandon it altogether.
- 6.11. The organizer reserves the right to amend these regulations.

7. Registration for the Competition:

- 7.1. In order to participate in the XChallenge Competitions, it is necessary to create and activate an account on the xchallenge.pl platform by the date to be announced on [XChallenge social media](#). This will be estimated to be September - October 2024. The next step, after creating an account, is to add to your account all the Robots with which the Participant wants to take part in the Competition. Once the Robots have been added to the account, the other constructors of the Robot can be added to each Robot. The registration process described in this section is necessary for each Constructor, Guardian and each Robot. Any Constructor or Robot that is not registered by this date in the registration process will not be allowed to participate in the XChallenge Competition as a Competitor.
- 7.2. In order to enter a given Competition and its category, it is necessary to confirm one's arrival on the day of the Competition at a specially designated point located near the main entrance. During the confirmation of arrival, the staff will verify the Participant in the system and issue the Participant with an entry package containing, among other things, a special named RFID tag, and verify which of the entered Robots have arrived ready for the Competition by confirming the arrival of each Robot. All Robots that are not confirmed in the system will not have the opportunity to be included in the final ranking, which is equivalent to not being able to win any place in the Competition.

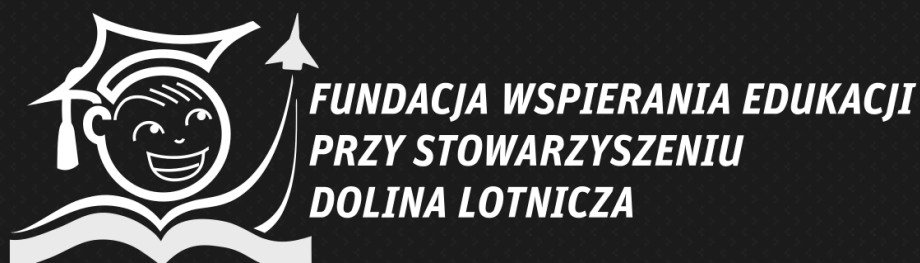
8. Consents:

- 8.1. Registration of a Robot in the competition implies consent to the publication of basic information about it, i.e. the name of the Robot, the name of the Team, the name of the University or Institution, photos, videos and the place taken by the Organizers and Partners of the Competition without informing the Constructor or the Team.

9. Organizers:

ROBOLAB
Local STEM Incubator

RZIT
RZESZOWSKA GRUPA IT



PITI
POLSKIE TOWARZYSTWO INFORMATYCZNE
ODDZIAŁ PODKARPACKI