Micromouse Competition Rules

Introduction

Competition Title: MicroMouse Zagreb

Competition Description

A participant or a team of participants must design and build an autonomous robot that can navigate a specific maze of a given dimension from a designated corner to the center.

Organizers

Organizer of MicroMouse Zagreb is X.FER, Informatički klub studenata Fakulteta elektrotehnike i računarstva (*Student Computer Club of the Faculty of Electrical Engineering and Computing*).

Participant Eligibility

Academic Status

All participants must be enrolled in accredited study programs at higher education institutions. Participants must be able to provide proof of their study status and must provide it to the organizer upon request.

Team Composition and Number of Teams

Teams shall consist of one to four participants. There is no limit on the number of participants who may register to participate.
One persona may not be a member of multiple teams.
Each team must have one person designated as the primary point of contact for communication with the organizers, who will respond to any inquiries from the organizers.
Each team is independently responsible for the design, construction, and programming of the robot.

Organizer’s Discretion

The organizers reserve the right to make the final decision on accepting or rejecting a participant's application, taking into account the criteria relevant criteria for the competition. The organizers' decision is final and not subject to further discussion.

Robot Rules

Development

The MicroMouse robot submitted by a team must be designed and built from scratch, including all hardware and software components, and must not be a pre-assembled or commercially purchased kit.
Any use of pre-made templates, pre-written code, or other forms of plagiarism will result in immediate disqualification from the competition at the organizers' sole discretion.
A robot built in previous competitions may be used by a team that includes at least some of the original members, provided that all current team members can demonstrate full understanding and control of the robot without the assistance of former members.

Self Containment

The MicroMouse robot shall be self-contained (no remote controls). The robot shall not use an energy source employing a combustion process.

Dislodged Parts

The MicroMouse robot shall not separate from any part of itself whilst navigating the maze. To complete the maze, the robot in its entirety must enter the center of the maze.

Method of Movement

The MicroMouse robot shall not jump over, fly over, climb, scratch, cut, burn, mark, damage, or destroy the walls, or any part, of the maze.

Micromouse Size

The MicroMouse robot shall not exceed 25 cm in length or width. Robots with variable geometry must also remain within 25 cm × 25 cm in length and width. There are no restrictions on the robot's height.

Inspection

All MicroMouse robots are subject to inspection prior to the competition to ensure compliance with these rules and to verify that they pose no safety hazards.

Rules Violations

Any violation of these rules including plagiarism, use of unapproved components, or non-compliance with size and movement restrictions will result in immediate disqualification from the contest and ineligibility for any associated prizes.

Maze Specifications

Maze Dimensions

The maze is composed of 18 × 18 cm unit squares, arranged to form a maximum 16 × 16 unit grid. The walls of each unit are 5 cm high and 1.2 cm thick (±5% tolerance). The entire maze is enclosed by exterior walls.

Maze Coloration and Construction

The sides of the maze walls are white, the tops of the walls are red, and the floor is black. The maze is made of wood, finished with non-gloss paint.

> **Note:** Wall and floor coloration may vary between mazes due to fading or the use of different sections. The floor may be slick, and seams between plywood sheets may exist. Do not assume consistent friction or surface finish.

Start and Finish Zones

The starting square is located at one of the four corners, bounded by walls on three sides. The start line is positioned between the first and second squares, and the timer begins as the robot crosses it. At the starting square, the MicroMouse robot shall be oriented facing into the maze. The robot's left side and rear side shall be bounded by outer walls of the maze.

The finish zone consists of the four central squares of the maze. The destination square has only one gateway.

Lattice Point

Lattice points are small square posts, 1.2 × 1.2 cm, located at the four corners of each unit square.
The maze is constructed so that at least one wall is positioned at each lattice point, except inside the finish zone.

Path and Navigation

Multiple paths from start to finish are allowed and expected.

The maze design ensures that a simple wall-following algorithm will not guarantee reaching the finish zone.

Competition Rules

Time

Each team has 13 minutes in the maze, starting when the competition administrator grants access. Any time spent adjusting the MicroMouse robot between runs counts toward these 13 minutes. A run time is recorded for each successful run, from the start cell to the center zone. The fastest run within 13 minutes is the robot's official time.

Stopping/Removing the MicroMouse Robot

Runs start from the starting square. Multiple attempts are allowed within the 13-minute limit. A team may abort a run at any time and return the robot to the starting zone. If the robot has reached the destination square and has acquired a "run time," the robot should return to the starting square on its own. Alternatively, it may be removed at any time without affecting the runtime of that run.
If the robot is manually returned to the start, a 30-second penalty is added to its next run.

Reprogramming After Maze Reveal

Once the maze is revealed, the robot may not be reprogrammed, but the switch positions on the robot may be changed.

Run Time

The run timer will start when the front edge of the Micromouse robot crosses the start line and stops when the front edge of the mouse crosses the finish line. The start line is at the boundary between the starting unit square and the next unit square clockwise. The finish line is at the entrance to the destination square.
Every time the MicroMouse robot leaves the starting square, a new run begins. Re-entering the start square before reaching the destination aborts the run.

Modifying the Robot

No maze information may be fed to the robot after reveal. ROM or program changes are prohibited, but participants may:

- Change switch settings (e.g., select algorithms)
- Replace batteries
- Adjust sensors

- Change speed settings
- Make repairs

After the 13-minute period starts, the robot's weight may not be altered (e.g., removing a sensor array or using lighter batteries to increase speed is prohibited). All interactions with the robot are subject to the judges' and administrators' arbitration.

Scoring

Presentation

All robots must be presented to the judges by the original team.

Scoring

Criteria	**Percentage in the final scoring**	**Description**
Run time	85%	The fastest recorded time. Points are awarded proportionally based on speed (e.g., fastest = 100%, others = percentage of the fastest time)*
Team Presentation	15%	Clarity and organization of the presentation, creativity, and innovative solutions. Depth of understanding and quality of work demonstrated on assigned topics.

* Teams with the MicroMouse robot that does not enter the center square will be ranked by the judges based on the following criteria:

- How close the robot gets to the destination square without being touched.
- Evidence that the mouse knows where it is relative to the destination square.

If, on occasion, the robot becomes immobilized in a corner or on a wall, the team may manually intervene to correct the problem (with care not to modify the mouse's intended direction of movement. The frequency of such corrections will be considered by the judges while scoring.