2015 All America MicroMouse Competition

The following rules are for observed for All America MicroMouse Competition hosted at University of California, Los Angeles Campus. The Rules are modified from Official Rules from IEEE International MicroMouse Competition.

A. Objective

In this contest the contestant or team of contestants design and build small self-contained robots (micro mice) to negotiate a maze in the shortest possible time.

B. Contest Eligibility

1. All contestants must be an undergraduate or graduate student at a United States. Any student who graduates anytime during the Fall-Spring academic year in which the contest is held is eligible to enter the contest. A student graduating after competing in the contest still remains eligible to compete in succeeding Area, Region, and higher contests as an undergraduate student.
2. The MicroMouse entry may be the effort of an individual or a team. In the case of a team it should be possible to demonstrate that each individual made a significant contribution.
3. A team may consist of up to five people. Any team with more than five members is not allowed.
4. All entrants for All America MicroMouse Competition must declare their intention to enter the contest at least 2 days before the date of the Competition, that is before May 8th, 2015. The notice (registration form) must be submitted to the contact person (s) by email or through the online form located on the UCLA IEEE website.
5. If the total number of declared mice, from all schools, is less than the number of eligible schools to compete in this competition, all shall be eligible to compete in the area contest. Two or more mice of near identical design from the same school are allowed, however, only one of them will be able to claim top 3 prizes.

C. Rules for the MicroMouse

1. A MicroMouse shall be self-contained (no remote controls). A MicroMouse shall not use an energy source employing a combustion process.
2. A MicroMouse shall not leave any part of its body behind while negotiating the maze.
3. A MicroMouse shall not jump over, fly over, climb, scratch, cut, burn, mark, damage, or destroy the walls of the maze.

4. A MicroMouse shall not be larger either in length or in width, than 25 centimeters. The dimensions of a MicroMouse that changes its geometry during a run shall not be greater than 25 cm x 25 cm. There are no restrictions on the height of a MicroMouse.

5. The total cost of the mouse (in materials, labor is assumed to be free) may not exceed $500.00. This is judged on actual cost and market value of any donated materials used in the mouse. An individual or a team must have the description of components and their market prices at the time of contest to present it at judges' request. Since market values may vary from source to source, contestants must submit the copies of catalog pages along with the cover page of the catalog or quotes to confirm unusual prices.

6. Since market values may vary from source to source, contestants are advised to provide catalogs or quotes to confirm unusual prices. The judge's decision shall be final in these matters.

7. Any violation of these rules will constitute immediate disqualification from the contest and ineligibility for the associated prizes.

D. Rules for the Maze

1. The maze is composed of multiples of an 18 cm x 18 cm unit square. The maze comprises 16 x 16 unit squares. The walls of the maze are 5 cm high and 1.2 cm thick (assume 5% tolerance for mazes). The outside wall encloses the entire maze.

2. 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.
    a. **WARNING**: Do not assume the walls are consistently white, or that the tops of the walls are consistently red, or that the floor is consistently black. Fading may occur; parts from different mazes may be used. Do not assume the floor provides a given amount of friction. It is simply painted plywood and may be quite slick. The maze floor may be constructed using multiple sheets of plywood. Therefore there may be a seam between the two sheets on which any low-hanging parts of a mouse may snag.

3. The start of the maze is located at one of the four corners. The start square is bounded on three sides by walls. The starting square orientation shall be such that when the open wall is to the "north," outside maze walls are on the "west" and "south." The start line is located between the first and second squares. That is, as the mouse exits the corner square, the time starts. The destination goal is the four cells at the center of the maze. At the center of this zone is a post, 20 cm high and each side 2.5 cm. (This post may be removed if requested.) The destination square has only one entrance.

4. Small square zones (posts), each 1.2 cm x 1.2 cm, at the four corners of each unit square are called lattice points. The maze is so constituted that there is at least one wall at each lattice point.

5. Multiple paths to the destination square are allowed and are to be expected. The destination square will be positioned so that a wall-hugging mouse will NOT be able to find it.

E. Rules for the Contest

1. Each contesting MicroMouse is allocated a total of 10 minutes of access to the maze from the moment the contest administrator acknowledges the contestant(s) and grants access to the maze. Any time used to adjust a mouse between runs is included in the 10 minutes. Each run (from the start cell to the center zone) in which a mouse successfully reaches the destination square is given a run time. The minimum run time shall be the mouse's official time. First prize goes to the mouse with the shortest official time. Second prize to the next shortest, and so on. NOTE, again, that the 10-minute timer continues even between runs. Mice that do not enter the center square will be ranked by the maximum number of cells they consecutively transverse without being touched. All mice who enter the center square within their 10 minute allotment are ranked higher than those who do not enter the center square.

2. Each run shall be made from the starting square. The operator may abort a run at any time. If an operator touches the MicroMouse during a run, it is deemed aborted, and the mouse must be removed from the maze. If a mouse has already crossed the finish line, it may be removed at any time without affecting the run time of that run.

3. After the maze is disclosed, the operator shall not feed information on the maze into the MicroMouse however, switch positions may be changed. See Rule D.1.

4. The illumination, temperature, and humidity of the room shall be those of an ambient environment. (40 to 120 degrees F, 0% to 95% humidity, noncondensing).
    1. **BEWARE**: Do not make any assumptions about the amount of sunlight, incandescent light, or fluorescent light that may be present at the contest site.

5. The run timer will start when front edge of the mouse 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.

6. Every time the mouse leaves the start square, a new run begins. If the mouse has not entered the destination square, the previous run is aborted. For example, if a mouse re-enters the start square (before entering the destination

square) on a run, that run is aborted, and a new run will be deemed begun, with a new time that starts when the starting square is exited.

7. The mouse may, after reaching the destination square, continue to navigate the maze, for as long as their total maze time allows.

8. If a mouse continues to navigate the maze after reaching the destination square, the time taken will not count toward any run. Of course, the 10-minute timer continues to run. When the mouse next leaves the start square, a new run will start. Thus, a mouse may and should make several runs without being touched by the operator. It should make its own way back to the beginning to do so.

9. The judges reserve the right to ask the operator for an explanation of the MicroMouse. The judges also reserve the right to stop a run, declare disqualification, or give instructions as appropriate (e.g., if the structure of the maze is jeopardized by continuing operation of the mouse).

10. A contestant may not feed information on the maze to the MicroMouse. Therefore, changing ROMs or downloading programs is NOT allowed once the maze is revealed. However, contestants are allowed to:
    a. Change switch settings (e.g. to select algorithms)
    b. Replace batteries between runs
    c. Adjust sensors
    d. Change speed settings
    e. Make repairs

    However, a contestant may not alter a mouse in a manner that alters its weight (e.g. removal of a bulky sensor array or switching to lighter batteries to get better speed after mapping the maze is not allowed). The judges shall arbitrate.

11. Each team is allowed a maximum of 2 mice to compete. However, only the one with the best score will be counted.

12. If the amount of entries exceed 32, the overall run time will be reduced to 8 minutes or 8 runs, whichever comes first.

Verbal recognition and certificates will be given to the top three mice among those who are competing for the first time. If you and your mouse are first time contestants, be sure to so stipulate when you register for the contest and notify the contest judge at the time of the contest. If requested, a break will be provided for a mouse after any run if another mouse is waiting to compete. The 10-minute timer will stop. When the mouse is re-entered, the 10-minute timer will continue. The judges shall arbitrate on the granting of such breaks.

There are only 10 runs in total allowed for each contestant. Either 10 minutes or 10 runs used up will terminate the run of the mouse.