

Introduction

The wall follower classes have been introduced to create a simpler contest than the maze solver competition. Wall following mice are divided into two classes; 1) those mice that sense the position of the walls by making contact with them and 2) those mice that sense the position of the walls without making contact with them. The maze is of the same general specification in the Maze Solver and Wall follower classes but the arrangement of the walls is different. In the wall following classes the walls are arranged so that a mouse following the left hand wall will eventually reach the goal at the centre of the maze.

1. The Wall Follower Maze

1.1 The wall follower maze shall comprise 16 x 16 multiples of an 18cm x 18cm unit square. The walls constituting the wall follower maze shall be 5cm high and 1.2cm thick. Passageways between the walls shall be 16.8cm wide. The outside wall shall enclose the entire wall follower maze.

1.2. The side of the wall follower maze walls shall be white, and the top of the walls shall normally be red. The floor of the wall follower maze shall be made of MDF and finished with a matt variety of black paint (blackboard paint). The coating on the top and side of the wall shall be selected to reflect, and the coating on the floor shall be selected to absorb, visible and infra-red light.

1.3. The start of the wall follower maze shall be located at one of the four corners. The starting square shall have walls on three sides. The starting square orientation shall be such that when the open wall is to the 'north', outside wall follower maze walls are on the 'west', and 'south'. At the centre of the wall follower maze shall be an opening composed of 4 unit squares. This central square shall be the destination.

1.4. Square posts, each 1.2cm x 1.2cm x 5cm high, shall be placed at the four corners of each unit square (the lattice points). The wall follower maze shall be constituted such that there is at least one wall touching each lattice point, except for the destination square.

1.5. The dimensions of the wall follower maze shall be accurate to within 5% or 2cm, whichever is less. Assembly joints on the wall follower maze floor shall not involve steps or gaps of greater than 1mm. The change of slope at an assembly joint shall not be greater than 5 degrees. Gaps between the walls and posts shall not be greater than 1mm.

1.6. A start sensor may be placed at the boundary between the starting unit square and the next unit square. A destination sensor may be placed at the entrance to the destination square. The light beam from each sensor will be horizontal and positioned 1 cm above the floor.

2. The Wall Follower

2.1. A wall follower is subject to the following size constraints –maximum width 25cm, maximum length 25cm. There is no height limit. A wall follower must be completely self-contained and must receive no outside assistance.

2.2. The method of wall sensing is at the discretion of the builder; however, the wall follower must not exert a force on any wall likely to cause damage.

2.3. The power source will normally be batteries and electric motors, however alternative power sources will be permitted at the discretion of the judges.

2.4. If the judges consider that a wall follower has a high risk of damaging the maze it will be disqualified from the competition.

2.5 The wall follower must negotiate the wall follower maze; it must not climb or jump over the walls of the wall follower maze.

2.6 Nothing may be deposited in the wall follower maze.

2.7. Each wall follower should be fitted with a suitable hook or loop, for lifting the wall follower out from the centre of the maze, should this prove necessary. Contestants may not be allowed to climb over the wall follower maze.

3. The Competition

3.1. The wall follower is normally allowed only one run. The time taken to travel from the exit of the start square to the entrance to the destination square is the run time. If the wall follower requires any manual assistance at any time during the run, it will be considered 'touched'. Scoring is based on the run time and any touch penalties.

3.2. Each wall follower is allowed a maximum of 5 minutes to perform. This may be reduced to 3 minutes if time is limited. The judges have the discretion to request a wall follower to retire in the event that it seems unlikely to reach the destination in the allocated time.

3.3. The scoring of a wall follower shall be obtained by computing a handicapped time as follows:

Handicapped Time Score = Run Time + Touch Penalty

where, the Touch Penalty = 3 seconds for EACH touch.

3.4. When the wall follower reaches the entrance to the destination square, the timer will be stopped.

3.5. The time taken to negotiate the wall follower maze shall be measured either by the contest officials using a stop watch, or by sensors fixed at the start and the finish squares.

3.6. The starting procedure of the wall follower shall be simple and must not offer a choice of strategies to the handler.

3.7. The wall follower handler will be given 1 minute, from the moment the wall follower is required to start, to make any adjustments to the wall follower.

3.8. The timing will be started after the expiry of the 1 minute time limit, even if the handler is still making adjustments to the wall follower.

3.9. If a wall follower "gets into trouble" the handlers can ask the judge for permission to abandon the run and restart the wall follower at the start square. A wall follower may not

be re-started merely because it has taken a wrong turning. The judges may add a time penalty for a restart. The judges' decision is final.

3.10. If any part of a wall follower is replaced during its performance -such as batteries or EPROMs -or if any significant adjustment is made, then any memory of the maze within the wall follower must be erased before re-starting. Slight manipulations of sensors will probably be condoned, but operation of speed or strategy controls is expressly forbidden without a memory erasure. The mice may have software stored in EPROMs. However, at the judges' discretion, but not in normal circumstances, mice with battery backed up RAM may be allowed to download control software if the memory is erased accidentally during a run. The handler, in this instance, must convince the judges that the original software has been reloaded.

3.11. If no successful run has been made, the judge will make a qualitative assessment of the wall follower's performance, based on the distance achieved, 'purposefulness' versus random behaviour and quality of control.

3.12. If a handler elects to retire a wall follower because of technical problems, the judges may, at their discretion, permit it to perform again later in the contest.

3.13. The judges reserve the right to make changes to any of the above in the interest of fair play and sportsmanship, and to ensure that all competitors have an enjoyable competition. In the event of ambiguity, the judges' interpretation of any clauses of the rules shall prevail.