IEEE Ottawa Robotics Competition
Compétition de robotique d'Ottawa d'IEEE

Search and Rescue Challenge
Last Revised: February 28, 2020

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Disclaimer

It is your responsibility to read and understand this document on a regular basis because we may update it from time to time.

If you have questions, please contact our Arduino Team at orcarduino@gmail.com.

Search and Rescue Challenge

Many accidents can occur on mine sites worldwide, one of them being cave-ins. These can be very dangerous as a result of the conditions such as restricted escape options, the potential lack of oxygen and confined spaces.

In these cases, the mine rescue team needs to assess the situation quickly and carry out a site survey. Your challenge is to program an unmanned robot to search through a mine and to assist the leader of the mine rescue team to identify all the injured miners different and find an exit. In the case of our challenge, the maze will represent the mine and the different colored "flags" will represent different injured miners.

Challenge Rules

1. Each team must come to the contest area at the start of the challenge. Once the contest starts, teams are prohibited from editing their programs.

2. The robots are not allowed to make use of any Bluetooth device.

3. Each team's robot will go through the maze one at a time and the order that the teams go will be picked at random and announced on the day of the competition. Each team has a maximum of two tries to complete the maze.

4. There will be four 8x8 cm colored flags randomly placed around the maze; one red, one blue, one yellow and one green. The goal is for each team to find as many of the flags as they can and communicate the colors of the flags that were found using an audio signaling device.

5. The robot will be placed at the start of the maze and timing will start when the team captain starts the robot and stop when the robot reaches the finish line at the exit of the maze.

6. Each robot will go through the same maze and will be given a maximum of 5 minutes to go through the maze.

7. If a team's robot gets stuck in the maze at any point (i.e. if the robot is no longer moving and/or if the robot is still moving back and forth but not going anywhere), the robot will be given a minute to get back on track. If the robot remains stuck, each team gets the chance to restart the maze ONCE.

8. Your team must submit a fully-costed BOM of $150 or less, including shipping to orcarduino@gmail.com by **11:59 pm on May 17th**. Your robot will be inspected on competition day.

Judging & Scoring

1. All teams must stay at the competition area for the entire challenge.

2. There will be judges recording the time it takes each robot to complete the maze as well as the number of flags found.

3. Prior to the challenge, each team must indicate to the judge their audio signals for each flag color.

4. Each team's robot has a maximum of 5 minutes to complete the maze. If the robot is unable to complete the maze within this time, a time of 5 minutes will be recorded.

5. The winner of the challenge will be the team who scores the highest when the three judged aspects of the challenge are summed. The first judged aspect is the time to complete the maze, the second is the number of flags the robot was able to find within the maze and the last aspect is the mark received on the interview.

6. Decisions made by the judges are final

Search and Rescue Challenge Diagram

The maze will be 150 cm x 140 cm x 15 cm. The image below shows where each robot will be placed at the start of the contest
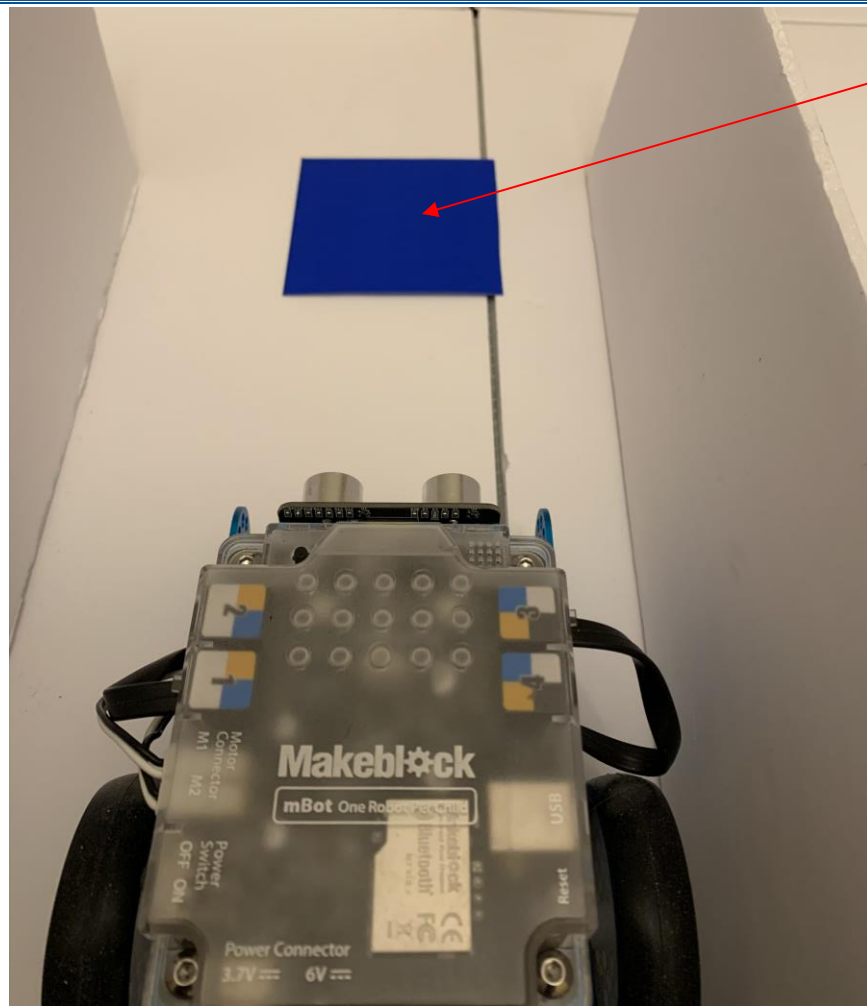
Colored flags will be placed on the floor of the maze so that the robots go over it.

The maze will be covered on top and would be dimly lit as a result of this to simulate the darkness of mines.

The timing for each robot will be taken once its front most part crosses the exit of the maze.