Simon Fraser University
School of Mechatronic Systems Engineering
MSE110 Mechatronic Design I

Project – Maze Solver

Demonstration Date: Tuesday July 31st 2018

Overview
This competition demonstrates a robots ability to navigate through a simple maze.

Challenge Objective
Each CR (mouse) must search through the maze to find the cheese and then return home through the shortest path.

Trial Procedure
All mice are placed into the competition zone at the beginning of the competition. The maze is unveiled once all the mice have entered the zone. A random process will be used to determine the order in which the trials will be conducted. For each trial,

1. The mouse is placed in the home position given to the team 1 minute before competition start.
2. The mouse must wait for the start signal and then may begin traversing the maze after sounding a 300 Hz tone for 2 seconds.
3. The mouse must sound another 300 Hz tone for 2 seconds when it believes that it has reached the cheese.
4. The mouse must begin its journey back home using the shortest way after sounding the tone.

Notes
- The Starter may pick-up the mouse and return it to the home position if the mouse encounters an unrecoverable fault.
- Each team is allowed a maximum of three restarts.

Definition of Terms

- "mouse"the competing robot (CR).
- "cheese"the cell in the top left corner.
- "home"the cell in the bottom right corner.

The Arena

The maze is constructed from a 4 x 6 grid of cells. Each cell has an inside dimension of 8 7/8". The wall of the maze are 6" high and have a thickness of approximately ½". The CR starts at cell A and finds the cheese at cell B. The maze is designed so that it contains a unique solution path. There will be many paths that lead to dead ends and the maze will contain a single loop that is not on the solution path.

The Following figure is an example of a typical maze. This is not the maze that will be used for the trials.