Micromouse

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Background
The nature of the problem is to find a specified object in a maze of M x N square units and to calculate the fastest route to the goal from its starting location. The mouse will keep track of its location as it discovers walls in its exploration. Upon reaching the goal, the mouse will perform additional exploration of the maze until it has found the shortest route from the start to the cheese. Once the optimal route has been found, the mouse will run that route in the shortest possible time.

Goal
Design and build an intelligent robot that can navigate its way from a specified location (start) to the center of the maze. The intelligent robot will also calculate the fastest route to the goal once it has finished mapping the maze.

Robot Design
- Digital Sensors
- Analog Sensors
- Wheels
- Motors
- Battery
- Microcontroller

System Break-down
The mouse will be mainly driven by its sensors. Based on the sensor readings, the mouse will act accordingly to change its speed and direction.

Algorithm
Flood Fill algorithm
An algorithm that determines the area connected to a given node in a multi-dimensional array. When applied to the maze, the mouse will map out all the area that is reachable to its current location. The mouse will then save all the discovered route to find the optimal / shortest route to the goal.

Applications
- Cave exploring robot
- Self-driving automobile
- Unmanned aerial vehicle

Team
Alvin Perlas
CSE - Hardware
(Lef)

Irvin Huang
EE - Project Lead
(Middle)

Timothy Chan
CSE & EE - Software
(Right)

Parts
- Analog Sensor ($11.95 ea)
- Digital Sensor ($6.95 ea)
- 100:1 Micro Metal DC Motor ($16.95 ea)
- Wheel & Encoder ($39.95 ea)
- Orangutan SVP 1284 ($99.95 ea)
- Pololu Robot Chassis ($5.95 ea)