Idea:

A remote-control car that avoids touching any obstacles

Concept:

The idea I want to explore is the combination between people and algorithm. In real world, people and machine can help each other to build really fantastic stuff. My algorithm stimulates a car-driving situation where human drives the car in a normal condition and algorithm prevents traffic accident in a dangerous condition.

Possible Technology

* Sensor

Ultrasonic

Line detector

Lidar (hard to implement)

An Octopus 8 chip for connecting the handle with the microbit

A handle that can report a x and a y value

* Motors

Maqueen

* Control systems

2 microbit chips, one for the remote control and one for driving the car

Success Criteria:

1. Ultrasonic Sensor:
2. Avoid obstacles
3. Sense objects
4. Report back a theta and a distance
5. Know its relative angle and position to the wall
6. Remote control
7. Move front, back, turn left and right
8. Move with the command of the handle
9. The user can command the robot through using the handle
10. Microbit chip
11. Use the angle and the distance to calculate its relative position
12. Use it relative position to determine where it should go
13. The best way is to use derivative so that we can use the algorithm along with the remote control, but the remote control has less contribution
14. Use the PID controller to achieve goal 3
15. Main Goal

To go as smooth as possible so the user can solve the maze as fast as possible.

Benchmarks:

1. Do a linear PID first
2. Try to combine the linear PID with the remote control

Resources:

<https://www.youtube.com/watch?v=2gPO7yVQys8>