ECE 1001 1002 Introduction to Robotics
Lab #13: EscapeBot

Objectives

Escape from various enclosures by various means

Introduction

You will need an Arduino robot which is able to drive around on the table by itself.

You will need:

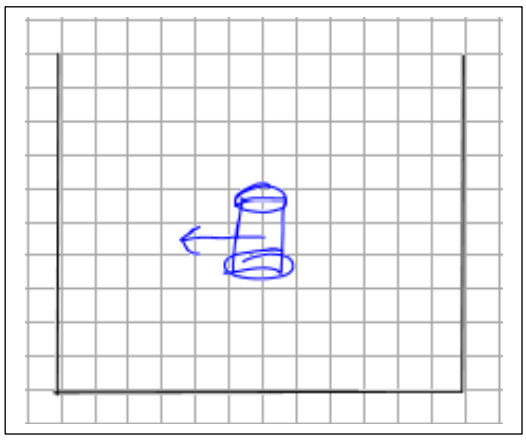
Ultrasonic sensor.

Requirements

1) Escape a 3-sided box.
The Bot will be placed in the middle of the 3-sided box facing one of the three walls/sides. Your bot must make four pre-programmed 90-degree turns – i.e. measure, turn, stop, measure, turn, stop, etc. The Bot will measure and save the Ultrasonic distance for all 4 sides and display them on the LCD and wait 2 seconds to read the values. The Bot will then turn continuously to the side with the largest distance and drive out of the 3-sided box without hitting the walls.

Distance1	Distance2
Distance3	Distance4

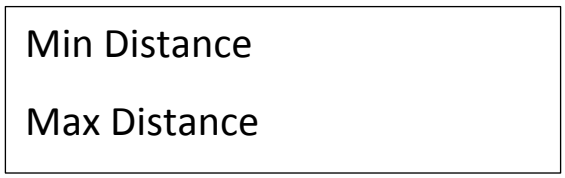
LCD Display



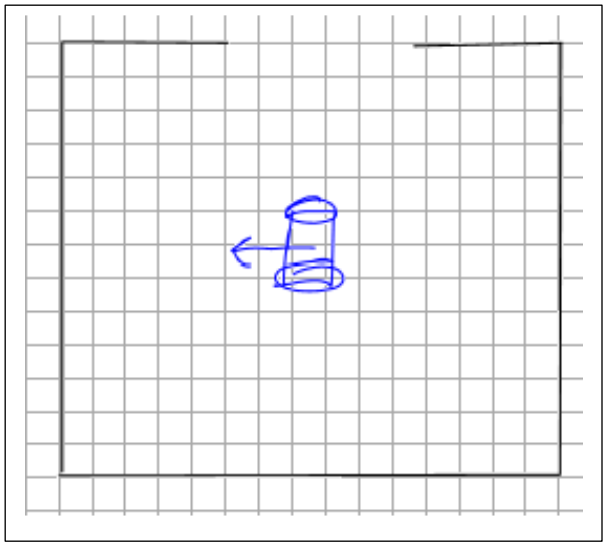
Three-Sided Box

2) Escape a 4-sided box with small opening.

The Bot will be placed in the middle of the 4-sided box facing an arbitrary direction. Your bot must make multiple pre-programmed step-turns – i.e. measure, turn, stop, measure, turn, stop, etc. Make at-least 10 step-turns – i.e. step-turn about 36 degrees. You can do smaller step-turns. The Bot will measure and save the Ultrasonic distance values after each step-turn and display the max and min values on the LCD. The Bot will then turn to the side with the largest distance and drive out of the 4-sided box without hitting the walls.



LCD Display



Four-Sided Box

Report

Turn in your code and submit your signoff sheet by the deadline.

If you have this report to write, submit it to the report portal by the deadline