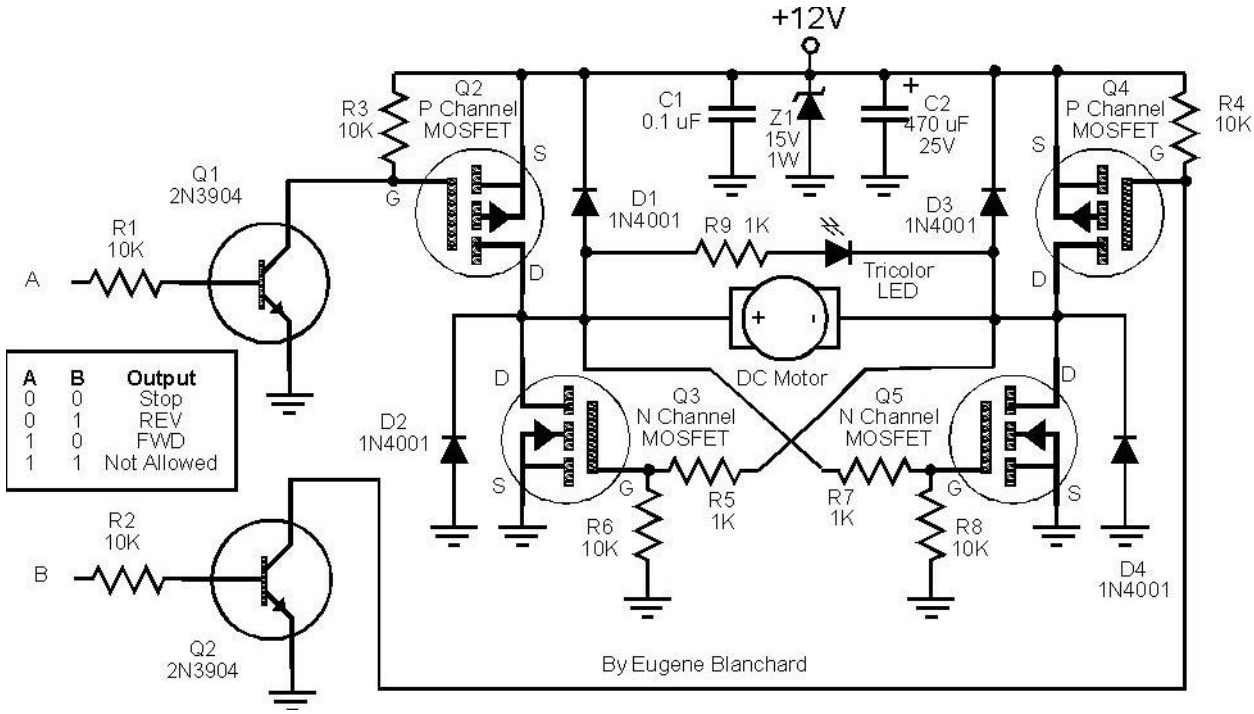
Project Report

Laptop Controlled Robot

Robot is controlled from a custom PC software and is able to detect, lift and drop object at an elevated place

Mosfet Motor Driver

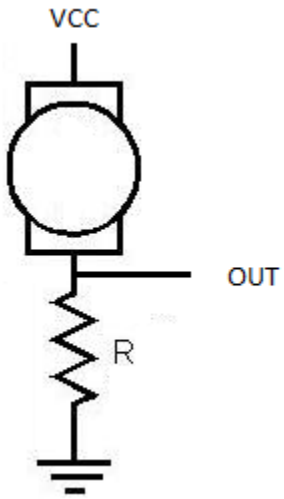
Mosfet motor drivers are extreamely reliable and can handle currents like 15A and above(depending on mosfets and heat sink)



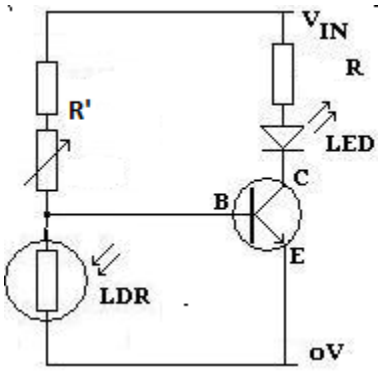
A slight variation of above Mosfet Motor Driver is implemented. The one used in robot uses additional protection circuitry to avoid not allowed state.

Power Supply Board

a) Sensors(Limit Switches and Object Sensor)

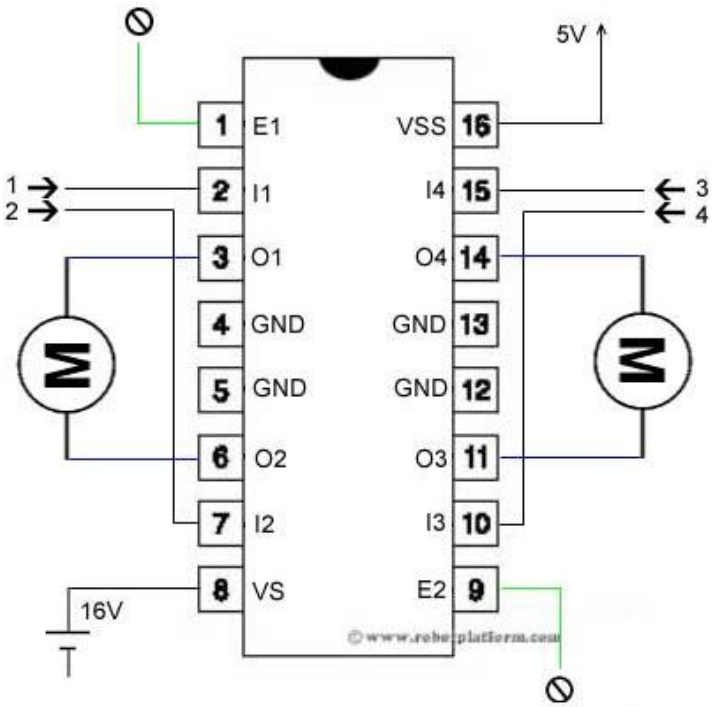


Above circuit shows the design for single limit switch



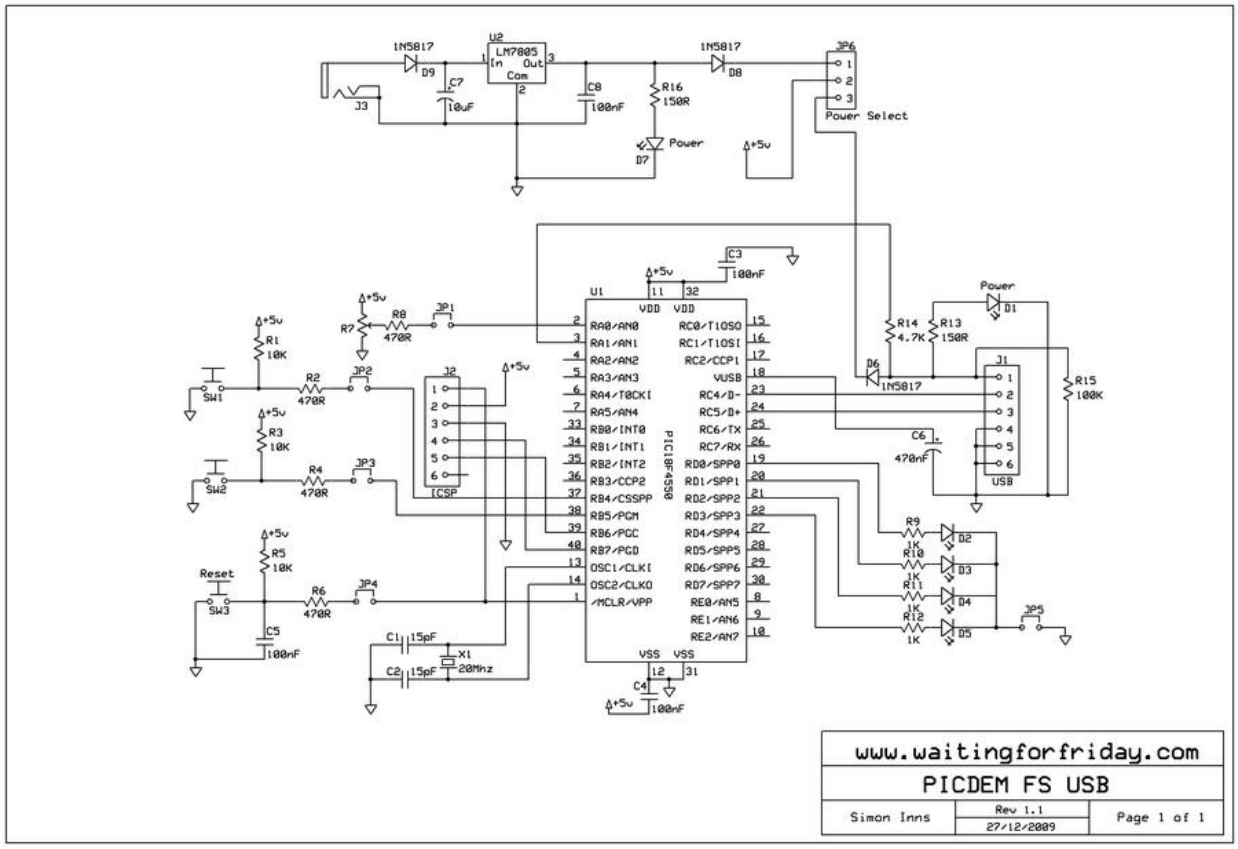
Design of Object Detector Circuit

b) L293D Motor Driver



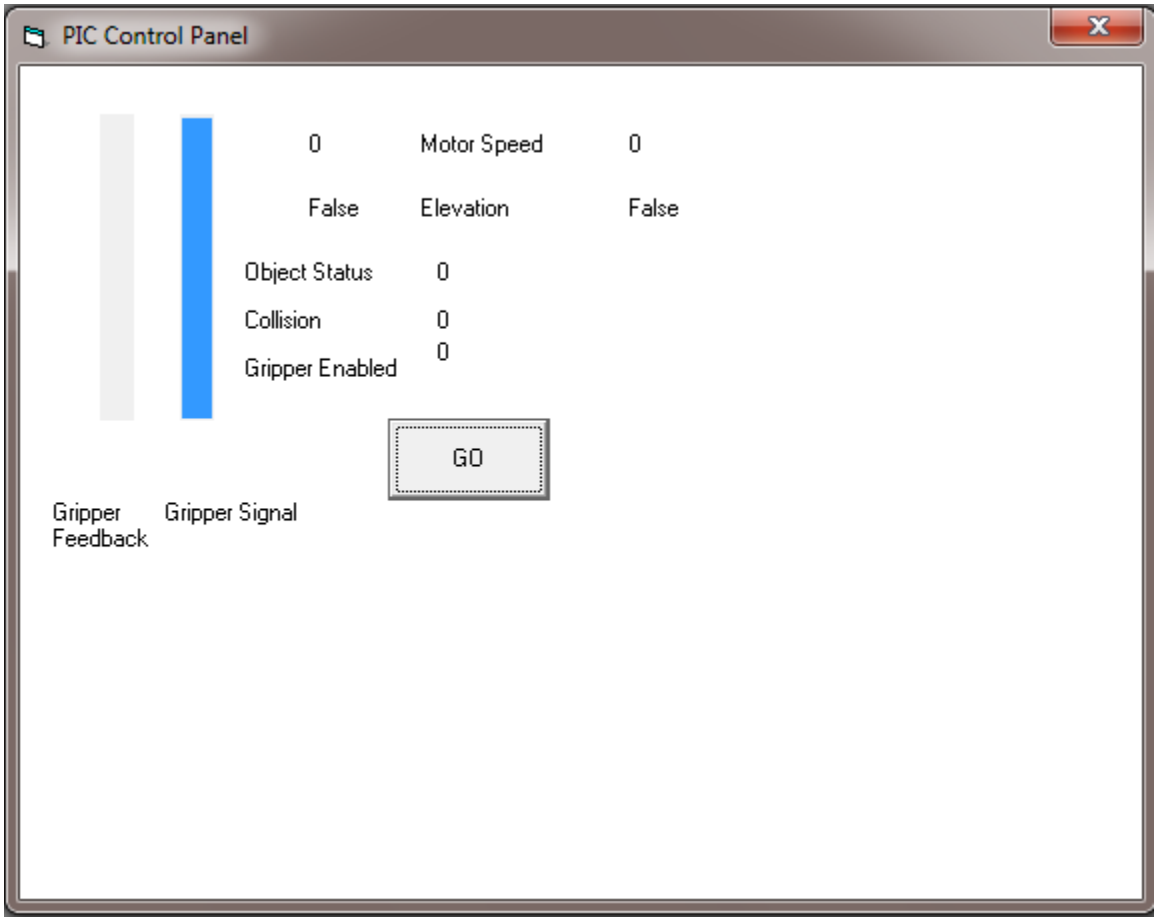
→	Input from Microcontroller : 4 Inputs - I1, I2, I3, I4
⊘	Enable Pins : E1 & E2
M	Output to 2 Motors : O1, O2 & O3, O4
GND	Connect to microcontroller ground

Micro Controller Board



A Simplified version of above schematic is used as development board for the robot. It lacks some functionality of above schematic but works fine our purpose.

PC Software



Gripper Signal-indicates Refrence positon of gripper

Gripper feedback : feedback from variable resistance.

Object status: 1 means laser not obstructed

Collision : 1 means robot has collided with object

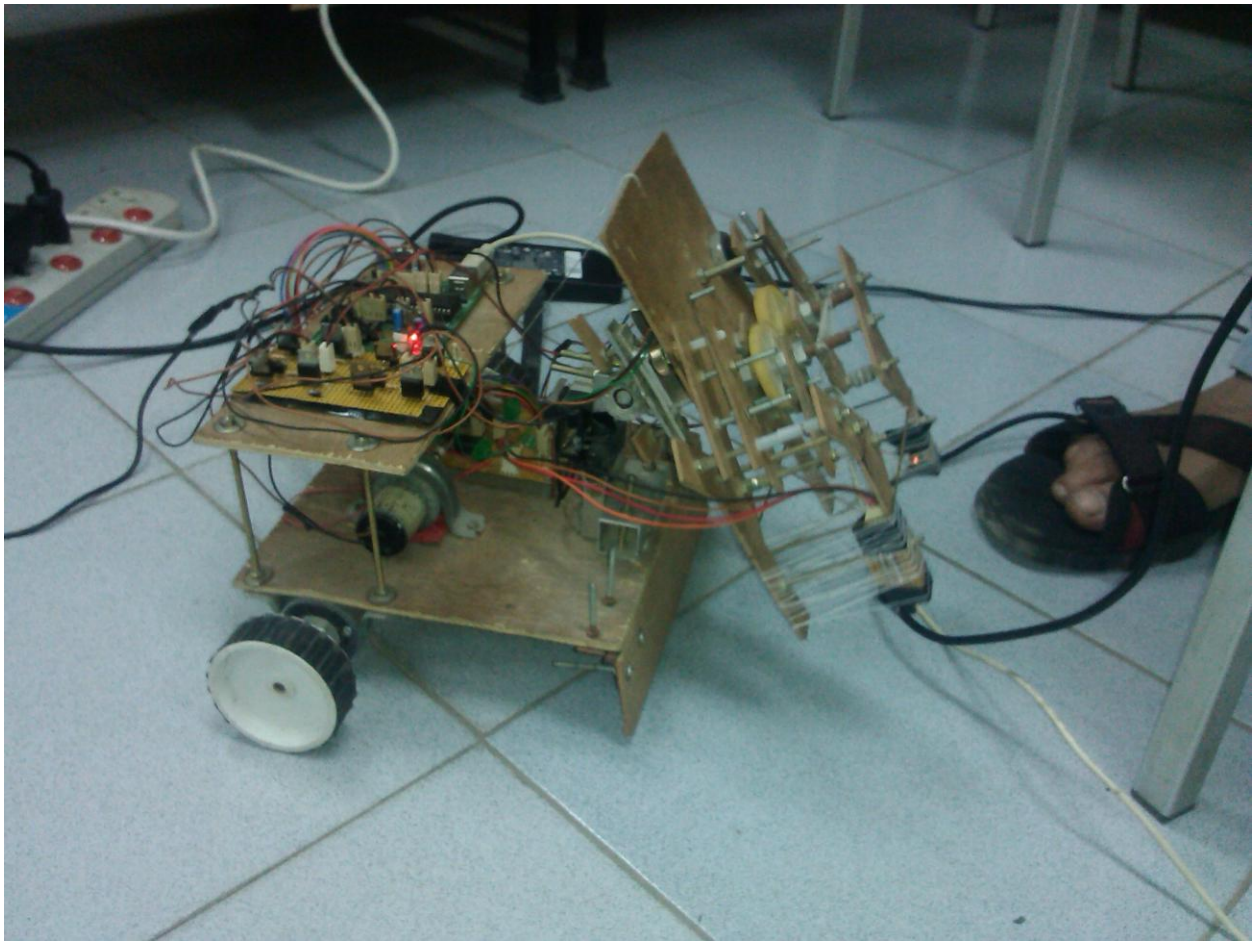
Gripper Enabled : 1 : enabled ,0 : disabled

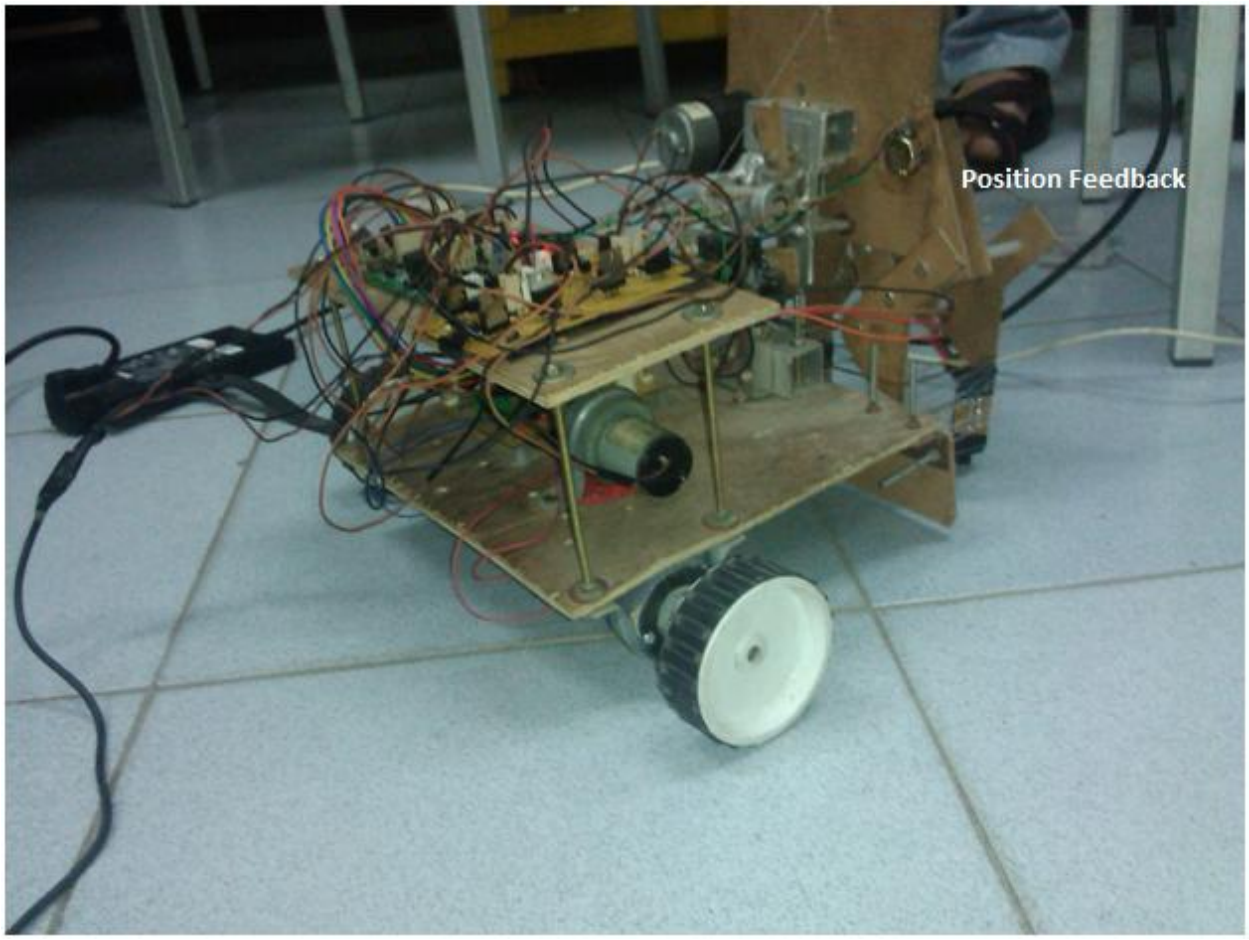
[Precaution : Gripper needs to be disabled after object is gripped since motor will not be able to gripper will not be able to follow the reference and motor will break.]

Elevation : indicates the direction up down movement of gripper.

Motor Speed : indicates the direction and magnitude of rotation of left motor and right motor respectively.

Final Result




Position Feedback