Scientific Literature

For this project we have to use many software for designing PCBs, schematics, Coding and Hardware that are not familiar to us. We studied about schematic and PCB layout software while we worked on them.

We referred data sheets and internet articles to have an idea about the components we used such as Pic microcontroller, TCRT5000 sensor, L293D motor controller, LM324N comparator, LM7895 regulator.

While coding we used MPLAB XC8 compiler. First we tried with simple codes and we simulated them in proteus like led blinking, switching circuit. Next we we got the PWM programme from internet and simulated it with proteus to know how it works.

Microcontroller

It is a compact size controlling system that can be applied for various applications. It is most advantageous because of the size and the amount of current it draws.it can be used with both analogue and digital I/O. We use PIC 16F877A microcontroller and that is the key component in our device.

IR sensor

We use TCRT5000 sensors. It consists a diode and a photo transistor which are placed closely. The light emitted by LED absorbs by the surface when the surface is black. The is no change in photo transistor. But when surface is white whole light emitted by led reflects on the surface and it detects by photo transistor. Biasing of the transistor changes by this and a current pass through the collector. it changes the output voltage value (High or low according to circuit)

Motor controller

We used L293D motor controller because it draws small current and works with small supply voltage. The motor controller can control 2 motors at a time in both directions. We uses motor controller to control the motor with the small digital outputs from the micro controller. It consists four op amps for its operation.