

# Progress Presentation-I

e-Yantra Summer Internship-2015  
PC CONTROLLED TWO WHEEL BALANCE BOT

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Ramiz Hussain  
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Mentors: Piyush Manavar, Saurav Shandilya

**IIT Bombay**

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# Overview of Project

## Progress Presentation-I

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Ramiz Hussain  
Devendra Kumar  
Jangir  
Mentors: Piyush  
Manavar, Saurav  
Shandilya

## Overview of Project

### Image

### Overview of Task

### Task Accomplished

### Task Accomplished

### Task Accomplished

### L293D Interfacing

### Task Accomplished

### CHALLENGES FACED

### Future Plans

### Thank You

- **Project Name** :PC controlled two wheel balanced bot
- **Objective** : To make a two wheel balance bot which can balance itself without any extra support.
- **Deliverables**: Two wheeled balanced which can balance itself and move according to the given PC commands.

# Image

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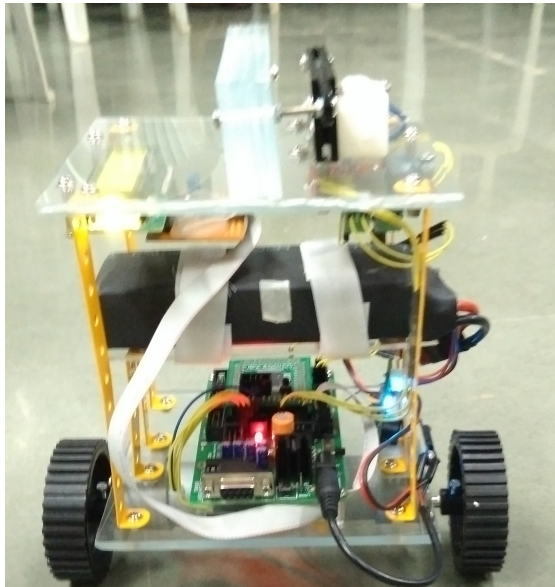
L293D Interfacing

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- 1 Selection of Components, Sensors and Actuators- week 1
- 2 Design and fabrication of bot - week 1
- 3 Designing of circuit, power management and interfacing - week 1
- 4 Algorithm and code implementation for balancing week 2 and 3
- 5 Algorithm and code implementation for locomotion via PC communication week 4 and 5
- 6 Analysis and documentation week 6

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Task  
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Task  
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Task  
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## TASK1: Selection of components, sensors and Actuators

- 1 DC Motor(300 RPM)
- 2 Linear Actuator(150 RPM)
- 3 L293D and L298N Motor driver
- 4 ATmega 2560 Development board
- 5 16x2 LCD Display
- 6 GY-80(Accelerometer and Gyroscope module)
- 7 3 cell Li Po battery 11.1 Volts
- 8 Xbee module and adapter

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Task Accomplished

Task  
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## TASK2:Design and fabrication of bot

- 1 Fabricating materials
- 2 Weight Shifting mechanism
- 3 Center of gravity
- 4 Protection from falling

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## TASK3:CIRCUIT DESIGN,POWER MANAGEMENT AND INTERFACING

- 1 L293D and L298N Interfacing
- 2 LCD(16x2)
- 3 GY-80(ADXLS345 and AGD8) Interfacing

# L293D Interfacing

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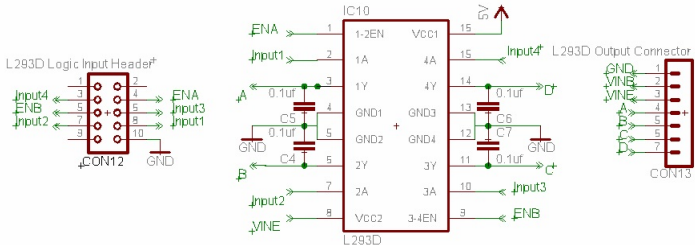
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# L298N Interfacing

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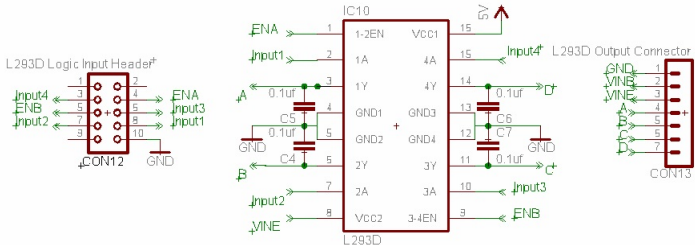
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# LCD Interfacing

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Image

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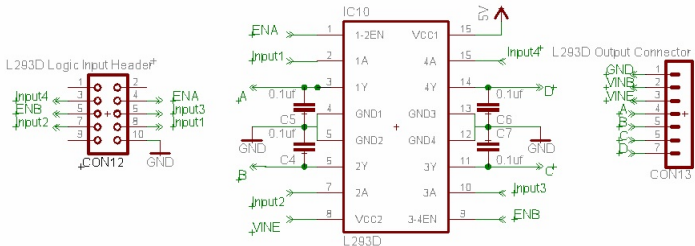
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## TASK4:ALGORITHM AND CODE IMPLEMENTATION

- 1 I2C protocol for accelerometer and gyroscope
- 2 PWM(10bit Fast PWM or Phase Correct PWM) for controlling velocity of motors
- 3 Timers for PWM and PID calculations
- 4 PID Algorithm for balancing the bot

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- Maintaining Center Of Gravity(COG) while fabricating the bot
- Understanding and Implementing I2C protocol
- Converting accelerometer values to 10 bit mode and to angles in degrees
- Erroneous reading from accelerometer
- PID tuning

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- PID implementation for balancing and moving the bot
- Integrating gyroscope values using Kalman or complementary filter
- Xbee interfacing

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