

# Work Report Summary

**Date Assigned:** 22nd June, 2019.

**Date Submitted:** 15th December, 2019.

**Name:** Abhishek Deshpande

**Subsystem:** Coding

## **Robocon Progress:**

- Established I2C communication between a Raspberry Pi and an Arduino. Started with basic integer value sending. Worked up to sending and receiving arbitrary strings defined in the code.
  - Arduino sketch:  
<https://github.com/RoboManipal-9-0/Coding/blob/December-2019/Second%20Years/Abhishek/Arduino/i2cArduinoSlave/i2cArduinoSlave.ino>
  - Raspberry Pi Python Script:  
<https://github.com/RoboManipal-9-0/Coding/blob/December-2019/Second%20Years/Abhishek/RaspberryPi/arduinoI2C.py>
- Used I2C communication to retrieve sensor values from sensors connected to an Arduino to the Raspberry Pi. Code currently has five sensors, 2 ultrasonic sensors, 2 LSAs and an IMU. The code also supports sending and receiving of negative and/or decimal values even though I2C only supports only positive integer arrays being sent/received.
  - Arduino sketch:  
<https://github.com/RoboManipal-9-0/Coding/blob/December-2019/Second%20Years/Abhishek/Arduino/i2cSensorInterface/i2cSensorInterface.ino>
  - Raspberry Pi Python Script:  
<https://github.com/RoboManipal-9-0/Coding/blob/December-2019/Second%20Years/Abhishek/RaspberryPi/sensorInterfaceI2C.py>
- Worked with Sanketh to test and implement PID-control on the Try Bot along with Bluetooth/PS2 Controller controlled motion. Also helped juniors work with the bot and test out their various codes for the multiple sensors on the bot.

<https://github.com/RoboManipal-9-0/Coding/blob/December-2019/Second%20Years/Sanketh/BluetoothControl/BluetoothControl.ino>

<https://github.com/RoboManipal-9-0/Coding/blob/December-2019/Second%20Years/Sanketh/PS2/PS2.ino>

- Implemented on-point rotation and about-a-point rotation using buttons on the PS2 controller and the Bluetooth control app. Testing of the same is not complete due to space constraints.

### **Student Project Fair:**

- Code was written and tested for gesture-controlled bot – It is a bot where the bot moves based on IMU values. If the hand is tilted forward, the bot moves forward. If it is rolled to the left, it moves to the left and so on.

<https://github.com/RoboManipal-9-0/Coding/blob/master/Second%20Years/Abhishek/Arduino/gestureControlledBot/gestureControlledBot.ino>

## **Issues Faced**

- Issues Faced:
  - I2C Communication was timing out originally, the output sending on the IMU was reprogrammed to a plain text output so that it could be sent without much processing.
  - Value updation was very slow on the Arduino side. It was fixed by adding a timeout value to the pulseIn() method for ultrasonic value update method.
  - The SSH terminal was lagging severely when sending large amounts of data. This was fixed by simply connecting the Raspberry Pi to a wall power supply.
- Current issues:
  - Around-a-point rotation could not be tested sufficiently because the plywood testing area is too small to trace a circle on. It was able to trace a part of the circle within the bounds of the testing area. To confirm the working, the testing area needs to be bigger.