Technoguys – Data logging and Transmission

Progress Report

As you know, our project is to provide real time transmission of data of SAE vehicle. This report is to provide a summary of our work.

Our project is to log the data from the sensors (i.e. accelerometer, hall effect sensor, temperature sensor) these data will be collected from the sensors ADXL345, Magnetic hall effect sensor module (for temperature sensor we were going to use PT1oo but the price for the interface between is Raspberrypi and sensor is approximately 1000 rs so we just found a better option to use MAX6675 Thermocouple which has required range of temperature but, due to shipping delay we did not get the sensor and other sensors which were available did not have that range of temp which was required). The collected data from the sensors is sent to the thing speak server which will contain the all the parameter.

We have set the range of ADXL345 till 2G as that would be sufficient, and then it would output values in X, Y, Z axes. For the hall effect sensor, we have used a magnet which would be attached to the wheel and sensor would be just near it and as it passes in front of the sensor it will give output as one or we can say as a pulse and we used the digital signal or digital output lapse between 2 pulses and the calculated the RPM and the speed, and the algorithms will be easily understood form the code give at the end which we have modified according to our need. Then these values are published on the THINGSPEAK.

While uploading on THINGSPEAK we were having 2 possible ways to upload the data which are by 1) REST API or 2) MQTT API but we did a bit of research and found out that the REST API method is a bit slow and is also not secure way of transmission so we have used MQTT API for transmission of data. The data is published to ThingSpeak MQTT broker “mqtt.thingspeak.com” which would check the channel ID and the redirect it to our channel. The which we have sent is consisting of 6 fields “X axis, Y axis, Z axis, Rpm, Speed, Distance”. Then THINGSPEAK would provide graphs of the received values. For logging the data we first thought of using pandas library in python and create a CSV file locally but then we just directly used the data on the THINGSPEAK server and then we could directly export the CSV to cloud.

We are getting all the outputs and results mostly as expected and are just doing the final finishing touches to remove some garbage values form output and some technical problems.