
EE/CprE/SE 492 BI-WEEKLY REPORT

4/2 - 4/16

Group number: 32

Project title: Development of a Smart Sensing System for Road Performance Data Collection

Client &/Advisor: PROSPER - Bo Yang & Halil Ceylan

Team Members/Role: Victor Guerra, Ethan Young, Michael Petersen, Shlok Singh

o **Weekly Summary:**

This week we worked mainly on fine turning and making sure everything worked together as it should. The backend is all strapped together and functioning, now we just need more testing to ensure it continues to behave as it should. Making sure the data is correct will be challenging for us and is top of our list of pending issues. Unfortunately with how this semester has played out for everyone, this will be impossible to do. On a brighter note, we have gotten an Arduino Mega to replace the Uno for more memory space as we just could not get everything we needed to fit on the Uno.

o **Past week accomplishments**

- We have replaced our Arduino Uno with the Arduino Mega. This solved various issues we faced while testing, and as a result we have much more on-board memory for program code.
- Tested the database integration with the backend iri files that were implemented in the previous report.

o **Pending issues**

- Get comparison data from laser rig
- Collect data on anomalous road features like railroads
- Accelerometer data while the vehicle is on an incline/decline is not accurate. Can be solved using IMU's magnetometer assuming additional processing power doesn't conflict with other processes.
- Dynamic accelerometer positioning code is still too large
- GSM still seems to be unviable

o **Individual contributions**

Name	Individual Contributions	Hours past 2 weeks	Total Hours
Victor Guerra	IRI Calculation	6	122
Ethan Young	IRI Calculation, Arduino Testing	12	144
Michael Petersen	Arduino Testing	12	134
Shlok Singh	Server Preparation/Development	12	136

- Victor Guerra
 - Investigating accelerometer to profile filtering methods, results comparison
- Ethan Young
 - I tested quite a bit as well as moved everything to the actual cloud server. This allowed me to test in the “production environment”. I also tested storing into the database which I had to change around a couple of times. I also changed a bit to the integration calculation for the accelerometer data to profile. All of this needs even more work as we continue fine-tuning and rigorously test the back-end.
- Michael Petersen
 - I replaced the Arduino Uno with the Mega that has more on-board memory for program code and libraries, and tested modules with the new device.
- Shlok Singh
 - working on accelerometer dynamic positioning and trying to get the GSM issues figured out, GSM is on the backburner, not much documentation.

o **Plans for the upcoming week**

- Complete Arduino testing
- Test IRI calculation with data from Arduino
- Apply Tilt compensation to accelerometer readings using magnetometer
- Accelerometer to profile anomaly filtering testing
- Continue rigorously testing the back-end features especially with using the cloud server and not just testing locally.

o **Summary of weekly advisor meeting**

- Did not meet with advisor previous week