sdmay19-16: Smartphone App to Detect TwD (Texting while Driving)

Week 9 Report
November 12 - November 17

Team Members

- Kristina Robinson — *Project Lead*
- Andrew Knaack — *Lead Designer*
- Lucas Golinghorst — *Test Engineer*
- Sara Mace — *Meeting Scribe*
- Derek Clayton - *Report Manager*
- Ryan Baker - *Lead Architect*

Summary of Progress this Report

The focus of this reporting period was completing the revisions of our design document while executing some pressing matters involving our modules. Our primary goal was to get as much work done on the modules and design document as possible, before having to dedicate the next reporting period to working on our final presentation. An investigation on whether phone handling could be done with magnetic sensors was begun by some of our members. A testing strategy was developed, per the requirements of the design document, which will also drive our testing plan in the future. Some members delved further into OpenCV, starting work on image processing programming. The centripetal acceleration tests were conducted and data collected to support the use of it as a module in our application.

Pending Issues

- Final presentation must be completed.
- Design Document revisions must be completed.
- Issues in spelling module need to be worked out.
- Phone handling with magnetic sensors must be further investigated.
- OpenCV image processing software for sample images needs to be completed.
- Ways to minimize image processing time for machine learning must be investigated.

Plans for Upcoming Reporting Period

- In the next period we will all focus on the final presentation. We will also finish revising the design document and project plan. This, for the most part, will wrap up our work for the semester, but this is subject to change depending on the results of our final presentation and if there is time for eliminating smaller goals. Everyone will be expected to contribute to the final presentation.

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Kristina Robinson	Looked into magnetic sensor data to see if this sensor will give us better data to use for phone handling. It looks like it will so this is the next step for determining if phone handling is still going to be a useful	6	58

	component. Also put together template for final presentation. This upcoming week I will work on putting together the final presentation with the team.		
Andrew Knaack	Contributed a lot of writing to the revision of the Design Specifications and Proposed Design sections. Successfully implemented Shared Preferences into the application to store texting speed averages long-term across multiple sessions. Continued to try working around spelling module issues, but no success still.	8	70
Lucas Golinghorst	Developed the testing strategy for the entirety of the application: unit, integration, system, and acceptance. Condensed this plan and used the main points to complete the functional/non-functional sections of the design document. Learned the basic syntax of Tensorflow software for image processing after learning the OpenCV software for the last report. Collected sample images and began work on making a sample image processing program with Tensorflow.	8	60
Sara Mace	Researched more into the gyroscope data. I analyzed the data to see if there was any patterns. I then also took measurements of the magnetic sensor at the suggestion of Kristina. I then worked on writing revisions of the Design Document. I worked on writing about implementation issues we have had as a group on the project.	6	59
Derek Clayton	Conducted centripetal acceleration experiments, 30 turns for 30 trials, plus acceleration calculation using v^2/r. Analyzed data to determine patterns that would validate the use of centripetal acceleration calculations as a module. Graphed data to help with data visualization. Concluded that the use of centripetal acceleration is viable. Worked on the Analysis portion of the Design Document.	8	59.5
Ryan Baker	Learned the finer points of OpenCV software and looked a many implementation examples of android implementation of OpenCV. Also looked into image databases that would be	7	58.5

	helpful for our project. Looked into how to shortcut training machine learning by using existing classes to save weeks worth of training.		
		Total Group Hours:	365

Gitlab Activity Summary

Andrew implemented shared preferences to store texting speed and sample count over multiple sessions, for a long term. (3 changed files, 72 additions, 18 deletions) 11/15/18