EE/CprE/SE 491 WEEKLY REPORT 5

11/12/2019 – 11/20/2019

Group Number: 17

Project Title: Development of an App for Android Smart Phone for Pavement Roughness Estimation

Client/Advisor: Halil Ceylan

Team Members:

Tanner Dempsay – Communications Manager	Joe Van Treeck – Data Manager
Christian Royston – Git Master	Justin Kuennen – Web Master
Greg Starr – Logistics Manager	Kyle Eckrich – Report Manager

Weekly Summary

- IRI Algorithms
  - We met with Bo Yang, a member of the civil engineering research group that we are working with to discuss the formal IRI calculation using the quarter-car model.
  - Tanner and Joe worked on the mathematics behind the conversion from the differential equations to the final value, which is the pavement profile
- GPS Route Mapping
  - We are working on updating the demo app to plot the complete path of the user's route. Currently, it only draws a line between the start and end. We want to see every datapoint that we take during the route
- Design Document Updates
  - Our client has reviewed our design and made several comments on areas for improvement, such as the reference and schedule sections. We have improved those areas and fixed the issues discussed.
- Server Updates
  - The route class on the server has been updated to hold the characteristics of the car being driven. These values are used as coefficients in the IRI calculation and vary between different vehicles. Default values have also been implemented if the user has not specified what car they are driving.

Past Week Accomplishments

- Formal IRI Calculation Progress
- Design Document Updates (v2.1)
- Server uses Coefficients of Current Car

Individual Contributions

Team Member	Contributions	Hours This Week	Cumulative Hours

Tanner Dempsay	Updated design document for references and fixed Gantt Chart. Researched state-space representation for using quarter-car model to calculate IRI	17	53
Christian Royston	Working on user interface for Android application	4	26
Joe Van Treeck	Researching past IRI implementations used to calculate profile from acceleration.	14	48
Justin Kuennen	Working on GPS library for Android	6	24
Kyle Eckrich	Updated design document with more background on IRI	7	21
Greg Starr	Started working on route plotting on top of Google Maps view for Android	10	30

Plans for the Upcoming Week

- Design Review Presentation
  - Start working on the presentation and practicing our presentation
- Final Design Document
  - Will use feedback from document review meeting to improve our draft.
- Implement Formal IRI Calculation