

SE 491-sdmay19-27

Smartphone Tracking App for Microsoft HoloLens

Week 2

09/08/18 - 09/14/08

Client: Optical Operations

Faculty Advisor: Daji Qiao

Team Members:

Ben Holmes - *Android Development*

Anthony House - *Website Development/Security*

Ryan Quigley - *Database Admin*

Jose Lopez - *Website Development*

Travis Harbaugh - *Hololens Development*

Cory Johannes - *Report Management*

Summary:

- Assigned tasks to members of the team
- Set up Jenkins and https
- Finished bios for site
- Researched footstep tracking
- Got server setup
- Testing accelerometer for phone, graphing data
- Implemented light sensor
- Improved direction tracker

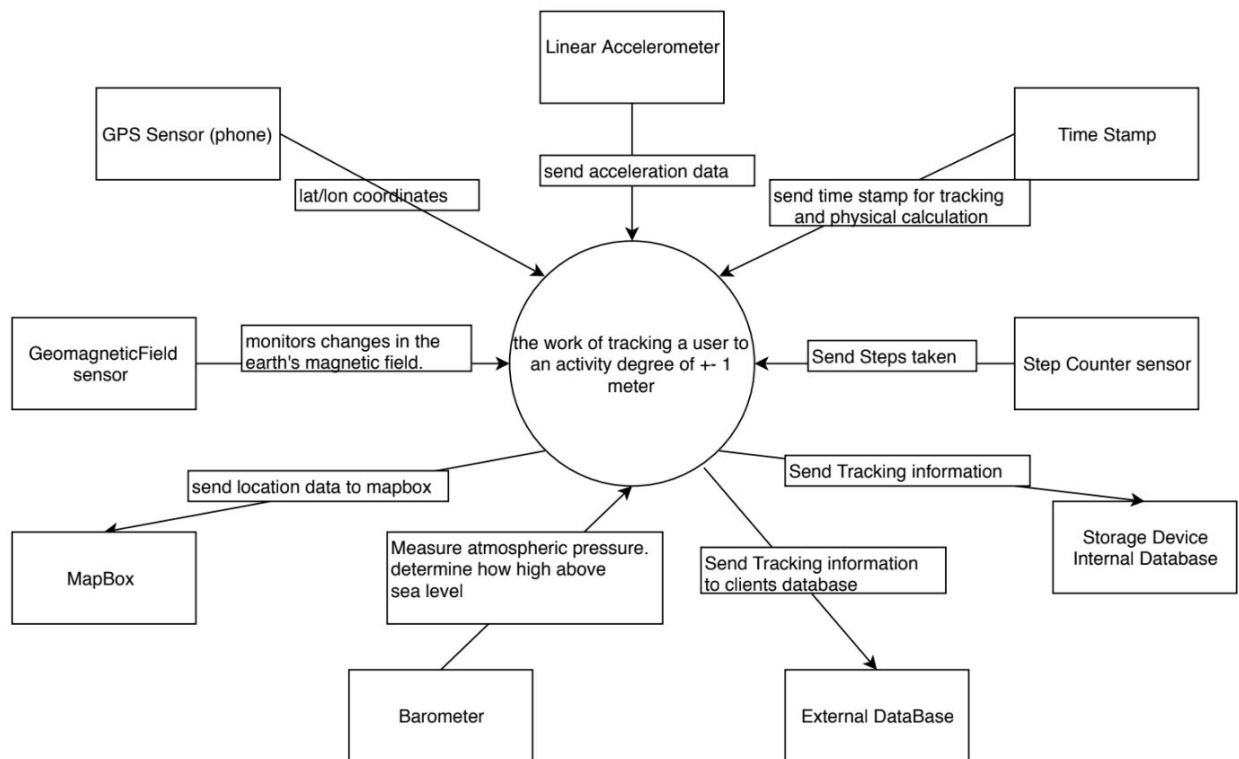
Pending Issues:

- Create data api
- Investigate redpoint positioning
- Flesh out functional and nonfunctional requirements
- Create drawings/charts
- Start collecting data
- Determine scope of project
- Continue experimenting with accelerometer and other available sensors

Past week accomplishments

- Travis Harbaugh - Updated context Diagram, wrote Functional/Non-Functional requirements, Defined scope, Created an Ios application, an android application, and Unity application for HoloLens
 - Updated the context diagram
 - Redefined the events and its flows for the scope of our project.
This was used to help write the functional/non-functional requirements for this weeks meeting.

Context Diagram



- Created the Scope
- Created Functional and Non-Functional requirements
- Created an Ios application
 - Implemented Accelerometer and Gyroscope sensors on the iphone that will gather the sensors measurements.
- Created an Unity project
 - Added Mapbox SDK to project
 - Worked on moving avatars based on longitude and latitude coordinates.
- Created an Android Application
 - Implemented the Accelerometer that records a users footsteps.
 - Researching on low-pass and high-pass filters to help improve the detection on this android application.

- Ben Holmes
 - Started looking at different ways to filter the data, low and high pass filters, as well as a brief look into a Kalman filter.
 - I have an idea for relaying phone data to a computer via Bluetooth, storing collected data in files, and further using the data to create graphs with PyPlot.
 - Started working with the Light Sensor
- Anthony House
 - Assigned tasks to members of the team
 - Set up Jenkins and https
 - Got server setup
- Cory Johannes
 - Researching
- Jose Lopez
 - Research different solutions for calculating distance

Individual Contributions:

Team Member	Contribution	Weekly Hours	Total Hours
Ben Holmes	Implemented a low pass and a high pass filter on the raw accelerometer data Researched how to estimate distance using accelerometer data Implemented android phone light sensor	8	15
Anthony House	Got the server set up Got https on the server set up Got Jenkins set up with secure log in	6	14
Ryan Quigley	Built an app to test feasibility of using accelerometer data to track displacement	8	12
Jose Lopez	Research for different options of implementing a solution for calculating distance	6	9
Travis Harbaugh	Updated context diagram Created scope	10	22

	<p>Created Functional and nonFunctional requirements</p> <p>Created an Ios application</p> <p>Created an Android application</p> <p>Created Unity project</p>		
Cory Johannes	Looked into elevation detection	2	6

Plans for Next Week:

- Anthony House
 - Prepare drawings of concept
- Travis Harbaugh
 - Android:
 - I will be working on fine tuning this application that detects the user footsteps. Going to improve the the step detection by splitting up the total acceleration into user acceleration and gravitational acceleration.
 - Ios:
 - I will be looking at implemented Pedometer on the IOS device and see how the step detection compares to the android device. Also going to implement proximity sensor to detect other object and see i can use it to determine the distance to a wall in a building.
 - Unity:
 - I will be gathering a bunch of longitude and latitude coordinates of a path that a user would take walking a building at Iowa state. Then store it in a file and have the avatar walk that path on the 3d environment in unity.
 - I will be starting on the project plan and reflection assignment.
- Jose Lopez
 - I will continue to look at different solutions/options and evaluate them in comparison to each other to figure out which one suits out needs the best.
- Ben Holmes
 - Researching articles relating to:
 - Dead reckoning tracking
 - Localization through sound
 - Localization through radio waves
 - Start Collecting Data