**Meeting Minutes 4, 27/3/18, 11:00am**

**Attendees: Everyone present**

**Summary of Progress**

* **Chong:** Emailed faculties with survey, and uni-park. Hopefully will get a response by Friday. Found some documents on geofencing
* **Amala:** Found a dataset. To investigate further (suitability, use etc.)
* **Chandala:** Research
* **Bin:** Research

**Alternatives**

* Discussed alternatives
* Ruled out physical sensing/communications technologies (WSN)
* Best idea is to build an app. Two main alternatives
  + Park sharing/reservation/swapping app
  + GPS tracing/data prediction

**Proposed Approach**

* We will start off with the GPS approach
* May be scope later on to also add reservation functionality

**Functionality of the App**

* Provide an indication of business of car parking lots on campus

**Requirements**

* Historic data to build models
  + GPS traces (google)
  + Or a prototype app to collect data over a control period
* GPS tracing solution to trace congestion in real-time
  + Activity recognition algorithms

**Short-Term Priorities**

* Distributing the survey and collect responses
* Beginning data collection of GPS traces
* Investigate data modelling techniques (perhaps online dummy data sets of GPS traces) and activity recognition algorithms
* App design/building

**Survey**

* Find distribution channels
* Collect responses
* Analyse data, build simple model etc.

**Data Collection**

* Two methods
  + Google GPS traces
  + Custom app to collect data (just an app that sends GPS coordinates to server)
  + Decide on either of the two approaches (or use a combination of both), and begin any relevant research/implementation
* Find a control group of students to collect data from
  + People who drive and park at UWA
  + People who are willing to share data over the span of a couple of months
  + Incentives? How to find/reach potential volunteers?
* Collect data
* Analyse, model, infer conclusions etc.

**Investigate GPS Data Processing Techniques**

* Find data sets online
* Research relevant technologies
  + Activity recognition algorithms for GPS traces
  + Congestion measurement from GPS trace data
  + Modelling/predictive techniques
  + Any other relevant/useful/important concepts/work
* Implement technologies/algorithms and apply to data set

**App Design/Building**

* Research frameworks for building apps
* Build a shell on Android
* Explore UX and UI elements of app design
* Backend and frontend app development
* Etc.
* Also will be responsible for exploring and prototyping bay-swapping/reservation idea

**Brining It All Together (Semester 2?)**

* An app to use both historical data, trends identified from surveys, and live GPS trace data (activity recognition and congestion recognition) to report useful metrics of business to users in real-time
* Perhaps, if time permits, an additional bay-swapping functionality
* Also, something to compare travel times for public transport/alternative modes of transport vs. driving to and parking at UWA

**Task Overview**

* Everyone responsible for survey
  + Identify what information we need
  + Build appropriate survey with relevant questions to collect relevant data
  + Find distribution channels for survey
  + Distribute and share
  + Collect data
  + Process, infer patterns/conclusions etc.
* 2 people on GPS data collection
  + Identify the problem. Research data-collection techniques (GPS data to identify movement patterns of cars within campus)
  + App itself should be quite simple to build (just collect GPS data and compare to known bounding box around UWA)
  + Explore methods to collect GPS data (simple custom app, Google GPS traces etc.)
  + Build simple implementation to start collecting data
  + Find control group of people (who park at UWA regularly) to be monitored over a few months
  + Start collecting data
  + Data processing/analytics (towards the end of semester 1/holidays)
* 2 people on researching GPS data processing techniques
  + Find any relevant information
  + Identify what we need to know. What are the problems? What does GPS data look like? What semantic information do we need to infer from it?’
  + Research literature, existing applications, algorithms etc.
  + Find online data sets to use (comparable to what we’ll retrieve; GPS trace data)
  + Identify relevant/important techniques and begin implementing them
  + Test on data set
* 1 person on app design prototyping
  + Research Android app design
  + Learn frameworks
  + Start mocking up a UI
  + Might be able to use Unity?
  + Start prototyping an app/shell
  + Also investigate/prototype bay-swapping/reservation idea

**Task Allocation**

**Bin** – App design & some research

**Chong** – Survey & research

**Ammar** – Survey & data collection & coordination

**Chandala** – Data collection

**Amala** – Research & data collection

**Miscellaneous Tasks**

* Meet with Chris to ask about data collection, privacy concerns etc.
* Schedule meeting with project mentor (Andrew)

**Deadlines**

* Upcoming deadline is tech presentations in week 7
* Be aware those are individual
* 13th April we’ve got our next meeting with Rachel (client meeting)
  + Want to have a general high-level picture, and some details, a plan, research, etc
  + Scope
  + Storyline