**Meeting Minutes, 23-3-2018, 3:00pm**

**Attendees: Ammar, Amala, Chong, Bin, Chandana, Rachel (Client)**

1. Proposed three different ideas to Rachel and their pros and cons:
   1. Sensing for occupancy detection of parking bays
   2. Park sharing app to facilitate swapping of bays between departing/arriving students
   3. Heatmap and data modelling/prediction using GPS tracing
2. Heatmap idea seems like the best approach
   1. Best you get from this analysis though is “it’s busy now”
   2. How long is it likely to take to park?
   3. Think about this in a trip planning way. Compare expected time to find parking to expected time if using bus.
   4. Multi-modal sensing. GPS. Correlation. Could play with a camera somewhere.
      1. Higher confidence when telling someone
   5. Regulations and privacy invasion when collecting data
   6. Talk to Chris about collecting data
      1. Need a plan where we can do quite a lot of this with data from somewhere else
      2. Wi-Fi data. Are there data sets available online?
      3. How does Chris manage permissions/ethical issues surrounding data collection.
      4. Streamlining data collection: Google already saves people’s locations anyway if they consent (Google GPS traces). See if we can find people who would consent to sharing their data for the project. Then we don’t have to collect the data ourselves, and can get it quicker/over a larger time scale. Check out Google API for accessing this data, and see how we can get people to share this data.
      5. Lots of work in cleaning/analysing data.
      6. Find existing software and existing work on how to track people and use GPS data (i.e. track congestion from GPS location traces, literature review etc. how to learn things from GPS data). Activity recognition from GPS trace data.
      7. The sooner we can find online data, the sooner we can start to work towards our product and figure these things out.
      8. How we will use existing technology and existing software/products
3. Ask Du about who our mentor is
4. Fleet Engineering work a lot with using GPS data through a web front-end interface
   1. Andrew
5. System View
   1. App (front-end)
   2. Server (data collection)
   3. Analytics
   4. Potentially some other sensors (carpark profile from other types of data sources). (Survey). Live data sources, but also historical trends.
6. Survey
   1. Talk to Du about distributing survey
   2. Get in contact with other faculties
7. Data
   1. There’s a lot of data we can use apart from GPS traces
   2. Think about other sources of data
8. Next Meeting
   1. 13th of April, 3pm
   2. Write and email agenda and summary for that meeting
   3. Topics, questions, and deliverables for that meeting
   4. Fortnightly iterations of work. Lots of reading and research. Divide it up.
9. Tasks
   1. Survey, distribution channels
   2. Contact UniPark
   3. Speak to Du about our mentor
   4. Start researching Google GPS traces. Getting permissions to use people’s data
   5. Online data sets (speak to Chris)
   6. Potential for multi-modal sensors (other types of data)
   7. Research on tracking parking/activity recognition through GPS traces (find existing work here)
   8. Timing and system. What are we going to do? When are we going to do it? Timeline? Data collection? Developing an app? Developing a server? Developing analytics? Surveys?
   9. What will we tell people? How long will it take? Probability of finding parking? Alternatives? What problem are we actually solving?