**Project task in-charge:**

1. (R) Migration from csv based application to databases.
2. (R) Creating r scripting database connections
   1. Creating SQL queries.
3. (R) Creating second time selection and location selection
   1. Their respective databindings
4. (R) Creating Slide bar interface
5. (R) Creating custom marker icons for Leaflet Markers
6. (R) Creating custom functions
7. Setting up Virtual Machine, creating databases.
8. Cleansing location data with unknown coordinates.
9. Creating python mysql connections
10. Python scripting to automate / troubleshoot
    1. Generation and uploading of Movement data
    2. Troubleshooting geopy
    3. Populating location table
    4. Installing python modules
11. Documentations of R script, python scripts, database descriptions

**Challenges:**

1. Lack of previous team’s documentations
2. Understanding R
   1. Shiny-Leaflet development.
   2. Lack of R resources
3. Designing database
4. Creating python applications
5. Dealing with data transformation

**How i overcame some of the challenges.**

**School concepts**

Through the semesters in DBIS, I picked up some programming concepts which i find is applicable to (understanding) our problems and solution. Such as something as recent as anonymous functions, post backs, to for loops, data types, python scripting, SQL etc.

There were a few times which i had to refer to python and database 6Ps in order to recall the concepts and details that i had learnt

Through understanding the problems, i tried to find ways to apply these prior knowledge in creating a solution.

**Prior experience**

Having worked briefly with php had also enabled me to understand R to a small, but critical extend. Certain syntax in R looked very similar to php example would be the $ sign which denotes variable / data in the latter. This use had some similarity in R, as it also seems to mean ‘variable’/property. My hypothesis was confirmed when i looked on the internet to know its actual meaning.

Previous experience with other programming languages also enabled me to draw rough conclusions as to how certain parts of the code works, and from there how it should be written.

**Online resources**

Online resources and self learning played a major role in understanding the problem and R. As we had no previous documentations to refer to on R, i had to look up resources online in order to understand how R works (what is reactive), their syntax, what’s available and special pertaining to R (apply family of functions), how to work with functions.

As there is no structured lessons this time, i found that at times i had to learn from the basics through online resources when encountering problems caused by the simplest misunderstanding.

**Paper workflow illustration**

Applicable to python scripting and data transformations.

During the above two task, i often found it difficult to understand the problem and solution flow in algorithms. To overcome this i would illustrate the process in point form or illustrations on paper.

**Explore alternative approach and idea**

At the start of the project i thought that only 1 table was needed. However, this turns out that we will have a problem with select queries on 74 million rows of data, and that the queries have to be re-run each time the user interacts with the application.

My team mate Guan Yan then raised the idea of pre-populating the data. From there further explorations were made, pros and cons drawn up, and implemented to expectations.

Other examples are alternative recommendations to solve the problems. Several times i was met with issues that doesn’t seems to have a solution based on my hypothesis. But through looking at examples, a lot of other alternative solutions were found to the same problem. Such had not only enabled me to solve the issues, they allowed me to understand the language better.