CMM507 Research Project

Group 2 Meeting Summaries

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# FEB 11

Time & Location: 2.30pm to 3.30pm, SIWB Cafeteria  
Present: Alex, Georgios, Karen, Roshi, Stuart

Objectives:

1. Narrow down project’s scope of research
2. Divide research areas to each member for the week.

Notices:

1. With 4 votes from the poll on Slack, “Plastic Pollution” is the general topic.
2. A github repository has been set up to store project documents
3. We will adopt a central listing of all source links: to share resources and as the source for eventual bibliography element.

Decisions:

1. Current project scope: building a predictive model of plastic accumulation size in the ocean given the factors of: rate of pollution, rate of extraction, shipping lanes, currents and other factors

Actions:

All members to research their areas in the week

* sources, datasets and literature;
* collect and update slack with key updates on the go;
* prepare to present findings on 18 Feb to converge research.

|  |  |
| --- | --- |
| Alex | Shipping lanes - location, timeseries and plastics in lanes |
| Georgios | Plastic islands - location, size and timeseries |
| Karen | Plastic sources – location, size and timeseries;  Evidence of existing scope research |
| Roshi | Reasons/motivations for research;  Evidence of existing scope research |
| Stuart | Ocean currents and other factors leading to plastic accumulation |

Discussion Notes:

1. Wildlife, types of plastic, other debris (incl. rubber), and under-surface plastics are removed from project scope but can be alluded to in the motivations for research and further research sections.
2. Larger plastics are easier to remove at surface, before it is disintegrated into microplastics.
3. Microplastics are harmful to plankton production (aquatic life), ingestion by marine animals, ingestion by humans of which effects are still largely unknown.
4. We are interested in where plastic accumulates and why (shipping, currents, location of deposits).
5. Timeseries information is important for model training.
6. We will have to consider interpolation and methods for relating distinct sources of non-overlapping data.
7. We may be interested in the impact of plastic-reduction campaigns (for later research/conclusion)
8. We don’t know if plastic accumulation will increase or decrease in time, but we are building a model to attempt to predict it given different test scenarios.
9. The project scope may still change/ be refined based on research found, especially if a model already exists.

# FEB 18

Time & Location: 2.30pm to 3.30pm, SIWB Cafeteria  
Present: Alex, Georgios, Karen, Roshi, Stuart

Objectives:

1. Create hypothesis

Notices:

1. None

Decisions:

1. None

Actions:

1. Everyone to find more insights in their respective datasets/areas

Discussion Notes:

1. There was some…

# FEB 25

Time & Location: 2.30pm to 3.30pm, SIWB Cafeteria  
Present: Alex, Georgios, Karen, Roshi, Stuart

Objectives:

1. Summarise project to date to consult Eyad about scope legitimacy

Notices:

1. BibliTex for final R Sweave file now working
2. Stuart found new data set on plastic debris: type and location found

Decisions:

1. Will consult Eyad on Wednesday to confirm project scope is ok.

Actions:

1. Each member to post summary of their findings and any material to slack/github by end of day.
2. Karen to consolidate project summary to date.

Discussion Notes:

1. Alex talked through plastic debris findings
   1. Debris by type and location
   2. Bias in dataset – rubber recorded only on 1 region
   3. Some regions are land-locked: lakes and lochs
   4. Some long/lats may be using differing long/lat systems
2. Georgios talked through coastline source findings
   1. High relationship: plastic waste as % of waste generated
   2. Medium and low income countries highest contributors
   3. Stuart: is M & L income highest contribution because of population density? Opportunity to bring in population dataset.
3. Could we overlap plastic debris dataset with coastline/10 rivers dataset?
4. Alex presented review article on plastic pollution from shipping activity. Will review to find figures behind article and develop key message.
5. Roshi working on source list and motivations. Key message to be developed by next week so to include in presentation.

# MAR 4

Time & Location: 10am to 11am, SIWB Cafeteria  
Present: Alex, Georgios, Karen, Roshi, Stuart

Objectives:

1. Prepare presentation for next week
2. Prepare pre-report for submission 12 mar

Notices:

1. Karen: Presentation template has been started, will need graphics.
2. Georgios: Model for predicting label being built

Decisions:

1. Agreed to subset data.
2. Agreed to re-class some labels.

Actions:

1. Stuart, Georgios to continue with exploration and model building respectively.
2. Karen to finish presentation, initial report and update final report
3. Roshi to wrap up motivations and provide to Karen
4. Alex to prepare writeup on dataset description, which will lead to a section on dataset cleaning.

Discussion Notes:

1. Data set is too large for model
   1. Georgios: Building model to predict label name based on location, qty, error radius
   2. Georgios: 247k instances described as plastic, will need to subset as processor cannot cope.
2. Re-categorising
   1. Georgios: need to re-categorise some of the labels, the variance is too high.
   2. Stuart: Roshi has provided re-classification groupings on slack
   3. Georgios: will integrate
3. Valid variables for model
   1. Stuart: error radius may not be a good variable to use
   2. Stuart: each entry is an observation, not a raw count of items, but count at the time.
   3. Georgios: agree radius is not good to use, but count still is.
4. Correlations
   1. Roshi: Are there any correlations in there?
   2. Karen: We will be looking at correlations between items occurring and events. E.g. fireworks in north America and July, fireworks and six pack rings
5. Presentation
   1. Karen: Initial structure of presentation is drafted. 5 sections of: what we started with, problems we found, turning point, what we’ve found since, what we’re doing next.
   2. Karen: will start combining all work on Saturday for presentation and final report, please upload latest material by Friday, amendments can be made after
6. Final Report
   1. Karen: Will need a section in report to describe the original dataset, this will describe what is in it, what is wrong with it (missing values, incorrect values, relevance -e.g. Stuart’s point about error radius) this will then lead to a following section about how the data was treated (e.g. re-classing) before we processed it.
7. Code review
   1. Stuart: request for code review isn’t to check every line for accuracy, but to check the logic is sound and if any steps missed.