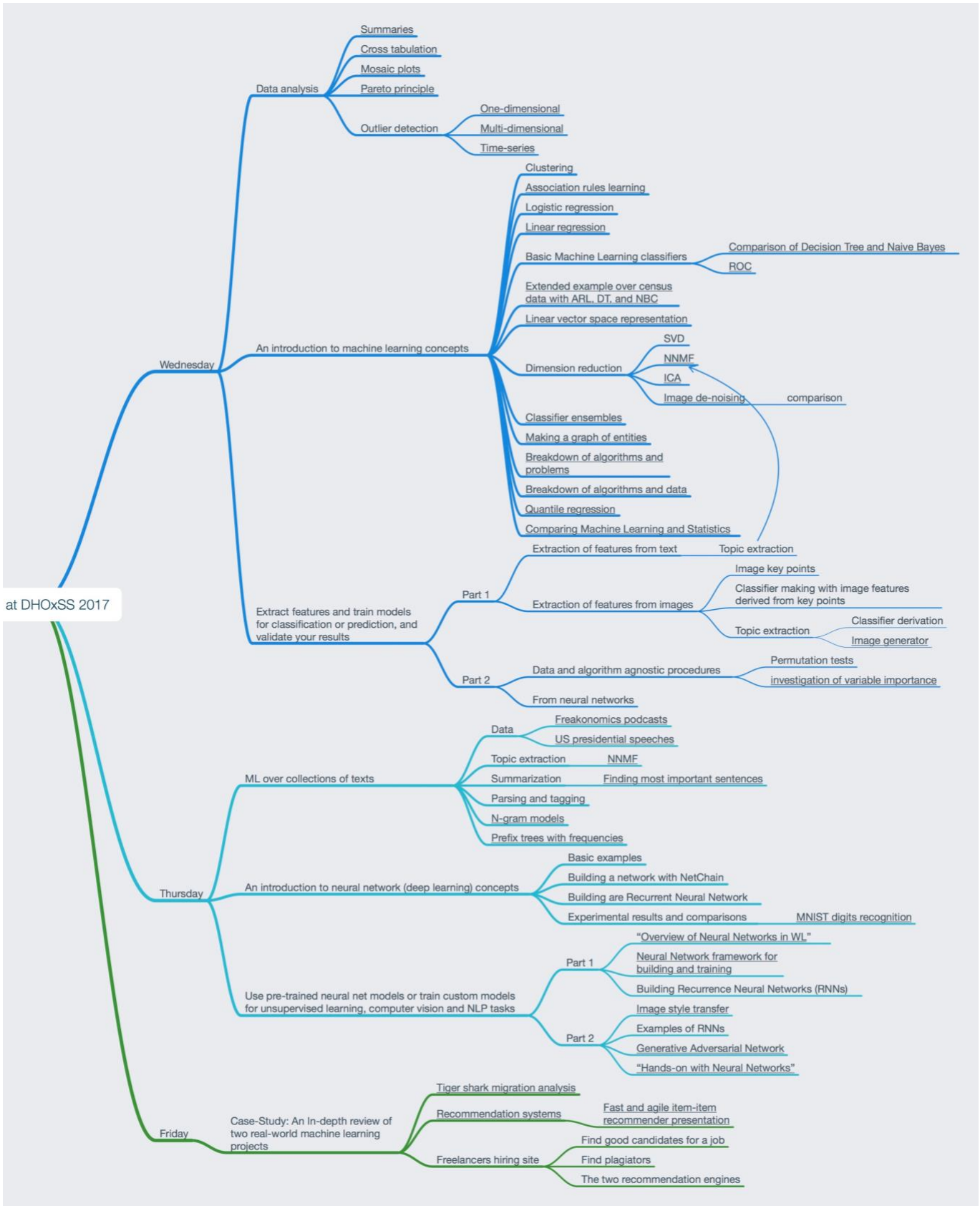
Oxford Summer School 2017 -- Data Science track



The data science workshop was very intensive. First two days, we trained on Wolfram Mathematica software. I did not have prior experience with Wolfram Mathematica before and I found the program interesting. Mathematica is a computation program well known for technical computing such as machine learning and it uses Wolfram language, that is a multi-paradigm, functional language. Below is a sample of Mathematica code, where a dataset is divided into training and testing data and printing the summary.

```
mlData = MapThread[Rule, {Training, Tlabels[[All, 1]]}];
```

Separating the data at 0.75:

```
SeedRandom[123]
{trainingData, testData} =
  TakeDrop[RandomSample[mlData], Floor[0.75 * Length[mlData]]];

meanRow = Mean[trainingData[[All, 1]]];
RecordsSummary[meanRow]
```

```
1 column 1
Min      -1131.99
1st Qu   8.22631
Median   14.6834
3rd Qu   20.9983
Mean     25.0205
Max      83377.9
```

Especially the sessions on understanding Supervised learning vs. Unsupervised learning vs. Reinforcement learning was very interesting for me. Furthermore, a learnt about an unsupervised machine learning technique called Associate rules learning, also known as "market basket analysis". The technique can be summarized as follows:
Given a set of baskets (or transactions) T:

1. Find μ-frequent sets -- sets of items that appear together more than $\mu \mid T \mid$ times

2. Extract rules antecedent $\rightarrow$ consequent from each μ-frequent set

2.1. apply the measures confidence, lift, leverage, conviction, and others;
2.2. order and filter the rules.

For instance, after examining 5K shopping charts within a day in K-market, we can conclude that people who buy beer and chips together, 80% likely to buy salmiakki candy, as well. Thanks to this method and the summer school, I utilized this technique during my PhD studies and submitted publications, that are part my PhD dissertation.

I also met several other PhD students from all over the world. Likewise, I met other PhD students from University of Helsinki that I did not know before. We were, in fact, 7 students from University of Helsinki and we ended up being friends afterwards. Furthermore, I kept in touch with our instructor in the workshop, Dr. Anton Antonov, after the summer school. From time to time we remotely discuss machine learning topics and Mathematica in particular, since the summer school.

I have learnt quite a lot in this summer school and overall, I am very glad I participated in. My attendance certificate is attached below.