**3rd year project diary**

**During Summer 2016:**

**UROP Project:**

1. Worked with Professor Stathis and Emanuele Uliana on a Multi-agent systems project. Involved creating a nice library that acts as a foundation for a multi-agent system anyone may want to build. I will use it to form the foundation of my system.
2. Reading Machine Learning - Tom M. Mitchell. – **STILL READING!**
3. Watched RL Course by David Silver - Lecture 1: Introduction to Reinforcement Learning and continued up to lecture 3 – **MAY CONTINUE**
4. 27/08/2016: Reading through <http://stevenmiller888.github.io/mind-how-to-build-a-neural-network/> and <http://stevenmiller888.github.io/mind-how-to-build-a-neural-network-part-2/> to get a feel for basic neural networks and how to build one.
5. Looking at using neural networks for time series prediction <https://www.cs.cmu.edu/afs/cs/academic/class/15782-f06/slides/timeseries.pdf>
6. <https://www.youtube.com/watch?v=E92jDCmJNek> Talk on learning with sequences: INTERESTING: LSTM – gated learning models (GRU model also worth looking into) Keras – Deep learning/ Neural Network Python library look into it!
7. <https://www.youtube.com/watch?v=iX5V1WpxxkY> CS231n Lecture 10 - Recurrent Neural Networks, Image Captioning, LSTM a lecture on LSTM and RNN, interesting stuff! I should try out an LSTM start to experiment with time series data, maybe try numpy
8. 02/09/2016 - Convocation with Zhiyuan about processing power needed when using LSTMs it is a lot! If I don’t have a capable machine I may have to scrap the idea and go with a moving window model instead
9. 16/09/2016 Starting to write project plan
10. 03/10/2016 started writing Smart Meters and Energy Demand Management report
11. 08/10/2016 finished writing Smart Meters and Energy Demand Management report – 1 day after the planned finish time, I had a busy week in London and so lost afew days to write it, but it took about as long as planned. Read a lot on smart meters.  **Some things to think about:** --- Data differences between industrial and house-hold energy consumption – how will this affect the results of the ANN. Maybe only house-holds should be considered as industrial context may not have habits (is DR relevant to them?) --- Go into more detail about agents and why they are suitable for this project in the agents report.
12. 08/10/2016 created a personal git repository to store all reports/programs.
13. 10/10/2016 finalized the Smart Meters and Energy Demand Management report – checked grammar etc. Starting the Multi-agent systems report today. (Starting late but been busy in London – have 2 weeks should be able to complete on time if focused.