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# PROJECT LOG - WEEK 4 AND 5

This is a combined log of my work for week 4 and 5. Last weeks submission missed the deadline

**What I wanted to learn and achieve over these two weeks**

My priority over this period was completing research of probability theory and Markov models to an acceptable level and developing, training and running a basic Markov chain.

Complete the Preliminary Project Proposal, including translating my previous work plan into a Gannt chart.

I met my supervision at the beginning of week 5 to present my work and discuss the project further. Throughout the meeting we discussed Markov chains in Music Information Retrieval systems and Lapack/TNT library. My supervisor directed me towards a relevant paper [1].

**Tasks completed**

The following tasks were completed or built this week

1. Built Markov Chain which generated MIDI information
    1. Order one Markov Chain
        1. Matrix operations
        2. Use of TNT library for multi-dimensional arrays
        3. Training function
        4. Output function
    2. MIDI
        1. File handler for large number of files
        2. Feature extraction ( pitch )
2. Preliminary project report
    1. Read University of London software projcets guide and Dawson 09 Student project guide

2. Finished Gannt chart
3. Produced report

3. Markov models
    1. Learnt about Hidden Markov Model
    2. Constructed basic HMM
    3. Constructed higher order Markov chains

The Markov chain constructed worked as expected. This is a significant milestone in the project.

**Week 6 Plan**

Develop Hidden Markov Model example. Research frequency domain representations, which may be suitable, how they work and the resulting complexity implications for the main project. Look into own implementation or source optimized open source libraries . Further investigation of previous work in music information retrieval systems work.

1. Casey,M. A. (2005) “Acoustic Lexemes for Organizing Internet Audio.” Contemporary Music Review