# Week 3 & 5 Summary

## Week 3

### Research

Week 3 was dedicated to the research of neural networks and reinforcement learning. During this time, a list of possible algorithms, models, structures, and learning types were created. Through a greater understanding of neural networks and their structures, it would be easier to determine which would be used to best simulate sentience

### Implementation

This week focused on research, however, the basic coding of a model, and formatting code so agent and resource creation became easier and more reliant on randomizers rather than user input.

## Week 4

### Research

Research in week 4 mostly fell under the topics of reinforcement learning. While the general structure of the neural network was now chosen, the learning algorithm was still undecided. In addition, to further remove a user from the system, extra time was put into learning topics such as intrinsic motivation, and other goal related topics that were currently possible hyper-parameters.

### Implementation

During this time, only code cleaning and the creation of the model and agent were completed

## Week 5

### Research

In week 5, the first of many problems appeared in terms of theoretical performance. The main topic was “How will the AI be able to in take their environment”. This question focused on what values would be pumped into the neural network. To produce the choice of movement direction.

This problem created a need for many new alternative methods of “thinking” for the machine. In this time the conclusion of using a single neural network was confirmed and the choice of whether to use a genetic algorithm or Deep QLearning was being determined. Currently the choice is still to be decided on however because they are similar in structure, coding can be done while continued research is done on the most appropriate learning algorithm.

### Implementation

In this week there was only code cleaning and the segmentation and clearing of bugs. Currently, the neural network is functional, the movement has been passed on, and the agents are ready to learn.