**Virtual Work Experience Project Evaluation**

**Name: Amari Lawal**

**Project Completed: Q-Reinforcement Learning Rock, Paper, Scissors**

Is there anything you would change about the project? (To help us plan for the next cohort)

I would want to increase the time it takes to do the project. Not in terms of the submission date. I thought that was sufficient. However, for the project we were recommended 5 hours. I wasn’t sure if that was a normal time window you would get on the job and because most of my previous projects take a lot longer. I was slightly anxious on whether we would have such little time in the workplace.

*e.g More/less time to complete tasks. More/less help etc.*

What skills have you developed? What did you learn?

Surprisingly I gained a confidence boost, after speaking out first on the call whilst being nervous. Which made me realise if you take the leap it doesn’t go as bad as you think it would. I also learned how to read academic papers properly to understand how to implement the ideas into real world problems.

Did you make a plan? Did you stick to it?

I deviated greatly from my initial plan after completely changing the algorithm I used. However, I stuck close to my initial plan in generating the data. I was able to have a good prediction of how long each task would take however I knew that it would be impossible to do it within 5 hours seeing that the debugging process from errors and data formatting is the most time-consuming part compared to other tasks. However, I find debugging oddly refreshing and relaxing. Whilst it works, breaks, works again but not in the way intended. Then it breaks again. Until you finally crack the puzzle, which I find extremely satisfying.

What did you do?

Initially I researched a way to use a neural network for this problem to calculate the probabilities for the actions off of training data however I realised that Q learning for reinforcement learning was the best method. In order to implement it I had to learn the main concepts, so I read several research papers to understand the logic and the algorithms that are normally used. Firstly, generating dummy scenarios of the game then training the agent using the algorithm and printing the game.

What didn’t go well? What would you improve next time?

The logical flow of my program was initially wrong which gave me a result, just not the one I wanted. The program was supposed to use the old move to determine the best next move, however for the longest time it kept generating random possibilities. Which defeated the point. I could have made a better play by making better comments then by making a flow chart to understand the flowing logic of the program.

What went well? What did you enjoy most?

The implementation of the equation was a lot less infested with bugs than I expected. The process was more like translating an equation into python and it worked well on the tenth try which was convenient. The part I enjoyed the most was the researching into q-learning. Before this program I was initially intimidated to learn q-learning due to the larger amount of code, data and complexity required. Which meant I would need a full understanding on how it works. However, I watched some YouTube videos by Jeff Heaton a professor at Washington DC that explained it perfectly, making an Atari game which found very cool.

*e.g I think my end product was really good. It hit a lot of my design criteria and was simple to make repeatedly. I enjoyed the testing most as that was seeing the design working. etc*