UNB

CS-4795
Project Proposal
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1   Introduction

Super Mario Bros. is an old and simple game for the Nintendo Entertainment System that released in 1985. For this reason, the game has simple controls that allows for easy use in Artificial Intelligence models as the model can be trained on 3 simple controls. A model being created on such a simple game can stand to be a foundation for improving models on video games, while Super Mario Bros. is not the first game, it is a well known game that has simple functions that are used in many games, even today. Then an intelligent agent should be relatively simple to create for this game, in fact, we can use a pre-made model for the game to dissect how the agent functions. Not only can we look at this agent and use it, we can try to morph it into a generational algorithm rather than the simple reinforcement learning model, this will serve as a good look into how hard it is to change an agent, as well as how well the generational algorithm works compared to the reinforcement learning model.

2   Plan

My plan for this project is to use an agent that has already been created. I will attempt to dissect the components of this model and explain what is occurring, then I will try to morph the model into a generational algorithm as it will be interesting to see how well it can learn with such a simple environment.

Super Mario Bros. is a simple game, as mentioned before, which means that the controls are also simple, in fact, we will only need to use 3 inputs:

1. left

2. right

3. jump

Using the same set up as the agent that is given, we should be able to morph it into a generational algorithm in a relatively simple manner, in doing so we can gather data from each model and compare the effectiveness of either model and try to discover the problems with changing a model from one to another.

3   Conclusion

This idea is really appealing to me, and I feel like it would be good for learning about how reinforcement models and generational models work even if the generational model does not function as intended. The application here is to study the effectiveness of the algorithms in depth as I will also play the game use a human benchmark to compare against the agent's results.