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CSC 415

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Term Project: Extreme Tic Tac Toe

Link to Code: <https://github.com/emily-sear/CSC415_TermProject>

Description:

This project was meant to be an extreme tic tac toe game with a reinforcement learning AI to be a player against the human player. The base of this tic tac toe game is found [here](https://bejofo.net/ttt)[[1]](#footnote-1). The point of this project was to explore reinforcement learning and to see how different amounts of training for the different games will affect how a computer will play the game. Each individual tic tac toe board would be trained at different rates to find what would be the best training rates for the game. Along with this, there is randomness included in this game so another point was to see how reinforcement learning will handle some sort of randomness.

Challenges:

There were two huge challenges within this project. The first being that there was no openAI gym to play tic tac toe and there was no 3rd party gyms as well. Also, being an ambitious college student, I wanted to try to create the reinforcement learning on my own. Finding code that did true reinforcement learning and then tweaking this code so that it worked with the full game was extremely difficult. The other big challenge was my health, while this is not an excuse, attempting to dig through code with reinforcement learning while my health was not the best was pretty difficult.

Going Forward:

This project was one that very much challenged me, but because of that I really enjoyed working on it. My first step going forward would be trying to connect my project up to the GUI that I created. This would allow for human players to play much easier. After that, I would like to play around with trying to train the game to learn how to win the big game as well as the smaller games. Obviously, the overall goal is to win as many small games as possible, but what if there was a way “learn” how to best play the randomness. Not sure if there is but I think this would be a cool thing to explore next.

1. https://bejofo.net/ttt [↑](#footnote-ref-1)