

Group 11 Final Project Documentation

Artificial Intelligence for Gaming - INFR 4320

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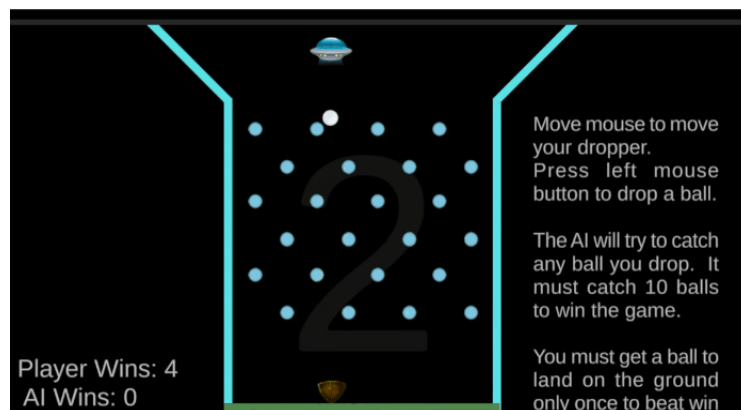
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Game Description:

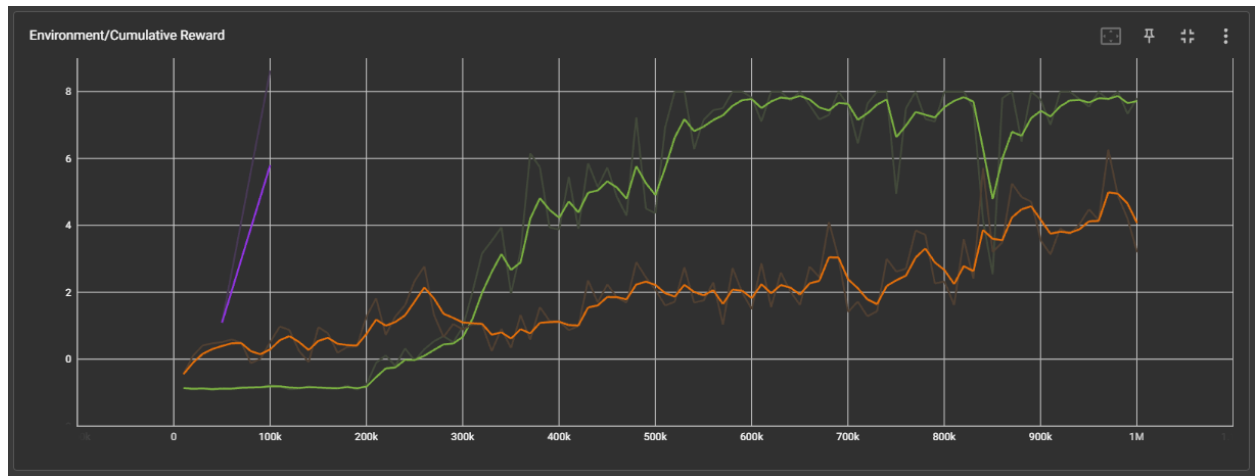
The game of choice for this project is a simple ball catcher game where the player plays against the AI. The player controls the UFO ship with the mouse at the top and uses the left mouse button to drop a ball. The AI will try to catch the ball dropped and the goal for the player is to try to drop the ball strategically so that it lands on the ground or basically passes the AI basket. If it does pass the AI, the player gains a point, and if the AI catches the ball it gains a point. Whoever reaches 10 points first wins.



AI Technique Used:

The AI technique implemented in the project is Reinforcement Learning. This technique is used to train the agent which in our case is the AI controlled basket through a series of training generations in order for the AI to learn based on a reward or penalty system. During the first generation we had the ball drop randomly and progress slowly down so the AI could easily catch it and learn the environment and we created multiple instances running simultaneously to speed up the process. In the second generation we created a more challenging environment by adding objects which cause the ball to follow various paths and have different movement speeds. Finally, for the third generation we introduced the player element along with easy-medium game difficulty, game UI, art assets and sound assets.

Training Graph



First Generation

Second Generation

What Makes The Game Interesting:

The most interesting feature of the game at the moment is the AI's accuracy thus far. There could be further training for it to be even more accurate but that would take more time. Therefore, because of this the player has to really try to strategically drop the ball somewhere that they think the it would land that isn't reachable by the AI. Also, our arcade type look and feel to the game.