Mice and Cheese (Police and Thief)

Brass, Brooks, Hull, Mayers, Minko

ECE578

Second-Half Project Implementations

The following lists the implementations we seek for the next iteration of our project:

Principally, we move the project to use TensorFlow as the back-end for training a neural network. TensorFlow is a popular, robust machine learning framework, supported by Google and under continuous development. By using TensorFlow, we ensure that issues future teams may have will have a wealth of high-quality documentation from the developers. Additionally, this aligns the machine learning algorithms to the rest of the projects, keeping the totality of the classes projects using similar frameworks.

We are implementing Keras as a layer on top of TensorFlow. This change makes the training easier for future groups and allows for rapid prototyping and a more straightforward implementation of training new models. This improvement also helps if our robot designs get damaged or destroyed over the years; future teams can prepare a new machine vision algorithm quickly and easily.

We are also containerizing the entire application using Docker. Containerization keeps the libraries, dependencies, files, and all necessary components together. Advantageously, this means that future groups will be able to clone the Docker container, and have the entire project up and running as we used it, without worrying about installing various libraries, environments, and other auxiliary files.

We are exploring the idea of modifying the environment in some regard. At present, the environment is a fixed-size triangle, which results in a solved game. Through combinations of changing the game board, adjustments to the environments, or more exciting applications of gameplay, we hope to move this outside of a solved program, which allows the robots to employ intelligent decision-making for an unknown board state.