AI Poker

Nathan, JP

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1 Problem Statement

The goal of the project is to train an AI to be very good at poker(Texas Holdem [1]), in order to do this a poker game will be created. This game will allow human vs AI(for testing) and AI vs AI(for training). In order to simplify the training, the game will only feature 5 players.

2 Proposed Approach

In order to train the model, the system will be forced to play against itself in order to improve its skills, this unsupervised with reinforcement learning approach is used as the system does not have labeled correct plays, due to hidden information. One possible method of training could be NEAT[2] where neurons are added in between generations. The AI will be rewarded based on gaining the most money overe a set number of rounds.

To train the AI will be given information about its hand, the cards currently available, the pot ammount, and each player's bet ammount. It will be evaluated based off the money the AI has after 10 rounds.

3 Team Structure

We are using AGILE SCRUM to assign tasks to maintain flexibility over time. Issues will be tracked on github and we will make sure we are logging who closed issues for end evalution.

3.1 Team Members with backgrounds

1. Nathan

(a) Helped architect and create several projects in Industry

(b) Experience leading software teams and setting up project infrastructure

(c) Obviously AGILE SCRUM experience.

(d) has watched youtube videos on AI, but never done one.

2. JP

(a) Took a genetic algorithms class abroad during my undergrad

(b) Masters Assistantship Contract project with the FAA focused on AI/ML (currently in progress)

(c) Passion and understanding of Texas Hold'em poker

(d) Experience with with system design, implementation and testing complete process/lifecycle

(e) Agile Scrum Experience

3.2 Roles and Responsibiltes

1. Nathan

(a) Repo Manager

(b) developers

2. JP

(a) Scrummaster

(b) developers

4 Refferences

References

[1] 1.-F.-2. Wikipedia. "Texas hold'em." (2021), [Online]. Available: https://en.wikipedia.org/wiki/Texas_hold_%5C%27em. (Accessed: 23-Feb-2022).

[2] Wikipedia. "Neuroevolution of augmenting topologies." (2021), [Online]. Available: https://en.wikipedia.org/wiki/Neuroevolution_of_augmenting_topologies. (accessed: 02.22.2022).