NeLter

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Description

NeLter is computer tool designed to help players improve at No Limit Texas Hold 'em. It will feature multiple modes to help the user hone their skills, as well as a full fledged simulation game where the user can test their abilities against their friends and the computer.

Competitive Analysis

There are countless paid applications on the internet dedicated to helping the user improve at No Limit Texas Hold 'em. This game is extremely complex due to how abstract it is, and infact it was only a year ago that computers (developed in part by CMU) were able to beat the top humans in six-player games. Due to this complexity at the highest level, most of these tools only focus giving the user a very indepth understanding of one part of their game. This can be very effective for helping a veteran player sharpen one side of their game, but can leave a beginner feeling rather confused and unguided.

There are also lots of free utilities for specifc jobs like calculating equity, pot odds, fold equity, etc., but it is up to the user to decipher what these concepts are and why they should care about them. The goal of NeLter is to fill this gap. It will provide a comprehensive user experience explaining many different poker concepts to the user in an easy to digest manor, so that they can implement them into their own game, and practice against the computer or their friends.

Structure

The NeLter framework contains several files which implement the GUI for the entire application, the files which implement training modes, and the main game.

- The GUI has a main file that is executed, as well as some helper modules which are imported into that main file.
- Each training mode has its own file that implements it, using resources from the main game framework and computer algorithm
- The main game is composed of several helper modules and a driver file. Each player and hand are implemented as objects and are constructed by the driver file that runs the game. The computer algorithm to play the game involves principles from the training modes, but ultimately analyzes its opponents play to decide its moves.

Algorithmic Plan

The most algorithmically complex part of this tool is the computer algorithm that plays the game. The way this algorithm will work is by trying to guess the opponents' holdings and act according to various well established poker principles. This will be done through a range analysis algorithm where the computer will try to narrow down possible enemy hands based on a variety of factors that will start at a default, and be narrowed down by monitoring the opponents' play over time and trying to establish habitual behaviors.

Timeline

During the first week of working on this project I have nearly completed the framework for playing and manipulating the game. During the second week I plan to write the GUI for the app, write a preliminary computer algorithm using mostly basic poker principles, and use the tools I wrote in week 1 to develop the training modes. Finally, in the last week I plan on implementing multiplayer support for the game and improving the computer algorithm to utilize past play analysis to make more informed decisions.

Version Control

Version control for this project is handled through Git and GitHub. See image in directory.

Module List

- Pickle
- Pillow
- Tkinter

TP2 Updates

None.