Pokerbots 2021

Lecture 1: Introduction to Pokerbots

Meet the team

Sponsors

Resume Drop:
pkr.bot/drop

Giveaways

Giveaway Game: pkr.bot/height

Raffle:
pkr.bot/hello

Agenda

- Class overview + logistical details

- Intro to poker + variant rules

- Skeleton bot setup and connecting to the scrimmage server

- Testing your bot locally

- Overview of skeleton bot architecture

- Coding Lecture 1 reference bot

Class Overview + Logistical Details

Class Structure

- Six lectures, MWF 1 to 2:30pm EST

- Office hours, MWF 2:30 to 4pm EST, TR 1 to 2pm EST

- Scrimmage server (first three weeks)

- Weekly tournaments

- Final tournament and event (Jan 29th)

>$30k

Total Prize Amount

Prizes

- Grand prize: $5k

- Second place: $4k

- Third place: $3k

- Bot Language Specific Prizes

- ~$2k/week Scrimmage Server Prizes

- All announced prized can be viewed on the syllabus

- More prizes to be announced soon!

6 Lecture Titles

1. Introduction to Pokerbots

2. Poker Theory

3. Game Theory

4. Engineering and Performance

5. Advanced Topics

6. Guest Lecture: Noam Brown

How to Receive Credit For This Course

Participate

Submit a bot to the scrimmage server every week

Improve

Each week you should beat your bot from the previous week

Report

Submit a 3-5 page strategy report at the end of the competition

Intro to Poker + Variant Rules

Heads-up No-limit Hold'em Poker Rules

- Objective: earn as many chips as possible

- Players recieve two secret cards *(hole cards)*

- Players bet into a pot in several rounds; the pot is given to the player with the best poker hand

- Structure of a betting round: first player can bet 0 (*check*) or any amount between "big blind" and the # of chips they have remaining. If they check, action passes to second player. If they bet, second player can *fold*, *call*, or *raise*

- Hand strength is determined as the best 5-card poker hand you can form out of 7 cards: 2 hole cards and 5 community cards

Poker Rules

- Two cards dealt to each player (*hole cards)*

- Betting round (first betting round begins with *blinds*)

- Flop (3 community cards revealed)

- Betting round

- Turn (+1 community cards revealed [4 total])

- Betting round

- River (+1 community cards revealed [5 total])

- Betting round

- Settlement (*showdown*)

Card Rankings

Poker Hand Strength

Hand Rankings

ROYAL FLUSH	STRAIGHT FLUSH	FOUR OF A KIND
A K Q J 10	9 8 7 6 5	7 7 7 7 6

FULL HOUSE	FLUSH	STRAIGHT
4 4 4 Q Q	K J 9 8 5	7 6 5 4 3

THREE OF A KIND	TWO PAIR	ONE PAIR
Q Q Q 4 5	A A 5 5 9	10 10 Q 9 5

2021 Variant Reveal

2021 Variant - Blotto Hold'em

At the beginning of every game, 6 cards are drawn to each player

Bots must allocate these cards into 3 pairs of hole cards

These pairs of cards will be the hole cards for three distinct boards of poker

Each board is pre-inflated with 1, 2, and 3 big blinds respectively

Pokerbots play standard no-limit hold'em on each of these boards simultaneously

<u>GOAL</u>: Allocate your 6 given cards effectively and beat your opponent in heads-up no-limit hold'em on each board!

Blotto Hold'em (Visualized)
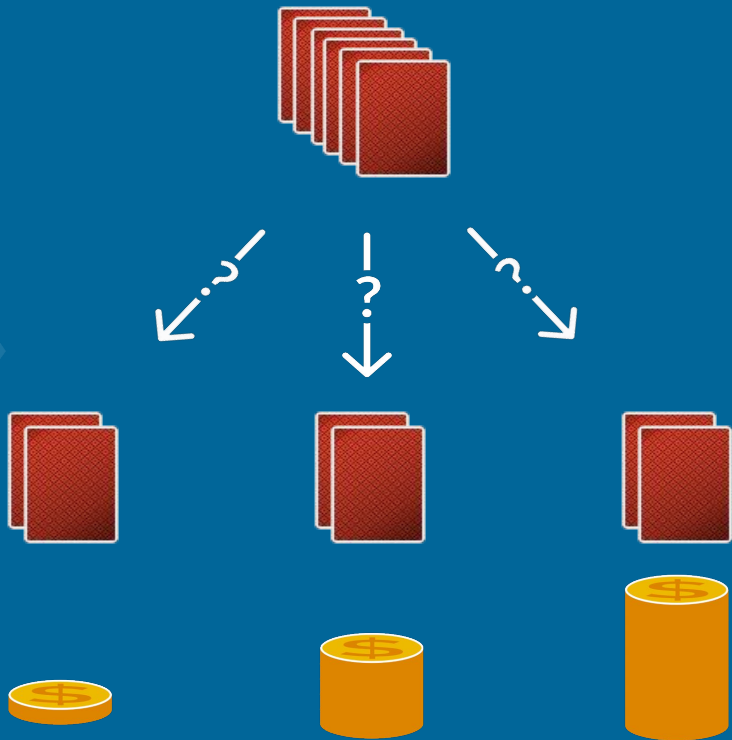
Skeleton Bot Setup: Connecting to the Scrimmage Server

Before You Code

See Piazza post @10 to set up your development environment for Pokerbots

Once finished, make a GitHub account to facilitate code management

Read up on using Git from the command line

Getting Set Up

Clone engine from mitpokerbots/engine-2021; create new repository for your code

Scrimmage server: download ZIP file from GitHub website and upload it directly.

Testing Your Bot Locally

Engine Config Parameters

Pull the engine from github.com repository mitpokerbots/engine-2021

config.py parameters: number of hands, number of seconds, where to bots

Overview of Skeleton Bot Architecture

Skeleton Bot Structure

- Engine info

- GameState, RoundState, and BoardState classes

- Bot walkthrough

Coding reference-lecture-1 bot

Example Bot

- We want to place our strongest cards strategically

- We want to raise the stakes if we are holding good cards

- Eventual goal: use a more advanced method to choose our hole cards combined with more sophisticated betting logic

Giveaway Winners

Average Height Game: 68.1456 inches