CS760
Project Proposal

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1 Goal

Implement a 5-card draw poker player that outperforms a random player. Initial implementation assumes two players (the learned player and another player, either random, a person, or another learned player).

2 Implementation

To create a 5-card draw poker player implemented via a reinforcement-learning approach. The constructed Player will retain memory of its initial and current hand to decide which cards to forfeit during the draw. To learn the Q algorithm, the reward signal is the ranking of the player's current poker hand, and the actions available are drawing [0-3] cards. I plan to implement this in Python.

3 Experiments

To gain an understanding and evidence of performance, I plan to measure performance against a random player and the Bayesian Poker Player from Monash University [1]. Performance is based on win/loss of a hand, averaged over thousands of hands.

4 Data Set

The UCI poker hands data set [2] will be used. This data set includes ranked "Poker Hand" information, which will assist in determining the reward signal.

References

[1] K.B. Korb, A.E. Nicholson and N. Jitnah, *Bayesian Poker*. In Proc. of Uncertainty in Artificial Intelligence, pp. 343-350, Stockholm, Sweden, August, 1999.

[2] *Poker Hand Data Set* http://archive.ics.uci.edu/ml/datasets/Poker+Hand