

CENG491

Poker Playing Agents

Prototype Presentation



A4

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Problem Definition

Problem: Making reasonable decision with unreliable or incomplete information

Poker is a game with imperfect information:

- The inability to observe opponents' cards
- Chance factor

Motivation

"Successfully achieving high computer performance in a non-trivial game can be a stepping stone toward solving more challenging real-world problems"

Jonathan Schaeffer

Existing Solutions

- Knowledge based systems

 - **Loki**: One of the first computer poker agents.

- Monte Carlo and enhanced simulation

 - **Poki**: This agent evolved from Loki

- Game theoretic equilibrium solutions

 - **Hyperborean**: winner of the AAI Computer Poker Competition in 2006.

- Exploitive counter strategies

 - **Hyperborean-BR**

Existing Solutions

- Case based reasoning

 - **Sartre**

- Evolutionary algorithms and neural networks

 - **MANZANA**: winner of the bankroll division of the limit hold'em competition at the 2009 and 2010 ACPC.

- Bayesian poker

 - **BPP**: achievements in 2006 and 2007 AAI Computer Poker Competitions.

Our Solution

Two main components :

- Decision Component
- Learning Component

Our Progress

- Literature Survey
- Game Client Application
- Integration of An Agent
- Building Process of An Agent

Scenes From API

The screenshot displays the Poker Academy Pro software interface. The main window shows a virtual poker table with several bots seated around it. The table is green with a wooden border and features the 'Poker Academy' logo in the center. The game is a Limit Ring Game with \$1/\$2 stakes. The pot is \$2.50. The current hand is Hand #389. The bots and their current status are:

- BoldBot**: \$51.56, Blind \$1
- CowardBot**: \$3.47, Call \$1
- ChumpBot**: \$18.50, Blind \$0.50
- Fold4Ever**: \$19.50
- Call4Ever**: \$4.47

The table shows the community cards: 5c, 8d, Jh, 9h. The pot is \$2.50. The current hand is Hand #389. The transcript shows the following actions:

TURN: 5c 8d Jh 9h
BoldBot bets \$2.10
CowardBot raises \$2.50
Call4Ever calls \$4.60
BoldBot calls \$2.50

RIVER: 5c 8d Jh 9h Td
BoldBot bets \$5.51
CowardBot calls \$5.51
Call4Ever calls \$5.51
BoldBot shows Qs 8s
CowardBot mucks
Call4Ever mucks
BoldBot wins \$48.09 with a Queen High Straight

HAND #389
ChumpBot blinds \$0.50
BoldBot blinds \$1
CowardBot calls \$1

The interface also includes a menu bar (Lobby, Options, Dealer, Table, Window, Help), a toolbar with navigation icons, and a right-hand sidebar with sections for Session Stats, Hand Evaluator, and Advisor. An 'Add Chips' button is visible at the bottom center of the table.

Scenes From API

The screenshot displays the Poker Academy Pro software interface. The main window shows a virtual poker table with several bots seated around it. The bots and their current chip counts are: BoldBot (\$31.36, Bet \$9.09), CowardBot, ChumpBot (\$43.55), Fold4Ever (\$13.50), Call4Ever, and A4. The pot is \$11.59. The community cards on the table are 6♥, A♦, 9♥, 5♣, and 7♥. The flop is 6♥ Ad 9h. The turn is 6h Ad 9h 5c. The river is 6h Ad 9h 5c 7h. The game is a Limit Ring Game with \$1/\$2 stakes. The interface includes a menu bar (Lobby, Options, Dealer, Table, Window, Help), a toolbar with navigation icons, and a right-hand sidebar with sections for Session Stats, Hand Evaluator, Advisor, and Transcript. The Transcript section shows the following text:

```

DumbBot calls $0.50
Fold4Ever folds
BoldBot wins $2

HAND #401
Fold4Ever blinds $0.50
ChumpBot blinds $1
BoldBot calls $1
Fold4Ever folds
ChumpBot checks

FLOP: 6h Ad 9h
ChumpBot checks
BoldBot checks

TURN: 6h Ad 9h 5c
ChumpBot checks
BoldBot checks

RIVER: 6h Ad 9h 5c 7h
ChumpBot checks
BoldBot bets $9.09
ChumpBot calls $9.09

```

Scenes From API

The screenshot displays the Poker Academy Pro interface for a Limit Ring Game with \$1/\$2 stakes. The game table is populated with several bots: BoldBot (\$41.19), CowardBot, ChumpBot (\$42.31), Fold4Ever (\$16.50), and Call4Ever. The dealer position is marked with a 'D'. The community cards on the table are the 9 of diamonds, 3 of clubs, Jack of diamonds, 5 of diamonds, and 7 of diamonds. ChumpBot is the winner of the hand, having made a Jack High Straight (10, 9, 8, 7, 5). The interface includes a menu bar (Lobby, Options, Dealer, Table, Window, Help), a session statistics panel on the right, a hand evaluator, an advisor, and a transcript of the hand's progress.

Limit Ring Game: \$1/\$2 Stakes

Session Stats

- Hands: 0
- Hands Played:
- Hands Won:
- Win Rate: sb/h
- History
- Chart

Hand Evaluator

Advisor

Transcript

HAND #395
Fold4Ever blinds \$0.50
ChumpBot blinds \$1
BoldBot raises \$1.50
Fold4Ever folds
ChumpBot calls \$1.50

FLOP: 9d 3c Jd
ChumpBot bets \$1
BoldBot calls \$1

TURN: 9d 3c Jd 5d
ChumpBot checks
BoldBot checks

RIVER: 9d 3c Jd 5d 7d
ChumpBot checks
BoldBot checks
ChumpBot shows Ts 8h
BoldBot mucks
ChumpBot wins \$7.50 with a Jack High Straight

Deal Hand

THANK YOU FOR LISTENING...

