Computer Poker Program Knows When to Hold 'Em

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(PhysOrg.com) -- Texas Hold'em poker has exploded in popularity over the past few years. Its popularity has extended to academic researchers, who are intrigued by the challenges of probabilities and decision-making in the face of uncertainty that players confront when playing the game. Now, poker-playing artificial intelligence systems, developed by a researcher at the University of California, San Diego School of Medicine, have been released for free use by the public.

A researcher and statistician with UCSD Department of Psychiatry, Ian Fellows, M.S., entered his program, called "Fell Omen 2" in the 2008 Computer Poker Competition sponsored by the Association for the Advancement of Artificial Intelligence (AAAI) at its annual conference last month in Chicago, where it placed second in a three-way tie.

The first computer poker program Fellows developed was named "INOT" (In the Nick of Time) as a last-minute entry for the 2007 AAAI competition. There, Fellows' program competed against 16 others from universities and individuals around the world and took the second-place prize, behind the University of Albert's renowned computer poker research group, in what Fellows described as a "tight battle of the BOTS."

"Unlike chess, poker is a game of chance," said Fellows, whose usual job involves designing research studies and analyzing data for the Department of Geriatrics at UC San Diego and who describes himself as a "mediocre" poker player. "Players don't know what cards they will be

dealt, or what cards will be dealt to the board. While techniques for dealing with chance have been well established in the context of other games such as backgammon, what sets poker apart is that it is a game of imperfect information."

In poker, each player knows only their own cards, and the common board cards. This private information breaks the usual methods (known as game tree search) used to solve chess and backgammon challenges using computer systems.

The field of computer poker has made great strides in recent years. According to Fellows "six years ago, a child could beat the best programs built; now professional poker players would be hard pressed to defeat INOT."

Fell Omen 2 is INOT's successor and can beat it handily. The few computer poker programs of similar strength use memory in the gigabytes, where as INOT takes up just 5 megabytes of space, making it suitable for use on a desktop PC. Fell Omen 2 is slightly larger, at 50 megabytes.

"My hope is that people will find these programs useful in improving their poker skills, and their understanding of game theory," said Fellows.

To download the programs, including source code, go to thefell.googlepages.com/poker

Provided by University of California, San Diego