

Faculty Advisor:



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MOTIVATION:

Games have been played for a millennia. Wall paintings over 5000 years old have been found in Egypt. People are playing the same games now they were back then, but only now, are we able to strongly solve them. The GamesCrafters research and development group was formed to explore the fertile area of combinatorial and computational game theory.

MOVES / POSITIONS:

• Winning Move: Either wins the game, or leaves opponent with losing moves. **Losing Move**: Either loses the game, or leaves the opponent with winning moves. Tying Move: Either makes a tie, or leaves opponent with tying and losing moves. Using these definitions:

- **Win**: A position in which there exists a winning move.
- Lose: A position in which all moves are losing moves.
- **Tie**: A position in which all moves are tying and losing.



GamesCrafters ndergraduate Game Theory Research and Development Group Faculty Advisor: Dan Garcia (Lecturer SOE)

GAMES WE SOLVE:

- Two players (Left & Right) No chance, such as dice or shuffled cards Both players have perfect information No hidden information, as in
 - Stratego & Magic
- The game must be finite it must end



How WE DO IT:

The value of a game is determined by a brute-force exhaustive search of the game tree. The value of a particular board configuration, or position, is based on the values of its children, i.e., the positions that are one legal move away. A position has a value of either Win, Lose, or Tie. Moves are also labeled with one of these three values.

RESEARCH PROJECTS:

Maximization: An iterative, parallelizable, retrograde solver, which can use optimized level files of actual positions visited to optimize the search

ODeepaBlue: A parallelization architecture that utilizes cluster computing and Map-Reduce programming paradigm GUI high-resolution resizeable skins, delta remoteness, visual value history, game tree traversal, solving progress bar, true game size, redo, and load and save games Network play with eHarmony pairing and network database server

Bit-perfect and zero memory DB access

Python Puzzles: Solving more puzzles!

Game histories and taxonomies researched, and an auto-updated web site with current analysis results

Gamesman Web: An effort to introduce client software for Gamesman using Web technologies such as HTTP and Javascript. • **iPhone Webapps**: Want to play Gamesman with your iPhone? No problem. Visit http://wingedtech.com/gamesman/



Tcl / Tk Gamesman Interface



