Introduction to Game Theory

Today, I’ll explain the core ideas behind game theory and show you your awesome final project.

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What “Board Games” do you mean?

- No chance, such as dice or shuffled cards
- Both players have complete information
  - No hidden information, as in Stratego & Magic
- Two players (Left & Right) usually alternate moves
  - Repeat & skip moves ok
  - Simultaneous moves not ok
- The game can end in a pattern, capture, by the absence of moves, or ...

Computational Game Theory

- Large games
  - Can theorize strategies, build AI systems to play
  - Can study endgames, smaller version of orig
    - Examples: Quick Chess, 9x9 Go, 6x6 Checkers, etc
  - Can put 18 years into a game (Schaeffer, Checkers)
- Small-to-medium games
  - Can have computer strongly solve and...
    - Play against it and teach us strategy
    - Allow us to test our theories on the database, analysis
    - Analyze human-human game and tell us where we erred!
    - Big goal: Hunt Big Game – those not solved yet
  - I wrote GAMESMAN in 1988 (20 yrs ago!),
  the basis of my GamesCrafters research group
  and the basis for this final project!