Experiment Details
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Artificial Intelligence Nanodegree
Project 4:
BUILD AN ADVERSARIAL GAME-PLAYING AGENT

Kindly see Jupyter Notebook on Github for the more details

Advanced Heuristic Analysis

- **What features of the game does your heuristic incorporate, and why do you think those features matter in evaluating states during a search?**
- **Analyze the search depth your agent achieves using your custom heuristic. Does search speed matter more or less than accuracy to the performance of your heuristic?**

Answer 1:-

My custom heuristic function chooses locations that are closer to the centre square. This is important because in a game of chess, for example, a knight is most powerful at the centre square with an average of 8 distinct squares to move to. Having access to the centre adds to the number of liberties at each state, and this is crucial in winning the game because having more liberties than the opponent can increase the chances of winning

Answer 2:-

My agent searches to a max depth of four. This is because of the time limit. Any search depth less than 4 causes the agent to guess a relatively optimal move. From my analysis, search accuracy matters more to the performance of my agent. This is because the iterative deepening search assists the alpha-beta algorithm to fall back to the last optimal state, should the time limit elapse.

Graph :

Please see attached bar-chart below, showing the outcome of playing 400 fair games with the minimax decision function. The charts represent the outcome of my custom heuristics and baseline heuristics for games with random first choice moves and greedy first choice moves.

400 Games With Fair Matches