Adversarial Search

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Monte Carlo Tree Search Analysis

This report covers results from match play.

In order to increase confidence level in results, 200 matches were played between agents.
Also, fair matches were played, which means 400 games were played in total and the play scores are given in table below.

Player 1	Player 2	Winning score Player 1	Number of threads
Monte Carlo Tree Search	Minimax	70%	1
Alpha Beta Pruning With Iterative Deepening	Minimax	33%	1

1. *How much performance difference does your agent show compared to the baseline?*

Well, *MCTS* proved significantly higher on *Alpha Beta Pruning With Iterative Deepening* algorithm (+37% percentage difference in favor to *MCTS* algorithm).

2. *Why do you think the technique you chose was more (or less) effective than the baseline?*

The result should be expected, since *MCTS* algorithm uses more sophisticated approach in performing a search. *MCTS* algorithm uses selection, expansion, simulation and backpropagation of reward to previous visited nodes and therefore reduces visits to all possible nodes in tree to a significant level.