

# Adversarial Game Playing Agent

## Analysis

MINIMAX PLAYER	Baseline heuristic	Custom heuristic
Minimax tournament 1	32.5%	66.5%
Minimax tournament 2	32.5%	72.0%
Minimax tournament 3	28.5%	69.0%
Minimax tournament 4	26.5%	75.0%
Minimax tournament 5	33.5%	70.5%
Average	30.7%	70.6%

*\* Each tournament is 100 games with fair\_matches flag on*

The custom heuristic has two improvements. The first is a special start score to help select the center position of the game board. The second is a break in the aggressiveness of the custom player. If the custom player's moves are less than 5 it starts to back off from the opposition in an effect to not become blocked.

The limit of the search depth does not matter much with this custom heuristic. Using a depth limit of 1000, it is still able to return a move before a time is called. This indicates that the search can search the entire tree before time is called.

The feature of the game that the heuristic uses is to see how many moves are left for its self and if it is less than 5 it backways from the opposition. This helps the search quickly move through moves that are not as important until the near end of the game.

Speed matters more in the begin of the game than towards the end. Towards the end accuracy matters more as one wrong move can quickly end the game for the player