

Heuristic Analysis

Vamshidhar Pandrapagada

May 16, 2017

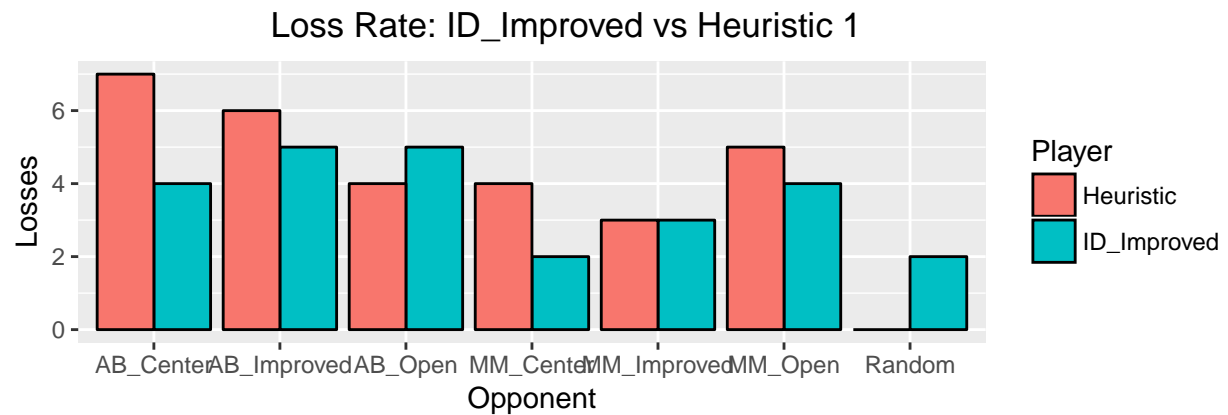
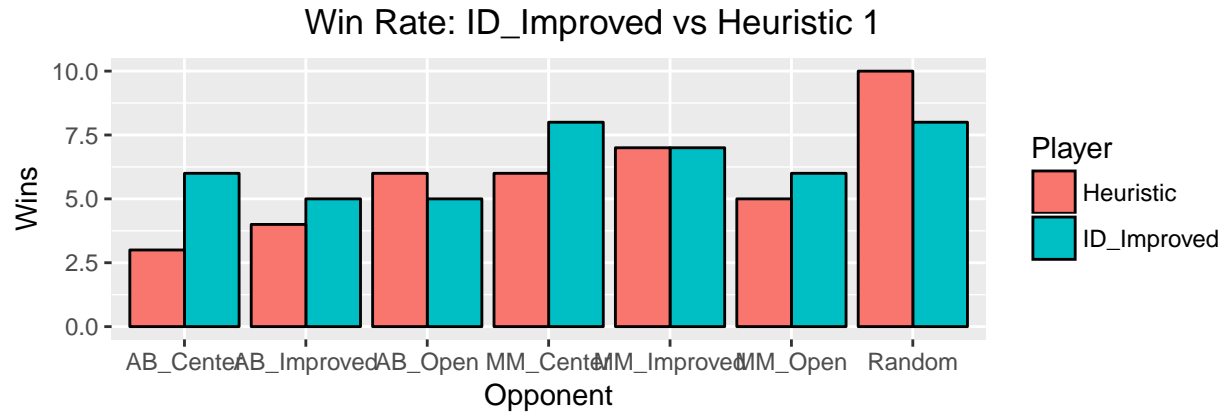
Heuristic Analysis

This document compares the different heuristics used in building the agent and highlights reasoning for choosing the heuristic that was ultimately used to submit the agent

Heuristic 1: Chase Opponent Aggressively

This Heuristic outputs the score which is equal to the difference between the number of Player's moves and the 2 times number of opponent's remaining moves. This score chases the opponent aggressively.

Below are the win-rates scored by Heuristic 1 while playing against ID_Improved



Win Rate for this heuristic was: 60%

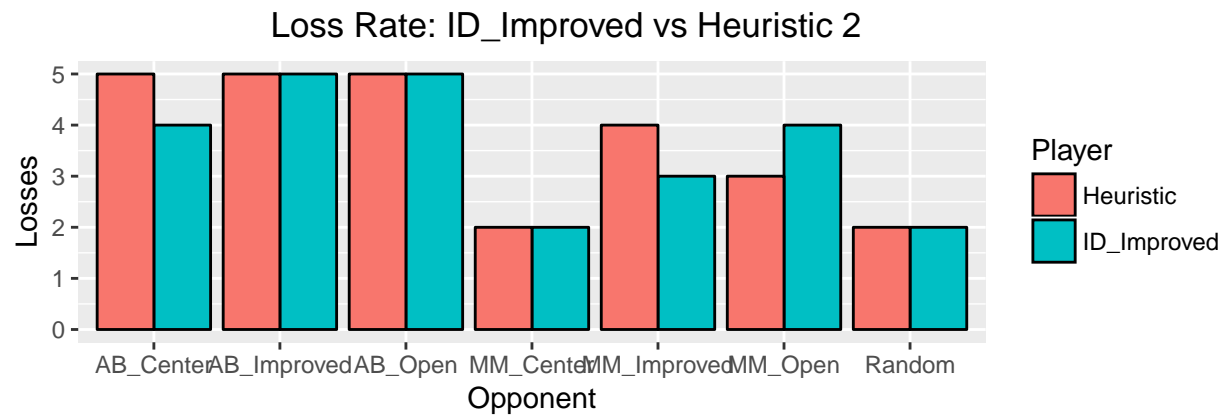
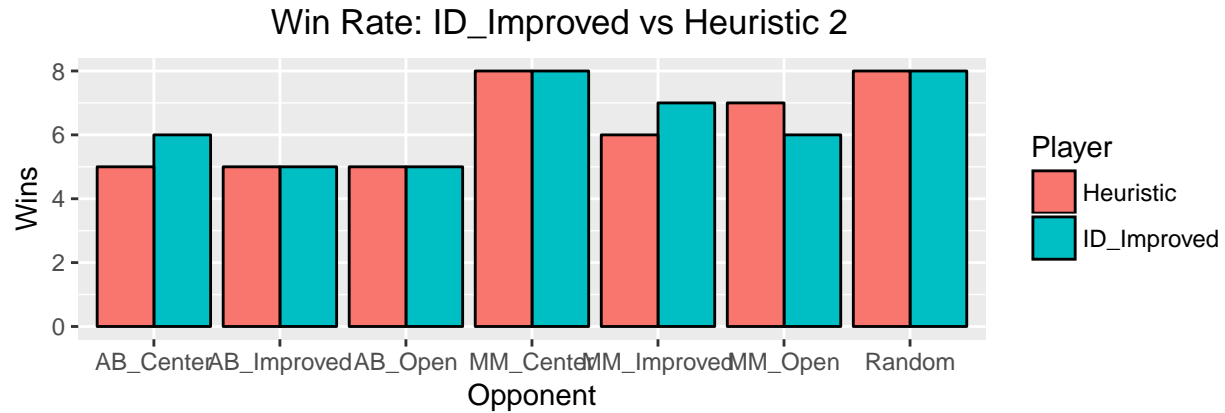
Heuristic 2: Evade Corners while nearing End-Game

This heuristic evaluates the game progress. If the board is occupied at near 70%,

- Extract next set of legal moves of the player and the opponent.

- b. If the move falls in the corners and board occupancy is > 70 penalize the move by deducting higher number of points.
- c. If the move falls in the corners and board occupancy is < 70 reward the move by adding lower number of points..
- d. Return the sum of differences between the score and the number of moves left for player and the opponent

Below are the win-rates scored by Heuristic 2 while playing against ID_Improved

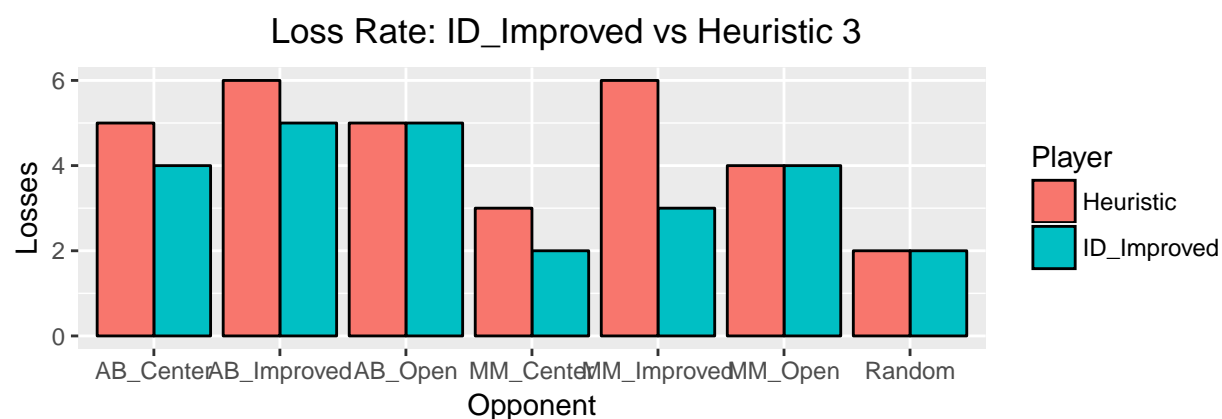
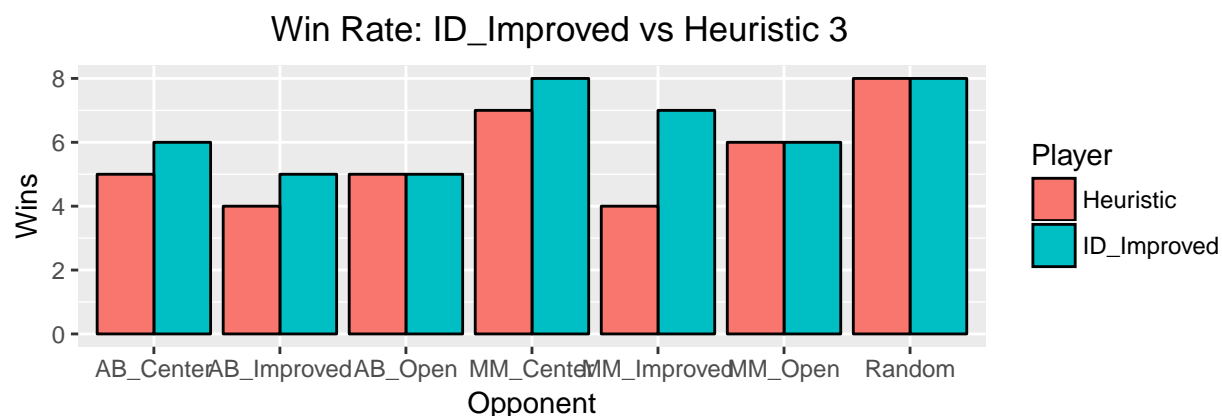


Win Rate for this heuristic was: 63%

Heuristic 3: Maximum distance from Walls

This heuristic function evaluates and returns the maximum squared distance between the player and any of the walls.

Below are the win-rates scored by Heuristic 2 while playing against ID_Improved



Win Rate for this heuristic was: 58%

Observations and Conclusion

Heuristic number 2: Evade Corners while nearing End-Game gave consistent results and was able to beat ID_Improved in most of the rounds with the win rate hovering at 72%. It is very evident that as the game gets near the end state with the board occupied nearly at 70%, avoiding the corners is yielding a higher probability of winning the game.

I ultimately use Heuristic number 2 for my submission.