Heuristics analysis

# Results

 Match #   Opponent    AB\_Improved   AB\_Custom   AB\_Custom\_2  AB\_Custom\_3

                        Won | Lost   Won | Lost   Won | Lost   Won | Lost

    1       Random       8  |   2     7  |   3    10  |   0     8  |   2

    2       MM\_Open      4  |   6     3  |   7     5  |   5     3  |   7

    3      MM\_Center     3  |   7     4  |   6     6  |   4     5  |   5

    4     MM\_Improved    5  |   5     4  |   6     5  |   5     1  |   9

    5       AB\_Open      3  |   7     7  |   3     4  |   6     2  |   8

    6      AB\_Center     5  |   5     4  |   6     6  |   4     4  |   6

    7     AB\_Improved    8  |   2     4  |   6     5  |   5     4  |   6

--------------------------------------------------------------------------

           Win Rate:      51.4%        47.1%        58.6%        38.6%

## AB\_Custom Heuristic

This heuristic uses the distance to the opponent, where a higher distance is considered as better.

## AB\_Custom\_2 Heuristic

The difference between the number o own legal moves and the number of opponent legal moves makes the bade of this heuristic. When this difference is lower than zero, the distance to the center of the board is applied making moves that were already bad moves worse as the higher distance will imply lower score.

## AB\_Custom\_3 Heuristic

For this heuristic was used the distance to the center of the board with the influence of the distance to the opponent. This benefits higher distances to the center and lower distances to the opponent.

# Comparison

Looking at the results it is possible to verify that neither the heuristics achieved a perfect score. AS it is possible to visualize form the results mentioned above, the better heuristic was the *QB\_Custom\_2*. It has a higher overall score and was the most consistent when playing against all the Opponents. The recommendation of which heuristic to use goes to the *QB\_Custom\_2* as well, will choose paths where the legal number of moves is higher than the opponent. If in case, no more paths where the number of legal moves is higher than the number of legal moves from the opponent then the heuristic will benefit the positions more near the center of the board. Choosing positions more at the center the board does normally has higher probability in having more positions available for the next move.