Heuristic Analysis

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First Heuristic: Difference of Moves

The first heuristic elaborates the difference of between the players legal moves and the opponents legal move, highlighting how many legal moves the next legal moves really has.

Result

Match #	Opponent	AB_Improved		AB_Custom	
		Won	Lost	Won	Lost
1	Random	10	0	10	0
2	MM_Open	5	5	8	2
3	MM_Center	6	4	8	2
4	MM_Improved	5	5	8	2
5	AB_Open	5	5	5	5
6	AB_Center	7	3	7	3
7	AB_Improved	5	5	6	4
		61.40%		64.30%	

Second Heuristic: Mid-center heuristic

The second heuristics tries to aim rather for the middle of the game, penalizing corner moves. Herefore the difference in legal moves of the two players with penalization of movement towards corner is being computed.

Match #	Opponent	AB_Improved		AB_Custom2	
		Won	Lost	Won	Lost
1	Random	10	0	10	0
2	MM_Open	5	5	8	2
3	MM_Center	6	4	9	1
4	MM_Improved	5	5	5	5
5	AB_Open	5	5	7	3
6	AB_Center	7	3	5	5
7	AB_Improved	5	5	6	4
		61.40%		71.40$	

Third Heuristic: Distance to opponent

The third heuristic evaluates again the difference in legal moves between the player and the opponent, however it also additionally ranks moves higher which are farther away from the opponent's current position. This is based on the principle, that in isolation you need to have movement space to win, staying away from the opponent to not get isolated.

Match #	Opponent	AB_Improved		AB_Custom3	
		Won	Lost	Won	Lost
1	Random	10	0	9	1
2	MM_Open	5	5	7	3
3	MM_Center	6	4	9	1
4	MM_Improved	5	5	6	4
5	AB_Open	5	5	4	6
6	AB_Center	7	3	7	3
7	AB_Improved	5	5	5	5
		61.40%		67.10%	

Conclusion

The best heuristic seems to be the first one, the comparison of moves between the player and the opponent, showed an improved score.

However, as the evaluation also showed, timeout might have been an issue for the other two heuristics, which might have been good in theory, however took too long in practice. A future approach could be to optimize the implementation of the second and third heuristic.