Heuristic Analysys

custom_score_2()

This function evaluates each action by subtract inactive player's legal moves from active player's legal moves. Each count of moves are squared to emphasis the difference. This function based on the simple consideration: The more action able to choice, the harder to be checkmated.

Opponent	Won	Lost
Random	8	2
MM_Open	7	3
MM_Center	9	1
MM_Improved	6	4
AB_Open	6	4
AB_Center	6	4
AB_Improved	3	7

Win Rate: 64.3%

This rate is not bad, but this function seems difficult to defeat AB_Improved.

custom_score()

This function evaluates each action by ratio of inactive player's legal moves and active player's legal moves.

Opponent	Won	Lost
Random	6	4
MM_Open	6	4
MM_Center	10	0
MM_Improved	6	4
AB_Open	6	4
AB_Center	8	2
AB_Improved	5	5

Win Rate: 67.1%

Win rate is improved from **custom_score()** instead of decreasing wins against *Random* and *MM_Open* opponent. Especially this becomes getting even score against *AB_Improved*.

custom_score_3()

This function evaluates each action by the distance between each player's location. This function based on the consideration that it is good at keeping long distance in order to be alive.

Opponent	Won	Lost
Random	9	1
MM_Open	6	4
MM_Center	7	3
MM_Improved	5	5
AB_Open	3	7
AB_Center	5	5
AB_Improved	5	5

Win Rate: 57.1%

Conclusion

Based on the result, I would recommend to custom_score because it has not only highest win rate but also has stability if any opponent comes.