

# Heuristic Analysis

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As instructed in the project material, I have written 3 custom\_score functions in order to evaluate the heuristic value of a game state from the point of view of the given player. The basic concept of those 3 functions came from the previous course material (#my\_moves - #opponent\_moves), and was customised and improved in certain ways.

Function custom\_score:

This function is the best heuristic function for my project submission. This function is generally the combination of custom\_score\_2 & custom\_score\_3 (for the explanations of custom\_score\_2 & custom\_score\_3 functions please see the following parts). This function has the highest performance.

Function custom\_score\_2:

This function makes the player aggressive due to the reason it only calculates advantage the player has based on how far ahead or how far behind by comparing the moves that the player has and the player's opponent has. In addition to this, I also applied power to the function, which enhances the advantages the player has. With this calculation implemented, the player would always try to maximise the returned value, which means it would always try to reduce the opponent's moves while it has the most possible moves.

Function custom\_score\_3:

This function is relatively similar to the first function, the only difference is that instead of enhancing the player's remaining moves, the function enhances the opponent's advantages so the player would be much less aggressive.

Please find performance screenshots in the following pages:

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 If you would like more information about Data Science Training, click the  
 Playing Matches  
 Re\*\*\*\*\* of this page.

Match #	Opponent	AB_Improved	AB_Custom_1	AB_Custom_2	AB_Custom_3	layperson?
		Won   Lost	Won   Lost	Won   Lost	Won   Lost	
1	Random	4   6	5   5	8   2	3   7	
2	MM_Open	10   0	10   0	10   0	10   0	
3	MM_Center	10   0	10   0	10   0	10   0	
4	MM_Improved	10   0	10   0	10   0	10   0	
5	AB_Open	8   2	4   6	4   6	7   3	
6	AB_Center	6   4	3   7	9   1	3   7	
7	AB_Improved	6   4	8   2	6   4	7   3	
Win Rate:		77.1%	71.4%	70.0%	71.4%	

There were 1.0 timeouts during the tournament. You have observed a  
 er increasing the timeout margin for your agent. p with a general rule of classification.

- You are playing blackjack and based on the sequence of cards you see, you

Your agents forfeited 120.0 games while there were still legal moves available to play.