I developed 3 scoring functions which I codenamed cutthroat, aggressive, and centralness. All of them were essentially modified versions of the “improved” score function (my moves - their moves), but each with a twist.

Cutthroat looks at if there’s an overlap in the available moves of the two players, and when there is an overlap of 1 in the legal moves gives a bonus if it’s the player’s turn, or a penalty if it’s the opponent’s turn. The idea is that a cutthroat player might prefer to steal the available spaces that the opponent can move to, thereby reducing their number of moves.

Aggressive is inspired by the lectures, where as the game progresses it puts a larger and larger multiplier on the “their moves” side of the “improved” score function. The later on in the game, the more this agent focuses on reducing the opponent’s moves relative to keeping its own moves.

Centralness values board position by giving a bonus when the player’s piece is within the center of the board, and a further bonus when the opponent’s piece is outside of the center of the board.

After developing my scoring functions by running tournament.py a few times, I ran two large batches by modifying tournament.py to increase the NUM_MATCHES to 100 and remove all of the opponents aside from AB_Improved. I did this because I felt the sample size was far too small in the default settings to draw conclusions from.

AB_Custom = cutthroat
AB_Custom_2 = aggressive
AB_Custom_3 = centralness

Match #	Opponent	AB_Improved		AB_Custom		AB_Custom_2		AB_Custom_3	
		Won	Lost	Won	Lost	Won	Lost	Won	Lost
1	AB_Improved	93	107	98	102	109	91	106	94
	Win Rate:	46.5%		49.0%		54.5%		53.0%	

I had expected cutthroat to perform the best, however it actually performed the worst out of them! I figured that the knight movement version of isolation didn’t have the board partitioning aspect of the queen movement version, so positioning in a way to steal the opponent’s moves might be a good strategy. Aggressive and centralness both seemed to outperform AB_Improved marginally, however given that AB_Improved wasn’t 50/50 with itself indicates a bit of a margin of error to me that they both fall within so I can’t confidently say any of my scoring functions reliably outplay AB_Improved. I would guess some intelligent combination of the 3 of them might be able to though, since from a high level the idea of stealing opponent’s moves, positioning centrally, and being aggressive later in the game could work well together.