

AIND PROJECT 2 Heuristic review

1. Custom (Ultimately chosen one)
 - Return $\text{own_moves} - \text{opp_moves}$
2. Custom_2
 - Return $\text{own_moves} / (\text{opp_moves} + 1)$
3. Custom_3
 - Return $3 * \text{own_moves} + 1 / (\text{opp_moves} + 0.3)$

I finally chose the heuristic that difference of own moves and opponent moves. It's very simple and easy to calculate, but it is also reasonable enoughly.

***** Playing Matches *****									
Match #	Opponent	AB_Improved		AB_Custom		AB_Custom_2		AB_Custom_3	
		Won	Lost	Won	Lost	Won	Lost	Won	Lost
1	Random	10	0	8	2	9	1	9	1
2	MM_Open	7	3	7	3	8	2	6	4
3	MM_Center	7	3	9	1	7	3	7	3
4	MM_Improved	8	2	7	3	6	4	8	2
5	AB_Open	6	4	5	5	6	4	5	5
6	AB_Center	7	3	7	3	5	5	7	3
7	AB_Improved	6	4	8	2	5	5	4	6
Win Rate:		72.9%		72.9%		65.7%		65.7%	

One of the matches result

'tournament.py' simulates 10 isolation games with each heuristic, and all heuristics perform well against to Random opponent, Center opponent., but it seems a bit ahead or equal to AB-Center, AB-Improved. Since my laptop specification is not good, Win rate changed a lot in each simulation.

Although I have not implemented it because of lack of my coding ability, I predict that more complicated heuristic which gives a penalty if the player gets closer to the corner, or considering the case of partitioning can show much better performance.