

Use an advanced search technique

CustomAgent class implements the following heuristic:

A score is calculated for both players based on their moves and state.ply_count.

A positive score is added for the player if moves lie in borders and state.ply_count < 30; in case that state.ply_count is between 30 and 50, a higher score is subtracted from the score; if state.ply_count is greater than 50, even much higher score is subtracted; a positive score is also added for moves not in borders.

The process is negated in case of the opponent.

The value of the difference between two scores of the current game state is returned.

Evaluate the performance of CustomAgent

Heuristic	Score	Result
Baseline	#my_moves - #opponent_moves heuristic from lectures	Win 50.0% of matches against Minimax Agent
Advanced Heuristic	The value of the difference between two scores of the current game state explained above	Win 75.0% of matches against Minimax Agent

Answer all required questions

- Whether moves lie in borders and state.ply_count features of the game are incorporated by custom heuristic. At the early stage of the game, for example, state.ply_count < 30, visiting border space has no risk of losing, and should be encouraged as visiting other space; with state.ply_count increasing, such behaviour should be avoided in order to win.
- The depth vs. state.ply_count is recorded during search. There is a steady increasing trend between them, indicating custom heuristic performs deeper search in an attempt to win the game. With regards to which of search speed and accuracy matters more to the performance of CustomAgent, it seems that speed might matter a little bit more, because deeper search is achieved near the end of the game.