Udacity Artificial Intelligence Nanodegree
Project Isolation Game Playing Agent

Contrasting of Heuristics - Scoring Functions

Three different scoring functions were implemented to assess the performance of our game playing agent on the board game „ISOLATION"

1. Custom Score 1 - Heuristic Title : Weighted
   We see a mixture of custom score 2 and 2 in form of a weighted score Since we can adjust the impact of the two custom functions, we played tournament one with a weight of 50% on custom score 1 and custom score 2 with a weight of 50%. Tournament 2 has been played with a weight of 40 to 60 % since AB_Custom_3 was favorable in the Alpha Beta games but the benefit was marginal

2. Custom Score 2 - Heuristic Title: Greed
   We yield a high score when our opponent is chased where fewer moves are possibles for the opponent. Since we can adjust the greediness of the heuristic, we set tournament 1 to a greediness factor of 2 and tournament 2 to a greediness factor of 8

3. Custom Score 3 - Heuristic Title: Chaser
   We yield a high score when our opponent has fewer moves left and we lose the game when we have zero moves left. Since we can adjust the greediness of the heuristic, we set tournament 1 to a greediness factor of 5 and tournament 2 to a greediness factor of 10

Tournament Comparison (Top: Tournament 1, Bottom: Tournament 2)

Overall, the win rate was rather comparable between custom functions. However, the AB-Custom function 2 performed quite well against any type of opponent and yielded a striking 75.7% win rate. This was due to a greediness factor of 2. When we increased it to 8, the agent became less successful.

As a general rule of thumb, minimizing the opponents moves is crucial while trying to maximize ones options.