

# BUILD A GAME PLAYING AGENT REPORT

## ADVANCED HEURISTIC

BASELINE AGENT (minimax with alpha-beta pruning using the difference in liberties heuristics between player and opponent) VS

GREEDY AGENT	75.0%
RANDOM AGENT	87.5%
MINIMAX AGENT	50.0%

## MY CUSTOM HEURISTIC VS

GREEDY AGENT	75.0%
RANDOM AGENT	97.5%
GREEDY AGENT	70.0%

My heuristic incorporates two main features of the game. One feature is the difference in the number of liberties available to both players, however, we also go one level deep to see the more promising moves down the line. In that way, we reward moves that create more openings in subsequent plays. The second feature we incorporated is the danger of being caught trapped at the edge of the board. To avoid this, the heuristic favours moves that go towards the centre of the board away from the edges.

Initially, I combined just the difference in moves and the favour centre positions approach. I was able to get on the average marginally better performance but was not impressed with the numbers. The heuristic improved the top score that was possible but in some rounds would perform poorly compared to the baseline. Modifying the heuristic to go a level deeper improved the results tremendously without the occasional dip in performance.

Accuracy matters more to the performance of my heuristic than search speed. Being able to see not only the moves available at this level but also those available at the next level of play helps the heuristic assign better scores to moves.