Intro to AI: Othello Project

Parker Cummings, Lexi Franklin

Dr. Debasis Mitra

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\*Note: Partner was unable to be contacted, and project was completed alone.

**Algorithm/Pseudocode:**

**A screenshot of a computer program

Description automatically generated**

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**A screenshot of a computer program

Description automatically generated**

**A screenshot of a computer game

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**Sample Run Screenshots:**

**A computer screen with green text

Description automatically generated**

Screenshot of launching the game, implemented tree depth limit to reduce branching factor

**A screenshot of a game

Description automatically generated**

Screenshot taken before the game has begun. The AI is playing as white.

**A screenshot of a game

Description automatically generated**

Screenshot taken after the first move. I chose (3, 2), and the AI chose (2, 4)

**A screenshot of a game

Description automatically generated**

Screenshot taken after 2nd move. I chose (3, 5) and the AI chose (2, 2)

**A screenshot of a game

Description automatically generated**

Screenshot taken after 3rd move. I chose (4, 5) and the AI chose (3, 6)

**Free Form Discussion:**

1. **Board Evaluation Function**

For the evaluation of the board at each step, I chose the heuristic known in the game as Disc Difference. This heuristic is the difference between the minimizing player and maximizing player’s discs on the current board. The function in pseudo code looks like such:

A screen shot of a computer program

Description automatically generated

The function takes in a current board and returns the difference between discs on the board. The function is used in the minimax algorithm to determine the score of the best path found. The main reference I used for this algorithm can be found here: <https://medium.com/@samharrison_58357/building-an-ai-to-play-my-favourite-board-game-othello-57f5aab1d6cf>

1. **Testing Plan**

To test this algorithm, I will play various games with strategies learned online and determine where the AI is not making the best decisions. My current plan is as follows:

* Find online Othello strategy
* Attempt strategy against AI, draw decision trees
* Find where AI is lacking
* Debug code

1. **Team Dynamics**

Because my teammate was unable to be reached, there was not a focus of team dynamics for this project. However, since there are future assignments with the project, there will be room to improve Team Dynamics.