**Connect 4 with AI project**

**Description:**

This is a connect4 game with GUI. The game has computer vs. player game mode. The computer player (AI) is implemented using a minimax algorithm, and a set of heuristics to evaluate each move and a given game state. The code will need pygame, numpy, math, random and sys libraries to run.

**How to Play:**

The first Player choose a color and then take turns dropping one colored disc from the top into a seven-column, six-row vertically suspended grid. The pieces fall straight down, occupying the lowest available space within the column. The objective of the game is to be the first to form a horizontal, vertical, or diagonal line of four of one's own discs. Connect Four is a solved game. The first player can always win by playing the right moves.

**Game Algorithm:**

The minimax algorithm has a practical search depth of 5, and the AI can play at an easy to moderate level. At search depth of 5, it takes about 5 to 7 seconds to compute a move (when there are still 7 columns available), while a search depth of 6 takes about 20 to 30 seconds to compute a move.

In addition, the current set of heuristics fails to account for "almost pointless moves" such as filling up a 3 in a row that leads to nowhere. This is due to the score is not given to a move base on its surrounding empty slots

**Team Members:**

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