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Senior Project Quarter 1 Summary

This quarter I worked mainly on discerning what constitutes a “solved” chess endgame and began to work on tweaking the evaluation algorithm for the middle-game in order to increase performance and find the most important factors.

Chess endgame work:

- Created a program using stockfish 15 to play chess games against itself with the following features:
    - Generated random starting positions for this program to start from, with the positions generated being more or less “balanced” (eval between +/- 3)
    - Move limit of 100 moves, program plays itself until a position with 7 pieces or a game-over is reached.
    - Resulting position of 7 total pieces is considered “solved” due to existing 7-piece syzygy tables showing all possible results for 7 piece positions.
    - Writes result of each game into csv files which are named according to number of pieces with the following data columns:
        - Starting fen, Reduction found, Ending fen, Number of Moves, Checkmate reached?, Stockfish Depth, Stockfish Time Constraint
- Ran over 5,000 games from varying positions.
- Decided upon an endgame of 12 pieces due to results.

Chess middle-game start:

- Read up on piece square tables and other chess eval methods:
- Found simple chess ai repo ‘sunfish’
- Future work:
    - Will tweak eval algo (piece square tables) to attempt to find better performance
    - Connect Stockfish endgame to sunfish middlegame
    - Find method of testing ai performance/playing games against self.
    - Code in opening book earlygame.