

Product Backlog

1. GUI

a. Chessboard

- i. Checkerboard grid (alternating colors)
- ii. Black/white chess pieces
- iii. Move pieces via arrow keys
- iv. Move pieces via mouse clicks
- v. Timer icon that displays time remaining per move

b. User menu options

- i. Log in/out
- ii. *Save/Resume game
- iii. Begin new game
- iv. Save game score
- v. Past history (top scores, etc)
- vi. Exit

2. AI

a. Assess board state (assign board state heuristics)

b. Generate all possible valid moves

c. Min-max tree structure

- i. Assign heuristic to each chess piece
- ii. Computer looks ahead one move in tree
- iii. Minimax tree used for AI
- iv. Alpha-beta pruning (one level)
- v. Alpha-beta pruning (across all levels)
- vi. Alpha-beta pruning (utility-based successors sorting)
- vii. Iterative deepening implemented

3. Utility Functions

a. Backend

- i. Call relevant AI functions
- ii. Maintain board state
- iii. Verify validity of all user moves
- iv. Determine if winner

b. Frontend

- i. Call relevant GUI functions
- ii. Maintain (visible) timer for each move
- iii. Bridge between GUI and AI

4. Client-Server mode

a. (Additional details to be released)