

Assignment #3: Kalah

Files

- main.py (Basic functions for Kalah game, connecting to the server, etc.)
- ui.py (GUI interface for the game)
- ai.py (**Your job:** determine next move according to current situation)



ai.py

- Class state (storing current stones in each hole and kalah)
- Function move (determine your next move, choose a hole from numbers 0 – 5)
- Function minmax (minimax algorithm with alpha-beta pruning)

Note:

- 1. Must be minimax algorithm with alpha-beta pruning algorithm! Otherwise you will lose all points!**
- 2. Don't change the names of important variables and functions.**

Turn In

- hw3.zip
 - ai.py
 - report.pdf

Report

- Report describing your implementation (at most 5 pages, 1" margins, 11pt, double-spaced), 8 points:
 - A brief description of the game: 1 point.
 - The definition of your heuristic function and its justification. Illustrate how it works with example moves it chose and explain why it chose them in terms of the function: 3 points.
 - The details of your program design, experiments and results:
 - How long does it take to make a move at different search depths and specify your CPU speed in the report. Timing restrictions are only for the tournament: 2 points.
 - How each heuristic function you designed affects the performance, e.g., the algorithm with this heuristic function vs the algorithm without this heuristic function: 2 points.

Tournaments:

- Play-off mode, randomly paired, the winner enters the next round.
- Score calculation (Player A vs Player B):
 - A moves first: $a : b$
 - B moves first: $c : d$
 - Final scores: $(a + c : b + d)$
- Illegal move or searching exceeding 1 sec will lower your score to **zero**.
- The players after xxx round **will receive bonus points!**

Note

- The game server can be only connected when you are using **Campus Internet**. If you want to debug outside of campus, use VPN or comment line #38 and #40 at main.py.