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MATH. - NATURWISS. FAKULTÄT
FACHBEREICH INFORMATIK
KOGNITIVE SYSTEME · PROF. A. ZELL

Artificial Intelligence

Assignment 8

Assignment due by: 11.01.2017, Discussion: 17.01.2017

Question 1 MinitChess [20 points]

The goal of this exercise is to implement an agent for playing the chess variant **MinitChess** as well as possible. MinitChess is played on a 5×6 board and every piece except the pawns are only present once on the board.

The game is based on the official chess rules with the following changes:

- No double pawn moves (this also precludes *"capturing en passant"*).
- Pawns are automatically promoted to queens upon reaching the other side.
- No *castling*.
- The bishops are *bad bishops*, i.e. they can move one square horizontally or vertically (without capturing) to change color.
- A player wins when he has the opposing king in checkmate or when the opposing player has no legal moves available on his turn.
- The game ends in a draw if neither player has won after 40 turns.

Download the file `5x6chess.zip` from ILIAS. Then create a separate class named after your team members (e.g. `AIOtteDoerr`). This class represents your agent and needs to implement the `ChessPlayer` interface, but you are free to choose the algorithm to use for deciding the moves. The zip-file you downloaded also contains a `readme.txt` with further details and hints for this task, be sure to read it.

Programs that don't compile are automatically given 0 points. To get at least half of the points, your agent must be able to reliably beat the random-move agent `MrRandom` that is included in the zip file (beat reliably means win at least 2 out of 3 games as both player 1 and player 2). To get full marks, your agent should be able to reliably beat the minimax agent `MrNovice` (with search depth 4) and do something besides adding alpha-beta pruning to the minimax agent (e.g. create a different/better heuristic). Bonus points *may* be awarded to agents that can't reliably beat `MrNovice` if they use an especially interesting algorithm/idea.

All the working agents will compete in a tournament. The prize for the winning team is full marks on all their assignments, second place gets full marks on their two worst assignments and third place gets full marks on their worst assignment.