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

Artificial Intelligence

Assignment 8

Assignment due: 14.01.2022

Question 1 Diana Chess [20 points]

The goal of this exercise is to implement an agent for playing a Chess variant called Diana Chess as well as possible. Diana Chess is played on a 6×6 board, without Queens and with only one knight, and without pawn double moves (so no en passant either). A pawn is always promoted to a rook when it reaches the 6th rank.

Download the file `dianachess.zip` from ILIAS. Your agent will be implemented in `studentagents/template.py` and you will have to keep the name this way while you are working on it, see the readme file.
For the submission, rename the file `template.py` in `studentagents/` to the last name of both team members (e.g. `rahim_schroeder.py` for Rahim and Schröder), and make sure to upload it to Ilias with that name. Use the class named `Agent` inside that file which represents your agent and keep its methods. The zip-file also contains a `README.txt` with further important details and hints for this task, be sure to read it.

Programs that don't compile are automatically awarded 0 points, so make sure your agent compiles (with the rest of the program, unchanged). The points will be distributed as follows:

- 5 points for a working agent that always beats the `MrRandom` agent that is included in the zip file (i.e. it compiles and there are no big logic errors that make it play to lose).
- 5 points if your agent can reliably beat `MrNovice` (`MrNovice` uses α-β-pruning with a limited search depth). This agent is not included.
- Up to 5 points are awarded depending on how well your agent plays against the agent `MrExpert`, which is not included in the zip file. It is an α-β-pruning-agent whose search-depth is only limited by the time per move.
- Up to 5 points for explaining the approach you chose for your agent (how you designed your evaluation function and what techniques you added to your agent).

All the working agents will compete in a tournament. The prizes are as follows:

- Winning team - 9 bonus points in the exam ($\approx$ a 1.0 improvement in the overall grade)
- Second team - 6 bonus points ($\approx$ 0.7/0.6 improvement)
- Third team - 3 bonus points ($\approx$ 0.3/0.4 improvement)