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

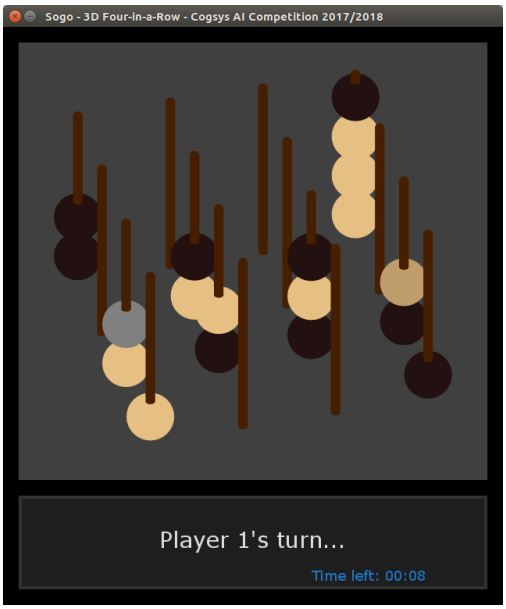
Artificial Intelligence

Assignment 9

Assignment due by: 10.01.2017, Discussion: 12.01.2017

Question 1 Sogo (3D Four-in-a-Row) [20 points]

The goal of this exercise is to implement an agent for playing the 3D four-in-a-row game Sogo as well as possible. Sogo is played on a $4 \times 4 \times 4$ board where the pegs have to be filled from the bottom up.



Download the file `sogo.zip` from ILIAS. Then create a separate class named after your team members (e.g. `AIPatinoBerquin`). This class represents your agent and needs to implement the `SogoPlayer` 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, so make sure your agent compiles (with the rest of the program) using a Java 8 compiler. 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 gross logic errors that make it play to lose). If your agent can reliably beat the `MrNovice` MiniMax agent at search depth 4 you get another 5 points (`MrNovice` uses a rather simple evaluation function). The next 5 points are awarded depending on how well your agent plays against the agent `MrExpert`, which is not included in the zip file, but is a straightforward extension of `MrNovice` to use Alpha-Beta pruning and thus can achieve search depth 5. The final 5 points will be awarded 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 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.