Artificial Intelligence

Exercise Track

344.021, 344.022, 344.023
WS2015

1 General Information

The purpose of the exercise track is to give students an opportunity to deepen their understanding of the contents presented in the lecture.

The exercise track is split into two parts: an obligatory and a voluntary part. Through the voluntary part students can gain a considerable amount of additional points to improve their final mark, as well as gain experience in programming real competitive game agents (and hopefully, having fun doing so). Both parts require programming in JAVA within a given game framework provided by the lecturers. We will give a concise introduction to this framework in the first class.

Groups: Both parts are to be done in **groups of TWO persons each**. Students have to form groups **until the beginning of the second class (12.10.2015) at the latest!** There is a forum available on the MOODLE site of this course (`https://moodle.jku.at`). Announce your group using this forum. Students without groups will be grouped **randomly**.

2 Assignments (Obligatory)

The obligatory part consists of four (+1) assignments with several tasks each. Each assignment will require implementing algorithms taught in the lecture within a given game framework in JAVA, and/or answering theoretical questions.

We will provide the exercise sheets and the current version of the game framework, including dummy implementations of the methods you are asked to write, via MOODLE. Make sure to always have the current version for each exercise. A short introduction to the game framework will be given in the first class. There will also be a more comprehensive handbook available in MOODLE for download.

We will evaluate these methods using a set of unit tests for correctness. A small subset of these unit tests will be available to you to test your implementations. Howvever, these will not cover all possible fault conditions, thus passing all the provided unit tests does not necessarily mean that the implementation is free of errors.

Handing in Solutions

The groups will have to upload their solutions via MOODLE according to the submission deadlines. Each group has a total of **three "late days"**. This means you can extend the deadlines three days **in total**. For example, you can hand in the first assignment three days late, but are then forced to submit the others on time. Or, you can hand in the first three assignments one day late each, etc...

If you hand in your solution late and have no late days over,
your submission will not be accepted.
No exceptions.

The preliminary assignment schedule is as follows. We do not expect these dates to change, but check the deadlines on the assignment sheets to be sure. The submission deadline is always at 23:55.

Assignment	Handout	Due	Discussion
A0	12.10.2015	19.10.2015	-
A1	12.10.2015	02.11.2015	09.11.2015
A2	09.11.2015	27.11.2015	30.11.2015
A3	30.11.2015	08.01.2015	11.01.2015
A4	11.01.2016	25.01.2016	-

Grading

Submitted solutions will be tested against a number of unit tests not available to the students. The percentage of passed unseen tests together with code reviews will determine the points gained for each task. The maximum number of points for a task will depend on the difficulty and effort associated with it.

To pass the class, students need to reach **at least 50% of all possible points** for the four exercises.

3 Competition (Voluntary)

The voluntary part is to program an artificial agent ("bot") for a simple but challenging 1 vs. 1 computer game[1]. Agents of different groups will play against each other in a league-like competition. Some of the methods implemented in the obligatory part will be useful in this context, but you will have to apply them in a meaningful way in order to beat your opponents. Additionally, agents will have to observe time and memory constraints. The game framework will come with two simple example bots. As soon as you get the framework, you can start developing your own bot and test it against these example agents.

To participate in the competition, you will have to upload your bot in a zip file to MOODLE until given deadlines. We will let the uploaded bots play against each other, as well as against

[1] Go to `http://unicorns.cp.jku.at` to see an example game replay

the winner of last year's competition. The results (including replays) will be available a few days after the competition ends. The preliminary schedule is as follows (upload deadline time is at 12:00 noon):

Round	Upload Deadline	Results
0	20.11.2015	23.11.2015
1	27.11.2015	30.11.2015
2	04.12.2015	07.12.2015
3	11.12.2015	14.12.2015
4	18.12.2015	21.12.2015
FINAL	08.01.2016	11.01.2016

The winner of the competition will be determined by the **final round only!**

Grading

Participating groups will be invited to an individual discussion with the lecturers, where they will explain the approach they chose for their agent. Based on this discussion the lecturers will give points up to the equivalent of a complete exercise of the obligatory part (¼ of all possible points). Note that the final ranking of the agent does not directly influence the grade!

BONUS: Groups beating last year's best submission (in the final round) will be awarded with full points on the voluntary part!

4 Questions

You can post questions about the assignments and/or the subject matter of the lecture in an online forum in MOODLE. **We encourage every student to answer questions in this forum!** Explaining things to other people deepens your own understanding of the matter. The lecturers will also regularly read the forum, give additional information and answer open questions.

Of course, you are not allowed to post solutions to exercises!

5 Contact

If everything fails, feel free to contact us directly. Make sure that you first tried other means to answer your question (read the handbook and/or slides, ask questions on the forum in MOODLE). If you want to discuss something in person, please write us so we can set up an appointment.

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