1 Background

This end-of-course project will account for 70% of your overall grade in CS7032. The project can be done individually or in teams of two students.

The project will be assessed through a report and code. In some cases, a demonstration might also be appropriate and will be arranged in advance. The report must be structured as an academic paper and contain, minimally: (1) a precise statement of the problem addressed by the project, (2) the approach you adopted to solving it, (3) a discussion of your results (whether positive or negative), (4) the main difficulties you encountered, (5) your assessment of the usefulness of an AI technique in addressing the type of problem tackled by your project and (6) references to the relevant literature.

In addition, if you worked as a team, you must include a separate section describing the contribution of each team member.

2 Goals

You should implement an agent (or controller for a team of agents, as the case might be) to play one of the recommended Game AI competitions. Although we should ultimately be aiming to produce an agent (or agents) which can in principle (say, after some extra work after the assignment itself is finished) be entered into a competition, some competitions may be too complex for a complete and competitive agent to be implemented within the time frame of the project. In such cases, it is acceptable for you to focus on an interesting aspect or sub-problem of the game in question (e.g. learning targeting or move strategies in combat-style games, learning the best choice of shooting technique in Angry Birds (e.g. (Jutzeler et al., 2013)), learning defense actions in fighting games (e.g. (Yamamoto et al., 2014)), etc).
3 Assessment

The project will be assessed and marked in terms of: (a) clarity of problem description, including adequate (not excessive) background information, (b) quality of the technical execution, bearing in mind that we are not looking for an unbeatable agent but one that illustrates clearly and meaningfully some of the techniques discussed in the course (such as problem specification in terms of agent architectures, simulation and multi-agent problem solving, supervised and reinforcement learning, etc), (c) clarity in the assessment of results, discussion of the effectiveness of the techniques explored, and conclusions drawn from the project work, (d) quality of the presentation and (e) description and assessment of the contributions of each team member (if you choose to work in a team).

The amount of effort you should put into the project should be commensurable with the amount of work put into preparing for an exam.

4 Delivering the assignment

The deadline for submission of the project report (and code) is Thursday, 28th January, 2016. The project must be submitted through blackboard.1

Please format the report (preferably in L\TeX) according to the ACM’s conference proceedings style template. The report/paper should normally not exceed 10 pages in the (two column) ACM format.

5 Possible choices

You may choose one of the following competitions:

1. CodeCup,
2. AI Birds - Angry Birds machines vs humans
3. Starcraft AI
4. Capture the Flag
5. Spelunky Bot
6. 2k botPrize

These options are recommended based on the following criteria: your expressed preferences, availability (and freedom) of code, interest of the AI community in general (as reflected in published papers and competitions scheduled for next year’s AI conferences), simplicity of the domain (so that you can focus on the AI).

1I will try to have an uploading module set-up until there, otherwise it will have to be by e-mail.
5.1 Resources

Surveys and links to the competitions, papers etc can be found at the Blackboard page of slides for the module (AI competition slides).

6 Questions?

Feel free to email me.

References
