Reinforcement Learning Project

Marking criteria

You will be marked on four criteria:

- **Quality:** How high was the performance of your trained agent relative to the difficulty of the problem that you chose to solve?
- **Rigour:** How thoroughly have you evaluated the performance of your agent?
- **Understanding:** How deep is your understanding of reinforcement learning in general, and of the methods you have implemented in particular? Have you made principled decisions when selecting your chosen solution method over potential alternatives?
- **Presentation:** How clear, concise, and well-organised are your report and video presentation?

In order to achieve a grade above 40%, students must implement an agent that demonstrates a noticeable amount of learning in their chosen domain. At this level, the students' chosen problem may be relatively simple (while still fulfilling the requirements for the project). Students should perform some basic analysis of their agent's performance, but may not provide comparisons to useful baselines and alternative methods. Students should demonstrate a basic understanding of the method(s) they chose to implement, but may demonstrate only a limited appreciation of possible alternatives. The students' writing style may be weak, with little effort made to ensure correct spelling and grammar. Students may position figures haphazardly and may not discuss them appropriately. The ideas and arguments presented in the students' report and video presentation may be unorganised and unclear.

In order to achieve a grade above 60%, students must implement an agent that demonstrates a substantial level of learning in their chosen domain, relative to the difficulty of their chosen problem. Students should thoroughly evaluate the performance of their agent(s), and include comparisons with key baselines and some alternative approaches. Students should demonstrate a good understanding of their chosen method(s) and give reasonable justifications for their algorithmic choices. This should include demonstrating a reasonable appreciation of the strengths and weaknesses of alternative methods. Throughout the report, the students' writing style should be clear, consistent, and correct. Students should use figures effectively to present key information and results, discuss their content appropriately, and put thought into their placement. Students should present key points clearly in both their report and video presentation, and their arguments should lead to natural and well-justified conclusions.

In order to achieve a grade above 70%, students should implement an agent that demonstrates a high level of performance in their chosen domain, relative to the difficulty of their chosen problem and the amount of time and compute resources available. In simpler domains, a near-optimal policy may well be learned. The solution methods developed should go beyond the content covered explicitly in the unit. Students should perform an in-depth evaluation of their chosen method(s) and include comparisons to and evaluations of additional baselines and alternative methods. Students may show evidence of creativity in their algorithmic approach and analysis. Students should demonstrate a deep understanding of their chosen method(s), as well as possible alternative approaches. All algorithmic choices should be well-justified. The students' writing style should be professional and fluent throughout. Students should use figures effectively and selectively to present key information and results, as well as to complement text where appropriate. The students' report and video

presentation should be well-organised, and ideas and arguments should be conveyed clearly and concisely at an appropriate level of detail.

Grades above 70% will normally be rare.

Penalties

All four deliverables are mandatory. A penalty of −10 marks will be applied for each deliverable that is missing from your submission.

A penalty of −5 marks will also be applied for each of the following issues: exceeding the specified page or time limits, not using the provided LaTeX template to write the report, not following the prescribed report structure, not recording the video presentation at your normal speaking tempo, or not having all group members participate in the video presentation.

We will not read beyond the first seven pages of the main body of your report, and no marks will be given for content beyond this point. The same applies to your videos: we will not watch or award marks for content beyond the specified time limits.

Plagiarism

Please ensure that you develop your solution and write your report independently of other groups. Cite literature appropriately and give clear credit to the authors of any third-party code you use as part of your solution.

Do not plagiarise. Plagiarism is a serious academic offence. Both your source code and report will be checked for evidence of plagiarism. For details on what plagiarism is and how to avoid it, please visit http://www.bath.ac.uk/library/help/infoguides/plagiarism.html.