COMP-579: Reinforcement Learning - Project Description

The course project can be carried out in teams of *3 students*. Its goal is to allow you to explore a topic of your choice more in-depth. Appropriate project topics should lie in the field of reinforcement learning, including:

- Re-implementing and reproducing the results in a paper

- Ablation studies on an algorithm, to better understand its properties

- Comparing different algorithms on an interesting benchmark or dataset

  Please note that a literature review, without any coding practice, is not suitable for the project.

- Implementing and testing new algorithmic variations

If you are unsure whether the topic is appropriate, you may discuss the topic of your final project with course staff via email, or during office hours.

The submission for the project consists of:

A project proposal. The proposal should be about *150-300 words*. It is worth 10% of your final project. We recommend you include:
- the problem you will be investigating, and your motivation;
- (a sketch of) the method you are proposing;
- the RL domain, simulator, dataset, or RL environment you will be experimenting on, and how you evaluate your method.

A report. The report is up to *4 pages in NeurIPS format*[1], *excluding references*. The report and the code are worth 70% of your final project. This short paper is recommended to include:
- a short abstract summarizing the content of the project and the role of each team member (if appropriate);
- an introduction section that motivates your project, and the contribution of your work;
- a background or preliminary section to define or formulate anything that you will use which *goes beyond the course material*;
- a related work section that briefly introduces literature in your field of interest (beyond the course material);
- a methodology section;
- an experiment section containing experimental settings (hyperparameters, benchmarks description) and results (relevant tables, plots, and their description); make sure that this section is complete and detailed enough to contain all the necessary information for someone else to replicate your results;

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[1] `https://neurips.cc/Conferences/2023/PaperInformation/StyleFiles`

- a short conclusion and future work section, which explains what other interesting things could be tried, and references (these do not count in the page limit).

Any relevant code, or notebooks. A `README.md` that provides sufficient information to run the code is highly recommended. The model checkpoints and packages (such as PyTorch) should not be included.

A short video. It should not exceed 4 minutes, explaining the highlights of your project. It is worth 20% of your final project.

The project proposal can be submitted without penalties until March 9, 11:59 pm. The rest of the project (the report, code, and video) can be submitted without penalties until April 12, 11:59 pm. For the late-day policy, $2^{\text{late days}}\%$ penalty will be deducted.