CS-GY 9223 / Fall 2020

Course project

Proposal: Sept 25; project plan: Oct 23, mid-term update: Nov 20; final report: Dec 15

There will be no final exam in CS-GY 9223. Instead, 40% of your total grade will depend on satisfactory completion of a semester-long {course project}. Projects are conducted in teams of one (1) or two (2) students. (Solo is fine, but I would strongly encourage groups of 2.)

The project is open-ended in scope and duration. The only criterion is that it should involve design and/or analysis and/or implementation of deep learning.

Templates for projects may include:

(i) learning about a new deep learning technique (beyond what is covered in class or homework); reading up prior work on that technique; implementing it; and evaluating on representative real-world datasets; or

(ii) focusing on a specific data analytics problem, and developing a deep learning based approach to solve that problem that achieves competitive performance (measured, say, in terms of metrics published in a paper, on a Kaggle leaderboard); or

(iii) extending the results of a research paper in a novel manner; or

(iv) doing a deep-dive into theoretical/algorithmic aspects of deep learning.

Your time is valuable and it is beneficial for you if you can align the project with your own research. However, **please do not** re-use an existing paper/project that you already worked on. Pick up new skills, or explore new ideas, or take (conceptual) risks that you ordinarily might not have considered.

Deliverables

- *Project proposal* (5% of total grade): The proposal should be no more than 1 page long. It should contain the names of all team member(s), a tentative title and project topic, a preliminary literature survey, and a rough problem statement.
- *Project plan* (10% of total grade): The project plan should be no more than 2 pages long. It should contain a clear problem statement, list of project deliverables, a detailed description of project goals (e.g., the specific dataset(s) you will use, the specific algorithms you will test), and a timeline of the steps you will take to achieve these goals. Invest thought into this, since the final grade depends on how well you have achieved your stated goals.
- *Mid-term update* (10% of total grade): The mid-term project update should be no more than 4 pages long. It should describe any updates to the project plan/timeline (although dramatic changes, such as an entirely new problem statement or project topic, are not permitted). It should contain your problem statement and a description of your preliminary results in sufficient detail. Demonstrate that you have made significant headway into the project.
- *Final report* (15% of total grade): The final report should be more than 10 pages (single column) long, with all figures, tables and references.

In terms of content: describe the problem in some detail, and explain what you intended to do and what you accomplished. Reports should be written in the usual style of scientific writing: a succinct introduction, literature review, main contributions of the project, results, and an optional conclusion.

All source code must be posted in a public Github repository and linked from the report.