AI Project Description
50.021 AI

Group: 4 members. Register here by the end of week 4.

Presentation: Week 13

Report due: Monday (11.59pm) of Week 12

Deadline permission for custom project: Friday of week 6

Submission: Report in PDF format and the zip-packed code through eDimension. Attach the code as a separate file outside of the zip, so that we do not need to download hundreds of Megabytes of code only to see the report.

1 Objective

The main objective of this project is to equip and familiarize students with the necessary skills to successfully complete an AI project, including data collection and processing, identifying and formulating problems, developing and tuning algorithms and models (in PyTorch), designing experimental evaluations and discussing results, scientific writing, presentation and working in teams.

2 Project Overview

For this project, students select an AI problem, or choose to work on the default project. Based on their problem description, students then find a dataset(s), and implement innovative solutions. Students will form a team comprising of exactly four members, and are expected to deliver a presentation and final report.

2.1 Project topic

Question and Answer Generation https://rajpurkar.github.io/SQuAD-explorer/

Fake News / Stance Detection http://www.fakenewschallenge.org/

COVID-19 Retweet Prediction https://data.gesis.org/covid19challenge/

Cell Counting / Segmentation https://warwick.ac.uk/fac/sci/dcs/research/tia/data/hovernet

Custom project Propose your own custom project by the end of week 6. Please obtain our approval before you start.

2.2 Presentation

Student teams will deliver a short presentation of their project (10 min), followed by some questions. All team members are expected to present.

During the presentation, please show that **your developed system works with a GUI**.

2.3 Final Report

Teams are expected to submit a report of max. 6,000 words, comprising the following items.

- Clear task description.

- Description of the dataset (brief) and of the pre-processing (e.g. how it was split). If applicable, mention any data collection methodology or APIs used.

- Description of your used model and loss.

- Description of your hyper-parameter settings and other experiment settings.

- Evaluation of your model training process through train and test performance/loss curves.

- Results discussion and, if applicable, comparison with state-of-the-art.

- Description of how to setup your code in order to be able to run the GUI.

- GUI demonstration.

- In addendum, please submit your code, including understandable comments within the code.

Tip: you can use Overleaf for easy collaborative writing in LaTeX.

3 Deliverables and Grading

This project is worth a total of 30 marks. The deliverables and grading of this project is further divided into the following components:

- State-of-the-art approach to modelling/training

- Implemented model and GUI works (a plus if it is creative).

- Evaluation of the proposed model.

- Quality of the final report as described in Section 2.3.

- Clarity of the final presentation.

The report is to be submitted in **PDF** format via eDimension outside of the code zip.