

AI Project Description

50.021 AI

Group: 4 members. Register [here](#) here by the end of week 6.

Presentation: Week 13

Report due: Friday morning, week 12

Deadline permission for custom project: Monday of Week 9

Submission: Report in PDF form and the zip-packed Code through eDimension. Attach the code as a separate file outside of the zip, so that we don't need to download hundreds of Mbytes 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 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

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

Cell counting dataset Either segmentation or cell counting. You can start with this dataset for it: <https://warwick.ac.uk/fac/sci/dcs/research/tia/data/hovernet>

Flatland challenge <https://www.aicrowd.com/challenges/neurips-2020-flatland-challenge/>

Custom project Propose your own custom project [here](#) by the end of week 6. Be sure to obtain our approval.

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 preprocessing (e.g. how it was splitted). If applicable, mention any data collection methodology or APIs used.
- Description of your used model and loss.
- Description of your hyperparameter 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.
- A description 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 suggested 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.