Group Project – Guideline

v1.0

Task – options to choose

Four students form a team and perform a project together. Each team will choose one of the following two project options:

Project option 1 (Mini-research): Perform a mini-research of problem-solving using AI techniques. Some candidate research topics are listed below (whose descriptions will be provided by the TA's in due course). Each team should choose a topic from the list, or may suggest their own research topic.

- [CV] Kaggle AD Challenge: Unsupervised Image Anomaly Detection Competition
- [RS] Music Recommendation System using Metadata
- [RL1] Learning Autonomous Driving in Simulation
- [RL2] Multi-Agent Reinforcement Learning Based on OpenAI GYM Environment
- [RL3] Continuous Control with Deep Reinforcement Learning using Physically-Based Simulator
- [NLP1] Toxic Comment Classification
- [NLP2] Dialogue State Tracking for Multi-domain Conversational Systems
- [NLP3] Open-domain Dialogue Generation
- [XAI] Research on eXplainable AI(XAI) Algorithm for Interpreting Deep Image Classifier

Project option 2 (Replication): Choose and replicate a recent AI paper (taken from the top conferences listed below), and making meaningful improvements on the solution (if you can).

- AI/ML – IJCAI, AAAI, NeurIPS, ICML, ICLR, etc.
- NLP – ACL, EMNLP, NAACL, etc.
- Data Mining – KDD, ICDM, CIKM, WSDM, etc.
- Computer Vision – CVPR, ICCV, ECCV, ICIP, etc.

Project Teaming (due: March 17)

Each team consists of four students. How to form a team will be discussed in the class.

Project Proposal (due: Monday March 28, 23:59)

Each team submits a video recording (of 3-minutes) for project proposal that includes the following:

- Cover page – project title, team name, member list
- Introduction – motivation and objectives of the project
- Solution – the proposed method (model, algorithm, technique, etc.)
- Experiment plan – plans for obtaining datasets and implementing models, etc.

The proposal video recording (plus the PPT file) must be submitted by the due date indicated above (via KLMS or Classum to be arranged by the TA). All the submitted proposal videos will be watched in the classes of March 29 and 31.

Progress Report (due: Sunday April 17, 23:59)

Each team should submit a video recording (of 5-minutes) about the progress of the project that includes the following:

- Cover page – project title, team name, member list, the baseline paper (for "Replication" option)
- Introduction – motivation and objectives of the project
- Related work – how other similar papers have tackled this problems, and their shortcomings
- Solution
  - (option 1) Description of the proposed method
  - (option 2) Description of the target method of the baseline paper to be replicated
- Data description – more detailed explanation of the dataset you will use (size, attributes, etc.)
- Evaluation method – how to analyze the result; evaluation metrics
- Experiment progress report – progress thus far, and the remaining work plans

The progress video recording (plus the PPT file) must be submitted by the due date indicated above (via KLMS or Classum to be arranged by the TA). During the mid-term week (April 18-22), online mentoring or feedback will be arranged separately for each team.

Final Presentation (due: Friday June 17, 23:59)

Each team should submit a video recording (of 20-minutes) for the project final report, covering the following:

- Executive summary of the baseline paper (1-page)
- Introduction – motivation and objectives of the project
- Related work – how other similar papers have tackled this problems, and their shortcomings
- Solution
  - (option 1) Description of the proposed method
  - (option 2) Description of the target method of the baseline paper to be replicated
- Experiment – datasets used, models implemented, any improvement made
- Results – result analysis and evaluation (use graphs, tables, whatever most appropriate)
- Discussion – problems faced, how overcome, and anything to discuss

The final presentation video recording (plus the PPT file) must be submitted by the due date indicated above (via KLMS or Classum to be arranged by the TA). In addition, TA's may need to access the source and/or execution files of your experiments.

Final Paper (due: Friday June 17, 23:59)

Each team must also submit a project report in a conference paper format in 6~8 pages (ICML/ACL/ICLR double-columned Word or LaTeX format to be provided).

Grading Criteria

- Project proposal – 20%
- Progress report – 30%
- Final presentation – 30%
- Final paper – 20%

NB:

There will be no classes during the final exam period, and the final video presentations and the final papers will be graded off-line.

(Version 1.0 – 2022/03/03)
