



جامعة محمد بن زايد
للذكاء الاصطناعي
MOHAMED BIN ZAYED UNIVERSITY
OF ARTIFICIAL INTELLIGENCE

AI701: Foundations of Artificial Intelligence
Fall 2022

Project Guidelines

Instructions:

- Group Project. Maximum number of students per group: 3.
 - This project carries 50 marks.
 - Project deliverables: project code and data (if not too large), project presentation, and project report. All the required material should be zipped in one folder (per group).
 - Project proposal submission deadline is 20th October 2022 (23:59 UAE time).
 - Project presentations will be in Week 15 of Fall 2022 semester.
 - Project report submission along with project deliverables deadline: 5th December 2022 (23:59 UAE time).
 - Project report format is CVPR (maximum page limit: 6) or NeurIPS (maximum page limit: 8) excluding references.
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1 Overview

The goal of working on a project is three-fold. First, it will provide you with the opportunity to apply the concepts learned in this course creatively, which helps you with understanding the course material more deeply. Second, designing and working on a unique project in a team which is something that you will encounter, if you haven't already, rather sooner than later in life, and this course project helps with preparing for that. Third, along with the opportunity to practice and the satisfaction of working creatively, students can use this project to enhance their portfolio or resume.

The project consists of 3 parts: *a project proposal*, *a short project presentation*, and *a project report*. The expectations for each part will be discussed in the following sections.

2 Project Proposal

The key purpose of the project proposal is to receive feedback from the TAs/the instructor regarding whether your project is feasible and whether it is within the scope of this class. Also, the project proposal offers a chance to receive useful feedback and suggestions on your project.

For this project, you will be working in a team consisting of three students. If you have any concerns working with someone in your group, please talk to a TA or the instructor for accommodations.

2.1 Proposal Format

The project proposal is a 1-3 page document (800-1200 words) excluding references. You are encouraged (not required) to use 1-2 figures to illustrate technical concepts. The proposal must be formatted and submitted as a PDF document. The submission deadline for project proposal submission deadline is **20th October 2022 (23:59 UAE time)**.

Introduction: Describe what you are planning to do. Briefly describe related work (if applicable).

Motivation: Describe why your project is interesting. E.g., you can describe why your project could have a broader societal impact. Or, you may describe the motivation from a personal learning perspective.

Evaluation: What would the successful outcome of your project look like? In other words, under which circumstances would you consider your project to be "successful?" How do you measure success, specific to this project, from a technical standpoint?

Resources: What resources are you going to use (datasets, computer hardware, computational tools, etc.)?

3 Contributions

You are expected to share the workload evenly, and every group member is expected to participate in both the experiments and writing. (As a group, you only need to submit one proposal and one report, though. So you need to work together and coordinate your efforts.)

Clearly indicate what computational and writing task each member of your group will be participating in.

It is crucial that you talk to each other regularly!!! Schedule regular meetings and/or use online communication tools (e.g., Gitter, Slack, or email) to stay in touch with your group members throughout the semester regarding the process of your project.

Modifications to the Proposal: After you have received feedback from the TAs/the instructor, and your project proposal has been graded, you are advised to stick to the project outline in

the proposal as closely as possible. However, if there is a concept introduced in a later lecture (for instance, a machine learning algorithm that you think is more appropriate than the one you proposed), you have the option to modify your proposal, but you are not penalized if you don't. If you wish to update your project outline, talk to a TA first.

4 Project Presentation

During the last week of lectures, you will be presenting your project to the class. The presentation is “free form” but should cover the following:

- Introduce the topic to a general audience (your class).
- Summarize the main approach or method.
- Highlight the outcomes of your project.

The presentation should be 8-10 minutes long, plus 2 minutes will be reserved for questions. All members of the group should participate in the presentation.

To encourage attendance, we will use a random number generator in class to determine the order in which the groups will present. Please bring your presentation in your own device USB for presentation. **Presentation days: 28th November 2022 and 29th November 2022 at 2:45pm-5:30pm will held in Multi purpose Hall (in case of unavailability presentation will held in Class room 4,5 and 6)**

There will be 3 awards:

- Best Oral Presentation
- Most Creative Project
- Best Visualizations

The awards will be determined by voting, each student will fill out a card in class (we will provide the cards), voting for each presentation (on a scale from 1-10 for each of the 3 categories, where 10 is best), and will collect the cards at the end of the lecture.

The voting card should be filled out as follows:

- Title of the Presentation, x/10, y/10, z/10
- Title of the Presentation, x/10, y/10, z/10 ...

where

- x are the points for 1. Best Oral Presentation
- y are the points for 2. Most Creative Project
- z are the points 3. Best Visualizations

The awards will be computed based on the highest number of points for each category. However, one project can only receive one of the prizes.

Each of the three cards handed in will provide 3 bonus points towards your project report grade (9 pts in total).

5 Project Report

The project report is expected to be 4-6 pages long (excluding references) and should contain the following sections:

- Introduction
- Contributions
- Related Work
- Proposed Method
- Experiments
- Results and Discussion
- Conclusions

Also, you are required to submit all the code, computations, and experiments you developed and conducted for this project. Note that the quality of code will not have any influence on your grade and will merely serve as a basis to establish that the report contains original and “real” results. **Note that, the deadline for project report submission along with project deliverables is 5th December 2022 (23:59 UAE time).**

Optional: Sharing your Project You are encouraged to share your project/final project report online after you completed the course – for example, via GitHub or on a personal website online.

6 Grading

The final grade will be computed using the following weighted grading scheme:

- 10% Project proposal
- 15% Project presentation
- 25% Project report

7 Some potential directions for project

- Empirical evaluation of different semi-supervised learning algorithms (on the dataset of your choice)
- Multimodal learning for image captioning.
- Multimodal Learning to associate faces with voices and vice versa.
- Self-supervised learning for video sequences.
- Exploring the effect of data augmentation on image classification tasks.
- Adversarial attacks on visual object tracking and detection algorithms.
- Deep learning models, such as ConvNets, also run in real time on mobile phones and Raspberry Pi's. So, building an interesting mobile application could be a good project.

- Detecting Bias in News Articles using NLP models.
- Automated writing feedback using NLP models.