# Fall 2024
# Image Processing

## Final Project Specification

## Introduction

We are approaching the end of this semester. We hope that you have made good progress on your final project. As you may recall, you are expected to submit **a 15-minute video-recorded presentation** and **presentation slides**.

## Video Recorded Presentation

Ready to prepare your 15-minute recorded presentation? Please read the following instructions carefully. The following items are expected to be covered in your presentation. We will grade your score based on these sections. If you have any questions, please feel free to let us know in the following **Final Project QA Sheet**! https://lopsided-soursop-bec.notion.site/Final-Project-QA-Sheet-57280d1cab384108 ad51f37f3d806f76?pvs=4

- **Introduction** - Brief overview of your problem. Why is this problem important? Why we spend time working on this?
- **Related work** - Describe papers/works that are relevant to your final project. Please also explain the difference between your work and the existing ones.
- **Dataset/Platform** - Explain the dataset/platform you used for your final project. For instance, the size of the dataset, distribution of classes, or how you implement the platform for your tasks.
- **Baseline** - Explain how you implement baselines. For example, you are working on an object recognition problem. You may choose Convolutional Neural Network (CNN) as your baseline. Your main approach may be a Transformer. Please give a brief description of the baselines in the video.
- **Main Approach** - Please propose a main approach. You should describe the algorithm in detail. Specifically, please discuss how they apply to your problem (what are the inputs/outputs, variables, factors, states, etc.).
- **Evaluation Metric** - Please include metrics, both qualitative and quantitative, you are using to evaluate the performance of your baselines and proposed method. Note that please explain your metrics in detail.
- **Results & Analysis** - Please present the performance of your baselines as well as the main approach. Additionally, please analyze the results you

obtained. For example, you are working on an object recognition problem, and there are 10 different classes. Most of the classes achieve reasonable results using CNN. However, one of the classes performs unsatisfactory compared to others. Why?

## Presentation Slide

The slide should cover the key items specified previously. Additionally, please incorporate the following information:

- **Github link** - Please upload your source code to Github. Your repo should include an overview of the task, prerequisite (your coding environment, package version (e.g., requirements.txt in Python)), usage, hyperparameters you set, experiment results, and so on.

- **Reference -** Please provide the reference to the original source, dataset, or the method you use.

- **Contribution of each member** - Please include the contribution of each member with **proportions**. We understand the condition that some members may fail to contribute to this project; thus, we will adjust your score if the contributions are significantly unequal. Feel free to let us know if you have any concerns about this part.

## Potential Tasks

1. Image editing
2. Image super-resolution
3. Image de-xxx (e.g. denoising/ deblurring/ dehazing/ deraining/ desnowing)
4. Image generation
5. Image segmentation

- Rule of thumb:
    a. Work on a project that applies learned or new algorithms for interesting/important applications
    b. Detailed analysis of an existing algorithm

## Submission

1. **The deadline is 12/13 (Fri.) at 23:59:00,** you need to submit the following two files to the E3 system.
    a. **Link of your video** (Please attach the video link in the Link.txt file)

b. **Final Presentation Slides** (The filename should be <mark>Team{TEAM_ID}_Slides.pdf</mark>)

```
├ 📜 Link.txt
└ 📜 Team{TEAM_ID}_Slides.pdf
```
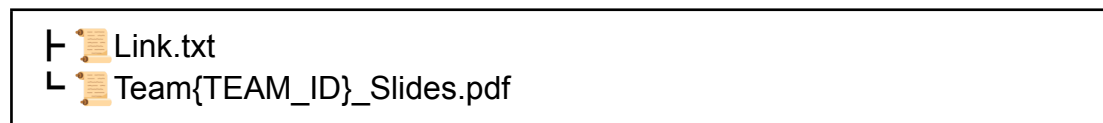
2. As this is the final project, we **DO NOT** **accept any late submissions**.

3. **Only one team member needs to submit the recorded presentation and slide.**

4. Please also fill in the [Google sheet](#) with the corresponding item before each due date as the following.

| Final Project Topic (Due: 11/15) | Github Repo (Due: 11/29) | Final Presentation Slides (Due: 12/13) |
|---|---|---|
| AAA | AAA | AAA |

- For the GitHub repo, please first create it before its due date, and you can modify it afterward.

5. We will select **5 groups** for a live presentation **(time will be announced later)**. Note that those selected groups **should** present your work (not optional this time). Those selected groups will have additional scores and perhaps some bonus awards (e.g., best poster, best presentation, and best-voted poster/presentation). Please be well-prepared as you might be one of the outstanding teams.

## Scoring Criteria

1. Originality (25%)

   Projects will be scored for creativity, with higher points awarded for unique methods, applications, or analytical perspectives. No points will be given for simply reproducing existing work.

2. Clarity & Organization of the video presentation (20%)

   Richness and clarity of expression

   - Introduction

   - related work

   - dataset/baseline

   - proposed method

   - contribution of each member

3. Completeness (55%)

Including:

a. Introduction (5)

b. Related work (5)

c. Dataset/Platform (5)

d. Baseline (5)

e. **Main Approach (15)**

   - Only use pre-built models from packages (scikit-learn, PyTorch …etc)：at most 5 points.

   - No explanation of your approach in detail: minus 5 points

f. Evaluation metric (5)

g. **Results & analysis & Others (15)**

   - Type of experiment (5)：If there is only one type,e.g., change the learning rate, then you'll get at most 2 points.

   - Discussion and analysis (5)：Only numerical values without discussion and analysis will receive a maximum of 2 points.

   - Limitation of your work (2)

   - Try to apply the model/method to practical use. (3)