

Course Project

In addition to the programming assignments assigned throughout the semester, the students taking the course are required to complete a course-related project. The students should carry out this project **individually**. The aim of the project is to give the students some experience on conducting research. If you are a fresh graduate student, it is very likely that you are doing research for the first time. This project will help you to adopt the correct methodology for doing research.

The course project may involve

- Design of a novel approach and its experimental analysis,
- An extension to a recent study (**published after 2008**) of non-trivial complexity and its experimental analysis,
- An in-depth empirical evaluation and analysis of two or more related methods not covered in the class.

Each student should submit a half page project proposal on their specific project idea by March 12nd. The proposal should provide the research topic to be investigated and a list of major papers on that area.

Project Progress Report

Due: April 16th (late submissions will be penalized)

Each student should submit a project progress report by April 16th. The report should be **2-4 pages** and should describe the following points as clearly as possible:

- Problem to be addressed
 - Give a short description of the problem that you will explore.
 - Explain why you find it interesting.
- Related work
 - Briefly review the major works related to your research topic.
- Methodology to be employed
 - Describe the representation(s) and/or algorithm(s) that are expected to form the basis of the project.
 - State whether you will extend an existing method or you are going to devise your own approach, or you will compare and contrast a group of related works.
 - * In case you are proposing a novel approach, describe the basic idea of your solution.
 - * In case you will extend an existing approach, state how do you plan to improve or modify it. If you are planning to use publicly available code(s), state the source(s).

- * In case you will compare several algorithms, give a list of the works you will analyze. Again if you are planning to use publicly available code(s), state the source(s).
- Experimental evaluation
 - Briefly explain how you will evaluate your results.
 - * Comment on the details of the qualitative evaluation you are planning to perform, *e.g.* plots or figures.
 - * Speculate on the metrics or statistical tests you are planning to employ in order to quantitatively measure the performance.
 - State which dataset(s) you will employ in your evaluation, *e.g.* Berkeley Segmentation Dataset 500, Caltech-101.
 - Provide your preliminary results (if any).

Project Presentation

Due: *will be announced.*

At the end of the semester, each student should give a **15 minutes** project presentation. Please plan to speak for 10-12 minutes, which will allow for 3-5 minutes of questions. **Since you have limited time, use your time wisely!** Instead of trying to cover every detail of your project, please concentrate mainly on presenting the most important parts or conclusions of your work. Remember that you can leave some details for your project report.

The plan is to use just a single computer for the presentations to avoid the cost of everyone setting up their laptops. Hence, **the students are expected to submit their presentations one day early from the presentations.**

Project Final Report

Due: June 4th (late submissions will be penalized)

As the last deliverable of the course project, each student is expected to submit a project report prepared using the style files provided in the course web page. The report should be **6-8 pages** and should be structured as a research paper. It will be graded based on clarity of presentation and technical content. A typical organization of a report might follow:

- Title, Author(s)
- Abstract
 - The abstract should summarize the contents of the report in a concise way and should contain at most 300 words.
- Introduction
 - This section introduces the problem that you investigated by providing a general motivation and briefly discusses the approach(es) that you explored to solve this problem.

- Background/Related Work
 - This section discusses relevant literature for your project topic.
- The Approach/Algorithm
 - This section gives the technical details about your project work. You should describe the representation(s) and the algorithm(s) that you employed or proposed as detailed and specific as possible.
- Experimental Results
 - This section presents some experiments in which you analyze the performance of the approach(es) you proposed or explored. You should provide a qualitative and/or quantitative analysis, and comment on your findings. You may also demonstrate the limitations of the approach(es).
- Conclusions
 - This section summarizes all your project work, focusing on the key results you obtained. You may also suggest possible directions for future work.
- References
 - This section gives a list of all related work you reviewed or used.