1 General Information

The course project consists of a couple of things:

- A project report (no page limit; must be written using LaTeX). The report is expected to contain abstract, introduction, problem formulation, method (e.g., Power Method, Gradient Descent, and ESPRIT), simulation/experiment results, and references. In short, all the things that are contained in a technical paper are required to be written in the report.

- Submission of the source code, which can be (easily) tested and read by me (please put clear comments in your codes). If the data that you work with is too large or confidential, you may make a demo with synthetic data.

The project report should address either of the following:

1. Read and understand a technical paper (some examples will be given in the next section). Write a summary about the background, the rationale behind the problem formulation, and how the optimization algorithm works. Implement the algorithm and apply it to some existing and new scenarios. Here, ‘new’ means that something was not included in the original paper. For example, if one topic mining paper applies their algorithm to a dataset, you may try another dataset. When you submit the project, highlight this new part and clearly state what is new. You are also encouraged to survey the related area and make your comments. Simply copying and pasting sentences from the original paper(s) will not be appreciated.

2. Propose new ideas and prototype them. Introduce the background and the problem. Introduce the state of the art. Propose your idea, formulate it as an optimization problem, and use simulations to support your idea. This could be risky given the short duration of the term. But if it works, you may enjoy high scores and potential publications in the future. You may propose something related to your research, but make sure that you discuss with your advisors to see if the contents are confidential. You may also make an appointment with me to see if the proposed idea is feasible in one month.
2 Technical Papers

You can pick one or more of the listed papers to summarize and replicate their results. Please note that the following are just some examples. You are not restricted to this set of papers. You may pick papers that you like from outside of the following pool and write report about those papers.

2.1 Samples of Technical Papers


