Project Guideline
Spring 2016
(Last Update: January 11, 2016)

The purpose of the project is to provide you hands-on experience on sparse representation and signal recovery algorithms, as well as analyzing the performance of the methods. I am in general open to all topics in signal processing, machine learning, and applied statistics. You are also encouraged to propose topics related to your research. However, everything you propose should be within the scope of this course. If you have doubts about your proposed project, feel free to send me an email.

Important Dates
1. Jan 29 (Friday 5pm): Initial email.
2. Feb 26 (Friday 5pm): Proposal deadline. 2-page, including references.
3. May 1 (Sunday 5pm): Report deadline. 6-page + 1-page references.

Initial Email (Optional)
If you like to get some quick feedback from me before you start to work on your project, you can send me an email by Jan 29. This email exchange is completely voluntary. The purpose is to help you shape your project focus. When you send me the email, please include the following items.

1. Title: This is a tentative title of your project. You can change afterwards.
2. Summary: Please write a few sentences to describe what you want to do. Do not write too much, as that usually means either you are not clear of what you want to do, or you are attempting too much.
3. Reference: Tell me which paper / book chapter that your project is based on.

Proposal
The proposal is extremely important in the sense that it forces you to think before you work. A good proposal can help you work smoothly and achieve a higher goal. When drafting the proposal, please use the \LaTeX template available on the course website. I do not accept MS Word. Please use font size 10pt (default), and write no more than two pages (including references). Your proposal should include the following elements:

1. Project title: Be specific of what you want to do. I do not accept things like: “Introduction to sparse representation”.
2. Motivation: State the problem, and tell me why is this problem important (1) to you; (2) to the rest of the world.
3. Uniqueness: What is the unique feature of your project? Why does existing works not sufficient?
4. Tasks: List out the tasks that you need to accomplish. Be realistic.
5. Expected Outcome: What do you expect to obtain?
The percentage of each component is weighted as follows: Title (10%), Motivation (30%), Uniqueness (30%), Tasks (15%), Expected Outcome (15%). As you can tell from the above grade distribution, I put extra emphasis on the motivation and uniqueness of your project. The reason is that I want you to spend the right effort on the right problem. So please think about these carefully when you write your proposal.

Final Report

Your project report should be self-contained, and should be of conference quality. Please use the \LaTeX\ template available on the course website. Maximum number of pages is 6, and you can use the 7th page for reference if needed. Your report should contain the following elements.

1. Project title: This is the finalized project title.

2. Introduction: After you have conducted the study, you should have a better perspective of your problem statement and motivation.

3. Literature Review: Please demonstrate your understanding of your work, and how you would position your work in the literature.


5. Experimental Result: Any experimental data to support your method? Comparison with other methods?

6. Conclusion and Future work.

Your report will be graded based on (1) Clarity of your problem statement and motivation (20%); (2) Creativity of your solution (30%); (3) Completeness of experiment (20%); (4) Writing (30%). Writing is an important part of the report. Please spend enough effort to polish your report.

Oral Presentation

You are required to give an oral presentation during the last week of the semester. If we cannot accommodate all students during that week, we will use the exam week as well. Date and time will be announced later. Your oral presentation will be graded as follows.

1. Attendance (15%). Even if you are not presenting, you should show up to support your fellow classmates.

2. Ask questions (15%). Every student should ask at least one question during the presentation week.

3. Technical content (40%). That includes: (1) Clarity of your problem statement and motivation; (2) Creativity of your solution; (3) Completeness of experiment. (Same for final report).

4. Presentation (30%). Be reminded that you are presenting your work to people who have little or no background knowledge about your topic. You have to make things clear, and understandable.