EEC264: Estimation & Detection of Signals in Noise Course Project

The term project is a research project related to any topic in estimation and detection, and their applications. The project will be an in-depth study of a research paper. There are four goals: 1) **understand the theory in the paper; 2) implement algorithms developed in the paper and replicate the numerical results; 3) make presentations so as to improve your presentation skills; and 4) write a final report so as to improve your writing skills**. Project proposal, presentation slides, matlab code and project report should be uploaded to Canvas before the corresponding deadlines.

Details and Deadlines:

- **Project proposal (1 page), due 9 PM of Feb. 8**

A one-page proposal is due Feb. 8 at 9 pm. The project proposal should state which paper you will study. **The paper should be from IEEE Transactions on Signal Processing**. Furthermore, **the paper should be published after Jan. 2015.**

- **Project proposal presentation (5 min), during Feb. 8 class**

A 5 min short presentation about which paper you select, the problem studied in the paper, the motivation, how the paper is related to this class, and what you plan to do etc.

- **Matlab code, due 9 PM of Mar. 12**

After understanding the paper, you are required to write matlab code to implement algorithms developed in the paper so that you can replicate **two figures in the numerical section** (some papers may call that section as simulation section) of the paper you choose. Your matlab code should be self-contained and generate these two figures automatically. For comparison purposes, some figures may contain curves of existing algorithms from other papers. You are also required to implement those algorithms and generate the corresponding curves. In other words, **you are required to generate two exactly same figures as the ones in the paper**.

Name your code as Yourlastname_EEC264.m

Make sure that I can simple run your code in my computer and all figures will be automatically generated.

- **Project report (5 pages) due 9PM of Mar. 12**

The project report is due by 9 pm on Mar. 12. Your final report should be (maximal) five pages (double column). In the report, you should describe the

topic you chosen in detail. Proper citation of published work: Be aware that a literature survey does not mean repeating verbatim what has been published in other papers (in fact this is plagiarism and will receive zero credit): it means summarizing, comparing, and contrasting the main ideas, concepts, and results presented by other authors in your own words. You may certainly give results derived by other authors and include theorems, tables and figures from published papers, but only if you give cite the exact reference each time you use such a figure, table, or proof. Exact quotes taken from published papers without reference are not acceptable and your report will receive no credit if such quotes are included.

In your report, please also include the two figures from the paper and the corresponding two figures generated using your matlab code.

- **Final presentation (10-15 minutes), week of Mar. 8**

Each student will be required to deliver a final presentation on the project. The presentation should be understandable by your classmates.

- **Grade based on proposal (5%), proposal presentation (10%), matlab implementation (30%), final presentation (25%) and project report (30%)**

Start your project early; do not wait until the last minute. Understanding the theory and implementing algorithms may be time consuming.