

Term Project

Proposal due 7:20 pm, Monday, April 13

Hard Copy of Presentation due at the beginning of your presentation

Project Report due 7:20 pm, Monday, May 4

An idea term project for this class is more like a super-mini Ph.D. dissertation. The main theme is "efficiency for simulation-based decision making under uncertainty". You are encouraged to do a small research project along this line.

A good starting point is a special topic we have studied in class. It is not limited to the topic studied by yourself. You can pick any topic the whole class has studied, including the OCBA presented by Prof. Chen. Pick a topic or a methodology you are interested.

The project should contains two major parts:

1. What is the literature? In this part you have to give literature review, and know what methodologies are available. Explain why you want to focus on this particular technique in your project. This part is mostly done when we did the special topic study if your project is related to your special topic.
2. What is your contribution? There are three possible contributions which you can make in this project. You may make contributions in one castigatory or more than one:
 - *Application/Testing.* Apply the methodology you choose to the current research problem you are working toward your Ph.D. dissertation, or anything related with your daily work. If you don't have anything in hand for testing, there are some benchmark examples available in a handout at the class web site. You can apply the chosen technique to some of those given benchmark examples. You want to compare the performance between using the chosen technique and without using it. For example, you can apply OCBA to the research problem you are working on, and document how much you can save the simulation cost as compared with traditional approaches such as equal allocation.
 - *Extension.* Extend or revise one of the methodologies you learn in special topics to see whether you can improve its performance. For the scope of this class project, a minor extension is sufficient. Then you can test your new extended technique on a couple benchmark examples to better quantify the effectiveness of your proposed technique. For example, you can change the way OCBA allocates computing budget in each

iteration, while preserving the asymptotic allocation rule. Then you can compare the extension and the original OCBA by testing them on some numerical examples.

- *Integration.* Integrate one of the methodologies you learn in special topics with other techniques to see whether you can improve its performance or handle different types of problems. For example, you can develop a new methodology by integrating OCBA with Genetic Algorithms so that your new technique can iterative search larger design space for optimization problems, which OCBA alone can not effectively handle.

GRADINGS:

Project Proposal 5%; Project Presentations 15%; Term Project Report 30%

COLLABORATION: Discussions are encouraged, but each has your own project.

PROPOSAL:

In your proposal, please illustrate what you plan to do, what methodologies you are particularly interested, what category of contributions you anticipate to have. At this proposal stage, you don't have to finalize on your methodology. However, you need to know which direction you heading toward, or what set of methodologies in which you want to choose one. Proposal is no longer than two pages. As your project proceeds, you can always change the topics or do something which is not described in your proposal. The main purpose of the proposal is to force you to think about your project seriously and to get started. In specific, each project has to submit a proposal which must include the following items:

1. Title of the project
2. Names/email addresses
3. Project description

Page limit: 1~2 pages.

PRESENTATION:

Project presentations will be scheduled in the last class on May 4. Each presentation has 20 minutes, not including Q&A.

Please prepare a power point presentation and turn in a hard copy of your project presentation before you do your presentation. For the hard copy, 2 or 6 slides on one page is fine.

FINAL PROJECT Report:

A final project report is required. The final project report should look like a research paper, which includes the following items:

- Abstract
- Introduction (problem description and/or literature survey)
- Proposed Research
- Numerical Testing or Application
- Conclusions

Page limit: The ideal size is 12~20 pages, but no longer than 25 pages (not including appendix).