

IS 604 – Simulation and Modeling Techniques

Final Group Project Requirements

The course project will be done in groups of 2 or 3 students (depending on your own choice). You may choose your own topics (and teammates) by yourself.

The purpose of this project is to model and analyze a system/problem of your own interest. The system/problem can be either:

- A system that you have personally observed (e.g., at your internship, job, etc.). Basically, the system exists in reality with real data.
- A problem that is related to advanced simulation research and may be linked with your own research expertise (e.g., performance ranking algorithms for supply chain with simulation-based method, stochastic simulation, etc.).
- Textbook exercises are not suitable for course projects.

You will need to survey the state-of-the-art research developments (published in journal papers, not conference papers) dealing with algorithms, methodologies, or alternative configurations related to your own system/problem. If you would like, you may supplement the literature with selected papers from conference proceedings such as Winter Simulation Conference and others.

You will need to achieve three deliverables: 1) a proposal outlining your topic, 2) an in-class presentation, and 3) a final report. A schedule of each deliverable is shown below. All these deliverables will be submitted on Blackboard:

- Proposal: Please upload the file on Blackboard in Week #7 by **October 11, 2015, 11:59pm EST**.
- Presentation: Please upload the file on Blackboard in Week #15 by **December 3, 2015, 7:00pm EST**.
- Final Report: Please upload the file on Blackboard in Finals Week by **December 13, 2015, 11:59pm EST**.

Deliverable 1: Proposal. The proposal shall be 2 pages in length and include:

- A brief introduction, a high level description of the system/problem you will work on.
- A summary of two key journal papers relevant to your work.
- A problem formulation.
- A statement of objectives, proposed methodology, and the evaluation measure for the performance of the proposed methodology.
- A conceptual/high-level description includes assumptions, what aspects will be considered in your model/approach, and a study logic (flowchart may be a good option).

Note: I will respond to your proposal with approval or suggested changes. Your proposal is not graded.

Deliverable 2: Presentation. You will have 5-15 minutes (depending on the number of groups) to present your work. You shall:

- Introduce yourselves and describe your problem.
- Explain your objectives, challenges of your work, proposed methodologies, and the assumptions you made while conducting modeling and/or analysis.
- Provide an overview of your approach and/or conceptual model (please do not present your code directly).
- Describe the results you obtain and summarize the current achievements and possibility of future works.

Note: The final presentation is scheduled on **Thursday, December 3, 2015, 8:15pm EST** of Week #15

Deliverable 3: Final Report. The final project report should be similar to the technical papers you read in the literature. The report should not exceed 12 pages. (Appendices do not count in the page limit). Please number the pages. The report should (at least) include the following sections:

- Abstract: use 250 words or less to summarize your problem, methodology, and major outcomes.
- Key words: select a few key words (up to five) related to your work.
- Literature review: discuss how other researchers have addressed the similar problems, what their achievements are, and what the advantage and drawbacks of each reviewed approach are. Explain how your investigation is similar or different to the state-of-the-art. Please do not discuss paper one at a time, instead, identify key characteristics of your topic, and discuss them in a whole. Please cite the relevant papers where appropriate.
- Methodology: discuss the key aspects of your model/problem. If you work on real data, explain how you verified your model. If you work on theoretical aspects of simulation advancement, explain your method with details (you can put the theory and proof in the appendix if you see fit).
- Results and/or experimentation: describe what you did (validation, experimental design, study of the theories etc.), and what you found out (statistical analysis, comparison of various approaches, system performance improvement, optimization, new algorithm development etc.).
- Summary and future works: conclude your finds, suggest areas for future work.
- Appendices (Optional)
 - Table or figure shows the results of your developed model.
 - Snapshot of your model and process/system you studied.
 - Verification table and the associated discussion.
 - Supporting information for verification, validation or data collection and others.