

Project 2 : CS/ECE 541, Fall 2009

Each project will consist of a model, a simulation-based analysis using that model, and a write-up of the model and experiments.

The project's emphasis may be on the simulator framework, or on the model. In the former case you will build your own discrete-event simulator (you may use code provided in class) in any language you like. It will include an event-list into which and from which arbitrary events can be efficiently inserted and deleted (i.e., simple linear lists are not acceptable), random number generating routines including

- A quality uniform $U(0,1)$ RNG,
- Routines for generating Gaussian, Poisson, Geometric, Exponential, Uniform $[a,b]$, and Binomial distributions (with the Binomial distribution being implemented with an alias table)

The simulator will automatically select and use the number of replications required to achieve a specific accuracy of result. Write tests that validate the correctness of the components of the simulator. Use this simulator to model a system of interest to you and your research, e.g., a network, a system-on-a-chip, etc. This may be at a relatively high level, as much of the credit for the project is in the construction of the simulator rather than its use.

In the latter case you may use Möbius, or any other simulator you are familiar with (e.g., ns-2), or even one you write from the specifications above. Use it to model a system described in a conference paper, or from work you are doing. A good place to find such systems is in IEEE journal articles, QEST or ACM SIGMETRICS Conference proceedings. Then, do one of the following:

- Reproduce some or all of the results (acceptable).
- Modify the assumptions of the paper and solve the new model (better).
- Improve on the results of the paper (best).

You can find example of system that are already modeled as SANs in papers at web site: <http://perform.csl.illinois.edu/> Dont pick these systems to model, but you can use them as example of how to model things as SANs. Many of these papers started out as class projects.

Please email to Professor Nicol a proposal for the project, by November 12.

The project write-up is due the last day of class, December 8.