

CMSC 838P: Research in Software Engineering

Instructor: Vibha Sazawal

Spring 2006

The course project offers you the chance to deepen your knowledge of software engineering research and gain practical research experience. Through the project, you will perform software engineering research or apply recent software engineering research results to current problems.

You may complete the project individually or in pairs.

1 Project Topics

Students will choose their own project topic based on their interests. The project you work on should interest the software engineering community at large.

If you need ideas, some example topics are listed below.

- Extend Aspect Browser with substantive aspect-oriented design critics.
- Build a tool that effectively supports the recording and retrieval of software design decisions.
- Investigate modifiability techniques from other fields of engineering and determine how to apply such techniques to software engineering.
- Model the TCP/IP protocol (or something else) in Alloy and check interesting properties.
- Use five state-of-the-art research testing tools to test a substantive program. Compare and contrast the results, and gauge how many false positives and false negatives were obtained from each technique.
- Build a substantive piece of software you need using regular Java, AspectJ, Hyper/J and some other language of your choosing. Compare and contrast.
- Implement a tool that helps programmers build and maintain mental models about the flow of tainted input in their program.
- Implement a tool that helps programmers follow heuristics for fast code or lean code.
- Apply something from your field to a software engineering problem.
- Create your own project topic that is inspired by one of the readings discussed in class.

2 Project Milestones

February 16th Submit a 2-page project proposal. Please submit this via email before class begins. The project proposal should explain the motivation for your project, the contribution of your project, the process you will follow to complete your project, and if appropriate, how you will evaluate your work.

March 16th Submit a 3-page progress report. This progress report should discuss work completed to date and any preliminary results. The report should also describe how planned work will be completed.

April 27th Submit a preliminary draft of your project report.

May 9th-11th Present a talk about your project and its results.

May 11th Submit a 10 page final report. Structure the report as you would a conference paper (research track or experience report track, as appropriate). Use the ACM conference format.