

CMPSC 580
Topics and Research Methods in Computer Science
Spring 2015

Assignment 7: Research Paper Review
Due Thursday, 29 January 2015

General Information

For Module 2 you will read two research articles and use \LaTeX to write a one-page review of them.

Overview of the Papers

Automated unit test generation tools take as input a module under test and produce as output a test suite for that module. In the case of a tool called EvoSuite, the input is a Java class and the output is a JUnit test suite for that class. Although automated test data generation is an interesting idea, it raises important questions about the efficiency and effectiveness of the data generator itself. The first paper, “A Large Scale Evaluation of Automated Unit Test Generation using EvoSuite” presents one of the largest empirical studies to answer these types of questions. The second paper, “Parameter Tuning for Search-Based Test-Data Generation Revisited: Support for Previous Results” reports on a replication of previous experimentation with EvoSuite. While the first paper uses EvoSuite in a default configuration, the second attempts to determine whether or not modifying the parameters of the data generator will lead to higher quality test suites.

The Assignment

Both of the assigned papers describe automated test data generation techniques and then report on empirical studies of their effectiveness. Once you are finished reading these papers, you should know what automatic test data generation is, how it works, and the circumstances in which it is applied. Furthermore, you should have a comprehensive understanding of when automated test data generators do and do not work well. Since they include graphs, tables of data, and statistical analyses, these papers will also enable you to develop a full-featured understanding of how to conduct and report on the results of experiments in the field of computer science.

After you have finished reading the papers, use \LaTeX to write a one-page summary encompassing them both. This does not require full comprehension of the material presented in the papers — try to train your eyes to pick up on the “big picture” without getting lost in the extraneous details of the methodology, implementation of a technique, or the empirical results.

Your summary, devoting about half a page for each paper, should respond to these questions:

- What is the purpose and the background of the research described in the paper? Why is the proposed research important and interesting?
- What does the related literature suggest about the presented research? How does it further justify the motivation behind this research?
- In broad terms, what are the methodologies and techniques described in the paper?
- What do the results of the paper show? What are the implications of the results?