COM S 413 Survey

Learning Objectives

1. Get familiar with the terminologies we taught in class
2. Learn where to find the literature of program analysis
3. Practice presentation and teaching skills
4. Exercise analytical skills on the data set
5. Get in-depth understanding on a subject of program analysis of your interest

Description

The purpose of doing a survey is to teach you how to find, read and present the literature of program analysis. The focus for COM S 413 students is to identify and study software-related-artifacts used and generated in the relevant papers, including software benchmarks, comparison tools, bugs, test inputs and so on. To demonstrate your learning outcomes, you will teach a mini-tutorial in class that summarizes what you have read and your thoughts. You can select a topic of interest from the following list:

1. finding bugs: 5 *interesting* bugs from real-world software
2. automatic test input generation: the artifacts
3. Debugging and repair: the artifacts
4. specification inference: the artifacts
5. analyzing software changes and versions: the artifacts
6. big code analysis: the artifacts
7. analyzing AI software: the artifacts

The survey will be assigned at the first week of the class when you will be asked to select a topic of interest from the above list. The deliverables are due at the end of each topic. The specific dates for each topic will be announced in class. Note that the surveys for different topics are due at different dates.

Suggested Steps

1. Select a topic of interest
2. For topic 1, search github issue trackers or bug databases to find interesting bugs, understand the causes and patches, document the bug information (software, ID and the link of the bug, source code, patches, root cause explanations)
3. For topics 2--7, you will find 5 most recent 3 years of conference papers including ICSE/FSE/PLDI/ASE/ISSTA. You can find the proceedings of these conferences on the electric libraries of ACM and IEEE; Create a spreadsheet with the suggested columns: software (or bugs, tools ...), when used and generated, paper the articraft is from, link to the open source website if any, analysis of the articrafts (size, runnable …)
4. Prepare a presentation: the summary and analysis of bugs or artifacts
5. Conduct 20 min in-class mini-tutorial

Deliverables due at the date of the presentation

1. Presentation slides
2. Bug information - software name and source code, ID and location of the bug, patches, root cause explanations) (topic 1), spreadsheet for the articrafts (topics 2-7)
3. 20 min in-class mini-tutorial

All the deliverables should be zipped to one file and submit to canvas under the “survey” column.

Grading Criteria

Presentation (6)

The in-class tutorial will be peer reviewed, including me and the rest of the class. Here are the four questions that go to the evaluators:

1. Clarity (2 pt): are you able to understand the presentation? Does the presenter clearly say when these artifacts are used and generated? most, not at all, somewhat
2. Completeness (2 pt): does the amount of materials include 5 papers and they are the state of the art papers? yes, no, somewhat
3. Insightfulness (2 pt): is the material useful and interesting? Does the presenter use a novel way to summarize and analyze the articrafts? Does the presenter have interesting comments about the work? yes, no, somewhat
4. Provide one feedback to the presenter to further improve his/her tutorial.

We will fill the questions right after your tutorial and compute an average score among all the evaluators as your tutorial scores.

Articrafts summary and analysis (6)

1. Completeness (2 pt): does the document contain all the summary items?
2. Clarity (2 pt): are the summary documents understandable?
3. Insightfulness (2 pt): does the document contain interesting thoughts and analysis?

Can the presentation slides be integrated to the course materials (1)?

1. Yes (1 pt)
2. No (0 pt)

To be accepted as a pull request to the course website, please make sure your presentation is professionally written. For example, the examples you want to add should be complete, clear, big enough for slides. The references and citations will be properly added.

Your evaluation for other tutorials (2)

You should be prepared to attend all the tutorials and also submit your fair evaluation. Absence and irresponsible evaluation will reduce your 2 points.