COM S 413 Survey

Learning Objectives

1. Get an in-depth understanding on a subject of program analysis/software engineering of your interest
2. Learn how to search for program analysis literature and develop ideas and comments based on it
3. Learn how to nativage through open-source software engineering data and improve code and bug inspection skills
4. Get more familiar with the concepts in program analysis
5. Practice presentation and technical writing skills

Description

This survey consists of two parts. The first part is to learn how to survey software engineering data. Specifically, the task is to investigate two interesting bugs for real-world software. The students are expected to understand the root cause of the bugs, identify the inputs that can trigger the bug, learn the symptoms and consequences of a bug, locate the buggy source code, and find the patches in the repository. The students will report their research results in a presentation.

The second part is to learn how to survey program analysis literature. Specifically, the students will be asked to find a survey of a topic taught in class (see our syllabus), read the survey and summarize their thoughts in a one-page report. The report can include what you learn about how to write a good survey, any comments on the techniques and problems discussed in the survey, and any new ideas generated. You can use your own words to summarize the interesting points in the survey, but do not directly copy the content from the survey.

Advice

1. For the bug studies, you can start with some open-source software of your interest. Then you can search its github issue trackers or bug database (e.g., bugzilla) to find interesting bugs. Note that it will be easier to analyze a bug that contains complete information and patches. Based on the bug information given, you then understand its causes and patches, find the test that can trigger the bugs, and document the bug information (software, ID and the link of the bug, source code, patches, root cause explanations)
2. For the literature survey, I recommend you to use the ACM library as a search cite: https://dl.acm.org/, using the topic of interest as a keyword. There is also a high-quality journal called ACM computing surveys. Note that you will need to look for surveys published in recent years.

Deliverables

1. Presentation slides
2. Presentation in class (15 minutes)
3. Survey report

All the deliverables (including slides and writeup) should be zipped to one file and submitted to canvas under the "survey" column. **The slides and report due Feb 24 (Wed), 11:59pm. The instructor will notify the presentation time.**

Grading Criteria

Bug studies:

- Quality of the bugs: importance, interestingness (3 pt)
- Completeness and details of bug information: (5 pt)
- Clarity of the presentation (2 pt)

Survey reading report:

- Novelty, insightfulness and importance of the ideas (4 pt)
- Sufficient content (3 pt): does the report contain multiple points and ideas? Is the report only copying content from the survey without further analyzing it?
- Clarity of the writing (3 pt): is the report understandable?