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## COM S/CPR E 513 Survey

### Learning Objectives

1. Get an in-depth understanding on a subject of program analysis/software engineering of your interest
2. Gain more experience with finding and reading program analysis/software engineering papers
3. Get more familiar with the concepts in program analysis
4. Gain research experience of brainstorming and critical thinking on the state-of-the-art papers
5. Practice presentation and technical writing skills

### Description

The purpose of doing a survey is to teach you how to find, read and present the literature of program analysis. To demonstrate your learning outcomes, you will teach a mini-tutorial in class that summarizes what you have read. The presentation should first provide an overview on the surveyed area summarized from the surveyed papers, and then you will provide more details for one of the most important/interesting papers. You will also submit one page in writing to report your thoughts and ideas on the papers you have read and your vision for future directions.

You can select a topic of interest from the following list:

1. bugs and vulnerabilities
2. automatic test input generation
3. debugging and repair
4. specification inference
5. analyzing software changes and versions
6. big code analysis
7. analyzing and testing AI software and models

For each above topic, you will need to decide a sub-topic, and then select 5 papers relevant to the sub-topic. The papers should be selected from the top conferences or journals of software

engineering and programming languages published in recent 5 years. The conferences you should search for such papers include ICSE/FSE/PLDI/ASE/ISSTA (for topic 7, you might also check with ICML and NeurIPS). The journals are TOSEM, TSE, TOPLAS. Special papers and topics that are not within the above scope may be permitted upon the instructor's approval.

The survey will be assigned at the second week of the class. The deliverables are due at the end of each topic (see our syllabus for the tentative schedule). Note that the surveys for different topics are due at different dates.

## Deliverables

1. Presentation slides
2. Latex bib file
3. 20 min in-class presentation
4. 1-page report on important thoughts of the papers

Please submit your slides, your latex bib file and your report to Canvas under the "survey" column. All the deliverables should be zipped to one file. The slides and report will be **due Feb 24 (Wed), 11:59pm**. The instructor will notify the presentation time.

## Grading Criteria

### Survey presentation and report:

1. Paper selection (3 pt): do papers contain consistent and important work for the surveyed topic?
2. Presentation completeness (3 pt): do you include both overview of the area and one important work? Is the content of overview and selected work complete?
3. Presentation clarity (3 pt): is your presentation easy to understand?
4. Novelty, insightfulness and importance of the ideas (4 pt): The novelty can lie in your vision and comments on the surveyed problem and solutions. The novelty can also lie in your ways of analyzing and connecting the papers in presentation or report.
5. Report completeness (4 pt): does the report contain multiple points and ideas? Or is the report only copying content from the survey without further analyzing it?
6. Technical writing quality (3 pt): is the report easy to understand and logical?