INFORMATION VISUALIZATION IN SOFTWARE TESTING AND MAINTENANCE
A LITERATURE SURVEY

Peer Project Review 1

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Information Visualization

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Why Software Testing and Maintenance is important?

- Developers continuously apply changes
- Introduce bugs
- It costs the global economy $312 billion per year
- Developers spend 50% of their programming time on fixing bugs

✔ Test techniques: Executing a program or application with the intent of finding software bugs
✔ Maintenance: Addresses bug fixes and minor enhancements
What does Visualization in Software Testing and Maintenance mean?

- **Software Visualization**: mapping from software artifacts—including programs—to graphical representations.

- **Software Testing and Maintenance Visualization**: Software itself, software bugs and fixes are invisible
How Visualization helps Software Testing and Maintenance?

- Artifacts are textual, use textual visualization
- Specific ways of graphical visualization work better
- **Facilitates** testing and maintenance tasks
- Different techniques
- Example: Fault localization
Example 1

(Research)

[Fig. 4. Jones, James & Harrold, Mary & Stasko, John. (2002). Visualization of test information to assist fault localization. Proceedings - International Conference on Software Engineering. 467- 477.]
Example 2
(Industry)
Goals

- Survey the **existing literature** focusing on the use of visualization for software testing and maintenance
- Analyze the data from empirical experiments under **what/why/how framework**
- Abstract gathered information to **categorize/compare** existing approaches.
Contributions

- Literature review
- Organizing past works under a certain framework
- Analysis and synthesis of the findings of past researches
- New categorization/comparison
- Suggesting some possible future directions
Main Steps

- Gather (23-25) relevant papers
- Review some relevant survey papers to gain an idea about doing survey project in this area
- Review all papers one time to achieve a big picture
- Analysis of all selected papers under what/why/how framework
- Prepare final paper and presentation
What has been done?

- Collect relevant papers
- Review some relevant survey papers
- Review papers

Findings:

- Vissoft
- Variety of visualization techniques (the scope of projects in this field)
- Valid for analysis (the what/why/how framework is applicable)
- Basic works other papers refer to (such as example 1)
Next Peer Project Review

- Analysis of all selected papers under what/why/how framework
- A high-level presentation of the analysis work