INFORMATION VISUALIZATION IN SOFTWARE TESTING AND MAINTENANCE
A LITERATURE SURVEY

Peer Project Review 2
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What does Visualization in Software Testing and Maintenance mean?

- **Test techniques:** Executing a program or application with the intent of finding software bugs
- **Maintenance:** Addresses bug fixes and minor enhancements
  - **Software Visualization:** Mapping from software artifacts—including programs—to graphical representations. It’s needed because Software itself and software artifacts such as bugs and fixes are invisible.
  - **Software Testing and Maintenance Visualization:** Use the above definition for corresponding artifact.
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
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 and read relevant papers
  - All of them from VISSOFT conference under testing, maintenance, debugging and evolution categories

- Review some relevant survey papers
  - Limited survey papers on reverse engineering and repository mining
What has been done? (cont.)

- Analysis of all selected papers under **what/why/how framework**
  - Variety of techniques: feature extraction, clustering, matrix views, multiple view coordination
  - Variety of data types: Networks, Trees, Text, Sequences and Events
Categorization (to be completed)

**Context:** Bug, test case, source code, etc.

**Scalability:** If the system supports millions of LOC and/or thousands of classes and/or source files

**Tasks supported:** Detecting code smells, trace analysis, debug support

**Techniques used:** “How” part in What/Why/How framework
What to do next?

- Improve categorization
- Prepare final presentation
- Prepare final report