



# INFORMATION VISUALIZATION IN SOFTWARE TESTING AND MAINTENANCE A LITERATURE SURVEY

Peer Project Review 1

Marjane Namavar

University of British Columbia

Information Visualization

Fall 2019

# 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?

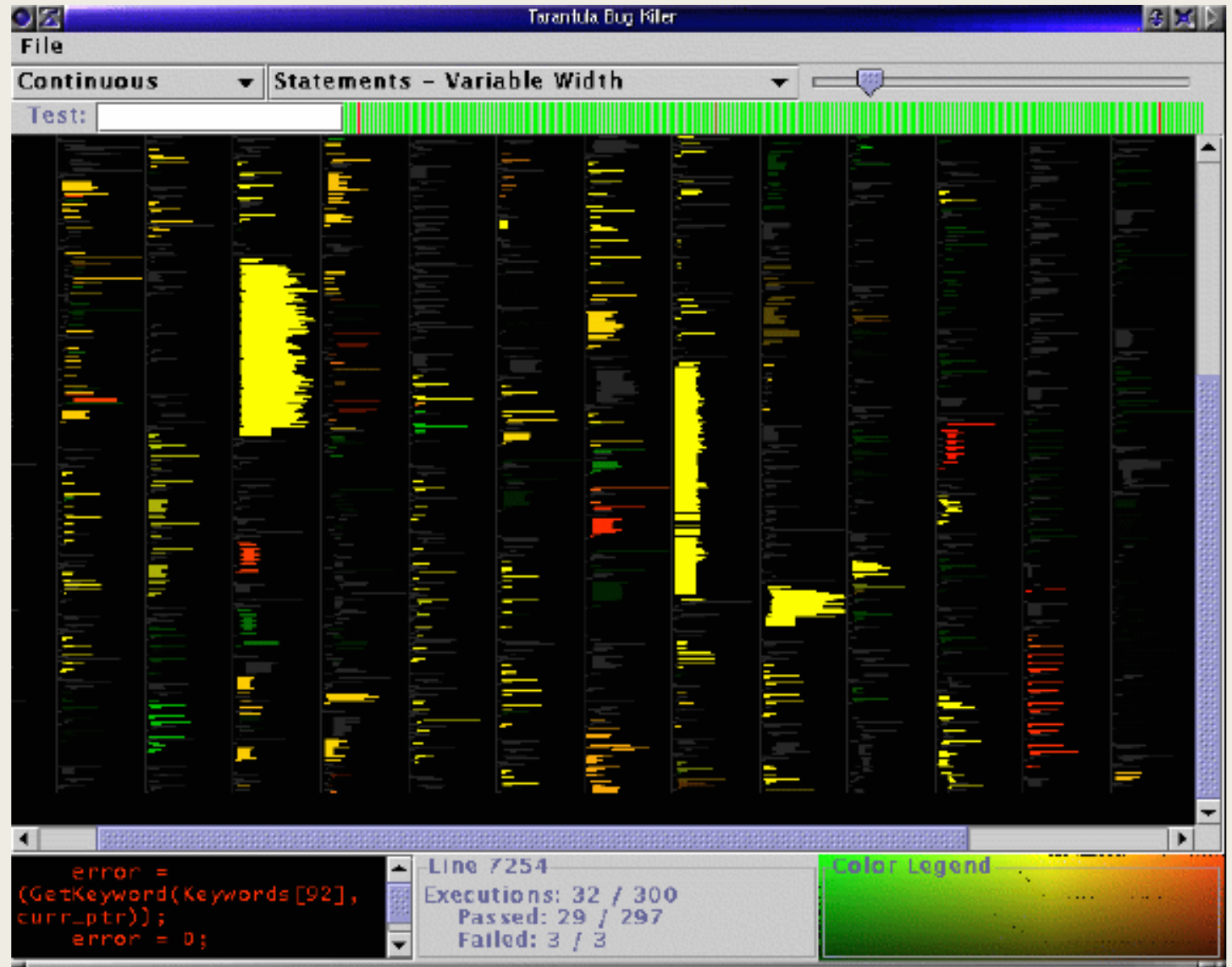
- **Software Visualization:** mapping from software artifacts—including programs—to graphical representations.
- **Software Testing and Maintenance Visualization:** Software itself, software bugs and fixes are invisible

# 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

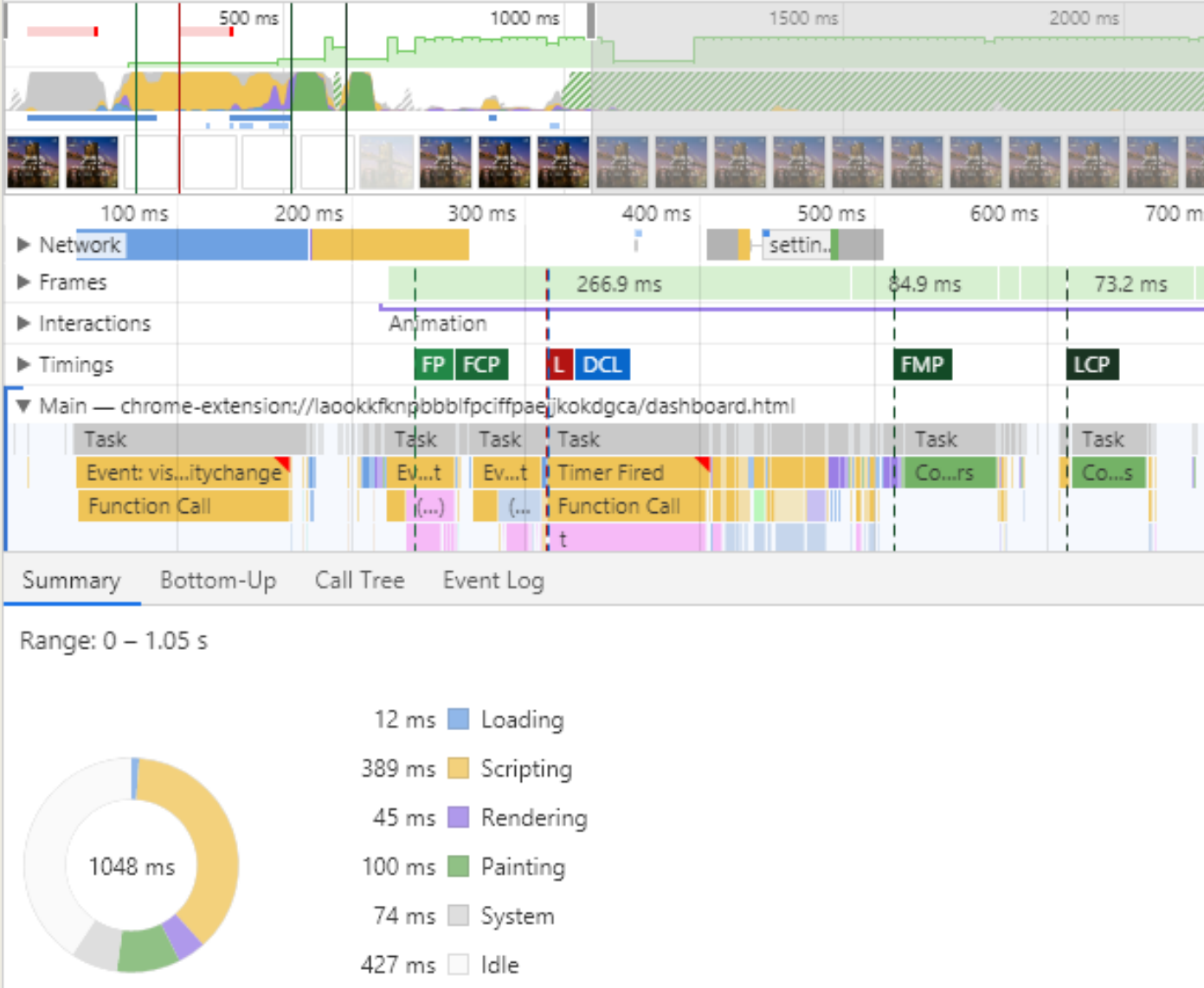
(Research)



[Fig. 4. Jones, James & Harrold, Mary & Stasko, John. (2002). Visualization of test information to assist fault localization.

# 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