Special Testing Topics

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Current Research Topics

- Sources for papers

- http://www.engpaper.com/free-research-papers-computer-science-software-testing.htm
- http://www.cc.gatech.edu/fac/Alex.Orso/papers/orso.rothermel.ICSE2014-FOSE.pdf

The Travelogue

- Survey of testing research
- Named after landmark 2000 paper
- Dedicated to the memory of the author, Mary Jean Harrold
- -
- Researchers were asked for most important topics

Research Topics

- Automated Test Input Generation
- Testing Strategies
- Regression Testing
- Empirical Studies
- Frameworks
- Continuous Integration
- Testing Modern, Real World Systems
- Oracles
- Probabilistic Program Analysis
- Testing Non-Functional Properties
- Domain-Based Testing
- Leveraging the Crowd and Cloud

Test Input Generation

- Symbolic Execution
  - Static analysis of all possible execution paths
  - Look for combinations that get to error states

- Search-Based Testing
  - Find smallest number of cases that cover all branches

- Random Testing
  - Generate effective random sets
  - Manage large numbers of test cases

Combinatorial Testing

- Lots of test possibilities
- Find smallest number of tests that don't overlap

- "The basic CIT approach involves
  - (1) modeling the system under test as a set of factors that can assume different values,
  - (2) generating a sample of the possible combinations of factors and values, and
  - (3) creating and executing test inputs corresponding to this sample."

Regression Testing

- The "retest all" approach
- Regression test selection to save time
- How to select tests to maximize value/time?
- Reduce tests that duplicate test results
- Test case prioritization - find common faults first
- Test suite reduction: smaller set with same coverage

Cloud Testing