Testing Retrospective

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RIACS/NASA Ames

General Papers

- James C. King.
  Symbolic execution and program testing.
  Communications of the ACM
  Volume 19 , Issue 7 (July 1976) pp. 385-394
  ISSN:0001-0782

- J.J. Chilenski and S.P. Miller.
  Applicability of Modified Condition/Decision Coverage to Software Testing.
  Software Engineering Journal,
  Volume 9, Issue 5, September 1994, pp. 193-200.

ASE Angle

- J. J. Chilenski and P. H. Newcomb, **Formal Specification Tools for Test Coverage Analysis**, Proceedings of the Ninth Knowledge-Based Software Engineering Conference (**KBSE'94**), Monterey, CA, USA, September 20-23 1994, pp. 59-68.

  - This paper describes a prototype software **tool** that supports analyses for 21 **structural coverage criteria**. Formal techniques were developed for axiomatizing Ada and translating the **path expressions** of subprogram bodies into conjunctive normal form for use in a **resolution-refutation theorem prover to determine feasibility**. Coverage specifications were combined with feasible path construct a minimal specifications. These methods proved effective for small subprograms written in a restricted subset of the Ada language. This work laid the groundwork for subsequent research into automating test generation and coverage determination. Directions for future research are outlined and briefly discussed

Influence

- After 10+ years influence is easier to judge
  - Others use the ideas/tools
    - Citation counts become relevant
  - Commercial impact can be judged

- Symbolic Execution (30+ years)
  - Even at this ASE there were 2 papers and 1 tutorial describing symbolic execution
  - State of the art commercial static analyzers use these ideas
  - …
- MC/DC Coverage (12 years)
  - Cornerstone of FAA Level A certification
  - …

Influence of Tools

Automated Software Engineering

Influence of Tools

Automated Software Engineering

Conjecture
Tools have more influence than papers

TOOL

The Impact Project: Tracing the Source(s) of Technology to its Origins

- Leon J. Osterweil (Umass)
- **www.sigsoft.org/impact/index.htm**
- Focus is on Software Technology
- Start with technologies in widespread use
- Trace back to how they came into widespread use
- Document and analyze
  - What facilitates/inhibits technology flow?
  - How to make more good things happen more easily and more often