Mutation Testing and Model Transformation (MT^2) workshop

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Research Topics

- Since 2005, I study model transformation testing and mutation analysis.
  - PhD at University of Rennes, INRIA Rennes, IRISA lab, Triskell, supervised by *Benoit Baudry* and *Yves Le Traon*

- Model transformation testing [CACM'10]
  - Test model generation and qualification
  - Test oracle building and qualification
  - Diagnostic
  - Traceability
- Mutation Testing
  - Mutation operators, mutation analysis
- Test evolution [MoDeVVa'13]

Mutation Analysis dedicated to Model Transformation Testing

- Mutation Operators
  - Design a set of mutation operators dedicated to model transformation testing [ECMDA'06]
    - Language independent
    - Based on MT operations and metamodels
  - Metamodelisation of a set of mutation operators [STVR'14]
    - Allowing higher-order model transformation.

- Mutation Analysis
  - Improvement of test models based on mutation operators [STVR'14]
    - Traceability and model of mutations combined to help testers improve test models.

Mutation Testing to experiment Model Generation and Qualification

- Black-Box : Covering input domain based on MM
  - Partitioning the input domain based on Metamodel
  - Transforming partition, constraint, test strategy
    - Into Test Models, through Alloy

  [ICST'08, ICMT'09, ICMT'12]
- White-box : Covering transformation rules
  - Static analysis of the transformation rules extracting how they manipulate the metamodel elements

  [ISSRE'12]

- The proposed techniques are experimented with mutation testing
  - Measuring mutation score of generated test models

Mutation Testing to experiment Oracle Qualification

- Oracle written by the tester are qualified with mutation testing
  - [Models'06]

- Definition of oracle functions
  - Distinguish oracle data from oracle function [MoDeVVa'08]
    - Expected models and model comparison
    - Partial expected models and partial model comparison [ICMT'13]
      - Help to get verdict when part of the output model is not predicted