

Experiences on the Quality and Availability of Test Models for Model Differencing Tools

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Motivation

Community
Benchmark Set

Lessons Learned

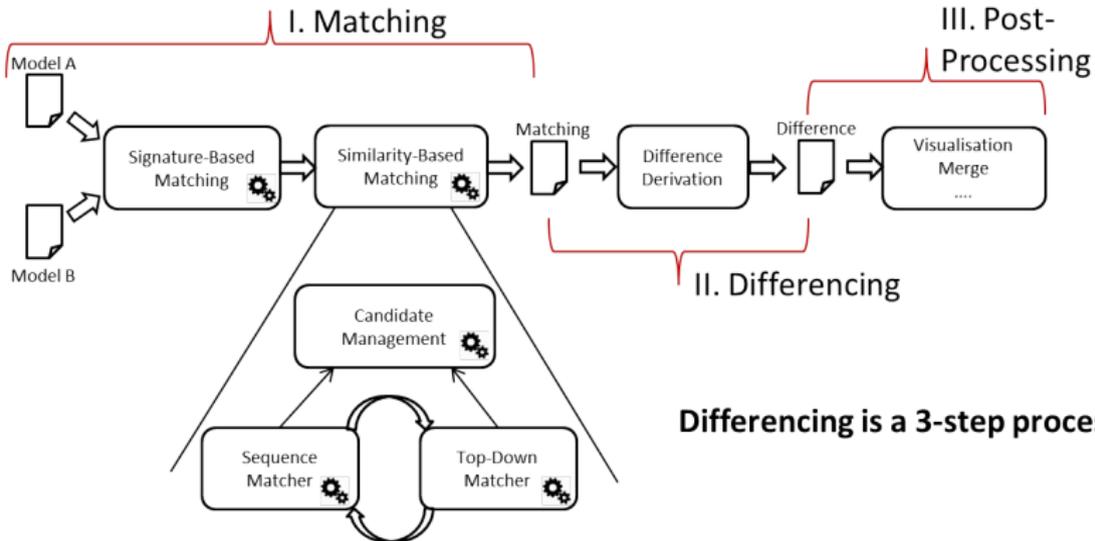
Summary

References

- Software Engineering Group @ University of Siegen
- Research in Model Driven Engineering
- Developing tools in the context of model versioning
- Strong focus on model differencing



SiDiff Model Differencing Framework



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Summary

References

State-Of-The-Art

Various matching approaches for various model types

- ID-based Matching
- Signature-based Matching
- Similarity-based Matching
- Operation Recording
- ...
- UML Diagrams
- Process Models
- Domain Specific Languages
- Simulink-Diagrams
- ...

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Available empirical evaluations have been conducted so far mostly by suppliers of the technologies, typically using small sets of use cases based on simple models. They cannot be reproduced or repeated with competing approaches.

Currently there are no standard benchmarks, challenges, test cases, or contests available.

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Summary

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We organize the workshop Comparison and Versioning of Software Models (CVSM).

Our idea was to collect a benchmark set which can be used to evaluate and compare competing tools in the context of model versioning.

The process should be community driven. Without acceptance of the community, the benchmark set would be rather useless.

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References

The workshop aimed at initiating a community process to draft an initial set of benchmarks.

- Topic was well received
- A total of 15 position papers
- General consensus: Objective evaluation is indeed a problem
- Discussions how a benchmark should look like

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Summary

References

Call for Benchmarks

- (Performance) Benchmarks
- Challenges
- Real Use-Cases

Accepted manually created as well as synthesized model sets.

- Testmodel Generator [PiSK11ASE]

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References

Call for Benchmarks

- (Performance) Benchmarks **(4)**
- Challenges **(6)**
- Real Use-Cases **(0)**

Real, industry-based models are not available!

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References

We prepared two different benchmark sets

- Heterogenous Metamodel Case [WiL2014CVSM]
- Challenges for Ecore and BPMN Diagrams [PiMR2014STT]

Nobody submitted any evaluation based on the benchmark sets.

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Summary

References

I. Different Requirements and Constraints

- Decisions in phase I and II are dependent on post-processing
- Approaches often make hidden assumptions
- Approaches often have hidden constraints
- There is “no one size fits all” benchmark!

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II. Proprietary Approaches

- EMF/Ecore is the de-facto standard in MDE
- Some tools work (for good or bad reasons) on proprietary formats
- These tools couldn't directly process the provided benchmarks
- When you convert the benchmarks, they lose the comparative value

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III. Model Differencing is just a Means to an End

- It is assumed the difference is given and correct
- Generally not much interest in how differences are computed
- Scientifically okay, but in reality problematic

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IV. Small Research Field

- There are not many differencing tools
- Available tools now their weakness...
- ...and do their best to hide them
- These tools don't want a objective comparison

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Summary

References

- Pros and cons of model generators
- Availability of models in general
- (Low) quality of available models

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Why we (think we) the CBS failed...

- I. Different Requirements and Constraints**
- II. Proprietary Approaches**
- III. Model Differencing is just a Means to an End**
- IV. Small Research Field**

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References

[WiL2014CVSM] - Manuel Wimmer, Philip Langer; A Benchmark for Model Matching Systems: The Heterogeneous Metamodel Case

[PiSK2011ASE] - Pit Pietsch, Hamed Shariat, Udo Kelter;
Generating Realistic Test Models for Model Processing Tools

[PiMR2014STT] - Pit Pietsch, Klaus Müller, Bernhard Rumpe;
Model Matching Challenge: Benchmarks for Ecore and BPMN
Diagrams