High-level Differencing, Patching and Merging of EMF Models

Eclipse DemoCamp (18.11.2013)

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## About us

**Software Engineering Group, University of Siegen**

Main research area: Model driven software development

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3. SiLift Approach
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Section 1

Introduction
Use Cases of SiLift

SiLift Tools

Differencing

Base model

\[ \text{A} \]

\[ \rightarrow \triangle \]

\[ \rightarrow \text{B} \]

Changed model

Patching

Base model

\[ \text{A} \]

\[ \rightarrow \triangle \]

\[ \rightarrow \text{A'} \]

Patched model

Merging

Base model

\[ \text{A} \]

\[ \rightarrow \text{B} \]

\[ \triangle_{AB} \]

\[ \rightarrow \text{C} \]

\[ \triangle_{AC} \]

Changed models

\[ \text{B} \]

\[ \text{C} \]

\[ \text{C'} \]

Merged model
Model Evolution

SiLift

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Introduction
SiLift Tools
SiLift Approach
Summary

rev. 1.1

Company

worksFor

Person

1

employer

employee

Developer

Manager

+ name : String

+ name : String
Model Evolution

Design Decision: Restrict association navigability
Model Evolution

Design Decision: Restrict association navigability

Refactoring: Pull up attribute

SiLift Tools
SiLift Approach
Summary
What textual difference tools report...
What EMFCompare reports...
Model Evolution

SiLift Tools

Design Decision:
Restrict association navigability

Refactoring:
Pull up attribute

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Model Evolution

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Design Decision:
Restrict association navigability
Edit Operation

Refactoring:
Pull up attribute
Edit Operation

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Section 2

SiLift Tools
SiLift

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Use Case (1)

Differencing

Base model

\( A \)

\( \Delta \)

\( B \)

Changed model
Difference Viewer
Use Case (2)

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Patching

Base model

Patched model
Consistency-Preserving Editing of Patches (1)
Consistency-Preserving Editing of Patches (2)
Controlled Application of Model Patches (1)

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Controlled Application of Model Patches (2)
Controlled Application of Model Patches (3)

SiLift Tools

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Use Case (3)

Merging

Base model

\[ \Delta_{AC} \]

\[ \Delta_{AB} \]

Changed models

Merged model

\[ \Delta_{AC} \]

\[ \Delta_{AB} \]
SiLift Tools

SiLift Approach

Summary
Controlled Merging (2)
Controlled Merging (3)
Section 3

SiLift Approach
SiLift Pipeline (low level)
SiLift Pipeline (high level)

Domain specific Edit-Rules

Low-Level Changes → Edit Operation Detection → Dependency Analysis → Patching & Merging

High-level changes based on complex editing commands.
Theoretical Foundation

pullUpAttribute(a)

LHS

RHS
Practical Usage

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Summary
SiLift Tools

Support for High-level model-based
- Differencing
- Patching
- Merging

Contact/More information

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Personal
- Now ;-}