

Model checking AToMPM models with Groove

Jeroen De Busser

University of Antwerp

Januari 22, 2015

Overview

Motivation

Comparison

Implementation

- Demo project
- (Meta-)model
- Transformation rules
- Rule scheduling

Demo and Questions

Table of Contents

Motivation

Comparison

Implementation

- Demo project
- (Meta-)model
- Transformation rules
- Rule scheduling

Demo and Questions

Motivation

- ▶ Checking correctness
 - ▶ Operational semantics
 - ▶ Instance models
- ▶ Reachability analysis

Table of Contents

Motivation

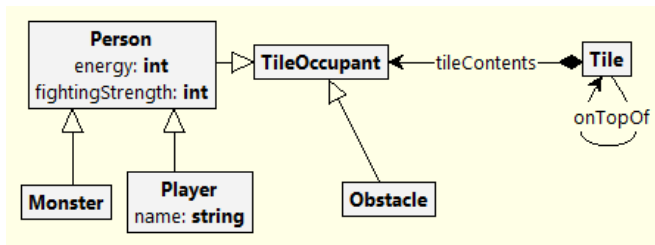
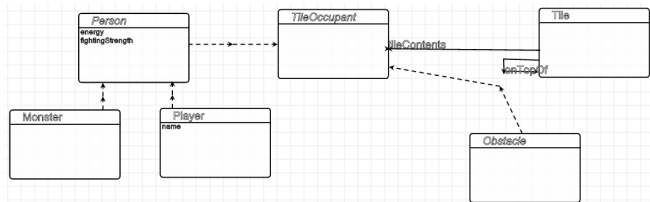
Comparison

Implementation

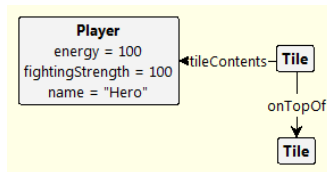
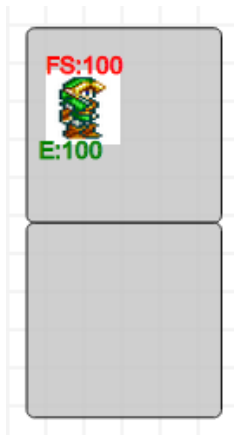
- Demo project
- (Meta-)model
- Transformation rules
- Rule scheduling

Demo and Questions

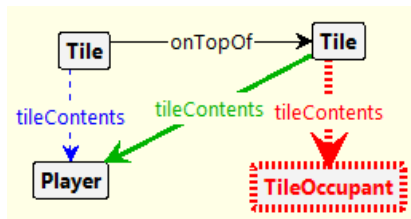
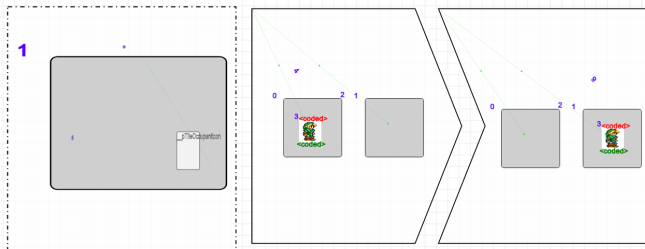
Meta-models



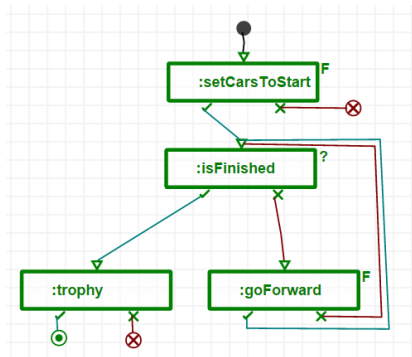
Models



Transformation rules



Transformation scheduling



```
setCarsToStart_forall;  
until(isFinished) {  
    try goForward_forall;  
}  
trophy;
```

Table of Contents

Motivation

Comparison

Implementation

- Demo project
- (Meta-)model
- Transformation rules
- Rule scheduling

Demo and Questions

Table of Contents

Motivation

Comparison

Implementation

Demo project

(Meta-)model

Transformation rules

Rule scheduling

Demo and Questions

Demo Project

Petrinet

1. Three transformation rules
2. Simple formalism
3. Still shows a lot of features

Table of Contents

Motivation

Comparison

Implementation

Demo project

(Meta-)model

Transformation rules

Rule scheduling

Demo and Questions

How to export

1. Export to metaDepth as a model
2. Run generator
3. Move to .gps
4. Open Groove

Example output

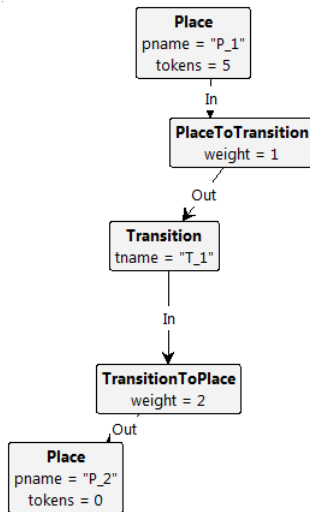
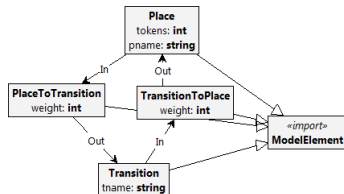


Table of Contents

Motivation

Comparison

Implementation

Demo project

(Meta-)model

Transformation rules

Rule scheduling

Demo and Questions

A quick overview

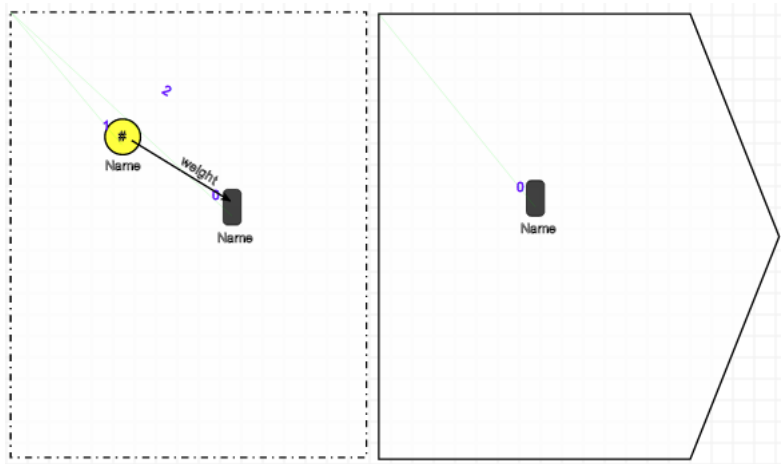


Yo dawg, I heard you like transformations, so I made transformations that create transformations that transform transformations into transformations

A real explanation

- ▶ GenericTransform formalism
- ▶ EGL generation for pattern elements
- ▶ transformation from GT to Groove
- ▶ Export to metaDepth

AToMPM rule



Example rule

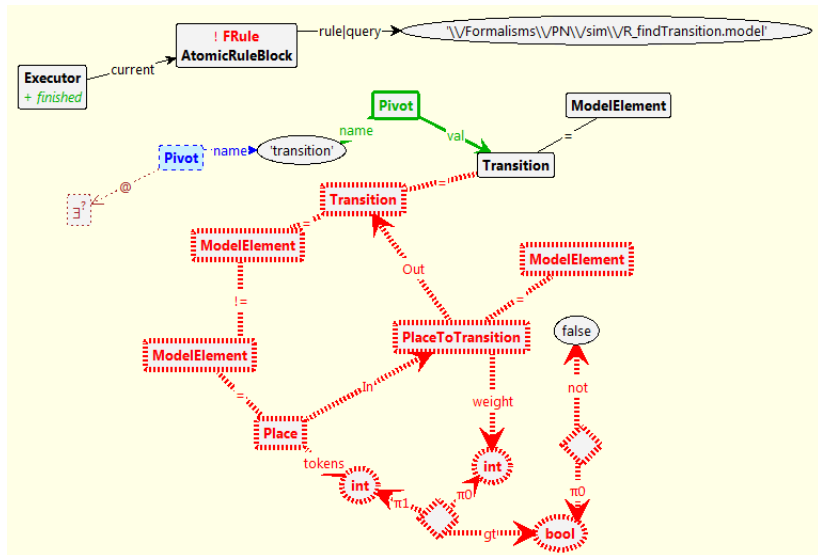


Table of Contents

Motivation

Comparison

Implementation

Demo project

(Meta-)model

Transformation rules

Rule scheduling

Demo and Questions

Implementation

- ▶ MoTiF emulator
- ▶ Scheduler is part of graph state
- ▶ Exported like any other model

Example

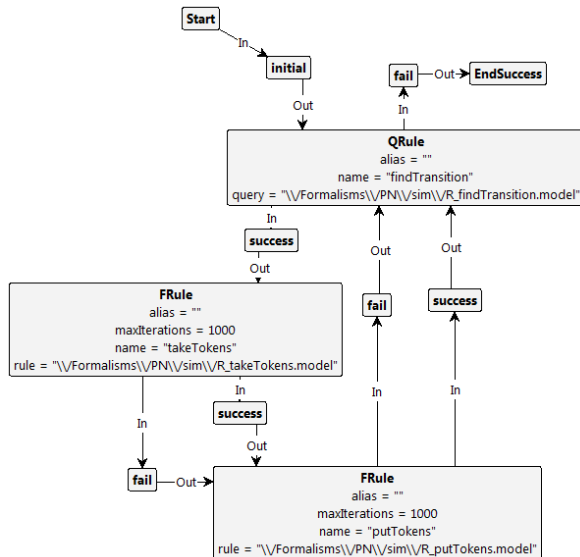


Table of Contents

Motivation

Comparison

Implementation

- Demo project
- (Meta-)model
- Transformation rules
- Rule scheduling

Demo and Questions

Demo

May the demo gods be with me