Application and Tools





Permanent Members



Philipp SCHLEHUBER-CAISSIER
Synthesis and Model Checking
Automata & LTL



Natalia KUSHIK
Model-based testing
Protocol analysis &
Input-Output automata



Sven DZIADEK
Weighted Logics

Non-Permanent Members

Lory SOUMPHONPHAKDY : CDD-TSP
Application of HDAs for control and logics

Clement BORNE : Doctorant-TSP
Games and robustness for Higher Dimensional Automata
Uli, Emily, Natalia & Philipp

Jakub HADJAS : DOCTORANT-TSP
$\omega - HDA$, HDAs for testing & more
Sven, Natalia & Uli

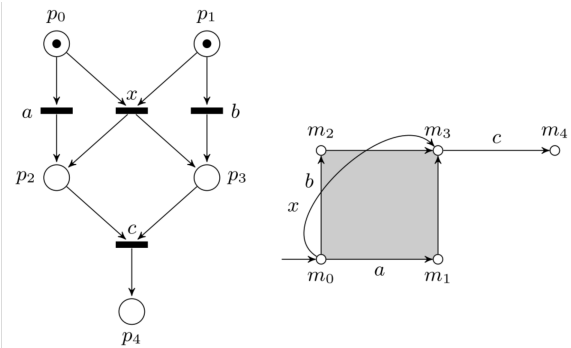
Topics Overview

4.1 Model checking of HDAs
4.2 Active learning of models for concurrency
4.3 HDAs for concurrent controllers

4.1 Model checking of HDAs

Data Structures and Algorithms

Coming from the analysis of Petri Nets via HDAs



Translation Aspects

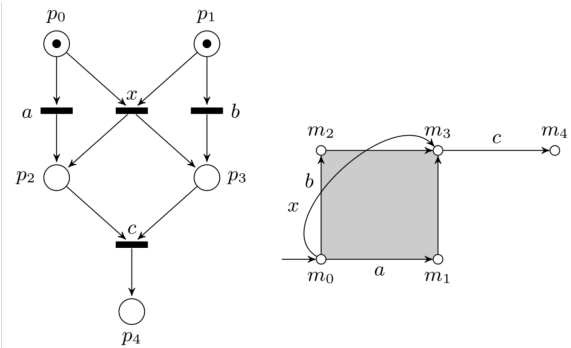
$$\text{LTL} \Leftrightarrow \omega\text{-automata}$$
$$\Downarrow$$
$$\text{LTL}_{\text{Poms}} \Leftrightarrow \omega\text{-HDA}$$

Links to WP2.3 Unfoldings, computation and tame paths

4.1 Model checking of HDAs

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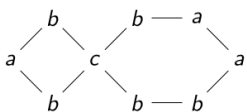
Or in general how to verify that an HDA models some formula, linking it to WP1

Links to WP2.3 Unfoldings, computation and tame paths

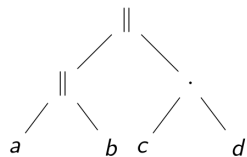
4.2 Active learning of models for concurrency

[Mainly the topic of Adrien et Amazigh, EPITA]
Learning Pomset Recognizers

Series-Parallel Pomsets



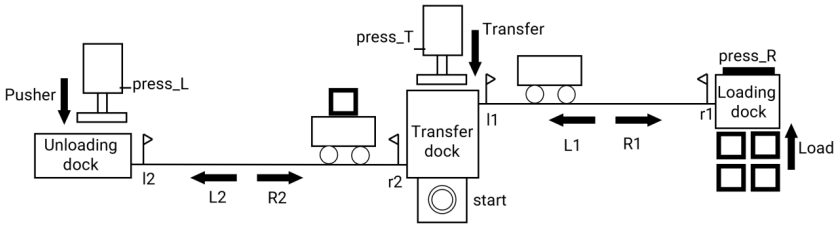
PomSet Recognizer



Binary Tree

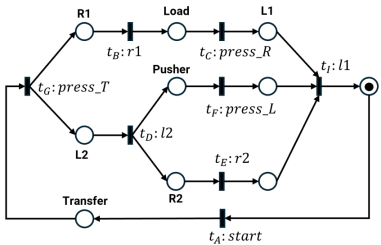
4.3 HDAs for concurrent controllers

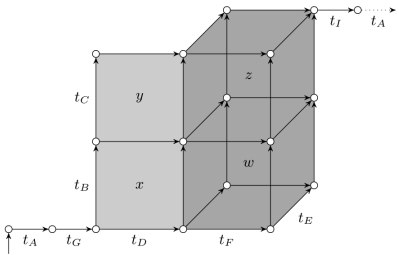
Most practical part: using HDA of as *concurrent Mealy Machines*



4.3 HDAs for concurrent controllers

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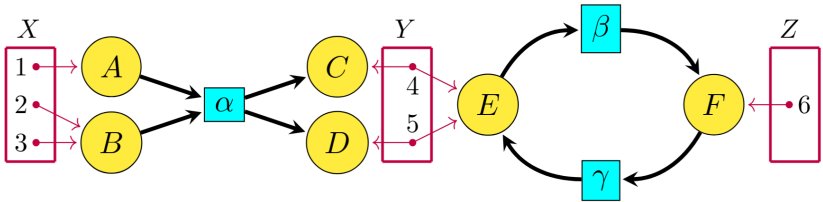


$\Rightarrow$ Connections to Grafcets, timed HDAs etc.

Other Topic

Compositionality of Petri Nets: *Open Petri Nets*

Can we mimic these constructions with HDAs?
Interesting link to Peter FETTKE and Wolfgang REISIG



Model Checking continued

Efficient Representation Max-Cell HDAs

When working with standard Petri nets one often finds such situations

