

Krohn-Rhodes

S.Sarkar

Decomposition

Application

Extension

Decomposition of Automata and its applications

RISC 2016 sprint talk by

Saptarshi Sarkar

Decomposition of Automata

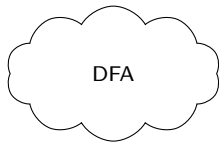
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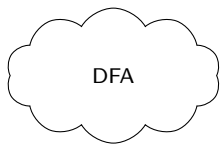
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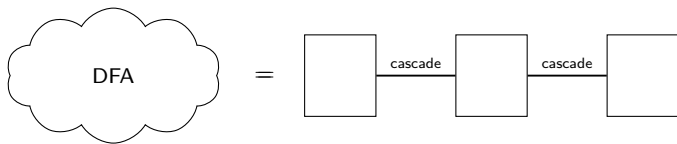
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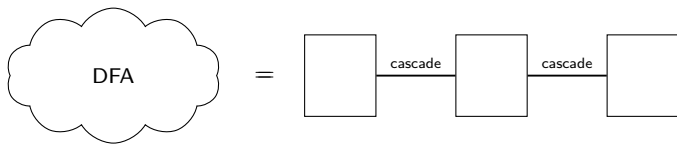


Figure 1: Krohn-Rhodes Theorem

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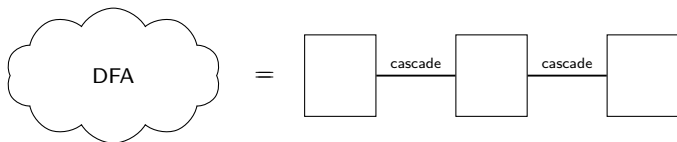


Figure 1: Krohn-Rhodes Theorem

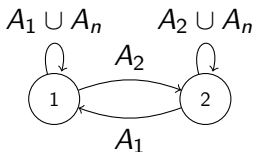


Figure 2: Two state reset automaton

Induction Scheme

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Claim

Cascade product of two state reset automaton are as expressive as LTL

Induction Scheme

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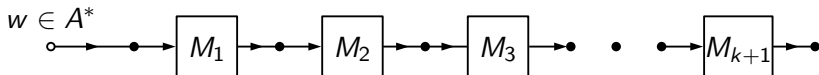
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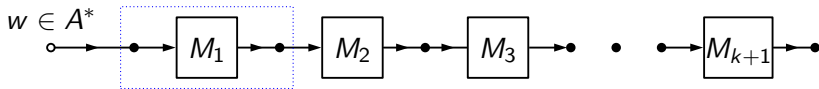
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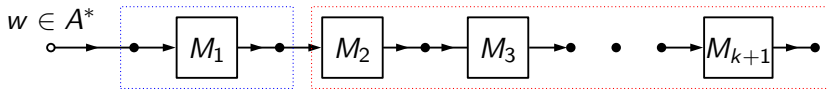
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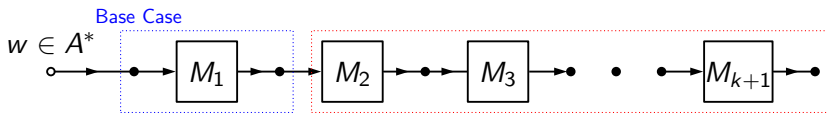
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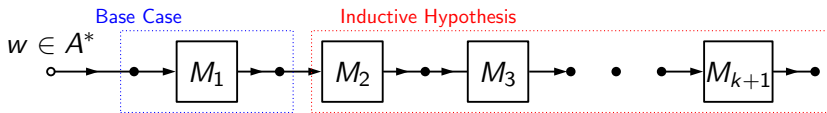
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Extending the theorem

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- Model checking in terms of constituent automata

Extending the theorem

Krohn-Rhodes

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Application

Extension

- Model checking in terms of constituent automata
- Game strategy in terms of prime game automata

Extending the theorem

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- Model checking in terms of constituent automata
- Game strategy in terms of prime game automata
- Extending the theorem to timed automata, distributed automata etc