

Reducing model-checking artefacts

Jeroen Keiren

MDSE PhD Meeting, January 11, 2013



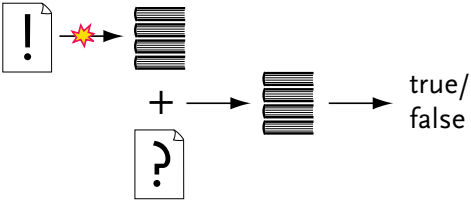
TU e

Technische Universiteit
Eindhoven
University of Technology

Where innovation starts

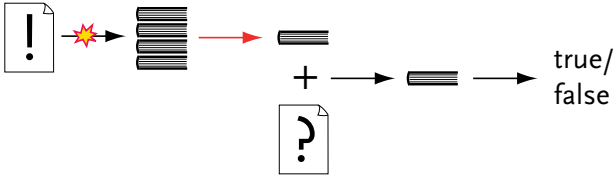
Context Model checking

Traditional



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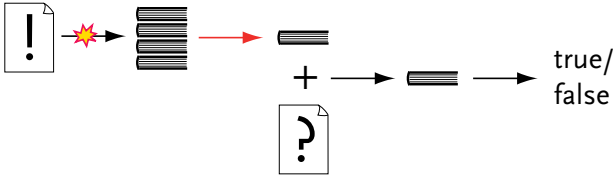
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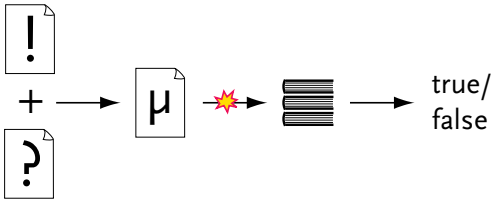
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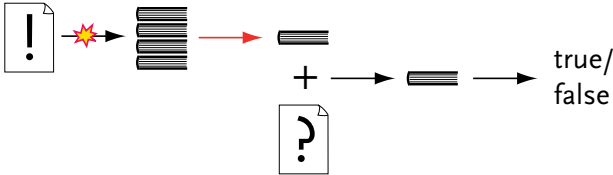
Symbolic



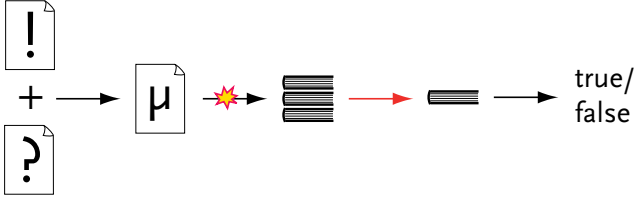
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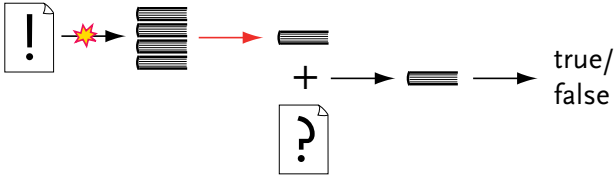
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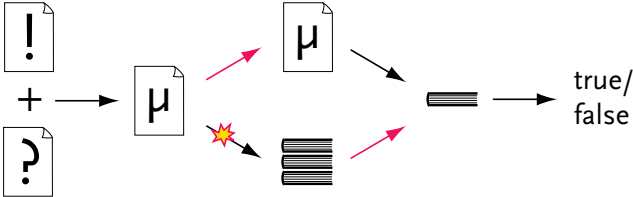
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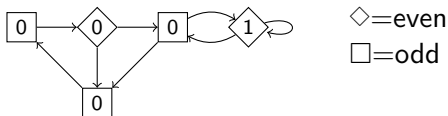


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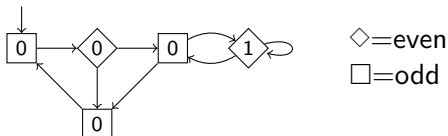
Parity games

V	A set of vertices.
$\rightarrow \subseteq V \times V$	An edge relation.
$\Omega: V \rightarrow \mathbb{N}$	A priority mapping.
$\mathcal{P}: V \rightarrow \{\diamond, \square\}$	A player mapping.



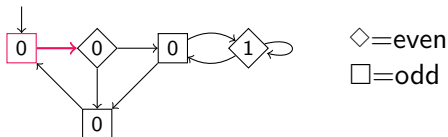
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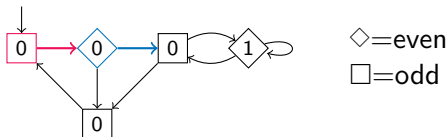
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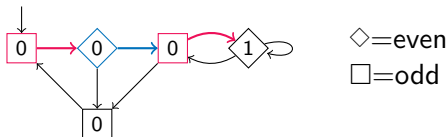
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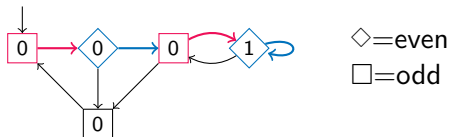
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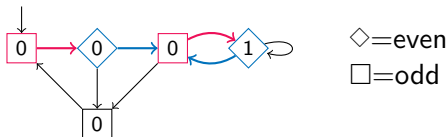
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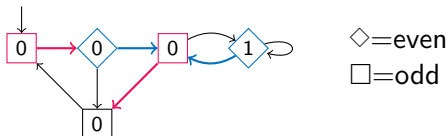
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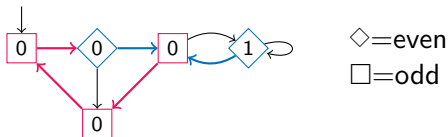
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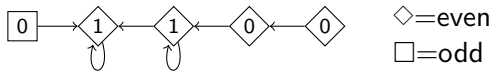
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Equivalences

Example



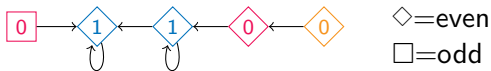
Strong bisimilarity [KW11]

Example



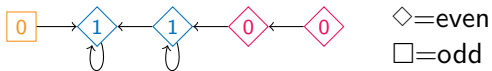
Governed bisimilarity [KW11]

Example



Stuttering bisimilarity [CKW11]

Example



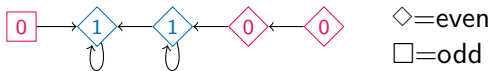
Stuttering bisimilarity [CKW11]

Example



Governed stuttering bisimilarity [CKW12]

Example



Governed stuttering bisimilarity [CKW12]

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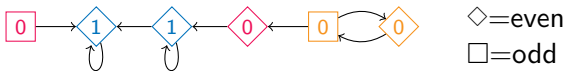
Governed stuttering bisimilarity [CKW12]

Example



Governed stuttering bisimilarity [CKW12]

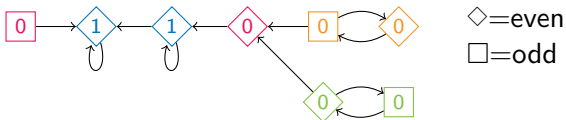
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Equivalences

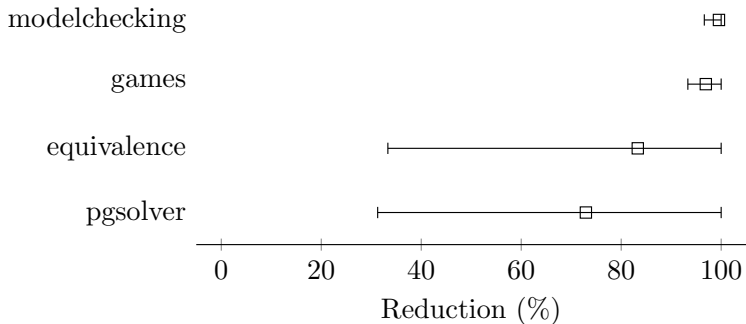
Governed stuttering bisimilarity [CKW12]

Example



Results

Size reduction governed stuttering (w.r.t. original)



Results

Time reduction (w.r.t. original)

