

Logic and Verification seminar

Kickoff meeting

Prof. Anthony Widjaja Lin

Dr. Daniel Stan

Oliver Markgraf

Automated Reasoning, TU Kaiserslautern

April 30, 2021

Organizational

- ▶ Friday 11:15 to 12:15, **every two weeks**
- ▶ Room: **Online** via OLAT/BBB
- ▶ Presentations by members of the group, guests, and by **you**
- ▶ Stay in touch: by mail (please register)
- ▶ The seminar page
<https://arg.cs.uni-kl.de/teaching/semss21/>

Validation

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- ▶ Attend at least 5 sessions: **try to be active, ask questions**;
- ▶ Pick an article of your choice (list incoming);
- ▶ **Prepare and present a talk** (~ 30 min, including questions);
- ▶ Write up a small report (~ 5 pages).

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a **Typical Session** will consists either:

- ▶ of a talk by a member of the group;
- ▶ or an external talk advertised on the mailing list (arg-seminar@informatik.uni-kl.de);
- ▶ or a simple discussion about reading progress (5min per student).

Timeline

Finalized timeline will be written on the website.

- ▶ Choice of topic: May 14th.
- ▶ Presentations: from now on to mid August
- ▶ 2th of September: write-up deadline, wrap up

Verification, Logic, Model Checking

Model checking is an automatic procedure:

System  , ...

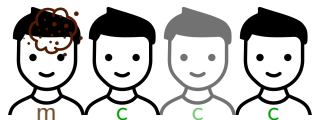
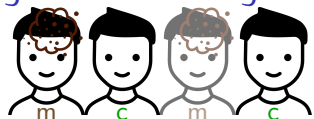
Model \mathcal{M}

Specification φ

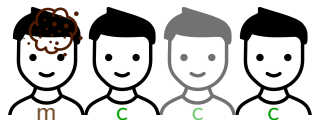
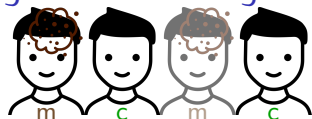
model checker

YES if \mathcal{M} satisfies φ , NO otherwise

Regular Encoding of a Model



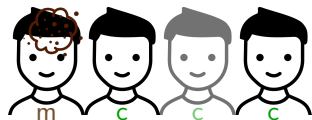
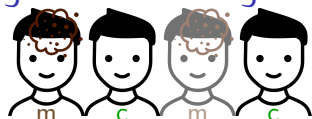
Regular Encoding of a Model



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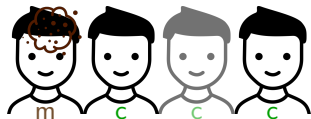
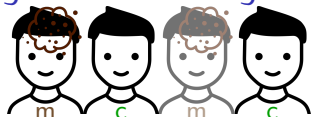


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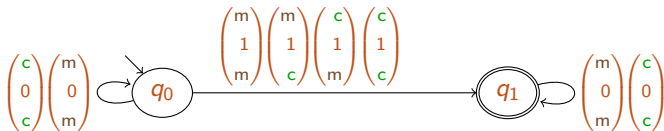
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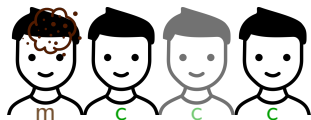
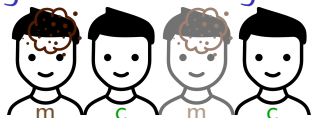
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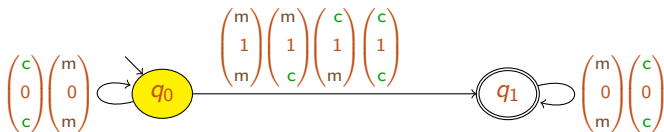
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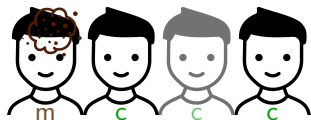
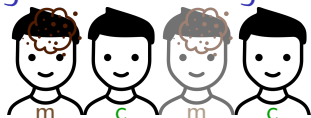
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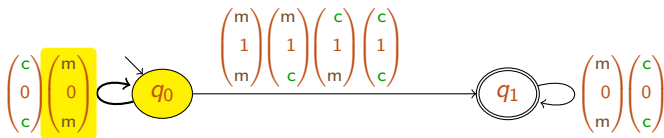
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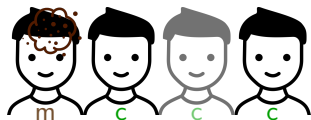
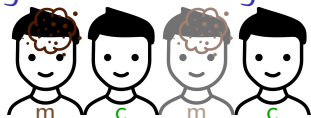
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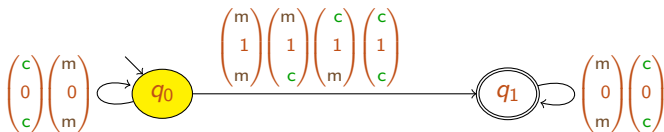
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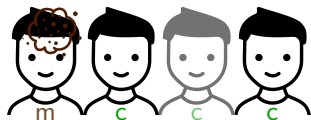
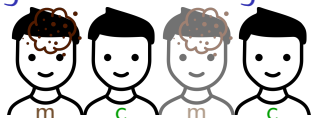
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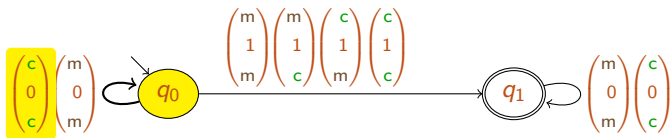
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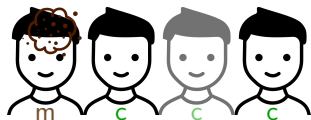
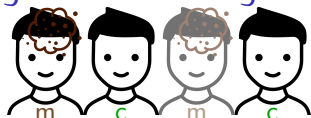
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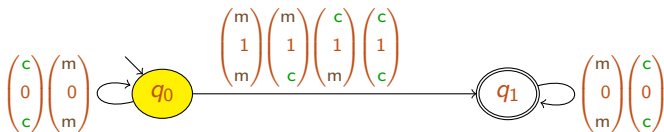
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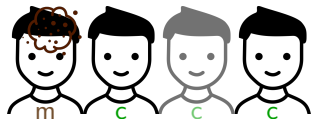
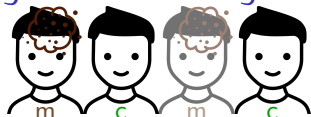
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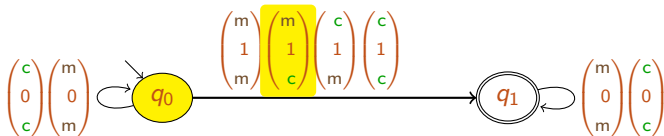
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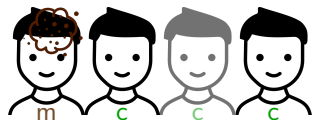
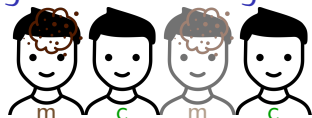
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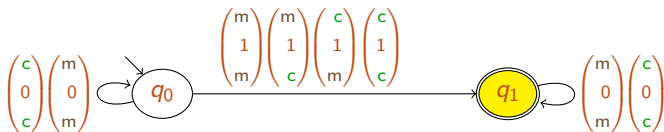
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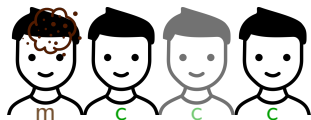
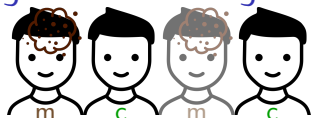
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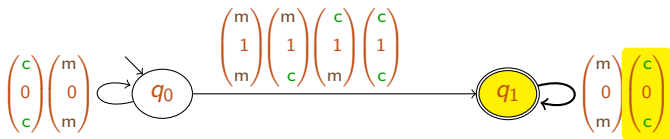
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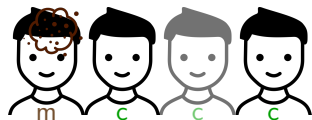
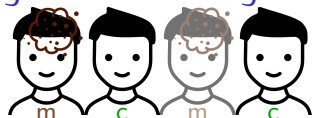
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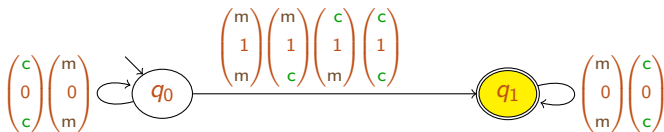
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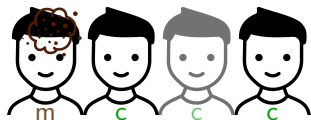
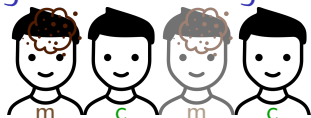
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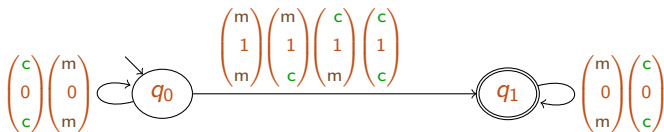
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Regular Model Checking focuses on models represented as **finite automata** (or transducer).

Topics of the seminar

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- ▶ Algorithmic problems in the field of verification
- ▶ Semantics of imperative programming languages
- ▶ Operationalization of formal specification techniques
- ▶ SMT (Satisfiability Modulo Theories) solving and decision procedures

Main topic this semester: **Regular Model Checking.**

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Main topic this semester: **Regular Model Checking**. → [some articles](#)

Questions ?

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Next meeting: May 14th

White board 1

White board 2

White board 3

White board 4