Proseminar Algorithms and Tools for Verification
Introductory Meeting

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Theory of Hybrid Systems
Informatik 2

WS 14/15

Contents

Goals of this proseminar

- Independent elaboration of a topic
- Structured scientific working
- Development of a short paper
- A good talk addressing the other students
- Literature research
- LaTeX skills

Paper and Talk

Paper

- 6 pages
- Font size 12pt
- Text begins on titlepage
- No index of contents
- Spell checker
- Paper has to be written in LaTeX

Talk

- 20 minutes
- Talk is for other students
- LaTeX-Beamer

To discuss

- Fix dates for
  - Introduction to LATEX
  - Introduction to "How to give a talk"
  - Library tour – possible dates:
    1. Monday, 13.10.2014   13.00-15.00h
    2. Tuesday, 14.10.2014   13.00-15.00h
    3. Wednesday, 15.10.2014   11.00-12.00h
  - Maximal group size: 7 students
- SVN-account for LATEX-templates and personal files:
  - `username`: First letter of first name + surname, e.g. sschupp

    Note: ß will be replaced by ss, ä, ö, ü will be replaced by ae, oe, ue respectively

  - `password`: Will be sent individually
  - `url`: `https://svn-i2.informatik.rwth-aachen.de/repos/proseminar_verification_ws1415/students/<username>`

Important Dates

20.10.2014	Contact supervisor
13.10. - 17.10.2014	Library tour
10.11.2014	Structure of paper
08.12.2014	Hand in paper
05.01.2015	Final paper
19.01.2015	Hand in slides
30.01.2015	Final slides
TBA	Presentation

Topics

1. Binary Decision Diagrams (BDDs), *Ábrahám*
2. Bisimulation, *Nellen*
3. CVC4, *Corzilius*
4. Deduction/Theorem proving, *Ábrahám*
5. Equality logic in SMT, *Corzilius*
6. Heap abstraction with Juggrnaut, *Kremer*
7. iSAT, *Schupp*
8. Modelchecking with MRMC / Prism / Storm, *Kremer*
9. Mutual exclusion, *Schupp*
10. PLC programming, *Nellen*

Topics

11 Probabilistic automata, *Kremer*

12 Satisfiability (SAT), *Ábrahám*

13 Satisfiability modulo theories (SMT), *Corzilius*

14 Solving nonlinear arithmetic via SAT modulo linear arithmetic, *Schupp*

15 Spaceset representations for hybrid systems, *Schupp*

16 Temporal logic, *Ábrahám*

17 Timed Automata, *Nellen*

18 Uninterpreted functions in SMT, *Corzilius*

19 Verifying coreutils, *Kremer*

20 Verifying real-time systems with UPPAAL, *Nellen*