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Theory of Hybrid Systems
Informatik 2

WS 14/15
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>
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.10.2014</td>
<td>Contact supervisor</td>
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<tr>
<td>13.10. - 17.10.2014</td>
<td>Library tour</td>
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<tr>
<td>10.11.2014</td>
<td>Structure of paper</td>
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<tr>
<td>08.12.2014</td>
<td>Hand in paper</td>
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<tr>
<td>05.01.2015</td>
<td>Final paper</td>
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<tr>
<td>19.01.2015</td>
<td>Hand in slides</td>
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<tr>
<td>30.01.2015</td>
<td>Final slides</td>
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<tr>
<td>TBA</td>
<td>Presentation</td>
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</tbody>
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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*