Overview
What I am interested in

Planning:

- **Nondeterministic planning and heuristics**
  - Strong planning, strong cyclic planning (you know that from the lecture)
  - Relaxation heuristics, abstraction heuristics (you know that from the lecture as well)

- **Search techniques** for planning

- Other techniques (SAT planning, BDDs, …)
What I am interested in

Verification:

- Model checking and synthesis
  - Planning techniques
    (e.g. heuristic search in Directed Model Checking)
  - Timed Game solving
  - Abstraction refinement

- All that is relevant to the AVACS project, in particular subprojects R3 and S1 (cf. www.avacs.org)
Thesis topics
Possible research directions
Some interesting ideas (no completely elaborated topics, though)

Nondeterministic Planning:

- Full observability: further heuristics such as
  - Merge-and-shrink abstractions
  - LM-cut heuristic
  - ...

- Partial observability:
  - Labelled uncertainty graph

Implementation language: Java
Possible research directions
Okay, maybe just one more or less elaborated topic

Generalization of Fast Incremental Planning to partially observable nondeterministic planning

Requirements:

- conceptual transfer
  (algorithm, definitions, theorems, proofs)
- implementation (Java or C++)
- empirical comparison to LAO*-based approach

Note: substantial amount of work

⇝ rather suited for Masters’ than for Bachelors’ thesis.
Possible research directions
Some interesting ideas (no completely elaborated topics, though)

Verification:

- Partial observability in verification
- PDB techniques
  (pattern selection, families of patterns, ...)
- Advanced search techniques for Directed Model Checking
- Improved abstraction refinement in Timed Game solving
Procedure
How do we proceed?

If you are interested in a topic …

- …drop me or Manuela a line:
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- or see either of us in our respective office
  (052-00-045 / 052-02-019).

- We will meet and agree on the scope of your thesis, project, practical, ….

- Later: regular meetings to talk about ideas, code, literature etc.