

Seminar: Search and Optimization

1. Organization, Seminar Schedule & Topics

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Universität Basel

September 19, 2013

Organizational matters

Target audience and prerequisites

Target audience

- MSc students of computer science and related subjects
- PhD students of computer science and related subjects

Prerequisites

- lecture “Foundations of AI (CS205)” or equivalent knowledge
 - C++ programming skills (only for the software project)
- ... or willingness to acquire these on the fly

Format

Seminar format

- 3 ECTS points for the seminar
- +3 ECTS points for the optional project extension
- evaluation: pass/fail

Requirements

Requirements to pass

- Give a seminar presentation
 - 25–30 mins
 - submit slides to advisor three days in advance
- Write a seminar paper
 - 10–12 pages, LaTeX
 - due one week before presentation
- Read all presented papers
 - prepare summary and questions
 - submit to advisor in advance
- Actively participate in discussions
- Participate regularly
 - be absent at most twice
 - notify us in advance if absent

People

Organizers

Prof. Dr. Malte Helmert

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- **office:** Bernoullistrasse 16, room 305

Silvan Sievers

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People

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People

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Jendrik Seipp

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- **office:** Bernoullistrasse 16, room 510

People



Malte Helmert



Gabriele Röger



Martin Wehrle



Florian Pommerening



Silvan Sievers



Jendrik Seipp

Time & place

Seminar

- **Time:** Thursdays, 15:15-17:00
- **Place:** Bernoullistrasse 16, seminar room 205

Project

- free project work
- meetings by appointment

Internet

Seminar homepage

`http://fbi.cs.unibas.ch/index.php?id=189`

- description of seminar
- slides (to appear)
- papers (to appear)
- additional materials (to appear)

Registration:

- `https://services.unibas.ch/`

Plagiarism

Plagiarism

- **plagiarism:** passing off someone else's work as your own
- consequence: failing the seminar
- if in doubt, **ask us!**

Learning goals

Learning goals

Seminar: dealing with scientific literature

- reading and understanding
- explaining and presenting
- comparing and discussing

Project: implementing efficient problem solvers

- practice in C++
- clean and efficient code (↔ code reviews)
- evaluation of algorithms (↔ scientific experiments)

Questions on organization

Questions?

Seminar Schedule and Topics

Schedule

- 19.09. Organization, Schedule & Seminar Topics
- 26.09. Background: Search Problems & Project Topics
- 03.10. Background: Basic Search Algorithms
- 10.10. Background: Mercurial
- 17.10. Presentation #1
- 24.10. Presentation #2
- 31.10. Presentation #3
- 07.11. Presentation #4
- 14.11. Presentation #5
- 21.11. Presentation #6
- 28.11. Presentation #7
- 05.12. Presentation #8
- 12.12. Presentation #9
- 19.12. Presentation #10

Topic #1 (October 17)

Topic #1

Ethan Burns, Matthew Hatem, Michael J. Leighton
and Wheeler Ruml

[Implementing Fast Heuristic Search Code](#)

5th Annual Symposium on Combinatorial Search
(SoCS 2012), pp. 25–32, 2012

Topic #2 (October 24)

Topic #2

Robert C. Holte

Common Misconceptions Concerning Heuristic Search

3rd Annual Symposium on Combinatorial Search

(SoCS 2010), pp. 46–51, 2010

Topic #3 (October 31)

Topic #3

Andreas Junghanns and Jonathan Schaeffer

Sokoban: Enhancing General Single-Agent Search Methods Using
Domain Knowledge

Artificial Intelligence, 129(1-2):219-251, 2001

Topic #4 (November 7)

Topic #4

Joseph C. Culberson and Jonathan Schaeffer

[Pattern Databases](#)

Computational Intelligence, 14(3):318–334, 1998

Topic #5 (November 14)

Topic #5

Fan Yang, Joseph C. Culberson, Robert Holte,
Uzi Zahavi and Ariel Felner

[A General Theory of Additive State Space Abstractions](#)

Journal of Artificial Intelligence Research, 32:631–662, 2008

Topic #6 (November 21)

Topic #6

Patrik Haslum, Adi Botea, Malte Helmert,
Blai Bonet and Sven Koenig

Domain-Independent Construction of Pattern Database Heuristics
for Cost-Optimal Planning

22nd AAAI Conference on Artificial Intelligence (AAAI 2007),
pp. 1007–1012. 2007

Topic #7 (November 28)

Topic #7

Blai Bonet and Héctor Geffner

Planning as Heuristic Search

Artificial Intelligence, 129(1-2):5-33, 2001

Topic #8 (December 5)

Topic #8

Emil Keyder and Héctor Geffner

[Heuristics for Planning with Action Costs Revisited](#)

17th European Conference on Artificial Intelligence (ECAI 2008),
pp. 588–592. 2008.

Topic #9 (December 12)

Topic #9

Silvia Richter and Matthias Westphal

The LAMA Planner: Guiding Cost-Based Anytime Planning with Landmarks

Journal of Artificial Intelligence Research, 39:127–177, 2010

Topic #10 (December 19)

Topic #10

Erez Karpas and Carmel Domshlak

[Cost-optimal Planning with Landmarks](#)

21st International Joint Conference on Artificial Intelligence
(IJCAI 2009), pp. 1728–1733, 2009

Next steps

Assignment of Topics

- We will send you the link to a doodle poll
- Number of the option = number of the topic in these slides
- Mark **at least 2** topics with **Yes**
- Mark **at least 3** topics positively: **Yes** or **(Yes)**
- until **September 25 (next Wednesday)**

Then:

- Paper assignment and supervisors announced September 26.
- **Start** reading the paper and contact supervisor **ASAP**