

Seminar: Search and Optimization

1. Organization, Seminar Schedule & Topics

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Universität Basel

September 19, 2013

Seminar: Search and Optimization

September 19, 2013 — 1. Organization, Seminar Schedule & Topics

1.1 Organizational matters

1.2 Seminar Schedule and Topics

1.3 Next steps

1.1 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

- ▶ email: `silvan.sievers@unibas.ch`
- ▶ office: Bernoullistrasse 16, room 404

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People

Organizers (ctd.)

Florian Pommerening

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- ▶ office: Bernoullistrasse 16, room 404

Gabriele Röger

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People

Organizers (ctd.)

Jendrik Seipp

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- ▶ office: Bernoullistrasse 16, room 404

Dr. Martin Wehrle

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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

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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?

1.2 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

1.3 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**