Planning and Optimization

A1. Organizational Matters

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Universität Basel

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People & Coordinates

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Lecturers

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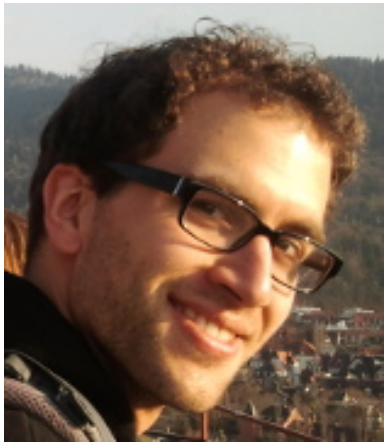
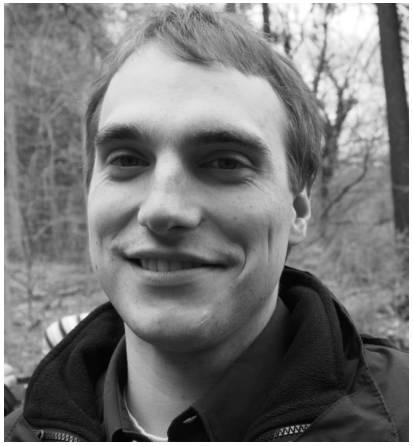
People: Tutors



Jendrik Seipp



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Time & Place

Lectures

- time: Mon 14:15-16:00, Wed 14:15-16:00
- place: room 00.003, Spiegelgasse 1

Exercise Sessions

- time: Wed 16:15-18:00
- place: room 00.003, Spiegelgasse 1

first exercise session: today

Planning and Optimization Course on the Web

Course Homepage

`https://dmi.unibas.ch/de/studium/computer-science-informatik/lehrangebot-hs18/lecture-planning-and-optimization/`

- course information
- slides
- exercise sheets and materials
- bonus materials (not relevant for the exam)

registration:

- `https://services.unibas.ch/`
- Please register today to receive all course-related emails!

Target Audience & Rules

Target Audience

target audience:

- M.Sc. Computer Science/Informatik
  - "new" degree, Major in Machine Intelligence: module Concepts of Machine Intelligence
  - "new" degree, Major in Distributed Systems: module Applications of Distributed Systems
  - "old" degree: module Kerninformatik (core)
- M.A. Computer Science ("Master-Studienfach") module Concepts of Machine Intelligence
- other students welcome

Prerequisites

prerequisites:

- general computer science background: good knowledge of
  - algorithms and data structures
  - complexity theory
  - mathematical logic
  - programming
- background in Artificial Intelligence:
  - Foundations of Artificial Intelligence course (13548)
  - in particular chapters on state-space search

Gaps?

$\rightsquigarrow$ talk to us to discuss a self-study plan to catch up

Exam

- oral examination (20–25 min)
- dates: January 28–30
- 8 ECTS credits
- admission to exam: 50% of the exercise marks
- final grade based on exam exclusively
- no repeat exam

Exercise Sheets

exercise sheets (homework assignments):

- solved in groups of at most three ($3 < 4$), submitted via Courses
- project-oriented assignments
  - each exercise sheet covers one part of the lecture
  - substantial in scope $\rightsquigarrow$ don't start too late
  - handed out at beginning of each part
  - work on these while we cover this part in the lecture
  - due six days after the end of the part
  - scope and marks proportional to covered topics
- mixture of theory, programming and experiments
- research aspects $\rightsquigarrow$ be independent, but ask questions!

Programming Exercises

programming exercises:

- part of regular assignments
- solutions that obviously do not work: 0 marks
- work with existing C++ and Python code
- Linux (other operating systems: vagrant virtual machine)
- pull from Mercurial (hg) repository

Exercise Sessions

exercise sessions:

- discuss past homework assignments
- ask questions about current assignments (and course)
- work on homework assignments
- sometimes live exercises

Plagiarism

Plagiarism (Wikipedia)

Plagiarism is the "wrongful appropriation" and "stealing and publication" of another author's "language, thoughts, ideas, or expressions" and the representation of them as one's own original work.

consequences:

- 0 marks for the exercise sheet (first time)
- exclusion from exam (second time)

if in doubt: check with us what is (and isn't) OK before submitting

exercises too difficult? we are happy to help!

Course Content

Learning Objectives

Learning Objectives

- get to know theoretical and algorithmic foundations of classical & probabilistic planning as well as practical implementation
- understand fundamental concepts underlying modern planning algorithms and theoretical relationships that connect them
- become equipped to understand research papers and conduct projects in this area

Course Material

course material:

- slides (online + printed handouts)
- no textbook
- additional material on request

Hands-On Week

- Next week will be a hands-on week.
- Please bring your laptop to next week's sessions (Monday and Wednesday).

Don't own a laptop?

- no problem, we will do the hands-on in groups of 3

Today's Exercise Session

- To make the hands-on week work smoothly, we try to work out compilation issues etc. today in the exercise session.
- The goal of today's exercise session is that you can run the examples of today's lecture on your own machine.
- The following slide contains the main information for today's setup for your future reference.
- In any case, please complete the setup before next Monday.
- We are happy to help you if you run into problems.

Your First Tasks (1) – on Ubuntu

Getting Started: Cloning the Repository

Install mercurial (if not already installed):

```
sudo apt install mercurial
```

Clone the course repository:

```
hg clone https://bitbucket.org/aibasel/planopt-hs18
```

Enter demo directory:

```
cd planopt-hs18/classical/demo
```

Your First Tasks (1) – using vagrant

Assumption: virtual box, vagrant, X server and SSH client available
console in new directory, containing file `Vagrantfile`

Getting Started: Setting up virtual machine

Set up virtual machine:

```
vagrant up
```

Login:

```
vagrant ssh
```

Enter demo directory:

```
cd planopt-hs18/classical/demo
```

Your First Tasks (2)

Getting Started: Building Fast Downward

Build Fast Downward and set a symbolic link:

```
cd fast-downward
./build.py
cd ..
ln -s fast-downward/fast-downward.py .
```

Without virtual machine

- See build instructions and dependencies at: `http://www.fast-downward.org/ObtainingAndRunningFastDownward`.
- Note that we use our own repository, not `hg.fast-downward.org`.
- You can skip the optional information regarding the LP solver.

Test `fast-downward.py` with the examples in the next chapter.

Your First Tasks (3)

Getting Started: Building VAL

Build VAL and set a symbolic link:

```
cd VAL
make -j4
sudo ln -sf `pwd`/validate /usr/bin/validate
```

Without virtual machine

- The main dependencies of VAL are `g++`, `make`, `flex` and `bison` (Ubuntu package names).

Test `validate` with the examples in the next chapter.

Under Construction...

- This year we will newly cover probabilistic planning.
- We are always happy about feedback, corrections and suggestions!