Planning and Optimization

A1. Organizational Matters

Malte Helmert and Gabriele Röger

Universität Basel

September 21, 2022

A1.1 People & Coordinates

People: Lecturers

Malte Helmert

Gabriele Röger

Lecturers

Malte Helmert

- email: `malte.helmert@unibas.ch`
- office: room 06.004, Spiegelgasse 1

Gabriele Röger

- email: `gabriele.roeger@unibas.ch`
- office: room 04.005, Spiegelgasse 1

People: Assistant

Thomas Keller

Assistant

Thomas Keller

- email: `tho.keller@unibas.ch`
- office: room 04.005, Spiegelgasse 1

People: Tutors

Remo Christen

Patrick Ferber

Tutors

Remo Christen

- email: `remo.christen@unibas.ch`
- office: room 04.001, Spiegelgasse 5

Patrick Ferber

- email: `patrick.ferber@unibas.ch`
- office: room 04.001, Spiegelgasse 5

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: next week

Communication Channels

- lecture sessions (Mon, Wed)
- exercise sessions (Wed)
- course homepage
- ADAM workspace
- Discord server (invitation link on ADAM workspace)
- email

registration:

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

Planning and Optimization Course on the Web

Course Homepage

`https://dmi.unibas.ch/en/studies/computer-science/courses-in-fall-semester-2022/lecture-planning-and-optimization/`

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

A1.2 Target Audience & Rules

Target Audience

target audience:

- M.Sc. Computer Science
  - Major in Machine Intelligence:
    module Concepts of Machine Intelligence
    module Methods of Machine Intelligence
  - Major in Distributed Systems:
    module Applications of Distributed Systems
- M.A. Computer Science ("Master-Studienfach")
  module Concepts of Machine Intelligence
- M.Sc. Data Science: module Electives in Data Science
- 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

- written examination (105 min)
- date: January 25 (to be confirmed)
- 8 ECTS credits
- admission to exam: 50% of the exercise marks
- final grade based on exam exclusively
- no repeat exam (except in case of illness)

Exercise Sheets

exercise sheets (homework assignments):

- solved in groups of two or three ($3 < 4$), submitted in ADAM
- weekly homework assignments
  - released Monday before the lecture
  - have questions or need help?
    $\rightsquigarrow$ assistance provided in Wednesday exercises
  - not sure if you need help?
    $\rightsquigarrow$ start before Wednesday!
  - due following Monday at 23:59
- mixture of theory, programming and experiments
- range from basic understanding to research-oriented

Programming Exercises

programming exercises:

- part of regular assignments
- solutions that obviously do not work: 0 marks
- work with existing C++ and Python code

Exercise Sessions

exercise sessions:

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

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!

A1.3 Course Content

Learning Objectives

Learning Objectives

- get to know theoretical and algorithmic foundations of classical planning and work on practical implementations
- 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)
- no textbook
- additional material on request

Virtual Machine

- We use a virtual machine (VM) for the exercises and for demos during the lecture.
- Setting up the VM is your first task for the exercises.

Priming the Virtual Machine (TL;DR Version)

Assumptions: VirtualBox and Vagrant installed

VirtualBox: `https://www.virtualbox.org`

Vagrant: `https://www.vagrantup.com`

on Ubuntu 22.04: `sudo apt install virtualbox vagrant`

One-time setup of the Virtual Machine

Download the `Vagrantfile` from the course homepage and put it into an empty directory.

Open a console in that directory and execute `vagrant up`. (This can take quite a long time.)

Logging in to the Virtual Machine

Open a console in the directory with the Vagrantfile and execute `vagrant ssh`.

Demo Examples

When working on the VM, go to the base directory for the course:

Base Directory for Demos and Exercises

```
$ cd /vagrant/planopt-hs22
```

One-time demo set-up (from the base directory):

Demo Set-Up

```
cd demo/fast-downward
./build.py
```


Under Construction...

- Advanced courses are close to the frontiers of research and therefore constantly change.
- We are always happy about feedback, corrections and suggestions!