KI Labor

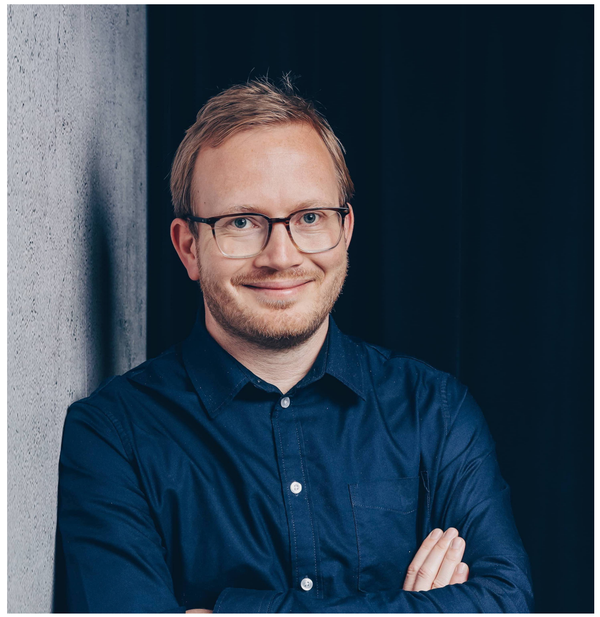
0. Organization

Hochschule Karlsruhe
Technik und Wirtschaft
UNIVERSITY OF APPLIED SCIENCES

Prof. Dr. Patrick Baier

WS 23/24

Dozent



Prof. Dr. Patrick Baier

- Teaching
  - Statistik, 2. Semester
  - Maschinelles Lernen, 3. Semester
  - Reinforcement Learning, WPF, 7. Semester
  - Künstliche Intelligenz, Master-INF
- Startup-Mentor: X-Lab, KI-Garage, CyberLab
- More information: www.home.hs-karlsruhe.de/~bapa0002/

Lab Overview

In this lab we will work in the following application domains:

- Computer Vision (CV)
- Natural Language Processing (NLP)
- Reinforcement Learning (optional)

The theory is learned in the lecture, in the lab we will:

- implement deep learning models in **Python** using **PyTorch.**
- **learn** how to use PyTorch (first half of the lab).
- **apply** PyTorch in a deep learning project (second half of the lab).

Organization

- We have a slot on Friday from 09:45 a.m. to 1:00 p.m.
- We use **Mattermost** for communication, please join here: https://mattermost.hska-iwi.de/i-ki-lab/channels/ws23
- The lab is held mainly online. Only the first and the last date (12.01.24) will be held offline at the Hochschule.
- We use **Zoom** for video calls, please join here.
- The lab is divided into two phases:
  1. **Learning phase** (first 7 weeks):
     Goal: Learn PyTorch and apply it to tasks in CV and NLP.
  2. **Project phase** (last 7 weeks):
     Goal: Apply knowledge to successfully finishing a project.

Teams

- Assignments and the project are done in teams with two or three members each.
- Once you found your team, send me an E-Mail with a list of the team members (real name and Mattermost name) and team name (not longer than 10 characters).
- Teams are fixed, do not change teams during the semester!
- Note: You can also find your team after today, but you should have it by before the first submission next week. If you cannot find a team, please contact me.
- *If there are problems with the teams throughout the semester (e.g. one person is dropping out), contact me.*

Learning Phase

- The learning phase consists of theory and assignments.
- Assignments are presented every Friday and need to be submitted every week until Friday.
- The assignments are not very big. Most of the work needs to be done in the project phase (ratio 1/3 assignments to 2/3 project phase).
- After submission, your team presents the assignment to me.

Project Phase

- In the project phase each team works on its own project.
- The team has a check-in call with me every week in wich we discuss:
  - Progress of the last week
  - Plans for the next week
  - Open questions
- The project can be self chosen or from a list of pre-defined projects that will be announced at the beginning of the project phase.
- At the end of the semester, every team writes a short report about the results of the project (~ 5 pages, LaTex template will be provided soon).
- In the last lab on 12.01., every team will give a 20 minute presentation about the results of the project.

Grading

- If you are studying on SPO7, you will get a final grade for this lab (if you are SPO6 there is only a „pass“, please let me know if that is the case).
- To complete this lab (valid for all SPOs) you need to full-fill two things:
  1. Hand-in a solution for all programming assignments (not graded)*.
  2. Finish the project (graded). This consists of three parts:
     - The code/implementation.
     - A presentation about the project.
     - A short report that summarizes the outcome of the project.

* Every not submitted assignment will decrease your final grade by one step (e.g. 1.0 to 1.3).

Project Grading

- The final grade is a composed of:
  - The quality of the solution.
  - The presentation.
  - The report.
- Note: The project topic is not graded. It only matters how you solve the project, not what is the topic of the project you chose.