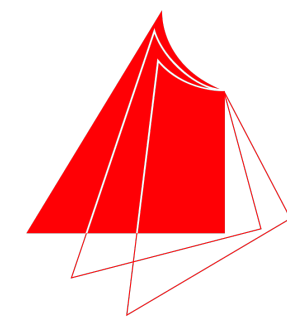# AI Lab

Project Phase

Hochschule Karlsruhe
Technik und Wirtschaft
UNIVERSITY OF APPLIED SCIENCES

Prof. Dr. Patrick Baier

WS 23/24

Time Table

Woche	Datum	Labor
1	29.09.23	PyTorch Intro
2	06.10.23	Training NNs
3	13.10.23	ausgefallen
4	20.10.23	CNNs
5	27.10.23	Transfer Learning
6	03.11.23	Object Detection
7	10.11.23	Text Intro + Presentation Projects
8	17.11.23	Projektphase
9	24.11.23	Projektphase
10	01.12.23	Projektphase
11	08.12.23	Projektphase
12	15.12.23	Projektphase
13	22.12.23	Vorlesungsfrei
	Weihnachtsferien	
14	12.01.24	Finale Präsentation
15	19.01.24	Vorlesungsfrei

Project Phase

- In the project phase each team works on its own project.

- The team has a check-in call with me every week.

- At the end, every team writes a final report about the results of the project.

- In the lecture on 12.01., every team will give a 30 minute presentation about the results of the project.

- The project grading consists of three parts:

  - The code/implementation.

  - The project presentation.

  - The final report that summarizes the outcome of the project.

Final Report

- The final report should be between 4-5 pages. Can be either German or English.

- Use the IEEE conference template (LaTex or Word):
  https://www.ieee.org/conferences/publishing/templates.html

- The report should (roughly) contain:

  - Abstract

  - Introduction/Motivation

  - Problem Statement (what was the goal, wich data is given)

  - Approach (how did you try to solve it, which approach did you follow)

  - Evaluation (show your results with different plots)

  - Conclusion

- Do not forget to cite the work of others that you use!

Weekly Meeting

- We will have a weekly catch-up (see next slide for time schedule). For each catch-up meeting please prepare some slides showing:

  1. What was done last week.

  2. What is planned for the next week.

  3. What open questions do you have? (if there any).

Schedule

- 10:00 - 10:30: Catch-up Team diehmstark
- 10:30 - 11:00: Catch-up Team AI_Wizards
- 11:00 - 11:30: Catch-up Team PyJamas
- 11:30 - 12:00: Catch-up Team TW Squad
- 12:00 - 13:00: Open question round

Code Sharing

- Please host your code on a place like GitHub or GitLab, which is accessible for me. There are two popular choices for that:

  - GitHub (you can make a private repo and add my username: pabair)

  - Self-hosted GitLab (VPN needed): https://iz-gitlab-01.hs-karlsruhe.de/help

- Send me the URL of this repository via E-Mail.

- Before every Friday meeting, make a commit in the repo that contains the state of the project that you want to discuss that week.

- When your code is in Jupyter-Notebooks, please make a separate folder in which you also commit the raw Python code of each notebook (that allows me to do a git-diff more easily).

Projects

- The next slides contain different project proposals.

- Every team works on a different project.

- **Send me together with your submission next week a list of the top four projects that you are interested in.**

- If any of you have worked on one of the projects before (Projektarbeit, Seminar, etc.), please do not put this project on your priority list.

- I will assign the projects to teams considering the given the priorities and using some randomizing when there are conflicting interests.

- You will learn about your assigned project next week.

- Not everything that you need for your project was covered so far. Use the weekly sessions to ask me for things that you do not understand.

Kaggle

- All the following projects are Kaggle challenges.

- Some of them are still running, some are already over (we don't care about the prize money).

- You can check the notebooks from others in the „code" section in Kaggle.

- You can even copy some code from there, <u>but</u>: you need to be able to explain to me what the code exactly does (line by line)!

- You do not need to upload your solution to Kaggle, just check your performance on the some labeled test data (if not provided, you can create your own test data as a 20% chunk from the training data).

Project List - Computer Vision

1. [BirdCLEF 2023](#)
   Identify bird calls in soundscapes

2. [Google - Isolated Sign Language Recognition](#)
   Enhance PopSign's educational games for learning ASL

3. [RSNA 2023 Abdominal Trauma Detection](#)
   Detect and classify traumatic abdominal injuries

Project List - NLP

1. Feedback Prize - Predicting Effective Arguments
   Rate the effectiveness of argumentative writing elements from students grade 6-12

2. Google AI4Code – Understand Code in Python Notebooks
   Predict the relationship between code and comments

3. NBME - Score Clinical Patient Notes
   Identify Key Phrases in Patient Notes from Medical Licensing Exams

4. LLM - Detect AI Generated Text
   Identify which essay was written by a large language model.

Project List - Own project

- You can also choose your own project.

- The topic needs to meet the following criteria:

  - It must be based on neural networks and be implemented in PyTorch.

  - It should be complex enough to keep you busy for 7 weeks.

- The typical project can be described as: „We use dataset X for trying to solve problem Y, we want to try out the following approaches …".

- You can also use a public (Kaggle, AICrowd, etc.) project that was not on the list.

- Important: If you want to choose your own project (or a different public project), send me a proposal on Mattermost until mid of next week!