Deep Learning Lab Course 2019

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April 24, 2019

University of Freiburg

Time and Place

- **Location:** Wednesday, 14:00 - 16:00, building 082, room 00 006 (Kinohoersaal)
- **Remark:** If we don't have a lecture, we will be there for questions
- We expect you to work on your own.
- Your attendance is required during lectures/presentations

Contacts

- Robotics and Reinforcement Learning:
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- Automated Machine Learning:
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  - **Matilde Gargiani** gargiani@cs.uni-freiburg.de
  - **Arber Zela** zelaa@cs.uni-freiburg.de
- Computer Vision:
  - **Christian Zimmermann** zimmermann@cs.uni-freiburg.de
  - **Silvio Galesso** galessos@cs.uni-freiburg.de

Requirements

This is an advanced course for deep learning, and we require that you heard some of the following lectures:

- Machine Learning (mandatory)
- Deep Learning (mandatory)
- Computer Vision
- Statistical Pattern Recognition
- Robot Mapping
- Reinforcement Learning

Schedule and outline

- **Phase 1 Lectures**
  - **Today:** introduction and CV lecture
  - **1.5** Holiday
  - **8.5:** AutoML lecture ; hand in exercise CV
  - **15.5:** Q/A session
  - **22.5:** IL/RL lecture ; hand in exercise AutoML
- **Phase 2 Projects**
  - **29.5:** presentation of projects ; Q/A session
  - **5.6:** Q/A session ; hand in exercise RL
  - **12.6 - 17.7:** Q/A sessions
  - **24.7:** poster presentation

Tracks (tentative topics)

- **Track 1 Computer Vision**
  - Semantic segmentation
  - Human pose estimation
- **Track 2 AutoML**
  - Neural architecture and hyperparameter search
  - Bayesian optimization
- **Track 3 Reinforcement Learning / Robotics**
  - Deep imitation learning
  - Deep reinforcement learning

Exercises

for each exercise:

- solve coding exercise alone
- we will use pytorch for the exercises
- hand-in **short** 1-2 page report as pdf file
  - describing what you did and how you did it
  - explaining your results (typically 1-2 figures e.g. learning curves / table with comparisons, . . .)
  - describe in which issues you ran into
  - tell us which conclusions you drew from the exercise
- hand in your code by forking our git repo and sending us a pull request with your report and code

Final Project

- We will provide a list of different projects but feel free to propose own ideas
- You will split up into small groups of 3 - 4 persons for the final project
- At the end we will organize a poster session where you have to present your results
- **You need to register for the exams**

Resources

- we provide access to Google cloud instance, see tutorial on our homepage.
- if you want to use pool machines you can get more space by sending a mail to the pool manager: poolmgr@informatik.uni-freiburg.de

What you need to do after today's class

- decide whether you want to take the course
- fill in the form on our homepage
- if you are enrolled in HISinONE for different tracks, unregister from all tracks except one (ideally the one you want to take later)
- start working on exercise 1

Material

- All material will be on our **Homepage:** http://dl-lab.informatik.uni-freiburg.de/
- We will also upload these slides
- The assignments will be uploaded on github
- For updates and questions join our slack channel (dl-lab-freiburg.slack.com)