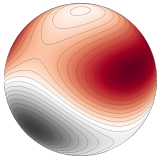
UNIVERSITÄT
HEIDELBERG
ZUKUNFT
SEIT 1386

IWR
Interdisciplinary Center
for Scientific Computing



Organizational Meeting
Seminar: Mathematical Machine Learning

Winter Semester 2024

Welcome

Roland Herzog
roland.herzog@iwr.uni-heidelberg.de

Georg Müller
georg.mueller@uni-heidelberg.de

scoop-teaching@uni-heidelberg.de

Concept of a Seminar

- Conduct independent research on a scientific topic.
- Start from a given source and explore further resources.
- Present your findings with appropriate references.
  - 45 minute oral presentation (70% of final grade)
  - 10-15 page written documentation (30% of final grade)
- Tailor the presentation to your audience.
  - Language: English
  - Intended for Master students
- Do not copy from sources, but explain in your own words, add examples, etc.

Timeline

- Today: Assigning of topics. Accepting a topic is the binding registration for the seminar.
- Starting October 31st: (roughly) weekly meetings with one presentation each.
- Topics are preassigned to their corresponding dates
- **Thursdays 16:00h - 18:00h**
- Submission of talk slides and written documents 24h in advance via e-mail: scoop-teaching@uni-heidelberg.de(!)

Topics

1. 2024-10-31 Introduction Machine Learning I
2. 2024-11-07 Introduction Machine Learning II
3. 2024-11-14 Feed Forward Network
4. 2024-11-21 ResNet
5. 2024-12-12 Convolutional Network
6. 2024-12-19 Recurrent Neural Network
7. 2025-01-09 Long Short Term Memory Network
8. 2025-01-16 Auto Encoder
9. 2025-01-23 Transformer (double feature topic for 2 people)

What's next?

- Resources are online: https://scoop.iwr.uni-heidelberg.de/teaching/2024ws/seminar-mathematical-machine-learning/
- These slides will be shared on the website.
- We provide LaTeX templates for your presentation and documentation.

Questions?