Resources

Α?

CS-E4891 - Deep Generative Models D, Lecture, 17.3.2025-6.6.2025

This course space end date is set to 06.06.2025 **Search Courses: CS-E4891**

Assignments Forums

Course feedback

Department of Computer Science / CS-E4891 - Deep Generative Models D, Lecture, 17.3.2025-6.6.2025

Course

Grades

Course feedback

General

Lectures:

- Mondays 12:15-14:00 (on 24.3.2025 at 10:15-12:00); check the dates and location from Course Schedule page
- o First lecture: March 17, 2025
- Harri Lähdesmäki, email: harri.lahdesmaki@aalto.fi (office: B358)
- Lauri Juvela, email: lauri.juvela@aalto.fi (office: Kide 3520)

Exercises:

- Exercise sessions are arranged online via zoom.
- Fridays 14:15-16:00; check details from Exercise Sessions page
- o Tuesdays 14:15-16:00; check details from Exercise Sessions page
- First exercise: March 21, 2025
- o Participation in the exercise sessions is not mandatory but you need to submit your answers via Jupiter hub
- o TAs: Luna Ansari, Mehmet Balik, Polina Barabanshchikova, Elias Pelo, Grosso Filippo, Kalle Kujanpää, Najwa Laabid, Maksim Sinelnikov, Verma Yogesh

Have a question about the course?

We will use Zulip: https://dgm-2025.zulip.aalto.fi/

Learning outcomes:

Students will learn the general principles of deep generative modeling and uncertainty quantification as well as the current deep generative modeling methods. After the course, students will be able to apply the methods to real-world data sets and study the topic further.

Preliminary syllabus:

Statistical methods, latent variable models, variational autoencoders, diffusion models and flows, autoregressive models, generative adversarial networks, audio and image synthesis from text, structured variational autoencoders, language models

Prerequisites:

Necessary: Deep Learning course CS-E4890 (or equivalent knowledge) as well as the prerequisites of CS-E4890.

Additional recommended prerequisites: Probabilistic Machine Learning (or Machine Learning: Advanced Probabilistic methods), Supervised Machine Learning (or Machine Learning: Supervised Methods), knowledge of statistics and probabilistic modeling.

Exam:

- The exam covers the topics covered in the lectures.
- You are not allowed to use any material or equipments in the exam.

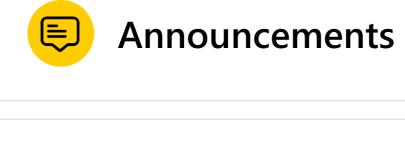
Assessment and grading:

- Exercises: 50% of total points
- Exam: 50% of total points
- Tentative grading: o [0,50] % = 0
- \circ (50,60) % = 1
- o [60,70) % = 2 o [70,80) % = 3
- o [80,90) % = 4

o [90,100] % = 5

List of materials:

- Lectures will cover selected parts of the following books.
- Murphy K, Probabilistic Machine Learning: Advanced Topics, 2023. http://probml.github.io/book2
- Prince SJD, Understanding Deep Learning, The MIT Press, 2023. http://udlbook.com
- Bishop CM and Bishop, H, Deep learning: Foundations and concepts, Springer Nature, 2023. Lecture notes with references to additional reading.



Exams

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