Learning Generative Models

Winter

(in German: Learning Generative Models)

Module-ID: FIN-INF-120522

Abbreviation	Credit Points	Semester	Term	Duration	Language	Level
LGM	6	Winter	starting at 1.	1 Semester	english	Master

Link:	LSF
Limited accessability:	
Responsibility:	Sebastian Stober
Lecturer:	Sebastian Stober
Classes:	• Lecture *Learning Generative Models* • Exercise class *Learning Generative Models*
Applicability in curriculum:	- M.Sc. INF: Informatik - M.Sc. INGINF: Informatik - M.Sc. WIF: Informatik - M.Sc. DKE: Learning Methods and Models for Data Science - M.Sc. DE: Methoden der Informatik - M.Sc. VC: Computer Science

Intended learning outcomes:
Students can ..

- confidently apply generative models to develop a solution for a given problem
- follow recent publications on generative models and critically assess their contributions
- formulate hypotheses and design & conduct experiments with generative models to validate them
- document progress & design decisions for reproducibility and transparency

Content:

- Training methods & architectures for generative models, in particular energy-based models (e.g. Restricted Boltzmann Machines, RBMs)
- autoregressive models
- variational learning and Generative Adversarial Nets (GANs)
- flow-based models
- diffusion models

Workload:
56 contact hours + 124h self study

Pre-examination requirements:	Type of examination:	Teaching method / lecture hours per week (SWS):
	• Oral exam (necessary preliminary work for admission to the examination is announced in the first week of the course) • Schein (necessary preliminary work for admission to the examination is announced in the first week of the course)	• 2 SWS lecture • 2 SWS exercise class

Prerequisites according to examination regulations:	Recommended prerequisites:
keine	*Introduction to Deep Learning* or *Deep Learning für Ingenieure* (required)

Media:	Literature:
	Ian Goodfellow, Yoshua Bengio & Aaron Courville: “Deep Learning”, MIT Press, 2016.

Comments:

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