

MADS-DL - Deep Learning

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General information	
Module Code	MADS-DL
Unique Identifier	DeepLearnC-01-MA-M
Module Leader(s)	Prof. Dr. Doerfel, Stephan (stephan.doerfel@haw-kiel.de)
Lecturer(s)	Prof. Dr. Doerfel, Stephan (stephan.doerfel@haw-kiel.de)
Offered in Semester	Wintersemester 2025/26
Module duration	1 Semester
Occurrence frequency	Regular
Module occurrence	In der Regel jedes Semester
Language	Englisch
Recommended for international students	Yes
Can be attended with different study programme	No

Curricular relevance (according to examination regulations)
Study Subject: M.Sc. - DS - Data Science Module type: Pflichtmodul Semester: 2

Qualification outcome
<i>Areas of Competence: Knowledge and Understanding; Use, application and generation of knowledge; Communication and cooperation; Scientific self-understanding / professionalism.</i>
Students know - the fundamentals of neural networks. - the most commonly used concepts of neural network based learning. - standard tools for deep learning.
Students are able to - setup deep learning experiments. - apply deep learning algorithms in practice. - use deep learning algorithms for real-world problems.
Students are able to - critically assess and compare the results of deep learning algorithms. - give and accept professional feedback to different topics of deep learning.
Students are able to - work professionally in the field of deep learning. - select relevant scientific literature about deep learning.

Content information	
Content	<p>Introduction to</p> <ul style="list-style-type: none"> - Artificial Intelligence - Neural Networks - Deep Learning - Computer Vision <p>Concepts</p> <ul style="list-style-type: none"> - Perceptrons - Multilayer Forward Networks - Neural Networks for Classification and Regression - Computer Vision and Convolutional Layers - Time Series and Recurrent Neural Networks - Transfer Learning <p>Applications</p> <ul style="list-style-type: none"> - Classification - Regression - Computer Vision - Time Series Forecasting
Literature	<ul style="list-style-type: none"> - Lecture Slides - Additional literature - Stevens, Antiga and Viehmann: Deep Learning with PyTorch. Manning (2020). <p>Available online: https://www.manning.com/books/deep-learning-with-pytorch</p>

Teaching formats of the courses	
Teaching format	SWS
Lehrvortrag + Übung	4

Workload	
Number of SWS	4 SWS
Credits	5,00 Credits
Contact hours	48 Hours
Self study	102 Hours

Module Examination	
Examination prerequisites according to exam regulations	No additional requirements
MADS-DL - Portfolioprüfung	<p>Method of Examination: Portfolioprüfung</p> <p>Weighting: 100%</p> <p>wird angerechnet gem. § 11 Absatz 2 PVO: No</p> <p>Graded: Yes</p>

Miscellaneous	
Recommended Prerequisites	<p>Basic Knowledge of Python</p> <p>Basic Knowledge of Machine Learning (particularly, the module MADS-ML)</p>