

## MADS-SMA - Social Media Analytics

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General information	
<b>Module Code</b>	MADS-SMA
<b>Unique Identifier</b>	SocialMedAna-01-MA-M
<b>Module Leader(s)</b>	Prof. Dr. Schwörer, Tillmann (tillmann.schworer@haw-kiel.de)
<b>Lecturer(s)</b>	Prof. Dr. Schwörer, Tillmann (tillmann.schworer@haw-kiel.de)
<b>Offered in Semester</b>	Wintersemester 2024/25
<b>Module duration</b>	1 Semester
<b>Occurrence frequency</b>	Regular
<b>Module occurrence</b>	In der Regel jedes Semester
<b>Language</b>	Englisch
<b>Recommended for international students</b>	Yes
<b>Can be attended with different study programme</b>	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 social media analytics - know the most commonly used concepts and techniques in the field of natural language processing and network analysis
Students - are able to apply state-of-the art algorithms in the field of NLP and network analysis to solve real-world problems - are able to evaluate the usefulness and quality of algorithms and results - are able to critically assess the social implications of algorithms and applications
Students - are able to report and present solutions for practical project tasks - are able to leverage the individual skills of all team members
Students - are able to work professionally in the field of social media analytics - are able to give and accept professional feedback to different topics of social media analytics - are able to identify and process relevant scientific literature

<b>Content information</b>	
<b>Content</b>	<p>Course contents:</p> <ol style="list-style-type: none"> <li>1. Handling Social Media Data               <ol style="list-style-type: none"> <li>1.1 Data Acquisition: APIs and Web Scraping</li> <li>1.2 Data Storage: JSON, Document databases, vector stores</li> </ol> </li> <li>2. Social Network Analysis               <ol style="list-style-type: none"> <li>2.1 Network analysis and visualization</li> </ol> </li> <li>3. Natural Language Processing (NLP)               <ol style="list-style-type: none"> <li>3.1 Classical NLP                   <ol style="list-style-type: none"> <li>3.1.1 Preprocessing and feature engineering for text data</li> <li>3.1.2 Training supervised and unsupervised machine learning models for text data</li> <li>3.1.3 Topic Modelling</li> </ol> </li> <li>3.2 Transformers in NLP                   <ol style="list-style-type: none"> <li>3.2.1 Embeddings</li> <li>3.2.2 Transformers and Large Language Models</li> <li>3.2.3 Transfer learning with Encoders</li> <li>3.2.4 Generative Language Models</li> <li>3.2.5 Retrieval Augmented Generation</li> </ol> </li> </ol> </li> </ol> <p>Example Applications:</p> <ul style="list-style-type: none"> <li>- Text classification: e.g. Sentiment Prediction, Hate Speech Detection</li> <li>- Token classification: e.g. Named Entity Recognition</li> <li>- Information extraction and text summarization</li> </ul>
<b>Literature</b>	<ul style="list-style-type: none"> <li>- Lecture Slides</li> <li>- Jurafsky, D. and Martin, J.H. (2024): Speech and Language Processing. An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition, available online: <a href="https://web.stanford.edu/~jurafsky/slp3/ed3bookfeb3_2024.pdf">https://web.stanford.edu/~jurafsky/slp3/ed3bookfeb3_2024.pdf</a></li> <li>- Sarkar, D. (2019): Text Analytics with Python</li> </ul>

<b>Teaching formats of the courses</b>	
<b>Teaching format</b>	<b>SWS</b>
Lehrvortrag + Übung	4

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

<b>Module Examination</b>	
<b>Examination prerequisites according to exam regulations</b>	None
<b>MADS-SMA - Portfolioprüfung</b>	<p>Method of Examination: Portfolioprüfung</p> <p>Weighting: 100%</p> <p>wird angerechnet gem. § 11 Absatz 2 PVO: No</p> <p>Graded: Yes</p>

<b>Miscellaneous</b>	
<b>Recommended Prerequisites</b>	Solid knowledge of Python Programming and Machine Learning