Simon Heilig

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Education

Since Oct. 2024	**Ph.D. Machine Learning** Ruhr-University Bochum Area: Deep Learning for Spatiotemporal Data Supervision: Prof. Fischer, Prof. Lio (Univ. of Cambridge)
Apr. 2022 - May 2024	**M. Sc. Data Science** Friedrich-Alexander University Erlangen-Nürnberg Thesis: "Hamiltonian Architectural Bias in Graph Neural Networks" Final Grade: 1.3
Oct. 2017 - Mar. 2021	**B. Eng. Computer Science** UAS Würzburg-Schweinfurt Thesis: "Analysis and Revision of the MEKA Matrix Approximation Approach" Final Grade: 1.1

Professional Experience

Apr. 2023 - Oct. 2023	**Student Research Assistant** Friedrich-Alexander University Erlangen-Nürnberg Image Data Exploration and Analysis Lab (Prof. Kainz)
Oct. 2022 - Mar. 2023	**Student Teaching Assistant** Friedrich-Alexander University Erlangen-Nürnberg Stochastic Modeling (B. Sc. Mathematics); Chair for Stochastics (Prof. Krüger)
May 2021 - Nov. 2021	**Full-time Research Assistant** UAS Würzburg-Schweinfurt Supported by: ESF (WiT-HuB 4/2014-2020), project KI-trifft-KMU
Dec. 2019 - Sep. 2022	**Student Teaching and Research Assistant** UAS Würzburg-Schweinfurt Computational Intelligence group (Prof. Schleif); Teaching assistant for Applied Numerics
Dec. 2018 - Feb. 2020	**Student Backend Developer** Plunet GmbH Part-time working student and full-time intern (six months) as a Java backend developer

Awards and Scholarships

2023	DAAD-PROMOS Travel Scholarship
2022	Hans-Wilhelm Renkhoff Award for Outstanding Bachelor Thesis
2019	Max Weber-Program Scholarship of the Federal State of Bavaria
2018	Scholarship of the Federal Government of Germany

Talks and Publications

Heilig, **Simon**. A primer on over-squashing and over-smoothing phenomena in graph neural networks. Talk at the 15th Mittweida Workshop on Computational Intelligence, Mittweida, Germany, 2023.

Heilig, **Simon**, M. Münch, and F. Schleif. Memory efficient kernel approximation for non-stationary and indefinite kernels. In *International Joint Conference on Neural Networks, IJCNN 22, Padova, Italy*, 2022.

M. Münch, **Heilig**, **Simon**, and F. Schleif. Multi-perspective embedding for non-metric time series classification. In *29th European Symposium on Artificial Neural Networks, ESANN 2021, Bruges, Belgium*, 2021a.

M. Münch, **Heilig**, **Simon**, P. Väth, and F. Schleif. Scalable embedding of multiple perspectives for indefinite life-science data analysis. In *IEEE Symposium Series on Computational Intelligence, IEEE SSCI 2021, Orlando, Florida, USA*, 2021b.

M. Münch, C. Raab, **Heilig**, **Simon**, M. Röder, and F. Schleif. Adaptive multi-modal positive semi-definite and

indefinite kernel fusion for binary classification. In *30th European Symposium on Artificial Neural Networks, ESANN 2022, Bruges, Belgium*, 2022.

M. Münch, M. Röder, **Heilig**, **Simon**, C. Raab, and F. Schleif. Static and adaptive subspace information fusion for indefinite heterogeneous proximity data. *Neurocomputing*, 555:126635, 2023.