M.Sc. Felix Neubürger

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github https://github.com/FNeubuerger

Employment History

2024 – · · · ·
- **Data Scientist / Data Engineer** Infineon Technologies
  - Development and implementation of AI Solutions
  - work in agile project settings
- **Teaching and Research Assistant** South Westphalia University of Applied Science
  - Research in Explainable AI
  - Research in agentic AI Systems
  - Teaching explainable AI, Deep Learning and Large Language Models

2019 – 2024 · · · ·
- **Research Assistant Data Science** South Westphalia University of Applied Science
  - Academic research on Industry 4.0 in manufacturing
  - teaching data science courses

2015 – 2018
- **Laboratory Physics and Statistical Methods of Data Analysis** Tutoring TU Dortmund

Education

2019 – · · · ·
- **Dr. rer.nat , PZAI Darmstadt** Predictive Maintenance in Steel Forming
  Thesis title: *Predictive maintenance using the example of a hot forming plant for press hardening of metal*
  - Application and development of cyber-physical systems
  - methodological research on machine learning
  - Explainable AI

2016 – 2018
- **M.Sc. Physics, TU Dortmund** Astroparticle Physics
  Thesis title: *Modelling the Diffuse Neutrino Spectrum with Very High Energy Gamma Ray Data using a Hadronuclear Blazar Models*.
  - numerical simulation of astrophysical objects
  - statistical analysis of a data catalog

2013 – 2016
- **B.Sc. Physics, TU Dortmund** Astroparticle Physics
  Thesis title: *Multivariate analysis of IceCube Level 2 data*.
  - Machine learning based data analysis

2004 – 2013
- **High-school diploma, Phoenix Gymnasium Dortmund** Mathematics and Physics
  Grade: *1,3*.

Selected research publications

1. F. Neubürger, J. Arens, T. Kopinski, and M. Hermes, "Development of a demonstator plant for hot stamping of metal sheets with a machine learning assisted anomaly detection control system," in *Proceedings of the 14th International Conference on the Technology of Plasticity - Current Trends in the Technology of Plasticity*, K. Mocellin, P.-O. Bouchard, R. Bigot, and T. Balan, Eds., Cham: Springer Nature Switzerland, 2024, pp. 261–273, ISBN: 978-3-031-40920-2. DOI: 10.1007/978-3-031-40920-2_28.

2. F. Neubürger, Y. Saeid, and T. Kopinski, "Timegan for data-driven ai in high-dimensional industrial data," in *Advances in Data-Driven Computing and Intelligent Systems*, S. Das, S. Saha, C. A. Coello Coello, and J. C. Bansal, Eds., Singapore: Springer Nature Singapore, 2024, pp. 473–484, ISBN: 978-981-99-9521-9. DOI: 10.1007/978-981-99-9521-9_36.

3 Y. Saeid, V. Wolf, and F. Neubürger, "Towards a person-job-fit recruitment: Job prediction with deep neural networks based on various pre-trained models," in *Data Science and Applications*, S. J. Nanda, R. P. Yadav, A. H. Gandomi, and M. Saraswat, Eds., Singapore: Springer Nature Singapore, 2024, pp. 437–450, ISBN: 978-981-99-7814-4. DOI: 10.1007/978-981-99-7814-4_35.

4 D. Gierse, F. Neubürger, and T. Kopinski, "A novel architecture for robust explainable ai approaches in critical object detection scenarios based on bayesian neural networks," in *Explainable Artificial Intelligence*, L. Longo, Ed., Cham: Springer Nature Switzerland, 2023, pp. 126–147, ISBN: 978-3-031-44067-0. DOI: 10.1007/978-3-031-44067-0_7.

5 F. Neubürger, D. Gierse, and T. Kopinski, "Hybrid bayesian convolutional neural network object detection architectures for tracking small markers in automotive crashtest videos," *Proceedings of the Northern Lights Deep Learning Workshop*, vol. 4, Jan. 2023. DOI: 10.7557/18.6802.

6 V. Wolf, F. Neubürger, and R. Lanwehr, "Generating synthetic data for better prediction modeling in skill demand forecasting," in *2023 IEEE World Conference on Applied Intelligence and Computing (AIC)*, 2023, pp. 313–318. DOI: 10.1109/AIC57670.2023.10263811.

7 F. Neubürger, J. Arens, M. Vollmer, T. Kopinski, and M. Hermes, "Coupled finite-element-method-simulations for real-time-process monitoring in metal forming digital-twins," in *2022 10th International Conference on Control, Mechatronics and Automation (ICCMA)*, 2022, pp. 260–265. DOI: 10.1109/ICCMA56665.2022.10011608.

8 F. Neubürger, Y. Saeid, and T. Kopinski, "Variational-autoencoder architectures for anomaly detection in industrial processes," in *Advances in Data Mining Applications and Theoretical Aspects 21th Industrial Conference, ICDM 2021*, ibai Publishing, Jul. 2021, ISBN: 978-3-942952-83-5.

Skills

Languages	German (Mother tongue), English
Coding	Python, c++, R, Docker SQL, NOSQL
Machine Learning libraries	TensorFlow, PyTorch, sci-kit learn
Databases	MySQL, PostgreSQL, INFLUXDB, SQLite
Web Dev	HTML, CSS, JavaScript
Microsoft Office	Excel, Word, Powerpoint
Operating systems	Linux (Ubuntu, Debian, Arch, RedHat), Microsoft Windows
Misc.	teaching, training, consultation

Miscellaneous Experience

Voluntary work

2014 - ongoing
- **Scout Lead**, DPSG Unna and Meschede
- **Baseball Umpire**, BSV NRW

Certification

2023
- **Scout Lead Training**, DPSG Paderborn