

Frederik Schubert

Education

- 2019 – 2025 **PhD**, *Leibniz University*, Hannover, Germany
Supervised by Prof. Dr.-Ing. Bodo Rosenhahn, Institute for Information Processing.
- 2016 – 2019 **M.Sc.**, *Leibniz University*, Hannover, *1.0*
Computer Engineering, *With distinction as third best in the academic year.*
- 2012 – 2015 **B.Sc.**, *Leibniz University*, Hannover, *2.2*
Computer Engineering
- 2011 **Abitur**, *Kaiser-Wilhelm- und Ratsgymnasium*, Hannover, *2.0*

Experience

Academic

- 2018 – 2025 **Assistant Instructor**, *Leibniz University*, Hannover
Supervising the *Reinforcement Learning* lecture and the lab on *Artificial Intelligence in Games*.

Industry

- Since 2025 **Computational Scientist**, *Flexcompute Inc.*
(Website)
- 2024 – 2025 **Head of Data Science**, *Inside M2M GmbH*, (Website)
Leading the data science team and integrating machine learning into the IoT ecosystem.
- 2020 **Software Consultant**, *Web Development*, (Website)
Workshops on agile web development and the Angular framework.
- 2013 – 2019 **Software Engineer**, *Inside M2M GmbH*, (Website)
Developing mobile and web Apps to manage and control Machine-to-Machine applications.
- 2015 **Software Developer and Co-Owner**, *HearingCampus GbR*, (Website)
Developed iOS/Android Apps and a backend to create audiograms and connect people that need hearing aids to their closest hearing care professional.

Publications

C. Reinders, F. Schubert, and B. Rosenhahn, “Hydramix: Multi-image feature mixing for small data image classification,” 2025.

F. Schubert, Y. Mahlau, K. Bethmann, F. Hartmann, R. Caspary, M. Munderloh, J. Ostermann, and B. Rosenhahn, “Quantized inverse design for photonic integrated circuits,” *ACS Omega*, 2025. ACS Omega.

Y. Mahlau, F. Schubert, K. Bethmann, R. Caspary, A. C. Lesina, M. Munderloh, J. Ostermann, and B. Rosenhahn, “A flexible framework for large-scale fdtd simulations: open-source inverse design for 3d nanostructures,” 2024. Photonics West 2025.

Y. Mahlau, F. Schubert, and B. Rosenhahn, “Mastering zero-shot interactions in cooperative and competitive simultaneous games,” in *Proceedings of the 41st International Conference on Machine Learning, ICML’24*, JMLR.org, 2024. ICML 2024.

C. Benjamins, T. Eimer, F. Schubert, A. Mohan, S. Döhler, A. Biedenkapp, B. Rosenhahn, F. Hutter, and M. Lindauer, “Contextualize me – the case for context in reinforcement learning,” *Transactions on Machine Learning Research*, 2023. Transactions on Machine Learning Research.

F. Schubert, C. Benjamins, S. Döhler, B. Rosenhahn, and M. Lindauer, “POLTER: Policy trajectory ensemble regularization for unsupervised reinforcement learning,” *Transactions on Machine Learning Research*, 2023. Transactions on Machine Learning Research.

M. Awiszus, F. Schubert, and B. Rosenhahn, “Wor(l)d-gan: Towards natural language based pcg in minecraft,” *IEEE Transactions on Games*, 2022. IEEE Transactions on Games.

C. Reinders, F. Schubert, and B. Rosenhahn, “Image classification on small datasets via masked feature mixing,” in *IJCAI-ECAI 2021*, 2022. IJCAI-ECAI 2022.

C. Benjamins, T. Eimer, F. Schubert, A. Biedenkapp, B. Rosenhahn, F. Hutter, and M. Lindauer, “CARL: A Benchmark for Contextual and Adaptive Reinforcement Learning,” *arXiv:2110.02102 [cs]*, Oct. 2021. Ecological Theory of RL Workshop @ NeurIPS 2021.

M. Awiszus, F. Schubert, and B. Rosenhahn, “World-gan: a generative model for minecraft worlds,” in *2021 IEEE Conference on Games (CoG)*, 2021. IEEE Conference on Games 2021.

F. Schubert, T. Eimer, B. Rosenhahn, and M. Lindauer, “Automatic Risk Adaptation in Distributional Reinforcement Learning,” *arXiv:2106.06317 [cs]*, June 2021. Reinforcement Learning for Real Life Workshop @ ICML 2021.

F. Schubert, M. Awiszus, and B. Rosenhahn, “Toad-gan: a flexible framework for few-shot level generation in token-based games,” *IEEE Transactions on Games*, pp. 1–1, 2021. IEEE Transactions on Games.

M. Awiszus, F. Schubert, and B. Rosenhahn, “Toad-gan: coherent style level generation from a single example,” in *Proceedings of the AAAI Conference on Artificial Intelligence and Interactive Digital Entertainment*, vol. 16, pp. 10–16, 2020. AIIDE 2020, Best Student Paper Award.