

EXPERIENCE

- **Fraunhofer Heinrich Hertz Institute** Berlin, Germany
Student Researcher – Applied Machine Learning 04/2022 - Present
 - **Data Engineering:** Build large, custom datasets by implementing fetcher and preprocessing units to periodically retrieve data from varying sources using Python and Pandas. Implement and maintain a robust and dynamic PostgreSQL database using SQLAlchemy.
 - **Neural Network Modelling:** Develop, implement, and tune graph neural network architecture for dynamic traffic flow prediction using PyTorch.
- **Fraunhofer Heinrich Hertz Institute** Berlin, Germany
Student Researcher - Photonic Components 02/2019 - 03/2022
 - **Neural Network Modelling:** Develop UNET object detection model for detecting defects on wafers using PyTorch.
 - **Laboratory Experiments:** Execute and analyze experiments for optical modulators. Train new working students in laboratory skills.

PROJECTS

- **3D Aneurysm Detection:** Develop 3D Semantic Segmentation Convolutional Neural Network model for 3D Aneurysm Detection with a F1-Score of 0.39. Execute and track experiments varying the data augmentation, loss functions, and hyperparameters.
- **Arena-Rosnav:** Build modular training and deployment pipeline for seamless integration of different DRL models and different robots. Develop a custom gym environment. Develop and deploy DRL-based agents for dynamic obstacle avoidance with success rates of 95%.
- **Implementation of RCPO:** Implement Reward Constrained Policy Optimization (RCPO) into stable-baselines3 implementation of Proximal Policy Optimization (PPO) using PyTorch. Reproduce results through experimental tracking using weights and biases. Write and submit respective article to the ICLR Blog Track.
- **YouTube: Boris Meinardus:** Documentation of personal Machine Learning progress. Lectures on Machine Learning theory. Development and demonstration of Machine Learning projects. Advice on entering the field of Machine Learning.

PUBLICATIONS

- **Arena-Bench:** Robotics and Automation Letters (RA-L) Journal, 2022
L. Kästner, T. Bhuiyan, T. A. Le, E. Treis, J. Cox, **B. Meinardus**, J. Kmiecik, R. Carstens, D. Pichel, B. Fatloun, N. Khorsandi, J. Lambrecht
- **Simulation framework for EtherCAT over TSN:** IFIP Networking Conference (IFIP Networking), 2021
B. Balakrishna, **B. Meinardus**, L. Kontopoulos

EDUCATION

- **Technical University of Berlin** Berlin, Germany
MSc Computer Science 09/2021 – 03/2025
 - **Relevant Courses:** Deep Learning 1, Machine Learning 1, Automatic Image Analysis, ML in Medical Image Processing, Advanced Topics in Reinforcement Learning
- **Technical University of Berlin** Berlin, Germany
BSc Computer Engineering; GPA: 3.0 (84.5/100) 09/2018 – 08/2021
 - **Thesis:** Deployment and Evaluation of Deep-Reinforcement-Learning-Based Navigation Approaches on Real Robots
 - **Relevant Courses:** Algorithms and Datastructures, Introduction into AI

SKILLS

- **Programming Languages:** Python, C++, SQL
- **Programming Frameworks:** PyTorch, OpenCV, Huggingface, Pandas, NumPy, Matplotlib, Seaborn
- **Technologies:** Deep Learning, Computer Vision, Weights and Biases, Docker, Git, GCP, Linux
- **Languages:** German (Native), English (Full Professional Proficiency), Bulgarian (Native), Mandarin (Elementary Proficiency)