

# Niklas Leinz

Braunschweig, Germany

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## EXPERIENCE

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### Doctoral Researcher (PhD)

Aug. 2025 — Present

Volkswagen AG

Wolfsburg

- PhD: Developing robotic foundation models for contact-rich assembly tasks, focusing on Vision-Language-Action (VLA) architectures and multimodal sensor fusion (vision + force/torque) for generalizing manipulation skills.
- Building an end-to-end training and evaluation infrastructure for validating research results directly in industrial environments.
- Identification and technical due diligence of AI & robotics solutions (startups/tech partners) for global Volkswagen production.

### Project Engineer

Oct. 2024 — May 2025

Holzbau.Tech

Rosenheim

- Master's thesis: "Automated Timber Construction: Leveraging Reinforcement Learning for Automated Trajectory Planning"
- Automating pick-and-place tasks in timber construction using reinforcement learning and sim-to-real transfer.
- Tuning RL algorithms (DDPG+HER, PPO) with Stable-Baselines3 and Gymnasium.
- Building a GPU-accelerated training pipeline with Docker and Jenkins.
- Mentoring and technical supervision of two working students.

### Dual Student – Platform Engineer

Jan. 2022 — Sept. 2022

Bosch Security and Safety Systems

Munich

- Bachelor's thesis: "Automated Anomaly Detection in Orchestrated Cloud Services"
- Developing server metrics with Java (Spring Boot) and Micrometer.
- Visualization and analysis in Grafana dashboards for server monitoring.
- Building an anomaly detection system with PyTorch, deployed with MLflow (MLOps).

### Dual Student – Application Engineer

Sept. 2019 — Dec. 2021

Bosch Energy and Building Solutions

Düsseldorf

- Developing an Excel/VBA tool to automate construction documentation (legally compliant per German BGB/VOB).
- Rolling out the tool to 36 Bosch sites, improving documentation for over 800 employees.
- Migrating the tool to a cross-platform Flutter application.
- Building an open-source design library of Bosch-compliant Flutter components.
- Preparing technical and legal documents in collaboration with the legal department.
- Supporting project planning and proposal preparation for customer projects.

## EDUCATION

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### Technical University of Munich

Munich

*Dr.-Ing. (PhD candidate)*

Aug. 2025 — exp. 2028

- Doctorate in cooperation with Volkswagen AG.
- Teaching: Simulation-Based Machine Learning in Robotics.

### Technical University of Munich

Munich

*M.Sc. Robotics, Cognition, Intelligence*

Oct. 2022 — May 2025

- Relevant coursework: Simulation-Based Machine Learning in Robotics, LLMs in Robotics, Machine Learning, Machine Learning Operations (MLOps), Introduction to Deep Learning.

### Technical University of Denmark

Copenhagen

*Exchange semester focused on autonomous systems*

Aug. 2023 — Jan. 2024

## Baden-Württemberg Cooperative State University (DHBW)

*B.Sc. Information Technology*

- Combination of electrical engineering and computer science courses.
- Research project: “Analyzing Mouse Dynamics Using Neural Networks”

Friedrichshafen  
*Oct. 2019 — Sept. 2022*

## Wilhelm Bracke Gesamtschule

*Abitur (German university-entrance diploma), science focus*

Braunschweig  
*Aug. 2016 — Jun. 2019*

## CERTIFICATIONS & AWARDS

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- **KUKA Robot Programming 1** Jan. 2025
- **TOEFL iBT 99/120 points** (English level: C1) Feb. 2022
- **AWS Certified Cloud Practitioner** Dec. 2021

## SKILLS & INTERESTS

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- **Programming Languages & Frameworks:** Python, Java (Spring Boot), C#, C, JavaScript, ReactJS, Flutter, Unity, ROS2, NVIDIA Isaac Sim/Lab
- **AI & Reinforcement Learning:** PyTorch (Lightning), Stable-Baselines3, Gymnasium-Robotics, MLflow (MLOps), YOLO, OpenCV
- **Cloud Technologies:** Docker, Jenkins, Linux, Terraform, Ansible, AWS, GCP, Prometheus, Grafana
- **Languages:** German (native), English (fluent, C1), Spanish (basic)
- **Hackathons:** HPI Code Night (2019), TUM.ai Makeathon (2023)
- **Hobbies:** Sailing, climbing, skiing, hiking

## PROJECTS

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**Embedded Machine Learning for Object Detection and Distance Measurement in Robotic Arm Prosthesis**

**Technical Report on Large Language Models in Robotics**

**Predicting Wind Power: Integrating Auto-Regressive and Stochastic Differential Models**