KEVIN EPPACHER

Robotics Software Engineer

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EXPERIENCE

Research Assistant – Tutorial Author

UAS Technikum Vienna

📅 Aug 2025 – Oct 2025 ● Vienna, Austria

- Authored student tutorials on ROS 2, nonlinear optimization with PyTorch, and end-to-end deep reinforcement learning using Stable-Baselines and Gymnasium.

Industrial Robotics Software Engineer

Blue Danube Robotics GmbH (AIRSKIN)

📅 Aug 2023 – Jul 2025 ● Vienna, Austria

- Developed and deployed low-level robot programs (MoveIt C++/ KRL / RAPID) involving kinematics, tool calibration, coordinate-frame transformations, and precise motion execution for AIRSKIN-equipped robots.
- Built an automated sensitivity measurement system, including depth-based visualization of contact points and geometric evaluation of measurement data.
- Created integration concepts for customer-specific AIRSKIN solutions, including cell layout design, workspace modeling, and feasibility analysis.
- Supported quality inspection workflows and robotic handling tasks with geometry-aware motion planning and cycle-time optimization.

Bachelor Thesis Intern

Automation and Control Institute (ACIN), TU Vienna

📅 Feb 2023 – Jul 2023 ● Vienna, Austria

- Developed a control system for high-speed drone tracking using a pan–tilt camera and cascaded PID controller.
- Implemented Kalman-filter-based sensor fusion for camera-based tracking and trajectory prediction in ROS / OpenCV.

Prototype Engineer

GKN Driveline AG

📅 Jun 2019 – Sep 2019 ● Bruneck, Italy

- Assembled and tested prototype transmissions and optimized assembly processes for pilot production.

EDUCATION

M.Sc. Robotics

UAS Technikum Vienna

📅 2023 – ongoing ● Vienna, Austria

- Focus on computer vision, probabilistic robotics, and nonlinear optimization.
- Thesis: "SAGE – Semantic-Aware Guided Exploration with Persistent Memory" (in progress).

PROFILE

Robotic software engineer with experience in computer vision, 3D perception, and real-time system design. Develops high-performance algorithms across perception, localization, and action for camera-based robotic platforms.

SKILLS

Programming Languages

C/C++   Python

Frameworks & Libraries

ROS 2   PyTorch / CUDA   OpenCV
BehaviorTree.CPP   Gymnasium (RL)
Matlab / Simulink

Tools & Environment

Git / GitHub   Docker   VS Code
CMake   Linux (Ubuntu)
Isaac Sim/Gym

Computer Vision & AI

Tracking & 3D Geometry
Visual-Language Models (VLM)
Object Detection & Segmentation

Robotics & Control

Model Predictive Control (MPC)
Nonlinear Optimization
Kinematics & Dynamics
Real-Time Systems

LANGUAGES

English   ●●●●●

German   ●●●●●

Italian   ●●●○○

B.Sc. Mechatronics & Robotics

UAS Technikum Vienna

📅 2020 – 2023   📍 Vienna, Austria

- Focus on dynamics, control theory, and mobile and articulated robotics.
- Thesis: "Design of a Cascaded Position and Velocity Controller for a Pan–Tilt Camera Tracking UAVs."

Higher Technical College (HTL) – Mechatronics

HTL Mödling

📅 2015 – 2020   📍 Mödling, Austria

- Specialized in control theory, mechanical design, and electrical engineering.
- Graduated with a diploma in Mechatronics Engineering.

PROJECTS

Selected projects focusing on control, semantic mapping, and autonomous exploration.

SAGE – Semantic-Aware Guided Exploration with Persistent Memory

Master's Thesis

📅 2025 – ongoing

- Developed a real-time semantic exploration system using calibrated RGB-D camera streams (intrinsic/extrinsic parameters) for depth fusion, point cloud generation, and spatial perception.
- Leveraged 2D navigation SLAM and 3D semantic point cloud maps, combined through geometry-aware fusion pipelines to enhance spatial understanding.
- Integrated image preprocessing, object detection (YOLO-E), and 3D semantic fusion (OpenFusion) to create persistent scene representations for open-vocabulary reasoning.
- Combined multi-source sensor fusion and behavior tree decision modules to enable autonomous object search and exploration under real-time constraints.

Nonlinear Model Predictive Controller (nMPC) for Differential Drive Mobile Robot (DDMR)

Frameworks: ROS 1 & 2 / CasADi / Python / PyTorch / Docker

📅 2024 – 2025

- Designed an nMPC local planner predicting future robot states via kinematic modeling and online optimization.
- Benchmarked against DWA and TEB planners in Gazebo, demonstrating smoother, constraint-compliant trajectories.

Automated Sensitivity Measurement System (AIRSKIN)

Frameworks: ROS Noetic / MoveIt / C++ / Docker

📅 2024

- Built an automated robotic test bench for AIRSKIN pads, reducing measurement time from hours to minutes.
- Integrated UR10, force–torque sensing, and 3D camera point cloud visualization via MoveIt and RViz; GUI developed in ImGui C++.

Full portfolio: KevinEppacher.github.io

REFEREES

Dr. Michael Zillich

@ CTO, Blue Danube Robotics (AIRSKIN)

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Supervised industrial robotics projects