DR. RUDOLF REITER

Zürich, Switzerland
rudolffreiter.github.io

Passionately committed to shaping the future through innovative solutions and advancing the fields of optimization, artificial intelligence, and control. Eager to tackle new challenges and embrace responsibility.

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher | *with Prof. Dr. Davide Scaramuzza* — Feb. 2025 – now

University of Zürich, Robotics and Perception Group — Zürich, Switzerland
- Research on agile vision-based autonomous drone navigation
- Team lead, budget coordination and project management

Postdoctoral Researcher | *with Prof. Dr. Moritz Diehl* — Nov. 2024 – Apr. 2025

University of Freiburg, Systems Control and Optimization Laboratory — Freiburg, Germany
- Research on combining model predictive control with reinforcement learning
- Budget coordination, project management, scientific supervision

Doctoral Researcher | *supervised by Prof. Dr. Moritz Diehl* — Mar. 2020 – Nov. 2024

Systems Control and Optimization Laboratory, University of Freiburg — Freiburg, Germany
Optimization-Based Motion Planning for Autonomous Driving and Racing
- Research on model predictive control for autonomous driving
- Project management, scientific supervision, organization of large events

Software Developer - Python/C++ — Dec. 2019 – Aug. 2023

Autonomous Racing Graz — Graz, Austria
- Development of embedded algorithms for real-world autonomous racing
- Focus on prediction, planning, and control algorithms

Software Developer, Junior Researcher - Python/C++ — Dec. 2018 – July 2021

Virtual Vehicle Research Center — Graz, Austria
- Algorithms for path planning and control of autonomous vehicles
- Developing simulation frameworks for autonomous driving

Control Systems Specialist - MATLAB/C++/C/Python — July 2016 – July 2018

Anton Paar GmbH — Graz, Austria
- Development of advanced control systems for high-end measurement devices
- Worldwide first full automation of an atmospheric distillation analyzer
- Novel viscosity measurement - US patent *US 10,976,230 B2*

SKILLS

Leadership	team lead, academic supervision
Networking	universities and tech. companies (US, Europe, China)
Budget Coordination	acquiring research budget (> 1 M CHF)
Project Management	global research projects, large events (200+ persons)
Teaching	teaching international Master students, workshops, talks
Languages	German (native), English (business fluent)
Programming languages	C/C++ (5 years), Python (7 years), MATLAB (6 years)
Optimization software	CasADi, acados, ForcesPro, Yalmip, Gurobi, CVX, MOSEK
Machine learning libraries	PyTorch, JAX, Stable Baselines 3, RLLIB, OpenCV, Hydra
Platforms and OS	ROS, NVIDIA Platforms, Speedgoat, Linux

Research Stays and Internships

Guest Researcher | **ETH**zürich | ETH Zürich, Prof. Melanie Zeilinger, Switzerland	4 months	Jan. 2024
Guest Researcher | IMT | IMT Lucca, Prof. Alberto Bemporad, Italy	1 month	Sep. 2023
Research Intern | MITSUBISHI ELECTRIC RESEARCH LABORATORIES | Mitsubishi Electric Research Laboratories, USA	4 months	Jan. 2023
Research Intern | ODYS | ODYS S.r.l., Milano, Italy	2 months	Apr. 2022
Research Intern | ◉ | Virtual Vehicle Research Center, Graz, Austria	8 months	Apr. 2015
Controls Engineering - MATLAB | **B&R** | B&R GmbH, Salzburg, Austria	3 months	Sep. 2012
Software Engineering - CNC | **B&R** | B&R GmbH, Salzburg, Austria	2 months	July 2010
Software Engineering - C++ | Step4 GmbH, Salzburg, Austria	3 months	Apr. 2009

Education

Master of Science | *Electrical Engineering: Control Systems and Mechatronics*	Oct. 2013 – Jan. 2016
Technical University of Graz / University of Utah | GPA: 1.2/1.0 (*with distinction*)	Graz, Austria,
Master's Thesis: Modeling of Nonlinear Drive-Train Dynamics	Salt Lake City, UT, USA
Bachelor of Science | *Electrical Engineering: Control Systems and Mechatronics*	Oct. 2009 – June 2012
Technical University of Graz | GPA: 1.5/1.0 (*with distinction*)	Graz, Austria

Selected Publications

AC4MPC: Actor-Critic Reinforcement Learning for Guiding Model Predictive Control	Sep. 2025
IEEE T. on Control Systems Technology, DOI: 10.1109/TCST.2025.3620521	
Reiter R., Ghezzi A., Baumgärtner K., Hoffmann J., McAllister P. ,Diehl M.	
Equivariant Deep Learning of Mixed-Integer Optimal Control Solutions for Vehicle Decision Making and Motion Planning	May 2024
IEEE T. on Control Systems Technology, DOI: 10.1109/TCST.2024.3400571	
Reiter R., Quirynen R., Diehl M., Di Cairano S.	
Frenet-Cartesian Model Representations for Automotive Obstacle Avoidance within Nonlinear MPC	June 2023
European Journal of Control, DOI: 10.1016/j.ejcon.2023.100847	
Reiter R., Nurkanović A., Frey J., Diehl M.	

Awards, Honors and Media

Magna Cum Laude - PhD Thesis, University of Freiburg	Honor	Nov. 2024
Marie Skłodowska-Curie PhD Fellowships, European Commission	Award	Aug. 2021
2nd rank ROBORACE Season Beta, Las Vegas Motor Speedway	Award	Mar. 2021
2nd rank ROBORACE Season Beta, Las Vegas Motor Speedway	Award	Feb. 2021
"Selbstfahrende Sieger" (self-driving winners) - Kleine Zeitung	Media	Sep. 2020
Outstanding Success (Top 5%), Master, Tech. University of Graz	Honor	Jan. 2016
Talent Scholarship, AVL List GmbH	Award	Jan. 2013
Outstanding Success (Top 2%), Bachelor, Tech. University of Graz	Honor	Jul. 2013
Performance Scholarship, Tech. University of Graz	Award	Jul. 2011

Private

Beyond my technical interests, I enjoy spending time outdoors, particularly climbing and hiking. I also enjoy listening to jazz and reading both novels and scientific literature.

Zürich, January 21, 2026