Maximilian Ulmer

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Education

Karlsruhe Institute of Technology *Karlsruhe*
Ph.D. Candidate Institute for Anthropomatics and Robotics *March 2022 - Present*
- Intelligent Robot Perception group led by Prof. Dr. Rudolph Triebel
- Zero-Shot 6D Object Pose Estimation for Robotic Manipulation

Technische Universität München *Munich*
Ph.D. Candidate Munich School of Robotics and Machine Intelligence *Sept. 2019 - December 2022*
- Vision-based Reinforcement Learning for Robotic Manipulation
- Advisor: Prof. Dr.-Ing. Sami Haddadin

Technische Universität München *Munich*
M.Sc. Electrical Engineering and Information Technology *December 2018*
- Graduated with high distinction: **grade 1.1, top 7.7% of students**
- Specialization: "Automation and Robotics"
- Research Interests: Computer Vision, Robotics, Reinforcement-Learning
- Master's Thesis: Sequential Analysis of High-Resolution, Aerial Video with Deep Reinforcement Learning (grade 1.0)
  Advisor: Prof. Dr.-Ing. Klaus Diepold, Chair for Dataprocessing

Technische Universität München *Munich*
B.Sc. Electrical Engineering and Information Technology *March 2016*
- Specialization: Communications, Control
- Nominated for the "Bayrische Eliteakademie"
- Bachelor's Thesis: Evaluation and Implementation of an Object Detection Algorithm for a Multi-Processor System-on-Chip (grade 1.3)

Aston University *Birmingham, UK*
Exchange Student *February 2014*
- Passed all modules with 1^{st} class honours

Publications

6D Object Pose Estimation from Approximate 3D Models for Orbital Robotics
Maximilian Ulmer, Maximilian Durner, Martin Sundermeyer, Manuel Stoiber, and Rudolph Triebel
IROS 2023

Seeking Visual Discomfort: Curiosity-driven Representations for Reinforcement Learning
Elie Aljalbout, **Maximilian Ulmer**, and Rudolph Triebel
ICRA 2022

Making Curiosity Explicit in Vision-based RL
Maximilian Ulmer*, Elie Aljalbout*, and Rudolph Triebel
ICRA 2021. Workshop on Curios Robots

Learning Robotic Manipulation Skills Using an Adaptive Force-Impedance Action Space
Maximilian Ulmer, Elie Aljalbout, Sascha Schwarz, and Sami Haddadin
arXiv 2021

*equal contribution

Learning Vision-based Reactive Policies for Obstacle Avoidance
Elie Aljalbout, Ji Chen, Konstantin Ritt, **Maximilian Ulmer**, and Sami Haddadin
CoRL 2020

Work Experience

German Aerospace Center (DLR), Institute of Robotics and Mechatronics *Munich*
Research Scientist, Department of Perception and Cognition *March 2022 - Present*
- Advised by Prof. Rudolph Triebel and Dr. Maximilian Durner
- Camera-based 6D pose estimation algorithms for spaceborne robotic operations.
- Projects: EROSS+, OOS-SIM, Ricados 2.0

Technische Universität München *Munich*
Research Assistant, Chair of Robotics Science and Systems Intelligence *Sept. 2019 - December 2021*
- Advised by Prof. Sami Haddadin at the Munich School of Robotics and Machine Intelligence
- Led the development of a software platform to conduct RL research on the Franka Panda robot.
- Manipulation, Computer Vision, Control, Motion Generation, Reinforcement Learning

Technische Universität München *Munich*
Research Assistant, Chair for Data Processing *June 2019 - September 2019*
- Advised by Prof. Klaus Diepold
- BMBF proposal process in cooperation with luminovo.ai
- Active Learning, Representation Learning

Rohde & Schwarz GmbH & Co. KG *Munich*
Working Student and Research Intern *March 2016 - December 2018*
Rohde & Schwarz is an industry-leading, international electronics group specialized in radiocommunication, information, and security.
- Led the development of a backend dataprocessor for the new Internet-of-Things telecommunications standard "Narrowband-IoT".
- Advised the project manager on GUI implementations regarding the C++ framework Qt.

Technische Universität München *Munich*
Robo-Hockey Tournament Victor *October 2017 - March 2018*
- Won a robotics hockey tournament in the scope of the master's module "Leistungskurs C++".
- Worked in a team of five engineers to develop the software of a fully autonomous robot in C++ and ROS.
- Executed the project from concept and planning to final roll-out.

Berner & Mattner Systemtechnik GmbH *Munich*
Working Student *April 2015 - October 2015*
Berner & Mattner (now Assystem GmbH) is a systems engineering company specialized in mechatronic systems, software services and consulting.
- Supported the automotive sector with the software build process and quality control of its tools.

BMW Group *Munich*
Software Development Intern *April 2014 - October 2014*
BMW is a multinational, premium automobiles and motorcycles company.
- Led a project to build an internally used Java application which automatically assesses the quality of interior electronic control units developed by BMW's suppliers.
- Nominated for the "BMW Fastlane" students program due to the project's success.

Bundesamt für Zivildienst *Munich*
Social Service in an Integration Kindergarten *October 2010 - April 2011*
Integration childcare facilities aim at integrating "special needs" children into the regular kindergarten environment.
- Supported the day care workers in their day-to-day tasks.
- Supervised groups throughout the day as a substitute.

Extra-Curricular Achievements and Certificates

Dec. 2022	**Best overall result** in 6D satellite pose estimation challenge SPEED+ hosted by ESA ACT and Stanford SLAB; team name: `mystery_team`
Oct. 2021	Imperial College London Summer School: Embodied Perception for Real-time Action
Mar. 2019	Machine Learning, Stanford Online, Coursera
Aug. 2018	ABBY-Net Summerschool, Interdisciplinary Research Workshop, Energy Transitions
Mar. 2017	LTE-A (Long Term Evolution - Advanced/Pro) - Training (Release 13), 3GPP
Mar. 2011	"Certificate in English Studies", Level: Advanced, LSI London Hampstead
Jul. 2010	Awarded by the "Deutsche Physikalische Gesellschaft" for the best physics abitur.

Teaching

Technische Universität München *Munich*
- **TA**, Advanced Robot Control and Learning *Fall 2020*
- **Head Organizer**, Robothon: *Coastal Cleanup: Robotics-aided Climate Protection* *March 2020*
- **Head TA**, Advanced Robot Control and Learning *Fall 2019*
- **Tutor**, SystemC Laboratory *Fall 2016, Summer 2017*

Language Skills & Interests

Languages:	German (native), English (fluent), French (basic)
Sports:	Sports play a central role in my life. Some of the sports I enjoy most are beach volleyball, windsurfing, skiing, and hiking.