Moritz Reuss

Binswanger Str. 55, 74172, Neckarsulm, Germany

☐ (+49) 15122035375 | ✉ moritz.reuss@kit.edu | 🏠 mbreuss.github.io | ⬚ mbreuss | in moritzreuss | 🎓 moritzreuss

Education

Ph.D in Computer Science
Karlsruhe, Germany

KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT)
01/2022 - Present

- Supervised by Prof. Rudolf Lioutikov
- Expected graduation: December 2025

MSc in Mechanical Engineering
Karlsruhe, Germany

KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT)
03/2019 - 09/2021

- GPA: 1.3 (on scale of 1-5 with 1 being the highest score)
- Supervised by Prof. Gerhard Neumann
- Exchange Semester at Chalmers University of Technology, Sweden - 2020/21

BSc in Mechanical Engineering
Karlsruhe, Germany

KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT)
10/2015 - 02/2019

- GPA: 2.0 (on scale of 1-5 with 1 being the highest score)

German A-Levels
Barcelona, Spain

GERMAN SCHOOL OF BARCELONA
2015

- GPA: 1.2 (on scale of 1-6 with 1 being the highest score)
- Graduated as Top of the Year with distinction.

Work Experience

Machine Learning Intern
Cupertino, USA

APPLE INC, DMLI
03/2025 - 07/25

- Research Project on World Models for Robot Policy Evaluation
- Supervised by Peide Huang and Walter Talbott

Graduate Research Assistant
Karlsruhe, Germany

KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT)
01/2022 - Present

- Introduced a novel imitation learning policy, called 'Score-based Diffusion Policies', to learn expressive, multimodal behavior.
- Proposed novel self-supervised learning objectives for policies to learn language-guided behavior from multimodal reward specifications.
- Developed a novel algorithm for zero-shot annotation of uncurated demonstrations with vision-language foundation models.
- Research on efficient vision-language-action policies for imitation learning.

Master Thesis Candidate
Renningen, Germany

BOSCH CORPORATE RESEARCH
04/2021 - 09/2021

- Research on hybrid models for control, combining recurrent neural networks with physic-based models for precise inverse dynamics prediction in a 7-DoF robotic arm, enhancing impedance control capabilities.

Student Research Assistant
Karlsruhe, Germany

RESEARCH CENTER FOR INFORMATION TECHNOLOGY (FZI)
05/2019 - 02/2021

- Conducted research in energy consumption models for electric vehicles using recurrent neural networks, such as LSTMs and Transformers, effectively leveraging supplemental road information data in Tensorflow.

Student Intern and Bachelor Thesis Candidate
Neckarsulm, Germany

AUDI AG
04/2018 - 01/2019

- Research on using dimension-less parameters models for predicting the air humidity in hydrogen fuel-cell cars in real-time.

Student Intern
Karlsruhe, Germany

IPG-AUTOMOTIVE GMBH
10/2016 - 03/2018

- Specialized in powertrain parameterization for hybrid vehicles and digitalization of real-world routes for fuel-consumption investigations.

Honors and Awards

2025	**Apple PhD Fellowship in AI/ML,** Apple DMLI	*Cupertino, USA*
2023	**Best Paper Award,** Workshop on Learning from Diverse, Offline Data (L-DOD) @ ICRA 2023	*London, England*

Publications

FLOWER: Democratizing Generalist Robot Policies with Efficient Vision-Language-Action Flow Policies

- **Moritz Reuss**, Hongyi Zhou, Marcel Rühle, Ömer Erdinç Yağmurlu, Fabian Otto, Rudolf Lioutikov
  under review, 2025

BEAST: An Efficient Action Tokenizer with B-Splines

- Hongyi Zhou, Weiran Liao, Xi Huang, Yucheng Tang, Fabian Otto, Xiaogang Jia, Xinkai Jiang, Simon Hilber, Ge Li, Qian Wang, Ömer Erdinç Yağmurlu, Nils Blank, **Moritz Reuss**, Rudolf Lioutikov
  under review, 2025

Efficient Diffusion Transformer Policies with Mixture of Expert Denoisers for Multitask Learning

- **Moritz Reuss***, Jyothish Pari*, Pulkit Agrawal, Rudolf Lioutikov
  International Conference on Learning Representations (ICLR), 2025

Scaling Robot Policy Learning via Zero-Shot Labeling with Foundation Models

- Nils Blank, **Moritz Reuss**, Marcel Rühle, Ömer Erdinç Yağmurlu, Fabian Wenzel, Oier Mees, Rudolf Lioutikov
  Conference on Robot Learning (CoRL), 2024

Multimodal Diffusion Transformer: Learning Versatile Behavior from Multimodal Goals

- **Moritz Reuss**, Ömer Erdinç Yağmurlu, Fabian Wenzel, Rudolf Lioutikov
  Robotics: Science and Systems (RSS), 2024

Towards Diverse Behaviors: A Benchmark for Imitation Learning with Human Demonstrations

- Xiaogang Jia, Denis Blessing, Xinkai Jiang, **Moritz Reuss**, Atalay Donat, Rudolf Lioutikov, Gerhard Neumann
  International Conference on Learning Representations (ICLR), 2024

Goal-Conditioned Imitation Learning Using Score-based Diffusion Policies

- **Moritz Reuss**, Maximilian Li, Xiaogang Jia, Rudolf Lioutikov
  Robotics: Science and Systems (RSS), 2023,

Information Maximizing Curriculum: A Curriculum-Based Approach for Learning Versatile Skills

- Denis Blessing, Onur Celik, Xiaogang Jia, **Moritz Reuss**, Maximilian Li, Rudolf Lioutikov, Gerhard Neumann
  International Conference on Neural Information Processing Systems (NeurIPS), 2023

End-to-End Learning of Hybrid Inverse Dynamics Models for Precise and Compliant Motion Tracking

- **Moritz Reuss**, Niels van Duijkeren, Robert Krug, Philipp Becker, Vaisakh Shaj, Gerhard Neumann
  Robotics: Science and Systems (RSS), 2022

Academic Service

Conference Reviewing

- Conference on Robot Learning (CoRL), Robotics: Science and Systems (RSS), Conference on Neural Information Processing Systems (NeurIPS), IEEE International Conference on Robotics and Automation (ICRA), International Conference for Learning Representation (ICLR)

Journal Reviewing

- IEEE Robotics and Automation Letters (RA-L), Transactions on Machine Learning Research (TMLR)

Open Source Contributions

- **diffusion-literature-for-robotics** Created a comprehensive guide on diffusion models for robotics, regularly updated, to support research and learning in the field.
- **beso** Codebase for Continuous-Time Diffusion Policies
- **mdt policy** Multimodal Transformer Policy with future frame generation objectives
- **MoDE Diffusion Policy** Codebase for Foundation Mixture-of-Experts Diffusion Policy with pretrained weights
- **FLOWER VLA** Codebase for finetuning and pretraining FLOWER VLA, a sota efficient Vision-Language-Action Model

Skills

Language	German (native), English (fluent), Spanish (B1), French (B1)
Machine Learning	Pytorch, MuJoCo, Numpy, Pandas, Scipy, Tensorflow
Programming	Python, Matlab, Docker, Git, ROS, C++
Other	LaTeX, Linux–Ubuntu, Microsoft Office