

Axel Sauer

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Education

University of Tübingen

Ph.D. in Computer Science

Focus on Deep Generative Modelling.

Advisor: Prof. Dr.-Ing. Andreas Geiger

Tübingen, Germany

since 04/2020

Karlsruhe Institute of Technology

M.Sc. in Mechanical Engineering (top 5% of class, with distinction)

Focus on Advanced Mechatronics and Information Technology.

Thesis title: Learning to Drive in Urban Environments

Karlsruhe, Germany

10/2015 – 04/2018

Karlsruhe Institute of Technology

B.Sc. in Mechanical Engineering (top 5% of class)

Focus on Automotive Engineering.

Thesis title: Thermo- and fluid-dynamic Analysis of the Cooling of an Electric Traction Motor

Karlsruhe, Germany

10/2012 – 08/2015

Research Experience

Stability AI

Research Scientist

My research focuses on training generative adversarial networks at scale.

Freiburg, Germany

since 05/2023

Max Planck Institute for Intelligent Systems - Autonomous Vision

Research Associate, Ph.D. Candidate

During my time in Tübingen, I worked on making deep generative models better, faster to train, and useful for downstream tasks.

Tübingen, Germany

04/2020 – 04/2023

NVIDIA Research

Research Intern

During this stay, I am working on large-scale training of generative adversarial networks.

Helsinki, Finland

05/2022 – 12/2022

Technical University of Munich - MSR

Research Associate, Scientific Staff (1 year 10 months)

During my time in Munich, I worked on visual object tracking and its integration into robotic systems. My work was showcased on several occasions, e.g., at the Hanover Fair and during a visit of the German Chancellor.

Munich, Germany

06/2018 – 03/2020

ETH Zurich - Computer Vision and Geometry Group

Visiting Researcher (6 months)

During this visit, I developed a new approach for autonomous driving in urban areas. The approach combines methods from model-based control with deep learning for visual perception.

Zurich, Switzerland

11/2017 – 04/2018

Mercedes-Benz Japan Co., Ltd. - Alternative Drivetrains

Engineering Intern (6 months)

During this stay, I evaluated measurement data regarding the charging and driving behavior of electric vehicles, analyzed the data, and compiled detailed reports.

Tokyo, Japan

03/2017 – 09/2017

During my time at Daimler, I implemented CFD and Matlab-Simulations of an electric motor cooling system. One of my proposed designs concepts led to a 50 % improvement of continuous power output on a real-world test bench. I also filed a patent for an active cooling system of electric motor windings.

Publications

- [1] **A. Sauer**, T. Karras, S. Laine, A. Geiger, and T. Aila. "StyleGAN-T: Unlocking the Power of GANs for Fast Large-Scale Text-to-Image Synthesis". In: *ICML*. 2023. **(oral)**.
- [2] K. Schwarz, **A. Sauer**, M. Niemeyer, Y. Liao, and A. Geiger. "VoxGRAF: Fast 3D-Aware Image Synthesis with Sparse Voxel Grids". In: *NeurIPS*. 2022.
- [3] **A. Sauer**, K. Schwarz, and A. Geiger. "StyleGAN-XL: Scaling StyleGAN to Large Diverse Datasets". In: *SIGGRAPH*. 2022.
- [4] **A. Sauer**, K. Chitta, J. Müller, and A. Geiger. "Projected GANs Converge Faster". In: *NeurIPS*. 2021.
- [5] **A. Sauer** and A. Geiger. "Counterfactual Generative Networks". In: *ICLR*. 2021.
- [6] V. Sauer, **A. Sauer**, and A. Mertens. "Zoomorphic Gestures for Communicating Cobot States". In: *Robotics and Automation Letters*. 2021.
- [7] N. Rao, E. Aljalbout, **A. Sauer**, and S. Haddadin. "How to Make Deep RL Work in Practice". In: *NeurIPS Deep RL Workshop*. 2020.
- [8] **A. Sauer**, E. Aljalbout, and S. Haddadin. "Tracking Holistic Object Representations". In: *BMVC*. 2019. **Best Science Paper Award**.
- [9] **A. Sauer**, N. Savinov, and A. Geiger. "Conditional Affordance Learning for Driving in Urban Environments". In: *CoRL*. 2018. **Nominated for the Best Systems Paper Award**.

Miscellaneous

Research Talks: at Bosch Center for Artificial Intelligence (BCAI), University of Illinois Urbana-Champaign (UIUC), Mohamed bin Zayed University of Artificial Intelligence (MBZUAI), Adobe

Awards: Recognized as a Highlighted Reviewer at ICLR 2022 (top 8 %), received an Honorable Mention in the Poster Competition at the IEEE RAS International Summer School on Deep Learning for Robot Vision, and obtained a Travel Grant for the same program. Paper awards, see above.

Reviewer: at ECCV, ICLR, CVPR, TPAMI, SIGGRAPH Asia, NeurIPS workshops

Teaching assistant: for Deep Learning, Team Project "Image Search", Seminar on Robotics

Ju-Jitsu Athlete: Member of the German national team (2010-2012), German champion (2009, 2010), U21 world champion (2011).