Shuxiao Ding

Kirchheimer Str. 120, 70619 Stuttgart, Germany dingshuxiao0511@gmail.com +49 152 23633281

dsx0511.github.io LinkedIn Github Google Scholar ORCID

Education

University of Bonn *Aug 2020 - Present*

Ph.D. Candidate in Computer Science

- Supervisor: Prof. Dr. Juergen Gall
- Topic: Understanding Traffic Scenes by Means of Graph-Networks
- Research interests: Graph Neural Networks, 3D Multi-Object Tracking, End-to-End Autonomous Driving
- Expected graduation: April 2025

Karlsruhe Institute of Technology (KIT) *Oct 2016 - Oct 2019*

M.Sc. in Mechatronics and Information Technology

- Average grade: 1.5 (scale: 1.0 - excellent, 4.0 - sufficient)
- Master Thesis: Development of Single Stage Detectors on Multi-Layer Grid Maps

Karlsruhe Institute of Technology (KIT) *Oct 2012 - Oct 2016*

B.Sc. in Mechanical Engineering

- Average grade: 1.9 (scale: 1.0 - excellent, 4.0 - sufficient)
- Bechelor Thesis: Evaluation of Algorithms for Registration of Point Clouds

Work Experience

Picsart Inc. Berlin, Germany

Senior Machine Learning Scientist *July 2025 - Present*

- I'm starting a new journey into generative AI with diffusion models. Stay tuned!

Mercedes-Benz Group AG Stuttgart, Germany

Industrial Doctoral Researcher *Aug 2020 - May 2025*

- Conducted diverse research initiatives within the realm of autonomous driving, exploring various innovative research topics such as learning Non-Maximum Suppression (NMS) with Graph Neural Networks, learning data association using Graph-Transformers for 3D Multi-Object Tracking (MOT), end-to-end multi-camera object detection and tracking, and end-to-end Bird's Eye View (BEV) future instance prediction.
- Engineered deployment infrastructures for training and evaluation processes on several cloud platforms, including Microsoft Azure, Google Cloud Platform and an in-house GPU cluster, ensuring scalable model deployment.
- Provided academic guidance and mentorship to graduate students, including supervision of one Bachelor's and three Master's Theses along with their associated pre-thesis internships.
- Published and presented research papers at premier Computer Vision and Artifical Intelligence conferences such as CVPR, ICCV and IJCAI, and contributed as reviewer at leading venues.

Forschungszentrum Informatik (FZI) Karlsruhe, Germany

Graduate Research Assistant *June 2019 - May 2020*

- Improved the results from my master thesis and enhanced the 3D object detection performance on multi-layer grid maps. Developed an innovative unsupervised domain adaptation method based on this refined detector, achieving sensor-agnostic detection capabilities and domain transferability across various datasets, e.g. nuScenes and KITTI.
- Published and presented the research findings in an international peer-reviewed conference.

- Upgraded the existing codebase for several deep learning applications on multi-layer grid maps, migrating from TensorFlow Object Detection API with TensorFlow 1.0 to a custom framework with TensorFlow 2.0.

Forschungszentrum Informatik (FZI) Karlsruhe, Germany

Research Assistant *Oct 2017 - Nov 2018*

- Designed and constructed mounting components to connect a humanoid robot with a wheeled robot platform using PTC Creo and tested the movement of the integrated robot using ROS Unified Robot Description Format (URDF).
- Conducted reachability analysis using ROS Reuleaux tools to evaluate the robot's operational capabilities.
- Participated as a member of team AlpaKa in the Audi Autonomous Driving Cup 2018 and secured the first place.

SEW-EURODRIVE GmbH & Co. KG Graben-Neudorf, Germany

Intern for Product Line Management *April 2016 - Mar 2017*

- Developed a CAD library of adjustable standard components for factory planning using SketchUp and prepared training documents to facilitate library usage. Constructed workplaces for servomotor assembly using the library.
- Optimized the factory layout considering space requirements, material flow, assembly processes and economic factors.
- Standardized the visualizations of servomotor components with varying sizes and features and configured highlighted displays for special features in SAP Manufacturing Execution (SAP ME), simplifying the identification of components.

Publications

* *denotes equal contribution.*

AGO: Adaptive Grounding for Open World 3D Occupancy Prediction

Peizheng Li, Shuxiao Ding, You Zhou, Qingwen Zhang, Onat Inak, Larissa Triess, Niklas Hanselmann, Marius Cordts, Andreas Zell

arXiv preprint arXiv:2504.10117, 2025

TQD-Track: Temporal Query Denoising for 3D Multi-Object Tracking

Shuxiao Ding*, Yutong Yang*, Julian Wiederer, Markus Braun, Peizheng Li, Juergen Gall, Bin Yang

arXiv preprint arXiv:2504.03258, 2025

ADA-Track++: End-to-End Multi-Camera 3D Multi-Object Tracking with Alternating Detection and Association

Shuxiao Ding, Lukas Schneider, Marius Cordts, Juergen Gall

arXiv preprint arXiv:2405.08909, 2024

ADA-Track: End-to-End Multi-Camera 3D Multi-Object Tracking with Alternating Detection and Association

Shuxiao Ding, Lukas Schneider, Marius Cordts, Juergen Gall

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2024

3DMOTFormer: Graph Transformer for Online 3D Multi-Object Tracking

Shuxiao Ding, Eike Rehder, Lukas Schneider, Marius Cordts, Juergen Gall

IEEE/CVF International Conference on Computer Vision (ICCV), 2023

PowerBEV: A Powerful Yet Lightweight Framework for Instance Prediction in Bird's-Eye View

Peizheng Li*, Shuxiao Ding*, Xieyuanli Chen, Niklas Hanselmann, Marius Cordts, Juergen Gall

Thirty-Second International Joint Conference on Artificial Intelligence (IJCAI), 2023

End-to-End Single Shot Detector Using Graph-Based Learnable Duplicate Removal

Shuxiao Ding, Eike Rehder, Lukas Schneider, Marius Cordts, Juergen Gall

DAGM German Conference on Pattern Recognition (GCPR), 2022

Unsupervised Domain Adaptive Object Detection with Class Label Shift Weighted Local Features

Andong Tan, Niklas Hanselmann, Shuxiao Ding, Federico Tombari, Marius Cordts
European Conference on Computer Vision Workshops (ECCVW), 2022

Single-Stage Object Detection from Top-View Grid Maps on Custom Sensor Setups
Sascha Wirges, Shuxiao Ding, Christoph Stiller
IEEE Intelligent Vehicles Symposium (IV), 2020

Services

Conference Reviewer

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)	*2023, 2024, 2025*
European Conference on Computer Vision (ECCV)	*2022, 2024*
International Conference on Robotics and Automation (ICRA)	*2024*
Asian Conference on Computer Vision (ACCV)	*2024*
IEEE/CVF International Conference on Computer Vision (ICCV)	*2023*

Journal Reviewer

IEEE Sensors Journal	*2024*

Skills

Programming Languages: Python, C++, Java, Matlab, Latex, Shell
Libraries: PyTorch, TensorFlow, Keras, PyTorch Geometric, MMCV, MMDetection3D, NumPy, Matplotlib
Development Tools: Linux, Git, Docker, VS Code, ROS, Google Cloud Platform, Microsoft Azure
CAD: AutoCAD, SolidWorks, Creo Parametric, SketchUp
Languages: Chinese (native), English (professional working proficiency), German (professional working proficiency)

Interests

Brain Activities: Reading, Board Games, Trading Card Games
Sports: Swimming, Table Tennis, Badminton