

# Shuxiao Ding

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🏠 [dsx0511.github.io](https://github.com/dsx0511)    in [LinkedIn](#)    🐙 [Github](#)    📄 [Google Scholar](#)    🆔 [ORCID](#)

## Education

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### 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)
- Bachelor Thesis: Evaluation of Algorithms for Registration of Point Clouds

## Work Experience

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### Mercedes-Benz Group AG

Stuttgart, Germany

*Industrial Doctoral Researcher*

Aug 2020 - Present

- 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 Artificial 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.

- 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**

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*\* denotes equal contribution.***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**

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**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

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**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

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**Brain Activities:** Reading, Board Games, Trading Card Games

**Sports:** Swimming, Table Tennis, Badminton