

# Philipp Schröppel

PHD STUDENT IN COMPUTER VISION AT THE UNIVERSITY OF FREIBURG

Freiburg i. Br., Germany

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## Personal Information

**Name** Philipp Schröppel  
**Address** 79106 Freiburg i. Br., Germany  
**Mail** schroepp@cs.uni-freiburg.de  
**Birthyear** 1992  
**Nationality** German

## Research

My broad research area is **3D reconstruction in terms of 3D geometry, ego-motion and object motion**. A particular focus is robust application on arbitrary real-world data. To this end, I am interested in:

- multi-view depth estimation,
- single-view depth estimation,
- optical flow estimation,
- scene flow estimation,
- depth-from-video,
- implicit 3D scene representations (neural fields).

Recently, I worked on **3D generation using diffusion models**. Currently, I am most interested in fundamental research on diffusion models, and in using scene priors learnt by diffusion models for 3D reconstruction.

## Publications

### CONFERENCE PUBLICATIONS (\* denotes equal contribution)

- ECCV 2024 Silvio Galesso\*, **Philipp Schröppel\***, Hssan Driss, Thomas Brox. *Diffusion for Out-of-Distribution Detection on Road Scenes and Beyond*. European Conference on Computer Vision, 2024.
- CVPR 2024 **Philipp Schröppel**, Christopher Wewer, Jan Eric Lenssen, Eddy Ilg, Thomas Brox. *Neural Point Cloud Diffusion for Disentangled 3D Shape and Appearance Generation*. Conference on Computer Vision and Pattern Recognition, 2024.
- 3DV 2022 **Philipp Schröppel**, Jan Bechtold, Artemij Amiranashvili, Thomas Brox. *A Benchmark and a Baseline for Robust Multi-view Depth Estimation*. International Conference on 3D Vision, 2022.
- GCPR 2022 Leonhard Sommer, **Philipp Schröppel**, Thomas Brox. *SF2SE3: Clustering Scene Flow into SE(3)-Motions via Proposal and Selection*. German Conference on Pattern Recognition, 2022.

### WORKSHOP PAPERS (\* denotes equal contribution)

- CVPR 2021 Julia Guerrero-Viu\*, Sergio Izquierdo\*, **Philipp Schröppel**, Thomas Brox. *Semi-Supervised Disparity Estimation with Deep Feature Reconstruction*. Women in Computer Vision Workshop, 2021.

## Education

### PhD Student Computer Vision and Deep Learning

COMPUTER VISION GROUP FREIBURG, HEADED BY PROF. THOMAS BROX

Working on 3D reconstruction and 3D generation with a focus on robust application to real-world data. (Python, PyTorch, Tensorflow).

Freiburg i. Br.  
since 01/2019

### Information Systems Engineering, Grade: 1.7

TU DRESDEN

- Degree: Dipl.-Ing. for Information Systems Engineering (equivalent to M.Sc.).
- Thesis, SICK AG, Waldkirch, Grade: 1.6.  
Title: *Detection and Mapping of Obstacles for an Automated Guided Vehicle Using a 3D Sensor*. (C++).
- Student research thesis (equivalent to Bachelor thesis), Chair for Automation Engineering, Grade: 1.0.  
Title: *Developing a SLAM Algorithm for an Omnidirectional Robot Using a ToF Depth Sensor*. (C++, ROS).

Dresden  
10/2012 – 07/2018

### Electrical Engineering

TU DRESDEN

Switched to information systems engineering after one year in order to enroll for more computer science courses.

Dresden  
10/2011 – 10/2012

### Abitur, Grade: 1.5

MARKGRAF-GEORG-FRIEDRICH-GYMNASIUM

Kulmbach  
2003 – 2011

## Work Experience

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### Internship

SICK AG

Gesture recognition using data of a 3D time-of-flight sensor. (C++).

Waldkirch (near Freiburg i. Br.)

5/2017 – 11/2017

### Research Assistant

CHAIR OF AGRICULTURAL SYSTEMS TECHNOLOGY, TU DRESDEN

- Linux server administration.

- Extending a system for the management of agricultural processes and the analysis of acquired sensor data. (PHP, JavaScript).

Dresden

7/2016 – 2/2017

### Research Assistant

CHAIR OF PROCESS CONTROL SYSTEMS, TU DRESDEN

Development of Android apps building on semantic web technologies. (Java).

Dresden

11/2013 – 9/2014 and 4/2015 – 7/2015

## Teaching & Mentoring

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2020	Master Thesis: Lal Jose. <i>Monocular Camera Tracking for Driving Scenarios</i> .
2020 - 2021	Master Project: Saurav Shanu. <i>Stixel Prediction with an End-to-end deep Network</i> .
2020 - 2021	Master Project: Sergio Izquierdo Barranco. <i>Deep Feature Reconstruction for Disparity Estimation with DispNet</i> .
2020 - 2021	Master Project: Julia Guerrero-Viu. <i>Semi-Supervised Domain Adaptation for Disparity Estimation with DispNet</i> .
2021	Teaching Assistant: Image Processing.
2021	Master Thesis: Julia Guerrero-Viu. <i>Improving Deep Feature Representations for Self-Supervised Training of Disparity Estimation</i> .
2021	Teaching Assistant: Statistical Pattern Recognition.
2021 - 2022	Master Thesis: Saurav Shanu. <i>Monocular 3D Object Detection and Bird's Eye View Generation in Driving Scenarios</i> .
2021 - 2022	Master Thesis: Leonhard Sommer. <i>From Pixel Matching to Dynamic Rigid Objects</i> .
2023	Master Thesis: Saiprasad Barke. <i>Analysing Multi-view Depth Estimation in a Common Framework</i> .
2023	Master Thesis: Tom Wellinger. <i>Bootstrapping Single-view Depth Estimation via Multi-view Depth Estimation</i> .
2023 - 2024	Master Project: Achim Wimme. <i>Depth-from-video Estimation with a RAFT Model Architecture</i> .
2023 - 2024	Teaching Assistant: Computer Vision.

## Skills

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<b>Programming</b>	Python, PyTorch, Numpy, Tensorflow, C++, C, Java, Haskell, JavaScript, HTML, CSS, PHP, OpenCV, ROS, Eigen
<b>Knowledge</b>	Computer Vision, Deep Learning, Machine Learning, Robotics (e.g. SLAM, 3D Mapping), 3D sensors, Software engineering
<b>Miscellaneous</b>	Linux administration, Git, $\LaTeX$ , Android app development
<b>Languages</b>	German ( <i>Native language</i> ), English ( <i>C1</i> ), French ( <i>B1 - B2</i> )

## Activities

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<b>Sports</b>	Preferably, I spend my free time outdoors and in company of my friends. We often go climbing, as much as possible outdoors, but also indoors in a climbing gym. Apart from climbing, I like running and cycling and go ski touring whenever I have the possibility to go to the Alps.
<b>Travelling</b>	All of this works well with my favour for travelling. Doing so, I like to live and move by simple means, for example with bike and tent.
<b>Friends</b>	On more quiet days, I also like to stay at home and read a book, or to meet friends and do something together that does not necessarily have to involve anything sports-related.