Philipp **Schröppel**

PhD Student in Computer Vision at the University of Freiburg

Freiburg i. Br., Germany

schroepp@cs.uni-freiburg.de | https://pschroeppel.github.io

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 Patter 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.

Teaching & Mentoring

2020	Master Thesis: Lal Jose. *Monocular Camera Tracking for Driving Scenarios*.
2020 - 2021	Master Project: Saurav Shanu. *Stixel Prediction with an End-to-end deep Network*.
2020 - 2021	Master Project: Sergio Izquierdo Barranco. *Deep Feature Reconstruction for Disparity Estimation with DispNet*.
2020 - 2021	Master Project: Julia Guerrero-Viu. *Semi-Supervised Domain Adaptation for Disparity Estimation with DispNet*.
2021	Teaching Assistant: Image Processing
2021	Master Thesis: Julia Guerrero-Viu. *Improving Deep Feature Representations for Self-Supervised Training of Disparity Estimation*.
2021	Teaching Assistant: Statistical Pattern Recognition
2021 - 2022	Master Thesis: Saurav Shanu. *Monocular 3D Object Detection and Bird's Eye View Generation in Driving Scenarios*.

2021 - 2022	Master Thesis: Leonhard Sommer. *From Pixel Matching to Dynamic Rigid Objects*.
2023	Master Thesis: Saiprasad Barke. *Analysing Multi-view Depth Estimation in a Common Framework*.
2023	Master Thesis: Tom Wellinger. *Bootstrapping Single-view Depth Estimation via Multi-view Depth Estimation*.
2023 - 2024	Master Project: Achim Wimme. *Depth-from-video Estimation with a RAFT Model Architecture*.
2023 - 2024	Teaching Assistant: Computer Vision

Education

PhD Student Computer Vision and Deep Learning — *Freiburg i. Br.*
Computer Vision Group Freiburg, headed by Prof. Thomas Brox — *since 01/2019*
Working on 3D reconstruction and 3D generation with a focus on robust application to real-world data.

Information Systems Engineering, Grade: 1.7 — *Dresden*
TU Dresden — *10/2012 – 07/2018*
- Diplom degree programme (equivalent to M.Sc.).
- 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*.
- Thesis, SICK AG, Waldkirch, Grade: 1.6.
  Title: *Detection and Mapping of Obstacles for an Automated Guided Vehicle Using a 3D Sensor*.
- Degree: Dipl.-Ing. for Information Systems Engineering.

Electrical Engineering — *Dresden*
TU Dresden — *10/2011 – 10/2012*
Switched to information systems engineering in order to enroll for more computer science courses.

Abitur, Grade: 1.5 — *Kulmbach*
Markgraf-Georg-Friedrich-Gymnasium — *2003 – 2011*

Work Experience

Internship — *Waldkirch (near Freiburg i. Br.)*
SICK AG — *5/2017 – 11/2017*
Gesture recognition using data of a 3D time-of-flight sensor.

Research Assistant — *Dresden*
Chair of Agricultural Systems Technology, TU Dresden — *7/2016 – 2/2017*
- Linux server adminstration.
- Extending a system for the management of agricultural processes and the analysis of acquired sensor data.

Research Assistant — *Dresden*
Chair of Process Control Systems, TU Dresden — *11/2013 – 9/2014 and 4/2015 – 7/2015*
Development of Android apps building on semantic web technologies.

Languages

German	Deutsch ist meine Muttersprache *(Native language)*.
English	I am highly proficient in spoken and written English *(C1)*.
French	Je suis bien capable de survivre dans la vie quotidienne *(B1 - B2)*.
Italian	Anche parlo un po' di italiano *(A1)*.

Skills

Programming	Python, PyTorch, Numpy, Tensorflow, C++, C, Java, Haskell, JavaScript, HTML, CSS, PHP, OpenCV, ROS, Eigen
Knowledge	Computer Vision, Deep Learning, Machine Learning, Robotics (e.g. SLAM, 3D Mapping), 3D sensors, Software engineering
Miscellaneous	Linux administration, Git, LaTeX, Android app development, SVN

Activities

Sports	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.
Travelling	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.
Friends	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.