

WOLFGANG BÖTTCHER

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I am an ambitious doctoral researcher in the Ellis programme with research and leadership experience in small innovative teams in academia and industry. Specialising in Computer Vision, my key research interests lie in perception and semantics for dynamic 3D scenes, VLMs and weakly supervised learning.

EDUCATION

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|-------------------|---|
| 03/2024 – present | MPI FOR INFORMATICS Ellis Doctoral Researcher at the Computer Vision and Machine Learning group, Supervisors: Prof. Bernt Schiele, Federico Tombari (Google Zurich) |
| 09/2020 – 12/2023 | ETH ZURICH M.Sc. Electrical Engineering and Information Technology; Grade: 5.7 (scale from 6.0 to 1.0, 6.0 is the best grade) |
| 08-10/2019 | NOTTINGHAM TRENT UNIVERSITY Research Internship, Computational Neuroscience and Cognitive Robotics group |
| 03-08/2019 | TECHNION – ISRAEL INSTITUTE OF TECHNOLOGY Semester abroad in Haifa |
| 10/2016 – 08/2020 | KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT) B.Sc. Electrical Engineering and Information Technology; Grade: 1.2 (scale from 1.0 to 6.0, 1.0 is the best grade, top 1%) |
| 08/2016 | Abitur (High School Degree) Grade: 1.0 (scale from 1.0 to 6.0, 1.0 is the best grade, top 1%) |

PUBLICATIONS

- W. Boettcher, L. Hoyer, O. Unal, J.E. Lenssen, B. Schiele: “**Scribbles for All - Benchmarking Scribble Supervised Segmentation Across Datasets**”, NeurIPS 2024 DS & Benchmarks, <https://www.arxiv.org/abs/2408.12489>
- W. Boettcher, L. Hoyer, O. Unal, D. Dai: “LiDAR Meta Depth Completion”, IROS 2023, <https://arxiv.org/pdf/2307.12761>
- W. Boettcher, P. Machado, N. Lama, T.M. McGinnity: “**Object recognition for robotics from tactile time series data utilising different neural network architectures**”, IJCNN 2021, <https://arxiv.org/abs/2109.04573>
- W. Böttcher, C Bunne, J von Stetten: “**Gradientenabstiegsverfahren: Der steile Weg zu den besten Parametern**”, Book chapter: *Wie Maschinen lernen: Künstliche Intelligenz verständlich erklärt*, Springer Nature

TEACHING EXPERIENCE

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|-------------------|--|
| 03-07/2020 | Tutorials in Optics & Solid-State Electronics |
| 10/2017 – 02/2018 | Tutorials in Electric Circuits |
| 03-07/2017 | Tutorials in Digital Technology |
| 03-07/2017 | Extended Didactics Certification for student tutors (4 ECTS) |

ACADEMIC PROJECTS (NON-PUBLISHED)

- **Scribble Supervised Cross Domain Semantic Segmentation, 2023**
Master Thesis at CVL, ETH; Research on improving weakly-supervised semantic segmentation for 2D images and point clouds for self-driving data
- **Reduced Channel Minimum Variance Beamforming, 2021**
Semester Project at IIS, ETH; development and deployment of novel computationally efficient Minimum Variance Beamformers for real-time energy efficient applications on FPGA platforms
- **Scientific college of the GERMAN ACADEMIC SCHOLARSHIP FOUNDATION, 2017 – 2019**, Working Group: “Artificial Intelligence – Opportunities, Facts, Risks”; Learning about the impacts of Machine Learning on society and how to create a positive impact; Publication of a popular science book on fundamentals of ML for school students

PRACTICAL EXPERIENCE

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| 03-07/2022 | Industrial Internship with INVATION AG in the field of vision algorithms for event based cameras; development of a 1kHz eye-tracking system using quantized neural networks; advancement of a physical prototype; introduction of MLOps procedures to the group |
| 11/2019 – 03/2020 | Industrial Internship with BOSCH ENGINEERING in the field of AI for Automotive Systems; probabilistic sensor fusion for road wetness detection; development of Pat. DE102021200890A1; research on sensor assisted engine knocking classification for performance enhancement |
| 05/2018 | Academic excursion on Israeli start-up culture Co-organiser in a team of three; Organisation and successful execution of a one week excursion to Israel aimed at exploring characteristics and spirit of the Israeli start-up culture and learning lessons for the German economic system; funded by the GERMAN ACADEMIC SCHOLARSHIP FOUNDATION |

SCHOLARSHIPS & AWARDS

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| 08-10/2019 | DAAD RISE WORLDWIDE Full scholarship for a research internship in the United Kingdom (1 of 200 recipients) |
| 07/2018 – 08/2020 | SCHROFF scholarship for highly gifted students (granted to the three best electrical & mechanical engineering students at KIT) |
| 01/2017 – present | Scholarship of the GERMAN ACADEMIC SCHOLARSHIP FOUNDATION (“Studienstiftung des deutschen Volkes”, top 0.5%) |
| 09/2016 – 08/2020 | Scholarship of the FRIEDRICH-NAUMANN-FOUNDATION FOR FREEDOM |
| 05/2016 | JUGEND FORSCHT; 1 st price and special awards in the state competition; special price in the federal competition (Jugend forscht is the national youth science contest in Germany) |

LANGUAGE & IT SKILLS

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| German: | Native | Proficient: | Python, PyTorch, OpenCV |
| English: | Fluent (C2) | Good: | LaTeX, MATLAB, Git |
| Spanish: | Basic skills (A2) | Basic skills: | C++, C#, System Verilog, ROS |

References available upon request