

# Dominik

Hollidt

Master Computer Science Student at ETH



## EDUCATION

### Master Thesis / March 2023 - August 2023

**MIT (CSAIL, Medical Vision Group) - Cambridge, USA**

Worked on deep 3D semantic segmentation via field-to-field transformation and neural radiance fields using 2D annotation only.

### Master Studies / September 2020 - now

**ETH - Zürich, CH**

Studying at one of the top universities for computer science with the major in machine intelligence and minor in theoretical computer science.

Machine Intelligence   Theoretical Computer Science

Advanced Machine Learning   Advanced Algorithms

Deep Learning   Probabilistic AI

### Exchange Student / August 2019 - June 2020

**KTH Royal Institute of Technology - Stockholm, SE**

Completed 90 ECTS with straight A's.

**Wrote Bachelor Thesis** about *Optical Flow Algorithms for Event Based Cameras* graded with 1.3 German Score. Created real-world optical flow data set for event-based cameras to investigate the impact of resolution on different optical flow algorithms.

Machine Learning   Computer Vision   Robotics   AI

### Bachelor Student / Sept. 2017 - June 2020

**Technical University Berlin - Berlin, GER**

Graduated in top 3% with 1.3 German score.

Python   Java   C++   basic studies



## PROJECTS

#### • Voluntary Semester Thesis Photorealistic Simulation (09.2021-05.2022):

- Extended the existing *Formula Student Simulator* to allow for end-to-end simulation with perception in the loop
- Simulated Cameras and LiDARs via Unreal Engine and AirSim
- Verified the autonomous racing pipeline purely in the high-fidelity simulator.
- Enabled fast data set creation with ground truth annotation for rapid prototyping and learning algorithms

#### • ETH Formula Student<sup>1</sup> AMZ (09.2020 - 09.2021):

Member of the Formula Student team at ETH. Worked full time in the perception and software infrastructure team:

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Website **dominikvincent.github.io/**

#### AMZ Perception:

- Developed a LiDAR based cone color detection algorithm using a CNN. Automatically extracted data set from raw data using GNSS measurements.
- Developed KPI analysis tool for evaluating the quality of perception algorithms
- Implemented method for automated multi-LiDAR extrinsic calibration

#### AMZ Software Infrastructure:

- Developed and maintained team's Continuous Integration pipeline using Jenkins and Docker to ensure car code was automatically tested
- Improved deployment by running the racing pipeline within Docker on the car.
- Built Docker images automatically in the cloud

#### AMZ Miscellaneous:

- Ideated and pitched business plan, achieving 3rd at the Formula Student East competition
- Business Team Lead in 2022 Season
- Worked on the software-hardware interface and whole autonomous system pipeline architecture

#### • KTH Formula Student (08.2019 - 06.2020):

- Worked in the perception team.
- Implemented a fast point cloud clustering algorithm to detect cones significantly faster than traditional 3D clustering algorithms.
- Aided in the development of cloud based machine learning training pipeline with Docker
- Helped with team management

#### • Small projects: Wiki-Alt Text Tool, Cat feeding machine, small phone-controlled LED-Controller, ...



## INTERNSHIPS

#### Daedalean (06.2022-10.2022):

- Generation of synthetic flight scenarios from historical flight data for intruder detection
- Statistical analysis on historical flight track data
- Color grading for synthetic flight scenarios to reduce the sim-2-real gap
- Work on data evaluation pipeline and tooling
- Implementation of upload station for automated upload of test data to the cloud.

#### AVM (06.2020-09.2020):

- Performed data analysis of customer support data and automatically linked it to crashes and bugs
- Automated data summaries via Spark and Zeppelin and performed WiFi speed tests via statistical tests
- Provided a tool to see feature relevance via decision trees to allow for better understanding of bug-causing configurations.

<sup>1</sup>Formula Student is a student engineering competition with the goal to build an autonomous race car.

## ★ Awards and Honors

- Spickenreuther Foundation Scholarship for Master Thesis at MIT
- Swiss-European Mobility Programme for Master Thesis at MIT
- VDI Honoring: For excellent graduation
- ERASMUS Scholarship
- IT-Talents Scholarship
- Nominated for "Stipendium des deutschen Volkes" due to excellent academic performance
- 3rd place out of 17 teams in Formula Student Germany Driverless
- 4th place out of 12 teams in FS East Driverless

## 📄 Papers

Dominik Hollidt, Clinton Wang, Polina Golland, & Marc Pollefeys. (2023). Geometry Aware Field-to-field Transformations for 3D Semantic Segmentation. Project Page

## ☰ Skills

**Programming Languages:** C++, Python, Go, Rust, Matlab

**Tools/Libraries:** ROS, Docker, Pytorch, Keras, NumPy, SciPy, Pandas, Matplotlib/Plotly, OpenCV, dash, cmake, Unreal Engine, Airsim, CGAL, Boost

**Other:** CI/CD, Git, Jenkins, (py)Spark

**Languages:** German: native, English: C1 fluent, Swedish: B1, Latin, Spanish: Beginner