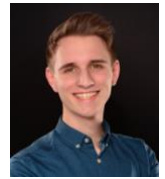


# SEBASTIAN KOCH

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PhD Candidate

Bosch Corporate Research, University of Ulm



## EDUCATION

**PhD Computer Science**, *University of Ulm, Ulm Germany*

Apr 2022 – present PhD topic: ‘Machine Learning for 3D Scene Understanding’, collaboration with Bosch Research

**M. Sc. Computer Science**, *University of Tübingen, Tübingen Germany*

Apr 2020 – Mar 2022 Computer Science Major with focus on machine learning, computer vision and robotics

Master-Thesis: ‘Multi-View RGB-D Fusion for 6D Pose Estimation’

GPA: 1.5 (1.0 is the best)

**B. Eng. Computer Science**, *Baden-Württemberg Cooperative State University, Stuttgart Germany*

Oct 2016 – Mar 2020 Computer Science Major with additional automotive orientated courses

Bachelor-Thesis: ‘Improvement of the robustness of a SLAM system with Computer Vision’

Thesis grade: 1.1, GPA: 1.8 (1.0 is the best)

## EXPERIENCE

**BCAI Master-Thesis (6D Pose Estimation)**, *Bosch Center for Artificial Intelligence, Tübingen*

- Oct 2021 – Mar 2022
- Development of a novel Multi-View RGB-D fusion architecture for 6D Pose Estimation
  - Focus on improvements in keypoint-voting and symmetry aware pose estimation

**University of Tübingen Research Assistant (Embedded Object Detection)**, *Cognitive Systems Lab, Tübingen*

- Sep 2020 – Oct 2021
- Researched novel approaches for real-time *object detection* in very high-resolution images
  - Optimizing state-of-the-art *deep learning* models for *object detection* with *CUDA* and *TensorRT* to achieve real time performance on embedded GPUs

**Bosch Group Working Student (SLAM, Computer Vision & Simulation)**, *Bosch Group (CR), Renningen*

- Apr 2020 – Oct 2020
- Developed a face detection system with *YOLO* directly integrated into *ROS*
  - Responsible for synthetic data generation with *AirSim* for 3D object detection with *computer vision*

**Bosch Group Cooperative Study Program**, *Bosch Group, Stuttgart*

Oct 2016 – Mar 2020 The Cooperative Study Program at Bosch provides the possibility to work on scientific projects in different departments at Bosch while pursuing ones Bachelor’s degree

Oct 2019 – Jan 2020 **Bachelor-Thesis (SLAM & Computer Vision)**, *Bosch Group (CR), Renningen*

- Researched how to make an existing *SLAM* system more robust regarding environmental changes with semantic understanding of the environment like object detection and semantic segmentation
- Extracted semantic information using *classical computer vision* algorithms and *deep learning*
- Trained various object detectors with *Tensorflow* to benchmark them on a small custom dataset

May 2019 – Sep 2019 **Intern (Pedestrian Behavior Simulation)**, *Bosch Group (CC), Leonberg*

- Implemented a pedestrian simulation for behavior prediction with *machine learning*
- Used *PyTorch* for efficient simulation and integration in the *neural network* pipeline

May 2018 – Aug 2018 **Intern Abroad (Hardware-in-the-Loop Simulation)**, *Bosch Group (Bosch Eng.), Novi USA*

- Designed automated testing functionalities in *MATLAB* and *Simulink* for faster software testing

Nov 2017 – Mar 2018 **Intern (Filter Algorithm Prototyping)**, *Bosch Group (CC), Leonberg*

- Analyzed an interference problem of the new ultrasonic sensor system in the lab
- Used the conducted research to develop a filter algorithm for false-positive detections in *C++*

## VOLUNTEERING

**RoboCup Fed** Working as a volunteer at RoboCup Junior events (national and international)

Mar 2019 – present Volunteers act as referees, supervisors and general helpers

## HONORS & AWARDS

**Bosch Group** Accepted into the Students@Bosch excellency program for students who excelled at previous Bosch internships. Guided by: Stefan Benz

Mar 2020 – Apr 2022

**University of Tübingen** 1<sup>st</sup> place in the yearly AI Chess Variant Competition conducted by the Cognitive Systems Lab of Professor Zell (approx. 100 contestants)

Jan 2021

**MPI-IS** 3<sup>rd</sup> place in the RL Hockey Competition of the Autonomous Learning Group (approx. 70 contestants)

Mar 2021

**RoboCup Fed** 1<sup>st</sup> place at the RoboCup World Cup 2013 in Eindhoven in the *Rescue* competition

2011 – 2014 4<sup>th</sup> place at the RoboCup World Cup 2014 in João Pessoa in the *Rescue* competition

## SKILLS

German

Python

C/C++

SLAM

Unix

Computer Vision

English

PyTorch

MATLAB

Robotics

ROS

Deep Learning