

Curriculum Vitae



Name

Claas Ehmke

Date of Birth

3rd April 1995

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Web




ce.claasehmke.com

teufelstonne.de/en

lightbenders.de

driverless.amzracing.ch

Languages

 German native speaker
 English fluent (C1 - IELTS)
 Spanish elementary

Skills

- C / C++
- Python
- Java
- VB.net
- Adobe Acrobat
- AutoCAD / Fusion
- MATLAB
- Altium Designer / Eagle

Education

Since Feb. 2021
Zürich, Switzerland

Swiss Federal Institute of Technology Zurich (ETHZ)

PhD Candidate in Flexible Micro-Robots

Advisor: Prof. Dr. Bradley Nelson (MSRL, ETHZ)

Feb. 2020 - Dec. 2021
Boston, USA

Massachusetts Institute of Technology (MIT)

Visiting Graduate Student

Master Thesis on Robots in Translational Medicine

Advisor: Prof. Dr. Giovanni Traverso (Langer Lab, MIT)

Sep. 2017 - Jan. 2021
Zürich, Switzerland

Swiss Federal Institute of Technology Zurich (ETHZ)

Master of Science - Robotics, Systems and Control

GPA: 5.77 (from 6.0 best to 1.0 worst)

Specialization: Estimation, Control Systems, AI

Mentor: Prof. Dr. Marco Hutter (RSL, ETHZ)

Oct. 2013 – Feb. 2017
Munich, Germany

Technical University of Munich (TUM)

Bachelor of Science – Electrical Engineering and Information Technology

GPA: 1.5 (from 1.0 best to 5.0 worst)

Specialization: Communications Engineering, HMI,
Control Systems, Signal Processing

Jul. 2016 – Nov. 2016
Stuttgart, Germany

Dr. Ing. h.c. F. Porsche AG

Bachelor thesis

Topic: "Simulation of Light-Based Driver Assistance Systems"

Grade: 1.0 (from 1.0 best to 5.0 worst)

Work Experience

Since Oct. 2019
Zurich, Switzerland

EuroTube Foundation

Electrical Engineer

Volunteering help in construction planning and initiation of industrial collaborations for a large-scale high-speed vacuum transportation track in Valais, Switzerland.

Oct. 2018 - Feb. 2019
Singapore

Singapore-MIT Alliance for Research and Technology

Research Assistant

Sensor-fusion of monocular camera and LiDAR sensor to enhance localization of autonomous vehicles. I presented my work at the Future Urban Mobility Symposium 2019 in Singapore.

Advisor: Prof. Dr. Daniela Rus (CSAIL, MIT)

Prof. Dr. Marcelo Ang (ARC, NUS)

Prof. Dr. Malika Meghjani (SMART / SUTD)

Feb. 2017 - Aug. 2017
Singapore

TUMCREATE Ltd.

Research Assistant

LiPo-Battery research and development of a bicycle electrification kit.

Oct. 2011 – Jun. 2016
Bremen and Munich,
Germany

Ingenieurbüro Wendt GmbH

Working Student

Electrical project planning of large construction projects like hospitals or high-rise buildings.

Competitions, Relevant Projects and Exhibitions

Apr. 2020 - Aug. 2020



Agile mobile robotic platform for contactless vital signs monitoring

MIT, Harvard Medical School and Boston Dynamics COVID-19 project

In the beginning of the COVID-19 pandemic, „Dr. Spot“ got developed in collaboration between MIT, HMS and Boston Dynamics. „Dr. Spot“ is able to measure four different vitals signs in a contactless manner. The robot got directly deployed in the emergency department of the Brigham and Women’s hospital, Boston.

My responsibility: software development, supported clinical personnel in the deployment of the robot

Mar. 2020 - Jul. 2020



Development of a Remote Controller for Hamilton Medical Ventilator

Leisure COVID-19 project

Development of a remote controller for ventilators during the COVID-19 crises. A group of six friends developed a remote controller in collaboration with Hamilton Medical and ETH Zurich and evaluated their system in hospitals in Switzerland and the USA.

My responsibility: software and electronics lead

Nov. 2017 - Sep. 2018



Formula Student Driverless (World's biggest student engineering design competition)

Akademischer Motorsportverein Zürich (AMZ) - 1st place at FS Italy, 1st place at FS Germany

In a team of 18 students, we transformed an electric race car to an autonomous driving one in 9 months. We won the Formula Student Italy championship with 1000/1000 points, the first team to achieve this since inception of the Formula Student competition in 1981. In addition, we won the competition at Hockenheimring, Germany.

My responsibility: programming of the SLAM algorithm, business relations, whole car electronics

Feb. 2017 - Aug. 2017



ease - Development of a Bicycle Electrification Kit

Project during TUMCREATE internship

Transforming a normal bicycle into a pedelec in only 60 seconds. *ease* makes it possible. The developed bicycle kit was also featured in several media worldwide (e.g. Galileo TV).

My responsibility: enhancement of pedal detection, motor control, developed electrical concept responsible for second prototype

Oct. 2013 – Jun. 2014



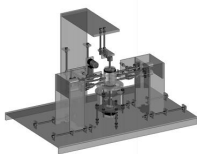
“Adveisor“-Competition

1st place - Soft-Skill-Program of the Technical University of Munich

“Adveisor“ is the soft skill program for electrical engineers at the Technical University of Munich. In the first year of the electrical engineering bachelor program, we developed a disc-shaped rotary display which outperformed the displays of the other student teams.

My responsibility: team leader, mechanics, programming of the display-control

Mar. 2013 – Jun. 2013



“Jugend forscht“ - “Ten Billion Barrel“-Robot (Biggest youth science competition in Europe)

National level – prize for an extraordinarily technical performance

Regional level Bremen - 1st prize in the topic area technology

As part of a high-school project, I developed with two friends a robot which solves the *Ten Billion Barrel*, a 3D puzzle that is quite similar to the Rubik’s cube. The development includes the whole robotic system and the derivation of a very efficient solving algorithm.

My responsibility: team leader, whole electronics and mechanics, optimization of solving-algorithm

Advisor: Prof. Dr. Dierk Schleicher, Ph.D. (Institut de Mathématiques de Marseille)

Exhibitions: Jun. 2013 - Open Campus of the University of Bremen

Technologiepark Bremen

Apr. 2014 - Hannover Messe (World’s leading Trade Fair for Industrial Technology)

Stand of the Federal Ministry of Education and Research of Germany

Jun. 2015 - 50. anniversary event “Jugend forscht“

Jacobs University Bremen

Publications

- August 2020 **Agile mobile robotic platform for contactless vital signs monitoring**
Submitted to: [IEEE RAM - Special Issue: Robotics Response for the COVID-19 Outbreak](#)
H. Huang*, P. Chai*, **C. Ehmke***, G. Merewether*, F. Dadabhoy, A. Feng, A. John Thomas, C. Li, M. da Silva, M. H. Raibert, E. W. Boyer, G. Traverso
- March 2020 **An all-in-one insulin pen: automated food carbohydrate counting, blood glucose measuring, and insulin delivery**
Submitted to: [Science Translational Medicine](#)
H. Huang*, S. Sean You*, L. Di Tizio*, C. Li*, E. Raftery, **C. Ehmke**, C. Steiger, J. Li, A. Wentworth, J. Y. Liang, J. Li, J. Collins, S. Tamang, K. Ishida, F. Halperin, G. Traverso
- Mai 2019 **AMZ Driverless: The Full Autonomous Racing System**
[Journal of Field Robotics \(JFR\)](#)
J. Kabzan*, M. Valls*, V. Reijgwart*, H. Hendrikx*, **C. Ehmke***, M. Prajapat*, A. Bühler*, N. Gosala*, M. Gupta*, R. Sivanesan*, A. Dhall*, E. Chisari*, N. Karnchanachari*, S. Brits*, M. Dangel*, I. Sa, R. Dubé, A. Gawel, M. Pfeiffer, A. Liniger, J. Lygeros, R. Siegart
- Mai 2019
Montreal, Canada **Redundant Perception and State Estimation for Reliable Autonomous Racing**
[International Conference on Robotics and Automation \(ICRA\)](#)
N. Gosala*, A. Bühler*, M. Prajapat*, **C. Ehmke***, M. Gupta*, R. Sivanesan*, A. Gawel, M. Pfeiffer, M. Bürki, I. Sa, R. Dubé, R. Siegart

Patents

- Jul 2020 **Remote Control Device and Method**
Submitted to: [IGE Bern, Switzerland](#)
J.Geiger*, **C. Ehmke***, M. Karakikes, J. Jahn, Y. Huang, P. Kopp and TBA

* The authors contributed equally to this work.