

Curriculum Vitae



Name

Claas Ehmke

Date of Birth

3rd April 1995

Mobile

(D) +49 157 84 92 12 80

(CH) +41 77 960 57 00

E-Mail

cehmke@ethz.ch

LinkedIn

[in linkedin.com/in/cehmke](https://www.linkedin.com/in/cehmke)

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 and Medical Robotics](#)
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. 2023
Zurich, Switzerland

Papaia Innovation GmbH
[Consulting mandate](#)
Consulting for engineering services

Since Oct. 2021
Zurich, Switzerland

Ophthorobotics AG
[Co-Tech Lead](#)
Development of a fully automated system capable of performing safe injections into the eye for chronic ophthalmic diseases.

Oct. 2019 - Jan. 2021
Zurich, Switzerland

EuroTube Foundation
[Electrical Engineer](#)
Construction planning and initiating industrial collaborations for a high-speed vacuum transportation track in Valais, Switzerland.

Oct. 2018 - Feb. 2019
Singapore

Singapore-MIT Alliance for Research and Technology
[Research Assistant](#)
Optimization of autonomous vehicle localization.
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.

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



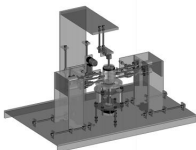
“Adveisor“-Competition

[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

- March 2023 **Self-folding soft-robotic chains with reconfigurable shapes and functionalities**
[Nature Communications](#)
H. Gu, M. Möckli, **C. Ehmke**, M. Kim, M. Wieland, S. Moder, C. Bechinger, Q. Boehler, B. J. Nelson
- February 2023 **Cost-effective Mobile Solution for Autonomous and Continuous Vital Signs Monitoring**
[Preprint - TechRxiv](#)
H. Huang, J. Chen, P. Rupp, **C. Ehmke**, P. Chai, R. Dhar, I. Ballinger, G. Traverso
- December 2022 **Acceptance of a computer vision facilitated protocol to measure adherence to face mask use: a single-site, observational cohort study among hospital staff**
[BMJ Open](#)
P. Chai, P. Rupp, H. Huang, J. Chen, C. Vaz, A. Sinha, **C. Ehmke**, A. Thomas, F. Dadabhoy, J. Y. Liang, A. B. Landman, G. Player, K. Slattery, G. Traverso
- July 2022
Glasgow, UK **In Situ Detection of Gastrointestinal Inflammatory Biomarkers Using Electrochemical Gas Sensors**
[International Conference of the IEEE Engineering in Medicine and Biology Society](#)
C. Ehmke*, H. Huang*, C. Steiger, I. Ballinger, M. Jimenez, N. Phan, H. Sun, K. Ishida, J. Kuosmanen, J. Jenkins, J. Korzenik, A. Hayward, G. Traverso
- April 2022 **Mobile Robotic Platform for Contactless Vital Sign Monitoring**
[Science Partner Journal - Cyborg and Bionic Systems](#)
C. Ehmke*, H. Huang*, J. Chen*, P. R. Chai*, P. Rupp, F. Z. Dadabhoy, A. Feng, C. Li, A. J. Thomas, M. Da Silva, E. W. Boyer, G. Traverso
- January 2022 **An automated all-in-one system for carbohydrate tracking, glucose monitoring, and insulin delivery**
[Journal of Controlled Release \(JCR\) - Received the best paper award](#)
H. Huang*, S. Sean You*, L. Di Tizio*, C. Li*, E. Raftery, **C. Ehmke**, C. Steiger, J. Li, A. Wentworth, I. Ballinger, D. Gwyne, K. Nan, J. Y. Liang, J. Li, J. Collins, S. Tamang, K. Ishida, F. Halperin, G. Traverso
- June 2021 **Closed-Loop Region of Interest Enabling High Spatial and Temporal Resolutions in Object Detection and Tracking via Wireless Camera**
[IEEE Access](#)
J. Chen*, H. Huang*, P. Rupp, A. Sinha, **C. Ehmke**, G. Traverso
- August 2020 **Agile mobile robotic platform for contactless vital signs monitoring**
[Submitted to: IEEE RAM - Special Issue: Robotics Response for the COVID-19 Outbreak](#)
C. Ehmke*, H. Huang*, P. Chai*, G. Merewether*, F. Dadabhoy, A. Feng, A. John Thomas, C. Li, M. da Silva, M. H. Raibert, E. W. Boyer, 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. Siegwart
- Mai 2019
Montreal, Canada **Redundant Perception and State Estimation for Reliable Autonomous Racing**
[International Conference on Robotics and Automation \(ICRA\)](#)
C. Ehmke*, N. Gosala*, A. Bühler*, M. Prajapat*, M. Gupta*, R. Sivanesan*, A. Gawel, M. Pfeiffer, M. Bürki, I. Sa, R. Dubé, R. Siegwart

* The authors contributed equally to this work.