

Yunfan Gao

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EDUCATION

Mar 2022–Present	PhD in Microsystems Engineering Albert-Ludwigs-Universität Freiburg • <i>Advisor</i>: Prof. Dr. Moritz Diehl • <i>Thesis</i>: Robust optimal control of fast robots in confined spaces. • Associated fellow of Marie Skłodowska-Curie Innovative Training Network ELO-X.	Freiburg, Germany
Sep 2019–Jan 2022	Master in Robotics, Systems, and Control ETH Zürich • <i>Thesis project</i>: Projection-based augmented reality with an ANYmal robot, supervised by Dr. Ryan Luke Johns, Perry Franklin, and Prof. Dr. Marco Hutter. • <i>Semester project</i>: Multi-sensor fusion for drone localization, supervised by Dr. David Hug, Dr. Marco Karrer, and Prof. Dr. Margarita Chli. • <i>Award</i>: Degree awarded “with distinction”, Swiss Robotics Master Award	Zürich, Switzerland <i>GPA: 5.82/6.00</i>
Sep 2015–Jun 2019	Bachelor in Electronic Engineering Fudan University • <i>Thesis project</i>: Channel-state-information-based indoor smartphone localization, supervised by Prof. Dr. Yuedong Xu.	Shanghai, China <i>GPA: 3.79/4.00</i>
Sep 2017–Dec 2017	Exchange Program University of California, Santa Barbara	Santa Barbara, the United States <i>GPA: 4.00/4.00</i>

PROFESSIONAL EXPERIENCE

Mar 2022–Sep 2025	Industrial PhD student in Robotics Bosch Corporate Research • <i>Supervisor</i>: Dr. Niels van Duijkeren • Research and development of real-time-feasible optimal control of mobile robots: (i) enabling smooth navigation in confined space where robots can barely navigate through; (ii) robustifying collision avoidance in the presence of uncertainties caused by plant-model mismatch and other moving objects. • Demonstration of the proposed controllers in real-world robotic experiments. • Extension of the collision-free optimal control methods to manipulation tasks.	Renningen, Germany
Jul 2021–Dec 2021	Software Development Intern Carl Zeiss • Sensor fusion (combining camera and IMU data) for object tracking.	Oberkochen, Germany

SELECTED PUBLICATIONS

One manuscript (as first author) has been submitted to *IEEE Transactions on Robotics*. [pdf][code]

2024	• Y. Gao, F. Messerer, N. van Duijkeren, B. Houska, M. Diehl. “Real-Time-Feasible Collision-Free Motion Planning For Ellipsoidal Objects,” in <i>Proc. of the IEEE Conf. on Decision and Control (CDC)</i>, Dec 2024. [pdf] [code] • Y. Gao, F. Messerer, N. van Duijkeren, and M. Diehl, “Stochastic Model Predictive Control with Optimal Linear Feedback for Mobile Robots in Dynamic Environments,” <i>IFAC-PapersOnLine</i>, Aug 2024. [pdf]
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2024	• J. Frey, Y. Gao, F. Messerer, A. Lahr, M. Zeilinger, and M. Diehl “Efficient Zero-Order Robust Optimization for Real-Time Model Predictive Control with acados,” in <i>Proc. of the European Control Conf. (ECC)</i>, Jun 2024. [pdf]
2023	• Y. Gao, F. Messerer, J. Frey, N. van Duijkeren, and M. Diehl, “Collision-free motion planning for mobile robots by zero-order robust optimization-based MPC,” in <i>Proc. of the European Control Conf. (ECC)</i>, Jun 2023. [pdf]
2020	• Z. Gao*, Y. Gao*, S. Wang, D. Li, and Y. Xu, “CRISLoc: Reconstructable CSI Fingerprinting for Indoor Smartphone Localization,” <i>IEEE Internet of Things Journal</i>, Sep 2020. [pdf]

TEACHING EXPERIENCE

Oct 2022–Jun 2023	Supervision of Master Thesis Bosch Corporate Research • <i>Thesis Project</i>: Optimization-based motion planning using signed-distance maps.	Renningen, Germany
May 2021–Oct 2021	Supervision of Master Thesis Bosch Corporate Research • <i>Thesis Project</i>: Safety certification of motion control for mobile robots.	Renningen, Germany
2011	Teaching Assistant ETH Zürich • Taught tutorial and exercise sessions for the course <i>Programming for Robotics—ROS</i>.	Zurich, Switzerland

PROFESSIONAL SERVICE

Mar 2025–Apr 2025	Co-organized the Hackathon at the workshop <i>Future PhD in control</i> , supported by IEEE CSS and EUCA.
Apr 2023–Oct 2023	Co-organized the Bosch PhD Conference, attended by over 150 participants.

SKILLS

Programming:	Python, C++
Competency:	Model predictive control, numerical optimal control, robotics
Software:	ROS 2, Git, MuJoCo
Language:	English (fluent), Chinese (native), German (basic)

REFERENCES

Prof. Moritz Diehl	Professor, Universität Freiburg	moritz.diehl@imtek.uni-freiburg.de
Dr. Niels van Duijkeren	Staff Engineer, Fernride GmbH (now) Senior Expert, Bosch Research (prev.)	niels.duijkeren@fernride.com
Prof. Boris Houska	Associate Professor, ShanghaiTech University	borish@shanghaitech.edu.cn