Yuanfei Lin

Personal Information	School of Computation, Information and Technology Technical University of Munich Boltzmannstr., 3 85748 Germany	(+49) 15223290081 yuanfei.lin@tum.de yuanfei-lin.github.io

Education

Technical University of Munich, Munich, Germany

Ph.D., Informatics — 2021.05 - present
- Advisor: Prof. Dr.-Ing. Matthias Althoff

M.Sc., Mechanical Engineering — 2018.10 - 2020.12
- GPA: 1.1/1.0 (Best 1% German grading scale)

M.Sc., Mechatronics and Robotics — 2019.04 - 2020.12
- GPA: 1.2/1.0 (Best 5% German grading scale)

Tongji University, Shanghai, China

B.Sc., Automotive Engineering — 2013.09 - 2018.07
- GPA: 4.8/5.0 (Best 5% Chinese grading scale)

Publications

Yuanfei Lin*, Haoxuan Li, Matthias Althoff.
Model Predictive Robustness of Signal Temporal Logic Predicates.
IEEE International Conference on Robotics and Automation (ICRA), under review, 2023.

Yuanfei Lin*, Matthias Althoff.
Rule-Compliant Trajectory Repairing using Satisfiability Modulo Theories.
IEEE Intelligent Vehicles Symposium (IV), 449-456, 2022.

Yuanfei Lin*, Sebastian Maierhofer, Matthias Althoff.
Sampling-Based Trajectory Repairing for Autonomous Vehicles.
IEEE International Conference on Intelligent Transportation Systems (ITSC) , 2021, 572-579.

Review Activities
- **Journals**: IEEE Transactions on Intelligent Transportation Systems
- **Conferences**: IEEE International Conference on Robotics and Automation

Research
Experience

Technical University of Munich, Munich, Germany
Master's Thesis (May - December, 2020)
Efficient Trajectory Repairing for Automated Vehicles

To ensure the safety of autonomous vehicles, we repaired the trajectories which do not consider all traffic rules or were infeasible to be executed. The first approach was based on an anytime graph-based search algorithm. In the second approach, we combined reachability analysis with convex optimization. They were both evaluated with different real traffic scenarios.

Semester Thesis (November, 2019 - May, 2020)
Creation of Complex Test Scenarios for Automated Vehicles

To secure and release automated vehicles, we presented an optimization-based approach to generate more complex test scenarios by means of Evolutionary Algorithm (EA). Tuning experiments with Genetic Algorithm (GA) and Particle Swarm Optimization (PSO) were performed to achieve better optimization performance.

Tongji University, Shanghai, China
Bachelor's Thesis (January - July, 2018)
Degradation Mechanism and Modeling of Power Battery for Electric Vehicles

Designed and completed reference performance and accelerated life cycle tests of a ternary lithium-ion battery.Formulated a semi-empirical cycle life model and verified it with a new set of test data.

INVITED TALKS	School of Mathematics, Southeast University, China (held online)	2022
	Title: Trajectory Repairing for Autonomous Vehicles	

HONORS AND AWARDS	Graduation Scholarship Awarded by TUM	2022
	German National Scholarship	2019
	Excellent Graduates of Shanghai, China	2018
	Tongji Scholarship of Excellence	2017
	National Scholarship in China	2016, 2014
	Shanghai Scholarship, China	2015

TEACHING EXPERIENCE

IN2106 Motion Planning for Autonomous Vehicles, TU Munich (WS21/22, SS22)

Supervisor of student's practical projects, which include literature research, implementation of motion planning algorithms, test case generation, evaluation, etc.

IN2107 Seminar Course Cyber-Physical Systems, TU Munich (WS21, SS22)

This seminar is on reviewing and suggestions of new techniques to tackle the grand challenge of safe and reliable cyber-physical systems.

MW0538 Modern Control 1, TU Munich (SS20)

Formerly a Teaching Assistant for MW0538, Modern Control 1, with Prof. Dr. Boris Lohmann. Duties included teaching tutorials, and writing and developing course materials.

COMPUTER SKILLS

- **Programming**: ROS, MATLAB, Python, C/C++, C#, LaTeX
- **Software**: Simulink, Unity 3D, AutoCAD, Catia, Inventor
- **Language**: Chinese (Native), English (C1), German (C1)

INDUSTRY EXPERIENCE

Software Engineering Intern, Validas AG, Munich, Germany
(December, 2019 - March, 2020)

Interned at Validas AG, an expert in library and tool qualification. Analyzed functional safety of libraries by the Tool Chain Analyzer (TCA) for automotive industry. Generated test cases in Python and C++ for the CUDA library using industrial standard ISO26262.

Software Engineering Intern, NIO, Shanghai, China
(October, 2017 - January, 2018)

Interned at NIO, an automobile manufacturer specializing in designing and developing electric vehicles. Tested NOMI, an in-car AI system, for NIO ES6 and ES8 prior to launch. Evaluated NOMI functions such as navigation and vehicle control with static and dynamic indicators.