

## 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

## RESEARCH INTERESTS

Rule-compliant motion planning, Formal methods, Optimal control, and Game theory.

## 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, and Matthias Althoff.

**Model Predictive Robustness of Signal Temporal Logic Predicates.**

*IEEE Robotics and Automation Letters (RA-L)*, vol. 8, no. 12, pp. 8050-8057, 2023.

**Yuanfei Lin\***, Michael Ratzel, and Matthias Althoff.

**Automatic Traffic Scenario Conversion from OpenSCENARIO to CommonRoad.**

*IEEE International Conference on Intelligent Transportation Systems (ITSC)*, accepted, 2023.

**Yuanfei Lin\*** and Matthias Althoff.

**CommonRoad-CriMe: A Toolbox for Criticality Measures of Autonomous Vehicles.**

*IEEE Intelligent Vehicles Symposium (IV)*, 1-8, 2023.

**Yuanfei Lin\*** and Matthias Althoff.

**Rule-Compliant Trajectory Repairing using Satisfiability Modulo Theories.**

*IEEE Intelligent Vehicles Symposium (IV)*, 449-456, 2022.

**Yuanfei Lin\***, Sebastian Maierhofer, and Matthias Althoff.

**Sampling-Based Trajectory Repairing for Autonomous Vehicles.**

*IEEE International Conference on Intelligent Transportation Systems (ITSC)*, 572-579, 2021.

## 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).

**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.

INVITED TALKS	IEEE IV 2023 Workshops, Anchorage, AK, United States	2023
	<i>Title: Reliable-by-Repair: Trajectory Repairing for Autonomous Vehicles with Rule Compliance</i>	
	School of Cyber Science and Engineering, Southeast University, China (held online)	2022
	<i>Title: Trajectory Repairing for Autonomous Vehicles</i>	
REVIEW ACTIVITIES	• <b>Journals:</b>	
	IEEE Transactions on Intelligent Transportation Systems (T-ITS)	
	IEEE Robotics and Automation Letters (RA-L)	
	• <b>Conferences:</b>	
	IEEE International Conference on Robotics and Automation (ICRA)	
	IEEE Conference on Decision and Control (CDC)	
	IEEE Intelligent Transportation Systems Conference (ITSC)	
HONORS AND AWARDS	Graduation Scholarship Awarded by TUM	2020
	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	<b>IN2106 Motion Planning for Autonomous Vehicles, TU Munich (WS21/22, 22/23, 23/24; SS22, 23)</b>	
	Supervisor of student's practical projects, which include literature research, implementation of motion planning algorithms, test case generation, evaluation, etc.	
	<b>IN2107 Seminar Course Cyber-Physical Systems, TU Munich (WS21/22, 23/24; SS22)</b>	
	This seminar is on reviewing and suggestions of new techniques to tackle the grand challenge of safe and reliable cyber-physical systems.	
COMPUTER SKILLS	• <b>Programming:</b> Python, ROS(2), MATLAB, C/C++, C#, L <sup>A</sup> T <sub>E</sub> X	
	• <b>Software:</b> Simulink, Unity 3D, AutoCAD, Catia, Inventor	
	• <b>Language:</b> Chinese (Native), English (C1), German (C1)	