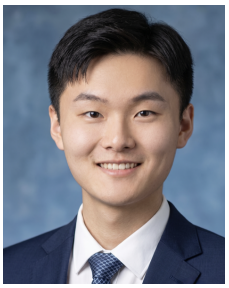
Chengye Wang

Master's Student in Mechanical Engineering
Beijing Institute of Technology, China

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PROFILE SUMMARY

- I got a Bachelor's degree in Vehicle Engineering at Jilin University, China. I am now pursuing a Master's degree in Mechanical Engineering at Beijing Institute of Technology, China.
- My research experiences focus on path planning and dynamic control of the four-wheel independent-drive (4WD) wheeled robot especially under the extreme conditions (high speed, low adhesion).
- I have a solid grasp of the fundamental theories of vehicle dynamics and optimization theory. I am proficient in Matlab/Simulink, CarSim, Python, and LaTeX. I am also familiar with Ubuntu/ROS, Vehicle Control Units (VCUs), Hardware-in-the-Loop (HiL) platforms, CAN and EtherCAT communication, motor control, and positioning modules.
- My future research interests lie in combining model and data-driven methods to push the boundaries of autonomous vehicle performance in complex real-world environments.

EDUCATION

Beijing Institute of Technology (Project 985), Beijing, China *Sep. 2024 – Jun. 2027*
Master of Mechanical Engineering *Supervisor: Yechen Qin*

- Research interests: stability analysis, motion control, trajectory planning, and state estimation.
- Thesis: the thesis topic is yet to be determined.
- Main courses: Vehicle Dynamics, Numerical Analysis, Advanced Control, and Modern Control Theory.
- Awards, and scholarships: Outstanding Freshman Scholarship, 4th in Urban and Highway Tracks of Onsite Autonomous Driving Algorithm Challenge

Jilin University (Project 985), Changchun, China *Sep. 2020 – Jun. 2024*
Bachelor of Vehicle Engineering *Supervisor: Nan Xu*

- GPA: 3.73/4.0 (top 5%).
- Thesis: "Vehicle trajectory planning method based on polynomial curve optimization."
- Main courses: Calculus, Linear Algebra, Automobile Theory, Principles of Control Engineering.
- Awards, and scholarships: Outstanding Graduate.

PUBLICATION

Chengye Wang, Shaoyang Shi, Yu Zhang, and Yechen Qin. "Controlled Stability Region-Guided Lateral-Longitudinal Trajectory Tracking for Autonomous Vehicles." IEEE Transactions on Industrial Electronics. **(Under review, IF=7.4, JCR Q1, Top)**

Chengye Wang, Yu Zhang, Xuepeng Hu, Shaoyang Shi, Jingqi He, and Yechen Qin. "Coordinated Tracking and Stability Control of Automated Vehicles at the Limits: A Controlled Stability Region Approach." 2026 IEEE 29th International Conference on Intelligent Transportation Systems (ITSC), Naples, Italy. IEEE. **(Accepted)**

Chengye Wang, Yu Zhang, Xuepeng Hu, Haipeng Qin, Guoli Wang, and Yechen Qin. "Real-time multidimensional vehicle dynamic stability domain calculation and its application in intelligent vehicles." SAE 2025 Intelligent and Connected Vehicles Symposium (ICVS), Chongqing, China. SAE International. **(Accepted)**

Yu Zhang, **Chengye Wang**, Fu Du, Mingming Dong, Yechen Qin, and Ming Mao. "Dynamic Region of Stability Integrated Path-tracking Control for Intelligent Vehicles." Chinese Journal of Mechanical Engineering. **(Accepted)**

Xuepeng Hu, Yu Zhang, **Chengye Wang**, Zhenfeng Wang, and Yechen Qin. "MCTP: A Multi-Coupled Dynamics Trajectory Planning Scheme for Autonomous Driving in Extreme Conditions." IEEE Transactions on Automation Science

and Engineering. **(Accepted, IF=6.4, JCR Q2, Top)**

Shaoyang Shi, Kai Yang, **Chengye Wang**, Dongwei Li, Yu Zhang and Yechen Qin. "Self-Evolving Reinforcement Learning Framework for Autonomous Driving via Uncertainty-Aware Collision-Risk Supervision" IEEE Transactions on Automation Science and Engineering. **(Under review, IF=6.4, JCR Q2, Top)**

Shaoyang Shi, Yu Zhang, Kai Yang, **Chengye Wang**, Zhenfeng Wang, and Yechen Qin. "A Risk-Aware Decision Making and Motion Planning Framework for Interactive Autonomous Driving." 2026 IEEE 29th International Conference on Intelligent Transportation Systems (ITSC), Naples, Italy. IEEE. **(Accepted)**

Jingqi He, Ziyi Yang, Shaoyang Shi, **Chengye Wang**, Yu Zhang, and Yechen Qin. "Tire Model-Free Tire-Road Friction Coefficient Estimation for Unmanned Platforms via Vision-Dynamics Dual-Confidence Fusion." Mechanical Systems and Signal Processing. **(Under review, IF=10.2, JCR Q1, Top)**

✸ RESEARCH EXPERIENCE

Graduate Student & Vehicle Engineer *May 2025 – Present*

Vehicle electrical-system setup, controller algorithm design, and real-vehicle testing

Xinxiang Northern Vehicle Instrument Co., Ltd., China

- Design the driving, braking, and steering controllers in the VCU using Matlab/Simulink and implement communication between the vehicle controller and actuators using CAN and EtherCAT.
- Assist in building the complete vehicle electrical system.
- Conduct vehicle testing at speeds up to 50 km/h and on slopes of up to 30°. Implement manual and remote-control modes and active pose control. [Video]

National Natural Science Foundation of China *Sep. 2024 – Present*

Vehicle lateral stability analysis considering the combined effects of multiple factors and real-time coordinated control

Beijing Institute of Technology, China

- Analyze nonlinear lateral stability in the phase plane while considering vehicle static parameters, driving conditions, and active control capability using the Lyapunov function method and phase portrait method. [Presentation]
- Quantify the stability region under real-time driving conditions and use it to coordinate trajectory tracking and stability control. [Video]
- Design longitudinal-lateral coupled trajectory-tracking and stability controllers based on Model Predictive Control.
- Design the Hardware-in-the-Loop platform. [Presentation]

National Natural Science Foundation of China *Nov. 2024 – Present*

Model-data-driven trajectory planning for interactive conditions and real-vehicle testing

Beijing Institute of Technology; BYD Auto Co., Ltd., China

- Develop a multi-coupled dynamics trajectory-planning scheme that considers lateral-longitudinal motion coupling, tire-force coupling, and lateral instability for autonomous driving under extreme conditions. [Video]
- Develop a risk-aware SAC–MPC framework where collision-risk supervision guides high-level interaction commands and MPC generates dynamically feasible, safety-constrained trajectories. [Video]
- 4th in Urban and Highway Tracks of Onsite Autonomous Driving Algorithm Challenge 2025. [Video]

✸ LANGUAGE & SKILLS

- **English:** CET-6 (China's College English Test Band): 544 (passed); listening, writing, reading, and speaking.
- **Chinese:** Native language.
- **Research skills:** Matlab/Simulink, CarSim, Python, Ubuntu/ROS, C++, LaTeX, automotive hardware and software debugging, and Microsoft Office.

✸ REFEREES

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