Keyu Chen

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CurryChen77 | Google Scholar

Beijing, China

RESEARCH INTERESTS

My research centers on **traffic simulation and closed-loop RL fine-tuning** for autonomous driving, with a particular emphasis on creating **realistic, interactive, and controllable traffic scenarios**. I am passionate about developing reliable closed-loop simulation frameworks to accelerate the safe and robust advancement of autonomous driving.

EDUCATION

- **Tsinghua University (THU)** *September 2023 - July 2028(Expected)*
  Ph.D. student at the School of Vehicle and Mobility. Beijing, China
  - Advisor: Prof. Sifa Zheng.

- **Nanjing University of Aeronautics and Astronautics (NUAA)** *September 2019 - July 2023*
  B.Eng. in Vehicle Engineering. Nanjing, China
  - GPA: 4.1/5 (Top 2%)

FIRST AUTHOR PUBLICATIONS

[arXiv 2025] RIFT: Group-Relative RL Fine-Tuning for Realistic and Controllable Traffic Simulation.
Keyu Chen, Wenchao Sun, Hao Cheng, Sifa Zheng.
Paper, Project Page, Code, Stars **100+**
RIFT achieves realistic and controllable traffic simulation by combining IL pre-training in a data-driven simulator for realism with RL fine-tuning in a physics-based simulator for controllability.

[CoRL 2024] FREA: Feasibility-Guided Generation of Safety-Critical Scenarios with Reasonable Adversariality.
Keyu Chen, Yuheng Lei, Hao Cheng, Haoran Wu, Wenchao Sun, Sifa Zheng. (**Oral 4.3%**)
Paper, Project Page, Code, Stars **50+**
FREA incorporates feasibility as guidance to generate adversarial yet AV-feasible, safety-critical scenarios for autonomous driving.

[KBS 2023] IGT: Illumination-guided RGB-T object detection with transformers.
Keyu Chen, Jinqiang Liu, Han Zhang. (Bachelors thesis)
Paper
IGT uses illumination intensity to guide the fusion process of multi-modality features, enabling the comprehensive utilization of cross-modality complementary information in object detection.

CO-AUTHOR PUBLICATIONS

[arXiv 2025] DriveCamSim: Generalizable Camera Simulation via Explicit Camera Modeling for Autonomous Driving.
Wenchao Sun, Xuewu Lin, **Keyu Chen**, Zixiang Pei, Yining Shi, Chuang Zhang, Sifa Zheng.
Paper, Code

[TRC 2025] Emergency Index (EI): A two-dimensional surrogate safety measure considering vehicles interaction depth.
Hao Cheng, Yanbo Jiang, Hailun Zhang, **Keyu Chen**, Heye Huang, Shaobing Xu, Jianqiang Wang, Sifa Zheng.
Paper, Code

HONORS AND AWARDS

- **Outstanding Graduate (Top 1%), NUAA** *June 2023*
- **Outstanding Bachelor Thesis Award (Top 5%), NUAA** *June 2023*
- **National Scholarship (Top 1%), NUAA** *December 2021*