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 2025]   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*