

Shuo Zhang

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Education

New York University PhD, Transportation System	Sep. 2023–May 2027 (<i>expected</i>) New York, NY
University of California, Los Angeles (UCLA) MS, Transportation Engineering	Sep. 2021–Mar. 2023 Los Angeles, CA
Dalian Jiaotong University BE, Civil Engineering	Sep. 2016–Jun. 2020 Dalian, China

Experience

Graduate Researcher, New York University | *New York, NY* Sep. 2023–Present

- **PhD thesis (three phases):** Human-in-the-loop simulation for safety-critical, out-of-distribution driving scenarios.
 1. Built a **dual-user VR–CARLA platform** to collect multimodal data on driver–worker interactions.
 2. Conducted **human-factors analysis** of driving behavior, gaze, physiological signals, and questionnaire.
 3. Developed **ego-vehicle trajectory prediction models** for autonomous driving using multimodal work-zone driving data.
- Developing a **co-simulation testbed** for **RL-based motion planning**, with closed-loop traffic, a PPO baseline, reward design, and generalization tests.

LiDAR Intern, Cepton Inc. | *San Jose, CA* Jun. 2022–Sep. 2022

- Developed two Python/C tools for real-time **LiDAR health monitoring** (temperature, voltage, and data rate), replacing Wireshark-based diagnostics.
- Automated **thermal and vibration testing** using USB relays, Arduino, and Raspberry Pi, following ISO and GM standards.
- Designed and conducted **LiDAR validation experiments**, including optical-module checks, image analysis, burn-in quality control, and data visualization.

Selected Publications

- [1] **Shuo Zhang**, et al. “Trajectory Prediction for Autonomous Driving in Road Construction Zones Using Human-in-the-Loop Driving Data” (*Under review*) ([Website](#))
- [2] **Shuo Zhang**, et al. “DuoRoad: A Dual-Participant Simulation Platform for Driver–Worker Interaction and Multimodal Data Collection.” (*Under review*) ([Website](#))
- [3] **Shuo Zhang**, et al. “WZ-Plan: A Roadway Work-Zone Testbed for Autonomous Vehicle Motion Planning via Reinforcement Learning.” (*Ongoing research*) ([Website](#))
- [5] **Shuo Zhang**, et al. “VR-WISE: VR-based work zone immersive simulation with eye tracking and biometric sensors for capturing driver-worker interaction.” ACM International Conference on Automotive User Interfaces and Interactive Vehicular Applications. (*ACM AutoUI 2025, acceptance rate = 35.6%*)
- [6] **Shuo Zhang**, et al. “Improving Work Zone Safety: Integrating VR-CARLA Co-simulation and Eye Tracking for Behavior Analysis of Drivers around Work Zones.” (*Journal of Transportation Safety & Security*)
- [7] **Shuo Zhang**, et al. “Work Zone Safety: Benchmarking Studies between Virtual Reality-based Traffic Co-simulation Platform and Real Work-Zones.” IEEE International Conference on Robotics and Automation, Future of Construction Workshop (*ICRA 2024 Workshop*)
- [8] Runsheng Xu, Xin Xia, Jinlong Li, Hanzhao Li, **Shuo Zhang**, et al. “V2V-Real: A large-scale real-world 3D LiDAR dataset for Vehicle-to-Vehicle Cooperative Perception.” IEEE/CVF Computer Vision and Pattern Recognition Conference (*CVPR 2023, Highlight Paper*)

Technical Skills

Programming & ML Frameworks: Python, C++, MATLAB, PyTorch, OpenCV

Simulation & Development Tools: CARLA, SUMO, ROS, Unreal Engine 4/5, Unity, VR/AR, Wireshark

Experimentation & Analysis: Experimental Design (Hardware, ML, Human-Subject Studies), Data Collection, Statistical Analysis