Yukai Ma

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Educational Background

UCLA	*Visiting Graduate Researcher*	Computer Science Department	2025 – Now
Shanghai AILab	*Intern Researcher*	ADLab	2023 – 2024
Zhejiang University	*PhD*	Control Science and Engineering	2021 – Now
Zhejiang University of Technology	*bachelor*	Electrical Engineering and Automation	2017 – 2021

Technical Ability

- Programming Languages and Tools: C/C++、Python、Pytorch、Git、LaTeX、ROS、Ceres、Eigen、g2o、Gtsam
- Familiar Open Source Frameworks: Magic Drive, LLaVA, Qwen-VL, MapTR, BEVFusion, LoFTR, Vins-Fusion

Recent work (first author)

DriveArena: A Closed-loop Generative Simulation Platform for Autonomous Driving Arxiv 2024

- The article introduces DriveArena, a high-fidelity closed-loop simulator for autonomous driving, enabling continuous learning and comprehensive testing of driving algorithms and scene generative models.

LeapVAD: A Leap in Autonomous Driving via Cognitive Perception and Dual-Process Thinking Arxiv 2025

- We introduce a novel closed-loop autonomous driving approach that incorporates a dual-process decision-making module inspired by human cognition theory, leveraging the Analytic Process and a reflection mechanism to accumulate a transferable memory bank, enabling continuous learning and generalization capabilities.

LiCROcc: Teach Radar for Accurate Semantic Occupancy Prediction using LiDAR and Camera RAL 2024

- The paper focuses on enhancing semantic scene completion in autonomous driving using 3D radar, introducing cross-modal refinement techniques and achieving significant performance improvements on the nuScenes-Occupancy dataset.

Publications (first author)

- Continuously Learning, Adapting, and Improving: A Dual-Process Approach to Autonomous Driving (**NIPS 2024**)
- FMCW Radar on LiDAR Map Localization in Structual Urban Environments (**JFR 2024**)
- RIDERS: Radar-Infrared Depth Estimation for Robust Sensing (**TITS 2024**)
- RadarCam-Depth: Radar-Camera Fusion for Deep Metric Depth Estimation (**ICRA 2024**)
- RoLM: Radar on LiDAR Map Localization (**ICRA 2023**)
- OL-SLAM: A Robust and Versatile System of Object Localization and SLAM ((**Sensors 2022**))
- For more co-authored papers see Google Scholar.

Project Experience

Multi-sensor fusion SLAM with target localization, Horizontal Project, in Charge 2022.03 – 2022.07

- Semi-dense maps are obtained by loosely coupling GPS and a direct visual odometer (DSO) and aligning the DSO trajectory with a absolute geographic coordinate system;
- Ground targets in the image are detected with YOLOv5, and the geographic location of the target is deduced from the local point cloud of the current image.

Awards

ECCV 2024: Multimodal Perception and Comprehension of Corner Cases in Autonomous Driving: Towards Next-Generation Solutions **2nd prize** 2024

Outstanding Graduate of Zhejiang Province, Provincial Government Scholarship for three consecutive years, Outstanding Graduate Student of Zhejiang University 2017-2023

The 15th National Intelligent Vehicle Race for College Students Beacon Group（**National First Prize**） 2020.08

National Student Mathematical Modeling Contest（**National First Prize**） 2019.09