

TIANYUAN YUAN

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EDUCATION

IIIS, Tsinghua University, Beijing, China

Sep 2022 - Jul 2027 (Expected)

PhD in Computer Science and Technology

Advisor: Prof. Hang Zhao

Yuanpei College, Peking University, Beijing, China

Sep 2018 - Jul 2022

Bachelor in Computer Science and Technology

GPA: 3.60/4.00 (Rank 1/27)

RESEARCH EXPERIENCE

Embodied AI

Galaxea Open-World Dataset & G0 VLA | Project Leader | ICRA 2026

- Constructed a large-scale open-world dataset, **Galaxea Open-World Dataset**, containing 500+ hours of high-quality human-annotated manipulation data. Curated data pipeline including collection, filtering, annotation and curriculum design.
- Led the pre-training of G0 VLA 3B, a dual-system Vision-Language-Action (VLA) model designed for generalist robot manipulation, which outperforms the pi-0 model on multiple self-hold benchmarks.

DepthVLA: Depth-Aware Spatial Reasoning for VLAs | ICRA 2026

- Proposed **DepthVLA**, a new architecture enhancing 2D VLA models with explicit depth-aware spatial reasoning capabilities by adding depth expert into the VLA backbone.
- Our architecture significantly improved success rates in complex 3D manipulation tasks in both simulated environments and real-world compared to baseline models.

Neural Reconstruction & Memory

LONG3R: Long-Sequence 3D Reconstruction | ICCV 2025

- Utilized streaming memory to build a multi-view 3D scene reconstruction framework capable of processing extremely long video sequences. Achieved real-time processing by implementing a recurrent memory update mechanism.

PreSight: City-Scale Neural Memories for Perception | ECCV 2024

- Proposed the first framework** leveraging past traversals to construct city-scale neural memories, enhancing online perception for autonomous vehicles in repeated routes.
- Demonstrated significant improvements in downstream perception tasks including occupancy prediction and map construction, ensuring the safety of autonomous driving vehicles. Being **deployed on real-world vehicles**.

Online Mapping

- Pioneered the field of **end-to-end vectorized HD map construction** in autonomous driving.
- StreamMapNet (WACV 2024)**: Introduced a temporal fusion strategy powered by recurrent memory to construct stable, large-range HD maps in real-time, solving the inconsistency issue in single-frame predictions.
- Neural Map Prior (CVPR 2023)**: **Proposed the first neural representation** of global maps that facilitates automatic global map updates and improves local mapping performance. Being **deployed on real-world vehicles**.
- VectorMapNet (ICML 2023)**: Proposed the first end-to-end vector map learning pipeline, predicting sparse polylines directly from sensor data.

WORK EXPERIENCE

Galaxea AI | Research Intern

Dec 2024 - Now

- Project leader on G0 VLA model and dataset construction.

SELECTED PUBLICATIONS (* INDICATES EQUAL CONTRIBUTION)

- DepthVLA: Enhancing Vision-Language-Action Models with Depth-Aware Spatial Reasoning.** T. Yuan, Y. Liu, C. Lu, Z. Chen, T. Jiang, H. Zhao. [ICRA 2026].
- Galaxea Open-World Dataset and G0 Dual-System VLA Model.** T. Jiang*, T. Yuan*, Y. Liu*, C. Lu, et al. [ICRA 2026].
- LONG3R: Long Sequence Streaming 3D Reconstruction.** Z. Chen*, M. Qin*, T. Yuan*, Z. Liu, H. Zhao. [ICCV 2025].
- PreSight: Enhancing Autonomous Vehicle Perception with City-Scale NeRF Priors.** T. Yuan, Y. Mao, J. Yang, Y. Liu, Y. Wang, H. Zhao. [ECCV 2024].
- StreamMapNet: Streaming Mapping Network for Vectorized Online HD Map Construction.** T. Yuan, Y. Liu, Y. Wang, Y. Wang, H. Zhao. [WACV 2024].
- Diffusion-Based Generative Models for 3D Occupancy Prediction.** Y. Wang*, Y. Liu*, T. Yuan*, et al. [ICRA 2025].
- Neural Map Prior for Autonomous Driving.** X. Xiong, Y. Liu, T. Yuan, Y. Wang, Y. Wang, H. Zhao. [CVPR 2023].
- VectorMapNet: End-to-end Vectorized HD Map Learning.** Y. Liu, T. Yuan, Y. Wang, Y. Wang, H. Zhao. [ICML 2023].

Skills: Programming Language: Python, C, C++; English: TOEFL 112/120.