

# TIANYUAN YUAN

Tsinghua University, Beijing, China

(+86)18612491010 | [yuanty22@mails.tsinghua.edu.cn](mailto:yuanty22@mails.tsinghua.edu.cn) | <https://yuantianyuan01.github.io>

## EDUCATION

IIS, Tsinghua University, Beijing, China  
PhD in Computer Science and Technology

Sep 2022 - Jul 2027 (Expected)

Advisor: Prof. Hang Zhao

Yuanpei College, Peking University, Beijing, China  
Bachelor in Computer Science and Technology

Sep 2018 - Jul 2022

GPA: 3.60/4.00 (Rank 1/27)

## RESEARCH EXPERIENCE

### Embodied AI

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

- Constructed a large-scale open-world dataset, **Galaxeal 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

#### Galaxeal AI | Research Intern

Dec 2024 - Now

- Project leader on G0 VLA model and dataset construction.

## SELECTED PUBLICATIONS (\* INDICATES EQUAL CONTRIBUTION)

1. **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].
2. **Galaxeal Open-World Dataset and G0 Dual-System VLA Model.** T. Jiang\*, T. Yuan\*, Y. Liu\*, C. Lu, et al. [ICRA 2026].
3. **LONG3R: Long Sequence Streaming 3D Reconstruction.** Z. Chen\*, M. Qin\*, T. Yuan\*, Z. Liu, H. Zhao. [ICCV 2025].
4. **PreSight: Enhancing Autonomous Vehicle Perception with City-Scale NeRF Priors.** T. Yuan, Y. Mao, J. Yang, Y. Liu, Y. Wang, H. Zhao. [ECCV 2024].
5. **StreamMapNet: Streaming Mapping Network for Vectorized Online HD Map Construction.** T. Yuan, Y. Liu, Y. Wang, Y. Wang, H. Zhao. [WACV 2024].
6. **Diffusion-Based Generative Models for 3D Occupancy Prediction.** Y. Wang\*, Y. Liu\*, T. Yuan\*, et al. [ICRA 2025].
7. **Neural Map Prior for Autonomous Driving.** X. Xiong, Y. Liu, T. Yuan, Y. Wang, Y. Wang, H. Zhao. [CVPR 2023].
8. **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.