

# Yichen Wang

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## EDUCATION & APPOINTMENTS

### The Hong Kong University of Science and Technology (Guangzhou)

Research Assistant, PAIRS Lab — Advisor: Prof. Fangqiang Ding

Jul. 2026 — Present

Guangzhou, China

### Tongji University

B.Eng. in Automation — GPA: 4.34/5, Weighted Score: 88.4/100

Sept. 2022 — Jun. 2026

Shanghai, China

## RESEARCH INTERESTS

- **Embodied AI:** Robot Navigation, Embodied Question Answering, Vision-Language-Action, World Model
- **Spatial Perception:** Visual SLAM, Multi-Sensor Fusion, Long-Term Spatial Memory
- **Machine Learning:** Deep Reinforcement Learning, Self-Supervised Learning, Graph Neural Networks

## RESEARCH EXPERIENCE

### Context-Aware DRL for Mapless Navigation with Temporal Memory and Curiosity

Dec. 2025 — Jun. 2026

Undergraduate Thesis, Tongji University · Advisor: Prof. Chao Huang

Independent Researcher

- Built upon CoRL 2023's GAT-based encoder-decoder framework with a pointer network for viewpoint graph navigation; identified its limitations under partial observability and sparse rewards in unknown environments.
- Introduced GraphLSTM to capture temporal dependencies across graph states, enabling the agent to maintain episodic memory under partial observability and improve long-horizon planning consistency.
- Extended SAC with an Intrinsic Curiosity Module (ICM), using forward-dynamics prediction error as intrinsic reward to drive exploration and mitigate slow convergence under sparse rewards.
- Ablations across Maze/Corridor/Office/Dynamic environments in ROS/Gazebo: the full model (GAT+LSTM+ICM) reached 0.84 average Success Rate and 0.66 SPL, beating the CoRL 2023 baseline and all single-module variants.

### Autonomous Navigation System for Hexapod Robots

May 2024 — Sep. 2025

Core Developer, Tongji University · Advisor: Dr. Jia Xu

Perception & Planning Lead

- Deployed and calibrated a real-time visual SLAM system (ORB-SLAM3) on a physical hexapod robot via ROS, overcoming sensor noise, IMU drift, and unmodeled leg-ground contact dynamics that are absent in simulation.
- Co-developed a hierarchical navigation stack: a local path planner bridging high-level SLAM-based global pose estimation with low-level legged locomotion control, achieving closed-loop perception-to-action on real hardware.
- Performed end-to-end hardware-software integration and debugging of the full autonomy pipeline (perception → planning → control), achieving collision-free navigation and reliable pose tracking indoors.

### Electric Bus Fleet Dispatch with Wireless Charging

Aug. 2024 — Nov. 2024

Team Leader, Tongji University · Advisor: Dr. Jia Xu

Team Leader (3 members)

- Designed a Transformer-enhanced DRL framework to solve large-scale electric bus fleet dispatch — jointly optimizing multi-vehicle routing and charging schedules under dynamic electricity pricing and time-varying passenger demand.
- Used a Transformer as the policy backbone, with self-attention encoding high-dimensional sequential states (demand and multi-vehicle status) to capture long-range temporal dependencies that MLP policies struggle to model.
- Won 2nd prize among ~100 teams, outperforming heuristic dispatch baselines on energy and time cost.

## SKILLS

**Languages:** C, C++, Python, Shell

**Frameworks & Tools:** PyTorch, OpenCV, ROS/ROS 2, Gazebo, Linux, Git

**Spoken:** Chinese (native), English (IELTS 6.5, Professional Communication)

## AWARDS AND HONORS

2022–23 Tongji University Scholarship

Oct. 2023

2023–24 Tongji University Scholarship

Oct. 2024

2nd Prize, National Campus Artificial Intelligence Algorithm Competition

Nov. 2024