

Jike Wang

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EDUCATION

Shanghai Jiao Tong University, Shanghai, China

Sep. 2021 - Present

Ph.D. student in Computer Science and Technology

Research Interests: Internet of Things (IoT), Wireless Sensing, Mobile Robotics

Xidian University, Shaanxi, China

Sep. 2017 - Jun. 2021

B.S. in Software Engineering

GPA: 3.9/4.0 Rank: 3/459 (Top 1%)

RESEARCH OVERVIEW

My research lies at the intersection of **wireless sensing**, **embedded intelligence**, and **mobile robotics**. I focus on building robust, energy-efficient sensing systems that enable high-precision perception in resource-constrained and complex environments.

Currently, I am particularly interested in **magnetic sensing**, a modality that is naturally immune to occlusion, lighting conditions, and wireless interference—making it uniquely suited for challenging, real-world scenarios. To explore its potential, I developed **Polaris**, a vision-free magnetic fiducial system for mm-level robot pose estimation, and **METRO**, a magnetic road infrastructure system enabling all-weather road marking perception for vehicles.

PROJECTS

Polaris: Accurate, Vision-free Fiducials for Mobile Robots with Magnetic Constellation Jul. 2023 - Dec. 2024

- **Background:** Traditional fiducial systems (e.g., AprilTag) are vulnerable to occlusion, energy consumption, and privacy issues, making them unsuitable for robust robot perception in complex environments.
- **Contribution:** Proposed the **Polaris** system, which achieves sub-millimeter pose estimation accuracy ($< 1 \text{ mm} / 1^\circ$) and low power deployment (25.08 mW) based on magnetic sensing.
- **Outcome:** Polaris was published at ACM MobiCom 2024 (CCF A), and received Artifact Available and Functional badges.

METRO: Magnetic Road Markings for All-weather, Smart Roads

Oct. 2021 – May 2023

- **Background:** Visual road surface markings (e.g., arrows) degrade under rain, glare, occlusion, and wear, becoming a major obstacle to reliable and safe driving.
- **Contribution:** Developed the **METRO** system—the first magnetic road marking solution—with long-term real-world deployment and robust perception (over 96%) under high-speed and noisy conditions.
- **Outcome:** METRO was published at ACM SenSys 2023 (CCF B, Tsinghua A list).

PUBLICATIONS

- **Polaris: Accurate, Vision-free Fiducials for Mobile Robots with Magnetic Constellation**
Jike Wang, Yasha Irvantchi, Alanson Sample, Kang G. Shin, Xinbing Wang, and Dongyao Chen
 Proceedings of the 30th Annual International Conference on Mobile Computing and Networking (ACM MobiCom), 2024
- **Demo: Implementation and Benchmark of Magnetic Tracking on Mobile Platforms**
 Zhenyu Chen, Jike Wang, and Dongyao Chen
 Proceedings of the 2024 Workshop on Adaptive AIoT Systems (ACM AdaAIoTSys), 2024
- **METRO: Magnetic Road Markings for All-weather, Smart Roads**
Jike Wang, Shanmu Wang, Yasha Irvantchi, Mingke Wang, Alanson Sample, Kang G. Shin, Xinbing Wang, Chenghu Zhou, and Dongyao Chen
 Proceedings of the 21st ACM Conference on Embedded Networked Sensor Systems (ACM SenSys), 2023

PRESENTATIONS

“Polaris: Accurate, Vision-free Fiducials for Mobile Robots with Magnetic Constellation”

ACM MobiCom 2024, Washington, D.C., USA Nov. 2024

Microsoft Research Asia – Shanghai (MSRA Shanghai), China Nov. 2024

“METRO: Magnetic Road Markings for All-weather, Smart Roads”

ACM SenSys 2023, Istanbul, Turkiye Nov. 2023

AWARDS

National Scholarship (Ph.D. Student) Ministry of Education of China | 2024

First Prize, Outstanding PhD Academic Forum Shanghai Jiao Tong University | 2024

National Encouragement Scholarship (Undergraduate) Ministry of Education of China | 2019

National Encouragement Scholarship (Undergraduate) Ministry of Education of China | 2018

Outstanding Student Award Xidian University | 2018

ACADEMIC/TEACHING SERVICES

ACM MobiCom artifact evaluation committee 2025

Evaluated reproducibility and functionality of submitted research artifacts.

Teaching assistant: CS1501, Programming Methodology 2021 Fall, 2022 Fall, 2023 Fall, 2024 Fall

CS1501 is the introductory course to computer science and programming at SJTU;

Class capacity: 88 – 96;

Received an **A grade** evaluation, 2022 Fall. Evaluated by 86 students.

Teaching assistant: CS106: Programming Practice 2022 Summer, 2023 Summer