Xin LI

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Profile

I am a dedicated AI researcher with interdisciplinary expertise in machine learning, robotics, and wireless communications, supported by extensive industry experience. My mission is to leverage AI to solve complex engineering challenges, and my work has made influential contributions in top conferences and journals, including IEEE RA-L, IROS, IEEE Sensors Journal, and ICASSP.

Education

Jan. 2025 – Present
Ph.D. Student in Electrical and Electronic Engineering, *Nanyang Technological University (NTU)*, Singapore, *Supervisor: Prof. Yuen Chau, IEEE Fellow*.

Sept. 2018 – Jul. 2021
M.Eng in Electronics and Communication Engineering, *Peking University*, Beijing, China.

Sept. 2014 – Jun. 2018
B.Eng in Measurement and Control Technology and Instruments, *Northeastern University*, Qinhuangdao, China.

Experience

Apr. 2024 – Jan. 2025
Research Assistant, *Nanyang Technological University (NTU)*, Singapore, *Supervisor: Prof. Yuen Chau*.
- Leveraged Large Language Models (LLMs) to solve complex mathematical engineering challenges in wireless communications.
- Designed and implemented advanced robotic perception systems, integrating deep learning techniques for robust dense scene reconstruction.

Mar. 2022 – Feb. 2024
SLAM Algorithm Engineer, *Gausium Robotics (alias "Gaussian Robotics")*, Singapore.
- Led a team in engineering a high-performance hierarchical visual localization system for large-scale environments using compact neural networks.
- Directed the integration of real-time map update modules and spearheaded the development of a novel indoor localization system that combines learning-based methods with traditional signal processing.

Aug. 2021 – Feb. 2022
Research Assistant, *Singapore University of Technology and Design (SUTD)*, Singapore, *Supervisor: Prof. Yuen Chau*.
- Developed a coplanar direct visual-inertial odometry system that overcomes 2D feature matching inaccuracies, outperforming conventional planar-constrained methods.

Sep. 2020 – Mar. 2021
Research Intern, *Microsoft Research Asia (MSRA)*, Beijing, China, *Supervisors: Dr. Yang Liu & Dr. Yizhong Zhang*.
- Engineered a multi-sensor reconstruction system that integrates mobile camera and IMU data to generate high-fidelity vectorized maps of large-scale supermarkets, enhancing indoor localization and navigation.

Feb. 2019 – Mar. 2020
Research Intern, *MEGVII*, Beijing, China, *Supervisor: Dr. Yijia He*.
- Researched geometric feature extraction in visual SLAM systems and developed a robust, tightly-coupled monocular Visual-Inertial Odometry (VIO) system that leverages heterogeneous features to generate semi-dense 3D scene meshes in real time.

Publications

(equal contribution)*

2025 **Onboard Terrain Classification via Stacked Intelligent Metasurface-Diffractive Deep Neural Networks from SAR Level-0 Raw Data**
Mengbing Liu, **Xin Li**, Jiancheng An, Chau Yuen. *ICLR ML4RS Workshop, 2025.*

2025 **TransPathNet: A Novel Two-Stage Framework for Indoor Radio Map Prediction**
Xin Li, Ran Liu, Saihua Xu, Sirajudeen Gulam Razul, Chau Yuen. *ICASSP, 2025.*

2023 **PVI-DSO: Leveraging Planar Regularities for Direct Sparse Visual-Inertial Odometry**
Bo Xu, **Xin Li**, Jingrong Wang, Chau Yuen, Jiancheng Li. *IEEE Sensors Journal, 2023.*

2022 **Deep learning-based channel estimation for double-RIS aided massive MIMO system**
Mengbing Liu, **Xin Li**, Boyu Ning, Chongwen Huang, Sumei Sun, Chau Yuen. *IEEE Wireless Communications Letters (WCL), 2022.*

2020 **Co-planar parametrization for stereo-SLAM and visual-inertial odometry**
Xin Li*, Yanyan Li*, Evin Pinar Örnek, Jinlong Lin, Federico Tombari. *IEEE RA-L, 2020.*

2020 **Leveraging Planar Regularities for Point Line Visual-Inertial Odometry**
Xin Li*, Yijia He*, Jinlong Lin, Xiao Liu. *IROS, 2020.*

Manuscripts Under Review

2025 **WirelessMathBench: A Mathematical Modeling Benchmark for LLMs in Wireless Communications**
Xin Li, Mengbing Liu, Li Wei, Jiancheng An, Merouane Debbah, Chau Yuen.
Under review.

2024 **Robust Gaussian Splatting SLAM by Leveraging Loop Closure**
Zunjie Zhu, Youxu Fang, **Xin Li**, Chengang Yan, Feng Xu, Chau Yuen, Yanyan Li.
Under review.

Academic Service

Reviewer NeurIPS (2024, 2025), ICLR (2025), ICML (2025), SIGGRAPH (2025), AISTATS (2025), IROS (2021, 2022), ICRA (2022, 2023, 2025), IEEE RA-L, ACM Transactions on Graphics (TOG)

Awards

2025 NTU Research Scholarship

2025 The 4th Place Winner, ICASSP 2025 Indoor Pathloss Radio Map Prediction Challenge