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Research Gate

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Website

Birthday: 16/08/1994

Address: 800, Dongchuan Road, Shanghai, China

Research Interest:
Autonomous navigation,
Latent world model,
Robust perception,
Robust navigation.

Kefan Jin Ph.D

Post-doctoral Researcher

EDUCATION

Post-doctoral Researcher **July 2023 - present**

Shanghai Jiao Tong University

- School of Automation and Intelligent Sensing
- Supervisor: Prof. Hesheng Wang

Doctor's Degree **Sept. 2016 - June 2023**

Shanghai Jiao Tong University

- School of Ocean and Civil Engineering
- Supervisor: Prof. Hong Yi

Bachelor's Degree **Sept. 2012 - June 2016**

Harbin Engineering University

- College of Shipbuilding Engineering

TEACHING AND MENTORING

- Teaching assistant of the undergraduate course Mobile Robotics in SJTU.
- Thesis advisor for four SJTU undergraduates and four SJTU Doctoral students.
- Advisor of two National Undergraduate Training Program for Innovation projects.

SELECTED AWARDS

- IEEE ROBIO 2022 Best Conference Paper, 2022 IEEE International Conference on Robotics and Biomimetics, **Best Conference Paper.**
- T.J. Tran Best Paper in Robotics Award of 2021 IEEE International Conference on Robotics and Biomimetics.
- 2020 "Maritime Clash" China Intelligent USV Challenge Concept Design of Intelligent USV (Group A) First Prize.
- Patent of A Composite Power Unmanned Surface Vehicle, 2020-09-18, China, CN201811167376.6.

Publications

Journal

K. Jin , Z. Liu, J. Wang, H. Wang,. **Unmanned surface vehicle navigation under disturbances: world model enhanced reinforcement learning,** *IEEE/ASME Transactions on Mechatronics, 2025, doi: 10.1109/TMECH.2025.3552677.*

K. Jin , Z. Liu, J. Wang. **Predictive obstacle avoidance algorithm for underactuated unmanned surface vehicle under disturbances via reinforcement learning,** *Journal of Field Robotics, 2025, doi: 10.1002/rob.22554*

K. Jin , H. Zhu, R. Gao, J. Wang, H. Wang, H. Yi, C.-J. Richard Shi. **DEMRL: Dynamic estimation meta reinforcement learning for path following on unseen unmanned surface vehicle,** *Ocean Engineering, 2023, 288: 115958*

K. Jin , J. Wang, H. Wang, X. Liang, Y. Guo, M. Wang, H. Yi. **Soft formation control for unmanned surface vehicles under environmental disturbance using multitask reinforcement learning,** *Ocean Engineering, 2022, 260: 112035-112035*

Y. Zhou, Y. Zhou, **K. Jin** , H. Wang. **Hierarchical Reinforcement Learning With Model Guidance for Mobile Manipulation,** *IEEE/ASME Transactions on Mechatronics, 2025, doi:10.1109/TMECH.2025.3552677*

H . Zhu, **K. Jin** , R. Gao, R, J. Wang. **Timed-Elastic-Band-Based Variable Splitting for Autonomous Trajectory Planning,** *Symmetry, 2025, doi: 10.3390/sym17060848.*

Z. Liu, Q. Liu, L. Tang, **K. Jin** , H. Wang, M. Liu, H. Wang. **Visuomotor reinforcement learning for multi-robot cooperative navigation,** *IEEE Transactions on Automation Science and Engineering, 2022 vol. 19, no. 4, pp. 3234-3245*

Conference

K. Jin , F. Mu, X. Han, G. Wang, Zhe Liu,. **Anomaly Detection For Robust Autonomous Navigation,** *IEEE International Conference on Robotics and Automation (ICRA), 2023*

K. Jin *, H. Wang*, C. Liu, Y. Zhai, L. Tang. **Graph Neural Network Based Relation Learning for Abnormal Perception Information Detection in Self-Driving Scenarios,** *IEEE International Conference on Robotics and Automation (ICRA), 2022.*

Z. Liu,* **K. Jin** *, Y. Zhai, Y. Miao. **Learning Robust Vehicle Navigation Policy Under Interference and Partial Sensor Failures,** *IEEE International Conference on Robotics and Biomimetics (ROBIO), 2022*

K. Jin , H. Wang, H. Yi. **End-to-end trajectory tracking algorithm for unmanned surface vehicle using reinforcement learning,** *International Ocean and Polar Engineering Conference (ISOPE). 2019*

*L. Zhuo,***K. Jin** ,Z. Liu,H. Wang. **RESBev: Making the BEV Perception More Robust,** *IEEE International Conference on Robotics and Automation (ICRA), 2026, submitted*

J. Shi, Z. Liu, **K. Jin** , H. Wang. **A Multi-Agent Reinforcement Learning Approach Based on Local Shapley Value,** *IEEE Conference on Decision and Control (CDC), 2025, accepted*

Y. Zhao, Z. Liu, H. Wei, K. Wang, H. Wang, D. Zhai, **K. Jin** , H. Shao. **GIPD: Global Intent Prediction and Decomposition of Cooperative Multi-Robot System in Non-Communication Environments,** *International Conference on Intelligent Robots and Systems (IROS), 2025, accepted*

Publications

H. Wang, **K. Jin** , H. Wang. **Attacking End-to-End Visual Navigation Model: How Weak Existing Learning-Based Approaches Can Be?,** *IEEE International Conference on Robotics and Biomimetics (ROBIO), 2021*

Preprint

K. Jin , X. Han. **Conquering Ghosts: Hidden Markov Model based Heterogeneous Relation Learning for Robust Navigation,** *arXiv:2203.09952*

ACADEMIC EXPERIENCE

Post-doctoral Researcher **2023 - present**

|IRMV Lab |Shanghai Jiao Tong University

- Develop a robust latent world model to predict navigation states under motion uncertainty.
- Develop a spatiotemporal information consistency learning method to detect and recover diverse perception anomalies.
- Develop a ROBEV method that can be easily deployed on existing BEV perception approaches, enhancing their robustness against perception anomalies.
- Develop a robust end-to-end navigation policy that enables reliable navigation in the presence of perception anomaly and motion disturbances.

Graduate Researcher **2016 - 2023**

|MIES Lab |Shanghai Jiao Tong University

- Develop a meta-RL-based navigation policy that enables few-shot adaptation for diverse dynamic characteristics.
- Propose a soft formation policy that enables adaptation to dynamic formation shapes and scales

SERVICE

- Associate Editor of ICRA 2025.
- Reviewer of international journal and conference: TASE, OE, RIA, RAL, JFR, TMECH, IROS, ICRA, NIPS.

SKILLS

- Progamming: Competent in PyTorch, ROS, OpenCV.
- Practical experience in applying the RL-based methods in practical vehicles.