

YAOZHONG KANG

Email: kangyz2021@mail.sustech.edu.cn

EDUCATION

Southern University of Science and Technology (SUSTech) *Sep 2021 - June 2025(Expected)*

B.S. in Automation

GPA: 3.56/4.0

*Related courses: Automatic Control Theory, Multi-variable Control System, **Optimal Control and Estimation**, Advanced Robotics Control, Information Theory, Mobile Robot Navigation, Robot Dynamics and Control, System Identification and Adaptive Control*

RESEARCH INTERESTS

Robotics, System Identification, and Control Algorithms.

SKILLS/HOBBIES

Programming Languages

Python, C/C++, Matlab, Java

Software

ROS1/ROS2, Isaac Sim/Gym, Mujoco, SolidWorks, Gazebo, Keil

Hobbies

Swimming

RESEARCH EXPERIENCE

Collaborative Fall Detection and Response Using Wi-Fi Sensing and Mobile Companion Robot[1]

Jan 2024 - July 2024

Advisor:: Prof. Max Q.-H. Meng

SUSTech

- Built up a mobile manipulator with dual 7-DOF Kinova arms on a differential chassis.
- Collected closed-door and open-door Wi-Fi fall detection datasets, utilizing transformer and transfer-learning to do subject state observation.
- Applied indoor navigation and optimization-based end effector control algorithms to handle door traverse and rescuing.
- Paper accepted by *2024 IEEE International Conference on Robotics and Biomimetics* as co-author.

Observability-Aware Active Calibration of Multi-Sensor Extrinsic for Ground Robots via Online Trajectory Optimization[2]

Dec 2023 - Present

Advisor: Prof. He Kong

SUSTech

- Utilized Fisher Information Matrix (FIM) to actively optimize the path planner while navigating using a B-spline curve.
- Designed an online EKF calibration system to calibrate the extrinsic parameters of wheel encoders, LiDAR, and microphone array.
- Tested algorithm effectiveness in both simulation and real-world experiments.
- Poster accepted as co-author for the 2024 IROS Late Breaking Results. The final paper is currently under review for *IEEE Sensors Journal*.

HIGHLIGHTED COURSE PROJECTS

Advanced Robotics Control

Fall 2024

Prof. Wei Zhang

SUSTech

- Utilized asymmetric PPO for rough terrain locomotion control with a point-foot legged robot.
- Adapted the training framework from IsaacGym to Isaac Sim and validated the results using MuJoCo.

INTERNSHIPS

University of Southern California & Alphaz

Aug 2024 - Jan 2025

Advisor: Yiyu Chen

Developed mobile quadrupedal robot outdoor navigation system on Unitree B2.

Agilex Robotics

Jan 2025 - Mar 2025 (estimated)

Learning whole-body mobile manipulation for timely trajectory tracking with an omnidirectional-wheeled-manipulator using MPC-based RL.

CONTEST EXPERIENCE

National University Robot Contest: RoboMaster University Series

Jan 2023 - Aug 2023

Advisor: Prof. Xiaoping Hong, Prof. Liangming Chen

SUSTech

- Designed navigation framework for **fully-automated** robot.
- Utilized multi-line LiDAR with IMU module as state estimator using *Fast-LIO* and *Point-LIO*.
- Developed terrain analysis system capable of navigating inclined surfaces through pointcloud clustering.

Sep 2023 - Aug 2024

- Applied nonlinear MPC algorithm for trajectory tracking on holonomic basis.
- Designed omnidirectional perception algorithms for obstacle and target object recognition using YOLOV5.
- Designed an autonomy strategy using behavior tree.

PUBLICATIONS

- [1] Y. Chen¹, **Yaozhong Kang**¹, Z. Zhao, Y. Hong, L. Meng, and M. Q.-H. Meng, *Collaborative fall detection and response using wi-fi sensing and mobile companion robot*, 2024. arXiv: 2407.12537 [cs.R0]. [Online]. Available: <https://arxiv.org/abs/2407.12537>.
- [2] J. Wang¹, **Yaozhong Kang**¹, L. Fu, and H. Kong, *Observability-aware active calibration of multi-sensor extrinsics for ground robots via online trajectory optimization*, IROS 2024 (Late Breaking Result); IEEE Sensors Journal (**Under Review**), 2024.
- [3] C. Hu, J. Chen, **Yaozhong Kang**, J. Zhang, and J. Li, *Enhancing 3d adversarial attacks through realistic object manipulation in point cloud data acquisition*, International Conference on Multimedia and Expo (ICME) (**Under Review**), 2025.

ACHIEVEMENTS

Outstanding Student Scholarship, awarded by SUSTech

Jan 2022

National First Prize in RoboMaster University Championship

Aug 2023

National First Prize for autonomous robot in RoboMaster University Championship

Aug 2023

National First Prize in National College Robotics Technology Innovation Camp

Dec 2023

Provincial First Prize in RoboMaster University League

Dec 2023

National Second Prize in RoboMaster University Championship

Aug 2024

7th place in 4×100m Freestyle Relay at Guangdong University Swimming Championship

May 2023