

Qianwei(Robin) Wang

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EDUCATION

B.S. Computer Science , University of Michigan-Ann Arbor , MI GPA: 3.96/4.0	Sep. 2023-May. 2026
B.Eng Electrical Information Engineering , Xidian University , China GPA: 3.90/4.0	Sep. 2021-Jul. 2023

SKILLS

Programming: C/C++, Python, Matlab
Tools: ROS, OpenCV, Gazebo, Eigen, Ceres

RESEARCH EXPERIENCE

Undergraduate Research Assistant , LIVE , University of Michigan Advisor: Dr. Vineet R. Kamat	Sep. 2023-now
Undergraduate Research Assistant , ARM , University of Michigan Advisor: Dr. Dmitry Berenson	May. 2024-Aug. 2024

PUBLICATION

Xu, Yifan; Luo, Ziming*; Wang, Qianwei* ; Kamat, Vineet; Menassa, Carol. " Point2Graph: An End-to-end Point Cloud-based 3D Open-Vocabulary Scene Graph for Robot Navigation ." (submitted)
Xu, Yifan; Wang, Qianwei ; Kamat, Vineet; Menassa, Carol. " Socially-Aware Shared Control Navigation for Assistive Mobile Robots in the Built Environment ." (submitted)
Xu, Yifan; Wang, Qianwei ; Kamat, Vineet; Menassa, Carol. "A Shared Autonomy based Wheelchair Navigation Stack considering User Preference and Control." ASCE International Conference on Computing in Civil Engineering , 2024 (accepted)

SELECTED PROJECTS

Shared Autonomy-based Wheelchair Supervised by Dr. Vineet R. Kamat, LIVE , University of Michigan © Utilize Gazebo to establish the simulation environment for testing the performance of normal navigation, shared navigation (combination of human preference and autonomous navigation) and manual control for the wheelchair. © Build the experimental platform in a wheelchair with lidar, camera, IMU, CAN communication system. © Now conducting various odometry and mapping algorithms, such as FAST-LIO , LEGO-LOAM ,	Sep. 2023-now
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RTAB-Mapping, etc.

Improved Personal Space Model for Robot Socially-aware Navigation

Final Project of ROB498 (HRI), University of Michigan

Sep.2023-Dec.2023

© Combining velocity-based personal space and density-based personal space from past papers through weighting, and after testing, it achieved superior performance in terms of safety and efficiency in the actual navigation process.

© By incorporating the distance to personal space and the distance to the target point as two factors, a cost function is constructed and applied to the Model Predictive Control (**MPC**), selecting the optimal path as the robot's route.

Code: https://github.com/weiqianwang123/Group_based_navigation_v1

Detection and Motion State Estimation for Fast Rotating and Translating Targets

University Championship-RoboMaster (held by DJI)

Sep.2022-Aug.2023

© Use **OpenCV** for real-time processing of images from high-speed industrial cameras, detect objects in the field of view that are moving and rotating quickly, with a detection frame rate exceeding 100FPS.

© The detected target is transformed into an absolute coordinate system using the **PnP** algorithm, and the absolute coordinates are fed into a state estimator centered around the Extended Kalman Filter (**EKF**). Simultaneously with state estimation, a **3D SORT tracker** is also employed to ensure continuous tracking of a target and obtaining its motion state.

Code: https://github.com/weiqianwang123/RMOS_2023

AWARDS

First Prize in The Chinese Mathematics Competitions

Second Prize in University Championship-RoboMaster (held by DJI)-[RMUC](#)

Second-class Scholarship at the Xidian University