Qingwen Xu

CONTACT

Date of Birth	1993.11.10
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EDUCATION

ShanghaiTech University & China Academic of Sciences	Mobile Robotics	PhD Student	Fall 2015 - Summer 2021 (Expected)
Jacobs University, Bremen		Visiting Student	May - Aug, 2018
Southeast University	Information Engineering	Bachelor	Summer 2011 - Spring 2015

INTERNSHIP

DeepGlint Robotics Intern Summer 2017

- Improve the efficiency of SLAM algorithm: Cartographer

TE Connectivity Automation Intern Spring 2017

- Develop A Robot Simulation System Based on ROS and Gazebo to verify the navigation algorithms
- Develop An App for Material Transportation Project
- Support on the Technology Evaluation of Material Transportation Project

EXPERIENCE

Rethinking Fourier-Mellin Transform in Multi-depth Environment 2020
Extend the Fourier-Mellin Transform to work in Multi-depth Environment with respect to translation and scaling

Optimal Experiment Design Based Sensors Calibration Spring 2019
Use the optimal experiment design technology to implement self-reflective sensors calibration, which make the robot calibrate the sensors actively

Improved Visual-Inertial Localization for Low-cost Rescue Robots Spring 2019
Detect and isolate abnormal sensors' measurements to improve the localization

Pose Estimation for Omni-directional Cameras using Sinusoid Fitting Spring 2019
Use the iFMI algorithm to find the motion of pixels and fit the motion to sinusoidal functions to calculate the relative pose

Deep-Sea Localization in Structured Environments Winter 2018
Estimate pose based on fast 3D plane registration in deep-sea environment, which can be an alternative and supplement to the marker-based localization

Pose Estimation for Omnidirectional Images Based on iFMI Spring - Autumn 2018
Use spectral method to find relative motion between each sub-frame cropped from omnidirectional images, then estimate relative poses between two omnidirectional images based on epipolar geometry.

PUBLICATIONS

[1] **Q. Xu**†, Z. Chu†, Y, Jiang†, B. Houska, C.N. Jones and S. Schwertfeger "An Optimal Experiment Design Based Self-Reflective Multi-Sensor Calibration Method", 2021 IEEE International Conference on Robotics and Automation. († Equal Contribution. Under Review)

[2] Z. Chu†, **Q. Xu**†, Y, Jiang†, S. Schwertfeger, and B. Houska "Optimal Experiment Design Based Hand-Eye Calibration", 2021 Annual American Control Conference (ACC). († Equal Contribution. Under Review)

[3] **Q. Xu**, H. Bülow, A. Birk, and S.Schwertfeger, "3D Visual Odometry based on 2.5D Spectral Registration of Omnidirectional 2D Images", The International Journal of Robotics Research. (Under Review)

[4] **Q. Xu**, X. Long, H. Kuang, and S. Schwertfeger, "Rotation Estimation for Omni-directional Cameras using Sinusoid Fitting", Journal of Intelligent & Robotic Systems. (Under Review)

[5] S. Schwertfeger, **Q. Xu**, X. Long, and H. Kuang. Rotation Estimation for Omni-directional Cameras Using Sinusoid Fitting (CN111354044A)

[6] **Q. Xu**, and S. Schwertfeger. An Extended Fourier-Mellin Transform Method for Multi-depth Scenarios (CN111951318A)

[7] Y.Yuan, **Q. Xu**, and S. Schwertfeger, "Configuration-Space Flipper Planning on 3D Terrain", IEEE International Symposium on Safety, Security, Rescue Robotics (SSRR): IEEE Press, 2020.

[8] **Q. Xu**†, Z. He†, Z. Chen, and Y. Jiang, "An Optical Flow Based Multi-Object Tracking Approach Using Sequential Convex Programming", 16th International Conference on Control, Automation, Robotics and Vision (ICARCV), 2020. († Equal Contribution)

[9] X. Long†, **Q. Xu**†, Y. Yuan, Z. He, and S. Schwertfeger, "Improved Visual-Inertial Localization for Low-cost Rescue Robots", 21st World Congress of the International Federation of Automatic Control (IFAC): International Federation of Automatic Control, 2020. († Equal Contribution)

[10] H. Kuang, **Q. Xu**, X. Long, and S. Schwertfeger, "Pose Estimation for Omni-directional Cameras using Sinusoid Fitting", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): IEEE Press, 2019.

[11] A. G. Chavez, **Q. Xu**, C. A. Mueller, S. Schwertfeger, and A. Birk, "Adaptive Navigation Scheme for Optimal Deep-Sea Localization Using Multimodal Perception Cues", IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): IEEE Press, 2019.

[12] **Q. Xu**, A. G. Chavez, H. Bülow, A. Birk, and S.Schwertfeger, "Improved Fourier Mellin Invariant for Robust Rotation Estimation with Omni-cameras", 2019 26th IEEE International Conference on Image Processing: IEEE, 2019.

SKILLS

Familiar with C++, MATLAB, ROS
English: CET-6

TEACHING

Robotics	Co-Teacher	Fall 2020
Introduction to Control	Teaching Assistant	Fall 2018
Computer Architecture	Teaching Assistant	Spring 2017
Computer Architecture	Teaching Assistant	Spring 2016

HONORS AND AWARDS

China Graduate Student Mathematical Contest in Modeling	**Third Prize**	Fall 2016
Best TA Award for Computer Architecture		Spring 2016