

Rong Zou

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EDUCATION

Eidgenössische Technische Hochschule Zürich (ETH Zürich)

Master of Science in Robotics, Systems and Control

Switzerland

Sep. 2021 – Present

- Final grade: **5.94/6.0**

University of Southampton (UoS)

Visiting Student in Ship Science

United Kingdom

Jan. 2019 – June 2019

- Final grade: **81/100 (First Class)**

Huazhong University of Science and Technology (HUST)

Bachelor of Engineering in Naval Architecture and Ocean Engineering

China

Sep. 2015 – June 2019

- Final grade: **3.94/4.00, 92.3/100 (Ranking 1/112)**

PUBLICATIONS

Retrieval Robust to Object Motion Blur

Rong Zou, Marc Pollefeys, Denys Rozumnyi. In *European Conference on Computer Vision*. 2024.

Seeing Behind Dynamic Occlusions with Event Cameras

Rong Zou, Manasi Muglikar, Nico Messikommer, Davide Scaramuzza. In *arXiv*. 2023.

Path Tracking Control of Skid-steered Mobile Robot on Slope Based on Fuzzy System and MPC

X. Yue, J. Chen, Y. Li, **R. Zou**, Z. Sun, X. Cao, S. Zhang. In *Int. J. Control Autom. Syst.* 2022.

WORK EXPERIENCE

Computer Vision Lab, Zürich Research Center, Huawei Technologies

Computer Vision and Machine Learning Research Intern

Switzerland

Mar. 2024 – Sep. 2024

- Conducted research on realistic image synthesis and deep learning-based image de-flickering to improve the quality of images captured by mobile phone cameras in dynamic scenes

Robotic Systems Lab (RSL), ETH Zürich

Robotics Research Assistant

Switzerland

June 2022 – Dec. 2022

- Contributed to the Autonomous River Cleanup project, responsible for data processing, front-end and back-end real-time communication, real machine testing and deployment

Corporate Research - Asia Pacific, Bosch (China) Investment Ltd.

Robotics Research Intern

China

May 2021 – Aug. 2021

- Improved the grasp planning algorithm for a robotic arm and verified the effectiveness by simulation
- Assembled and calibrated a robot gripper experimental platform and tested grasping stability on it

School of Mechanical Science & Engineering, HUST

Robotics Research Assistant

China

Sep. 2019 – Sep. 2020

- Developed improved particle swarm optimization algorithm for mobile robot global path planning
- Developed MPC-based algorithm for path tracking control of skid-steered wheeled mobile robots

PROJECTS

Monocular Depth Estimation with Virtual View Supervision

Feb. 2023 – June 2023

- Proposed leveraging Neural Implicit Surface Reconstruction methods to augment a limited-scale dataset via scene reconstruction and virtual view-depth pair generation for the training of supervised MDE networks
- Rendered images from Replica scenes as the base dataset, trained MonoSDFs for novel RGBD data generation
- Conducted extensive experiments, demonstrating significant improvements in DeepLabV3+ network MDE performance when using novel views as additional supervision signals

Computer Vision and Deep Learning for Autonomous Driving

Mar. 2022 – July 2022

- Fused multimodal driving data, identified laser ID from a given point cloud using K-means clustering, projected the LiDAR point cloud onto camera images and eliminated motion distortion with GPS/IMU data
- Constructed a multi-task learning architecture based on the DeepLabV3+ model for semantic segmentation and monocular depth estimation, ablated network architecture and improved the base network performance
- Created a 3D object detector to detect vehicles from LiDAR data, and studied the impact of canonical transformations and data augmentation on the box refinement stage of the detector

Vision-based Control for A Ball-balancing Robot

Feb. 2022 – May 2022

- Set up and calibrated the Pixy2 camera for object tracking; obtained the ball's pixel coordinates from the camera and transformed them into world coordinates for positional control
- Filtered the visual signal using Butterworth filter to effectively estimate ball velocities for PID control, implemented inverse kinematics of robotic arms to calculate servo angles from PID output
- Set up the ball balancing robot platform and tested algorithms in an Arduino microcontroller, successfully achieved perturbation-free self-balancing as well as specified trajectory tracking of the ball

Monocular Visual Odometry for Mobile Robots

Nov. 2021 – Jan. 2022

- Extracted and matched SURF features between keyframes and used the P3P algorithm for pose estimation
- Implemented sliding-window bundle adjustment to reduce reprojection errors and optimize estimated poses
- Performed loop detection based on a BoW model as well as global trajectory optimization for loop closure

HONOURS AND AWARDS

Excellent Graduation Thesis

Huazhong University of Science and Technology

Top 1/112

2019

National Encouragement Scholarship

Ministry of Education of the People's Republic of China

Top 3%

2018

National Scholarship

Ministry of Education of the People's Republic of China

Top 0.2%

2016, 2017

Model Student of Self-improvement

Huazhong University of Science and Technology

Top 0.1%

2017

Exceptional Undergraduate

Huazhong University of Science and Technology

Top 1%

2017

Merit Student

Huazhong University of Science and Technology

Top 3%

2016, 2017, 2018

SKILLS

Programming: Python, C++, Matlab, C, JavaScript, bash

Software / Framework: Pytorch, OpenCV, ROS, Blender

Languages: Chinese (native), English (C1 - proficient), German (basic)

Others: Git, Latex, Anaconda, Docker