

TANG JIAWEI

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Educations

Hong Kong University of Science and Technology

Sept. 2022 – Jul. 2025

PhD in Electronic & Computer Engineering

Hong Kong University of Science and Technology

Sept. 2019 – Aug. 2021

MPhil in Electronic & Computer Engineering

Hong Kong Polytechnic University

Sept. 2014 – Jun. 2019

BEng(Hons) in Electronic & Information Engineering

Research Works

Trajectory Optimization for Second-order Systems | *Optimization, Numerical Analysis*

Dec. 2022 - Sept. 2023

- Indicated the contradictory dynamics issues of existing numerical optimization methods for second-order systems.
- Developed modified direct transcription schemes and proved the superior theoretical performance of proposed methods.
- Completed two first-author papers and submitted them to the top-tier control journal (*L-CSS*) and conference (*ECC*).

Advanced Motion control for Mobile Robots | *Robotics, Planning, C++*

Sept. 2022 - Mar. 2023

- Led a five-person team to build a mobile robotic platform with perception, planning, and control systems from scratch.
- Designed the overall system and developed various control, planning, and state estimation algorithms.
- Conducted various simulations and physical experiments; Successfully demonstrated automatic navigation at HKUST.

Multi-robot Testbed | *Optimization, State Estimation, C++*

Jan. 2020 - Mar. 2021

- Cooperated with two MPhils to build a physical multi-robot testbed and a ROS-based simulation platform from scratch.
- Implemented various algorithms, including formation control, path planning with MPC, and extended Kalman filter.
- Completed and published one paper as the first author at *ASCC* and one as the third author at *ICPS*.

Working Experiences

Noah's Ark Lab, Huawei

Jun. 2023 - Nov. 2023

Research Intern

Hong Kong, CN

- Investigated the differential geometric techniques to robotic control and optimization.
- Developed a fully Python robotic simulation platform and implemented geometric MPC in simulation and real robots.
- Preparing one first-author paper on geometric optimization to submit to top-tier control and robotic conference.
- Recorded weekly paper sharing on AI, control, optimization and robotics.

Autonomous Driving Solution, Huawei

Oct. 2021 - Aug. 2022

Software Engineer

Shanghai, CN

- Served as a C++ software engineer and contributed to Huawei's self-developed navigation engine.
- Maintained and developed new features for HD-map navigation; Implemented data structure for cloud-based map.
- Recorded daily on-road test results from test engineers; coordinated software engineers from different teams to debug.

Robotics Institute, Carnegie Mellon University

Jun. 2018 - Aug. 2018

Research Intern

Pittsburgh, US

- Developed an efficient extrinsic calibration toolbox for camera and 3D LiDAR with a user-friendly GUI.
- Presented the work in the CMU RISS poster section; Report available in pp.140-144 of [RISS Journal].

Publication [M: manuscript, J: journal, C: conference]

[M2] Jiawei Tang, Yuxing Zhong, Pengyu Wang, Shuang Wu, and Ling Shi, "Direct Shooting Method for Second-order Systems: An Improved Transcription Method." In preparation.

[M1] Jiawei Tang, Yuxing Zhong, Nachuan Yang, Shuang Wu, Jiming Chen, and Ling Shi, "An Improved Direct Collocation Method for Second-Order Dynamics." Submitted to *IEEE Control Systems Letters (L-CSS)*.

[J2] Yuxing Zhong, Jiawei Tang, Nachuan Yang, Dawei Shi, Ling Shi, "Event-triggered Sensor Scheduling for Remote State Estimation with Error-Detecting Code." *IEEE Control Systems Letters (L-CSS)*.

[J1] Nachuan Yang, Jiawei Tang, Yik Ben Wong, Yuzhe Li, Ling Shi, "Linear Quadratic Control of Positive Systems: A Projection-Based Approach." *IEEE Transactions on Automatic Control(TAC)*.

[C2] Jiawei Tang, Yik Ben Wong, Zhengyu Fu, Nachuan Yang, Sil Kwong Tse, Winnie Leung, Ling Shi, "Motion Planning for Mobile Robots with Noise: A Probabilistic MPC Approach." *ASCC*, 2022.

[C1] Sil Kwong Tse, Yik Ben Wong, Jiawei Tang, Peihu Duan, Suk Wai Winnie Leung, Ling Shi, "Relative State Formation-based Warehouse Multi-robot Collaborative Parcel Moving", *ICPS*, 2021.

Others

Programming: C++, Python, MATLAB

Language: Fluent in English, Mandarin and Cantonese