JIAWEI TANG

(+852) 65531607 · jtangas@connect.ust.hk · https://garyandtang.github.io/

EDUCATION

Hong Kong University of Science and Technology; GPA: 3.86/4.3   2019.9 - 2021.8
Master of Philosophy in Electronic & Computer Engineering   ***Full Scholarship***
Related courses: Convex optimization; Linear system theory; Networked control and estimation; Aerial robotics

The Hong Kong Polytechnic University; GPA: 3.56/4.0   2014.9 - 2019.6
BEng(Hons) in Electronic & Information Engineering

RESEARCH INTERESTS

- **Optimal control; Optimization; Nonlinear system motion planning; Learning-based control**
- **State estimation; Sensor fusion; Computer vision; Positioning and mapping**

EXPERIENCES

Research Student at HKUST, working with Prof. Ling Shi   2019.9-present

- **Motion Planning for Mobile Robots with Uncertainty**
  - Proposed a probabilistic approach to solve the motion planning problem in a noisy environment.
  - Presented an optimization-based motion planning control framework with ILQR and MPC, and develop a convergence-guaranteed algorithm to achieve safety and optimality simultaneously.
- **Multi-robot Control**
  - Built a physical multi-robot testbed and a ROS-based simulation platform from scratch.
  - Implemented various control algorithms including leader-follower control, formation control, cooperative control, optimal control, extended Kalman filter and so on.
  - Researching on formation-based multi-robot collaborative parcel moving.
- **Optimal Control in Positive System**
  - Investigated infinite-horizon LQR design for positive linear systems for the first time.
  - Proposed an optimization-based framework for positivity-preserving LQR design with gain variations.

Research Intern at RI, CMU, worked with Prof. Michael Kaess   2018.6-2018.8

- **Automatic Extrinsic Calibration System of a Camera and a 3D LiDAR**
  - Developed an efficient extrinsic calibration toolbox for camera and 3D LiDAR with a user-friendly GUI.
  - Improved the calibration accuracy and system robustness. Report available in pp.140-144 of [RISS Journal]

Capstone Project Student at PolyU, worked with Prof. Kenneth Lam   2018.9-2019.5

- **Low Resolution Face Recognition**
  - Addressed the low-resolution face recognition with conventional method and deep-learning method.
  - Conventional method: match the LR images with HR images using multidimensional scaling.
  - DL method: guide the LR images' training with the feature difference between HR and LR images.
  - Developed a web-based demonstration system with Flask, HTML, Javascript and CSS.

Power Electronics Intern at ASM Pacific Technology   2017.6-2018.5

- **Project 1**: Designed feed-forward & PID control algorithm for digital controlled laser diode driver.
- **Project 2**: Simulated the performance of capacitance sensor in measuring the liquid height with MATLAB.
- **Project 3**: Developed a metal length measurement system with ADI ultrasonic sensor.

PUBLICATIONS

- **Jiawei Tang**, Yik Ben Wong, Zhengyu Fu, Nachuan Yang, Sil Kwong Tse, Ling Shi. "**Motion Planning for Mobile Robots with Uncertainty: A Model Predictive Control Approach**". *Submitted to IROS 2021.*
- Nachuan Yang, **Jiawei Tang**, Yik Ben Wong, Yuzhe Li, Shi Ling. "**Nonfragile Linear Quadratic Control of Positive Systems: A Projection-Based Approach**". *Submitted to TAC as technical note.*
- Sil Kwong Tse, Yik Ben Wong, **Jiawei Tang**, Peihu Duan, Suk Wai Winnie Leung, Ling Shi. "**Relative State Formulation-based Warehouse Multi-robot Collaborative Parcel Moving**". *Submitted to ICPS 2021.*

Volunteer Activities

- **Phnom Penh**, Cambodia, built solar panel charging stations for local villagers   2015.6
- **Phnom Penh**, Cambodia, built a library with obsolete container and solar panels for local schools.   2017.6
- **Phnom Penh**, Cambodia, built a study center with obsolete container for local primal schools   2016.6
- **Ya'an**, Sichuan, China, built 3D-print zero-carbon building for local villagers   2017.9 - 2018.9
- International Student Ambassador: to promote Chinese traditional food and culture   2016.9 - 2017.6

Award & Scholarship

- Postgraduate Studentship, HKUST   2019.9-2021.8
- UG Summer Research Abroad Sponsorship, PolyU   2018.6
- Mingxi Outstanding Youth Award   2017.11
- Hall Residences with Outstanding Contribution (2 of 250)   2017.07
- Second Runner-up Award of Robotic Challenge 2016, PolyU   2016.08
- HKSAR Government Scholarship Fund - Reaching Out Award   2016.6
- Best Sem GPA Award; Dean's List Honor; International Student Ambassador Scheme Outreaching Award

Skills

- **Programming**: C++, Python, MATLAB, Java, HTML, JavaScript, LaTeX
- **Others**: Pytorch, ROS, Git, Arduino, Spice, PCB Fabrication
- **Language**: Chinese Mandarin-Native; Chinese Cantonese-Fluently; English-Fluently