Guanrui Li | Curriculum Vitae

⚲ www.guan-rui.com   ✉ lguanrui@nyu.edu

EDUCATION

New York University
Ph.D. candidate Electrical and Computer Engineering   *2019 - present*

University of Pennsylvania
M.S.E Robotics   *2018*

Sun Yat-sen University
B.E. Theoretical and Applied Mechanics   *2016*

Related Experience

Robotics Institute, Carnegie Mellon University
Research Associate   *2018 - 2019*

GRASP Lab, University of Pennsylvania
Research Assistant   *2017 - 2018*

University of Hong Kong
Exchange Undergraduate   *2015*

Awards and Honors

Research Awards

2022 IEEE ICRA Outstanding Deployed System Paper Award Finalist, Learning Model Predictive Control for Quadrotors, (3 out of 1498 published papers)
2022 NYU Tandon Dante Youla Award for Graduate Research Excellence

Other Awards

2019: **Dean's PhD Fellowship**, NYU
2016: **Honors Graduates (Top 1%)**, SYSU
2016: **Outstanding Undergraduate Thesis paper**, SYSU
2015: **Fung's Scholarship**, SYSU
2014: **China National Scholarship (Top 1%)**, SYSU
2014: **1st Prize Outstanding Student Scholarship (Top 5%)**, SYSU
2014: **Meritorious Winner in The Mathematical Contest in Modeling (MCM)**, US
2013: **China National Scholarship (Top 1%)**, SYSU
2013: **1st Prize Outstanding Student Scholarship (Top 5%)**, SYSU

Publications

Journal

1. **Guanrui Li**, Xinyang Liu, and Giuseppe Loianno
   RotorTM: A Flexible Simulator for Aerial Transportation and Manipulation
   IEEE Transactions of Robotics, TRO, **2022** (submitted)

2. Alessandro Saviolo, **Guanrui Li**, and Giuseppe Loianno
   Physics-Inspired Temporal Learning of Quadrotor Dynamics for Accurate Model Predictive Trajectory Tracking
   IEEE Robotics and Automation Letters, (RA-L), **2022**

3. **Guanrui Li**, Rundong Ge, Giuseppe Loianno
Cooperative Transportation of Cable Suspended Payloads with MAVs using Monocular Vision and Inertial Sensing
IEEE Robotics and Automation Letters (RA-L), **2021**

Conference

1. Rundong Ge*, Moonyoung Lee*, Vivek Radhakrishnan, Yang Zhou, **Guanrui Li**, Giuseppe Loianno
Vision-based Detection and Tracking for Relative Localization of Aerial Swarms
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), **2022**

2. **Guanrui Li***, Alex Tunchez*, Giuseppe Loianno
Learning Model Predictive Control for Quadrotors
IEEE International Conference on Robotics and Automation (ICRA), **2022**(*: equal contribution)
Outstanding Deployed System Paper Award Finalist

3. Jeffrey Mao, **Guanrui Li**, Stephen Nogar, Christopher Kroninger, and Giuseppe Loianno
Aggressive Visual Perching with Quadrotors on Inclined Surfaces
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), **2021**

4. **Guanrui Li***, Alex Tunchez*, Giuseppe Loianno
PCMPC: Perception-Constrained Model Predictive Control for Quadrotors with Suspended Loads using a Single Camera and IMU
IEEE International Conference on Robotics and Automation (ICRA), **2021**(*: equal contribution)

5. **Guanrui Li**, Giuseppe Loianno
Design and Experimental Evaluation of Distributed Cooperative Transportation of Cable Suspended Payloads with Micro Aerial Vehicles
17th International Symposium on Experimental Robotics (ISER), **2020**

6. Christoph Bohm, **Guanrui Li**, Giuseppe Loianno, and Stephan Weiss
Observabilty-Aware Trajectories for Geometric and Inertial Self-Calibration
Power-On-and-Go Robots: 'Out-of-the-Box' Systems for Real-World Applications Workshop, Robotics: Science and Systems (RSS) Conference, **2020**

7. Vaibhav Viswanathan, Eric Dexheimer, **Guanrui Li**, Giuseppe Loianno, Michael Kaess, and Sebastian Scherer
Efficient Trajectory Library Filtering for Quadrotor Flight in Unknown Environments
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), **2020**

8. Bruno Gabrich, **Guanrui Li** and Mark Yim
ModQuad-DoF: A Novel Yaw Actuation for Modular Quadrotors
IEEE International Conference on Robotics and Automation (ICRA), **2020**

9. **Guanrui Li**, Bruno Gabrich, David Saldaña, Jnaneshwar Das ,Vijay Kumar and Mark Yim
ModQuad-Vi: A Vision-Based Self-Assembling Modular Quadrotor
IEEE International Conference on Robotics and Automation (ICRA), **2019**

10. David Saldaña, Bruno Gabrich, **Guanrui Li**, Mark Yim, and Vijay Kumar
ModQuad: The Flying Modular Structure that Self-Assembles in Midair
IEEE International Conference on Robotics and Automation (ICRA), **2018**

Media Coverage

Learning Model Predictive Control for Quadrotors
IEEE Spectrum Video Friday

Low-Cost Drones Learn Precise Control Over Suspended Loads
IEEE Spectrum, DroneDJ, NYU Tandon News

Cooperative Transportation of Cable Suspended Payloads with MAVs
IEEE Spectrum Video Friday

ModQuad: The Flying Modular Structure that Self-Assembles in Midair
Discovery Canada

Academic Services

Aerial Robotics IV Session Chairs, ICRA, 2022
Reviewers:
IEEE/RSJ Conference on Intelligent Robots and Systems (IROS) 2020, 2021, 2022
IEEE International Conference on Robotics and Automation (ICRA) 2019, 2020, 2021, 2022
IEEE International Symposium on Safety and Rescue Robotics (SSRR) 2020, 2021
IEEE Transactions on Robotics (T-RO) 2021, 2022
IEEE Robotics and Automation Letters (RA-L) 2020, 2021, 2022

Teaching Experience

Teaching Assistant, Foundations of Robotics
ROB 6003, Tandon School of Engineering, New York University   *Aug.2019 - May.2021*
60 graduate students, Instructor: Prof. Giuseppe Loianno

- Gave 1-2 lectures on dynamic model of a manipulator, using Lagrange approach and Newton-Euler approach.

Teaching Assistant, Design of Mechatronic Systems
MEAM 510, School of Engineering and Applied Science, University of Pennsylvania   *Aug.2017 - Dec.2017*
86 graduate/undergraduate students, Instructor: Prof. Mark Yim and Dr. Paul Stegall

- Held regular office hour and answered students questions on basic electronics and microprocessor.
- Modified a radio-controlled toy excavator to a WiFi-controlled robot for final project prototyping.
- Coached a 16-student team to win the first robot MOBA competition in the course.

Graduate Teaching Assistant, Robotics: Dynamics and control
edX learning platform, University of Pennsylvania   *July.2017 - Sept.2017*
Over 5,000 students, Instructor: Prof. Ani Heish and Prof. Vijay Kumar

- Moderated discussion forums and answered students questions on the lab assignments.
- Checked and fixed the course slides on linear and nonlinear control.