

GUANRUI LI

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EDUCATION

Ph.D. candidate Electrical and Computer Engineering

Aug.2019 - present

New York University, GPA: 3.93/4.00

M.S.E. Robotics

Sept.2016 - May.2018

GRASP Lab, University of Pennsylvania, GPA: 4.00/4.00

B.E. Theoretical and Applied Mechanics

Sept.2012 - June.2016

Sun Yat-sen University, GPA: 3.93/4.00

RELATED EXPERIENCE

Research Associate, AirLab, Field Robotics Center

Dec.2018 - May.2019

Robotics Institute, Carnegie Mellon University, Pittsburgh, supervised by Sebastian Scherer

Graduate Research Assistant, ModLab, GRASP lab

Aug.2018 - Dec.2018

Mechanical Engineering and Applied Mechanics, Univ. of Pennsylvania, Philadelphia, supervised by Mark Yim

Exchange Undergraduate

Jan.2015 - May.2015

College of Engineering, University of Hong Kong

PUBLICATIONS

1. Jeffrey Mao, **Guanrui Li**, Stephen Nogar, Christopher Kroninger, and Giuseppe Loianno, "Aggressive Visual Perching with Quadrotors on Inclined Surfaces", *proceedings of the 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* (Submitted)
2. **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)* with ICRA option, 2021
3. **Guanrui Li***, Alex Tunchez*, Giuseppe Loianno, "PCMPC: Perception-Constrained Model Predictive Control for Quadrotors with Suspended Loads using a Single Camera and IMU", *proceedings of the 2021 IEEE International Conference on Robotics and Automation (ICRA)*, 2021(*: equal contribution) (To Appear)
4. **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
5. Vaibhav Viswanathan, Eric Dexheimer, **Guanrui Li**, Giuseppe Loianno, Michael Kaess, and Sebastian Scherer, "Efficient Trajectory Library Filtering for Quadrotor Flight in Unknown Environments", *proceedings of the 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2020
6. Christoph Bohm, **Guanrui Li**, Giuseppe Loianno, and Stephan Weiss, "Observability-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. Bruno Gabrich, **Guanrui Li** and Mark Yim, "ModQuad-DoF: A Novel Yaw Actuation for Modular Quadrotors", *proceedings of the 2020 IEEE International Conference on Robotics and Automation (ICRA)*, 2020
8. **Guanrui Li**, Bruno Gabrich, David Saldaña, Jnaneshwar Das, Vijay Kumar and Mark Yim, "ModQuad-Vi: A Vision-Based Self-Assembling Modular Quadrotor", *proceedings of the 2019 IEEE International Conference on Robotics and Automation (ICRA)*, 2019

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

AWARDS AND HONORS

Dean’s PhD Fellowship , NYU	Aug. 2019
Honors Graduates (Top 1%) , SYSU	May.2016
Outstanding Undergraduate Thesis paper , SYSU <i>High dimensional model and nonlinear dynamical analysis of wind turbine blades under complex excitation</i>	May.2016
Fung’s Scholarship , SYSU	2015
Meritorious Winner in The Mathematical Contest in Modeling (MCM) , US <i>Why not change the lane: a mathematical model analyzing and simulating dynamic traffic under different rules</i>	May.2014
China National Scholarship (Top 1%) , SYSU	2014
1st Prize Outstanding Student Scholarship (Top 5%) , SYSU	2014
China National Scholarship (Top 1%) , SYSU	2013
1st Prize Outstanding Student Scholarship (Top 5%) , SYSU	2013

TEACHING EXPERIENCE

Teaching Assistant, Foundations of Robotics <i>ROB 6003, Tandon School of Engineering, New York University</i>	Aug.2019 - present
<ul style="list-style-type: none">· 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 <i>MEAM 510, School of Engineering and Applied Science, University of Pennsylvania</i>	Aug.2017 - Dec.2017
<ul style="list-style-type: none">· 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 <i>edX learning platform, University of Pennsylvania</i>	July.2017 - Sept.2017
<ul style="list-style-type: none">· 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.	

MEDIA COVERAGE

Low-Cost Drones Learn Precise Control Over Suspended Loads
[IEEE Spectrum](#), [DroneDJ](#)

ModQuad: The Flying Modular Structure that Self-Assembles in Midair
[Discovery Canada](#)

SKILLS AND INTERESTS

Program Language	C, C++, Python, Fortran, LaTeX, MATLAB
Research Interests	Multi-Robot Systems, Autonomous UAV, Dynamics and Control, Design of Mechanical and Mechatronic System
Software and Platforms	ROS, Linux, Solidworks, AutoCAD, Ansys