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)***(Accepted)

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)

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, "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. 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 — May.2016
High dimensional model and nonlinear dynamical analysis of wind turbine blades under complex excitation
Fung's Scholarship, SYSU — 2015
Meritorious Winner in The Mathematical Contest in Modeling (MCM), US — May.2014
Why not change the lane: a mathematical model analyzing and simulating dynamic traffic under different rules
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 — Aug.2019 - present
ROB 6003, Tandon School of Engineering, New York University

- 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 — Aug.2017 - Dec.2017
MEAM 510, School of Engineering and Applied Science, University of Pennsylvania

- 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 — July.2017 - Sept.2017
edX learning platform, University of Pennsylvania

- 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

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

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