

Zhichao Liu

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EDUCATION

University of California, Riverside , Riverside, California, USA	Sep 2018 – Present
▪ Ph.D. in Electrical Engineering, <ul style="list-style-type: none">• Adviser: Dr. Konstantinos Karydis• Cumulative GPA: 3.95 / 4.0• Focus: Legged Robots, Soft Robotics, UAV Collision Detection and Recovery, Robot-Environment Interactions	
University of Pennsylvania , Philadelphia, Pennsylvania, USA	Aug 2016 – May 2018
▪ M.S.E in Systems Engineering <ul style="list-style-type: none">• Cumulative GPA: 3.95 / 4.0	
Beijing University of Posts and Telecommunications , Beijing, China	Sep 2010 – Jun 2014
▪ B.E. in Measuring and Controlling Technologies and Instruments <ul style="list-style-type: none">• Cumulative GPA: 90 / 100, Rank: 3 / 54	

PUBLICATIONS

JOURNALS

- (1) E. Kokkoni, Z. Liu, and K. Karydis, “Development of a Soft Robotic Wearable Device to Assist Infant Reaching,” in *The ASME Journal of Engineering and Science in Medical Diagnostics and Therapy*, 2020, vol. 3, pp. 021109-1–9 [[DOI](#)]

CONFERENCES

- (1) Z. Liu and K. Karydis, “Collision Characterization and Recovery Control for a Collision-Resilient Quadrotor Equipped with Hall Sensors,” in *IEEE International Conference on Robotics and Automation [ICRA]*, 2021 (Under review)
- (2) Z. Lu, Z. Liu, G. Correa and K. Karydis, “Motion Planning for Collision-resilient Mobile Robots in Obstacle-cluttered Unknown Environments with Risk Reward Trade-offs,” in *IEEE/RSJ International Conference on Intelligent Robots and Systems [IROS]*, 2020 (In press)
- (3) Z. Liu, Z. Lu and K. Karydis, “SoRX: A Soft Pneumatic Hexapedal Robot to Traverse Rough, Steep, and Unstable Terrain,” in *IEEE International Conference on Robotics and Automation [ICRA]*, 2020, pp. 420–426 [[DOI](#)]

PROJECTS

Design and Control for an Actively Collision-resilient Quadrotor	Jan 2020 – Jun 2020
▪ Designed and built a quadrotor based on off-the-shelf components and custom 3D-printed parts.	
▪ Implemented nonlinear geometric controller based on PX4 flight control in ROS using C++.	
▪ Proposed a collision detection and characterization method based on Hall sensors and a recovery control method that generates and tracks a smooth trajectory after colliding.	
▪ Investigated experimentally the robot’s collision-resilient capabilities on collisions with walls, poles, and unstructured surfaces, as well as passive collisions (i.e. being hit).	
Design and Control for a Soft Pneumatic Hexapedal Robot	Apr 2019 – Sep 2019
▪ Designed and fabricated a novel soft pneumatic actuator and a novel six-legged soft robot.	
▪ Designed and tested gait patterns in simulations with finite element analysis and physical experiments.	
▪ Designed and implemented an air source control unit with four pressurization/depressurization channels.	
▪ Investigated experimentally the robot’s locomotion over rough, steep and unstable terrain.	

AWARDS & SCHOLARSHIPS

▪ UCR Dean’s Distinguished Fellowship	2018
▪ China National Undergraduate Electronic Design Contest (First Prize, Beijing)	2013
▪ China National Undergraduate Intelligent Car Racing (Second Prize)	2013
▪ China National Scholarship (Top %1)	2011

SKILLS

ROS, C++, Python, MATLAB, EAGLE PCB, SolidWorks, Fusion 360.