Yayun Du

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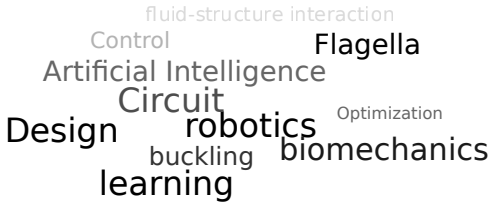

Profile Highlights

- **Publications and Patent**: Published or submitted five first-authored articles and two co-authored articles in top journals and conference proceedings in robotics. Several more are in preparation. Submitted an invention disclosure to UCLA.
- **Mentorship and Inclusion:** Supervised twelve undergraduate students, including four female students and two community college transfer students. Co-authored peer reviewed papers with eight supervisees. Out of these supervisees, Zihang Zhao later joined UCLA as a PhD student, Andrew Miller received graduate admission offers from UCLA and Georgia Tech for Fall 2021, and Jingyi Chen joined Cornell as a graduate student. Bhrugu Mallajosyula joined General Motors and Angeline Liu joined JPL.
- **Grant Writing:** Gathered preliminary data for a successful $450k federal grant from US Department of Agriculture. Prepared $\sim$ 33% of an NSF proposal with four PIs ($1.2M) that received ratings of Very Good, Very Good, Very Good/Good, and Fair (eventually declined).
- **Teaching:** Received an average student evaluation score of 8.0/9.0 in five courses.

Education

University of California, Los Angeles, CA — GPA:3.74/4.0
Ph.D. (Mechanical Engineering) — Dec 18 - Present
Major: System and Control
Minor: Structural and Solid Mechanics
M.S. (Mechanical Engineering) — Sep 16 - Feb 18

Harbin Institute of Technology, Heilongjiang, China — Ranking: 1/144
B.S.E. (Automotive Engineering) — Sep 12 - July 16

Research experience

Structure-Computer Interaction Lab, UCLA, Los Angeles, CA — April 18 - present
Graduate Research Assistant — Advisor: Prof. M. Khalid Jawed
Research area: robot design and control, biolocomotion, learning, agriculture robot, computer vision

New Energy Vehicle Research Institute, Harbin Institute of Tech, Harbin, China — Jul 14 - Aug 16
Assistant in Research — Advisor: Prof. Dafang Wang
Research area: distributed vehicle system control, alternative fuel vehicle

Technical Experience

FAW Jiefang Automotive Co., Ltd., Changchun, China — Jan 16 - Mar 16
Engineering Assistant Intern

Zhengzhou Nissan Motor Company, Zhengzhou, China — Jan 14 - Mar 14
Engineering Assistant Intern

Peer-Reviewed Publications & Proceedings

Note: In the field of robotics, it is customary to publish impactful works in peer reviewed conference proceedings instead of journals.
# indicates students supervised or mentored by Yayun Du.

P1. **Du, Y.**, A., Miller#, Jawed, M. K., "Simple Flagellated Soft Robot for Locomotion Locomotion near Air-Liquid Interface", *IEEE International Conference on Soft Robotics (RoboSoft)*, Yale, CT, 2021 (*In press*)
URL: `https://arxiv.org/abs/2103.05712`

P2. **Du, Y.**, Deng, Z. #, Fang, Z.#, Wang, Y.#, Nagata, T.#, Bansal, K., Quadir, M., Jawed, M. K.,"Vision and force based autonomous coating with rollers", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Las Vegas, NV, USA, pp. 9954-9960, 2020
URL: `http://doi.org/10.1109/IROS45743.2020.9341619`

P3. Qin, L., Huang W., **Du, Y.**, Zheng, L., "Genetic algorithm-based inverse design of elastic gridshells", *Structural and Multidisciplinary Optimization*, 62(5), pp.2691-2707, 2020.
URL: `https://doi.org/10.1007/s00158-020-02639-8`

P4. Wang, D., Zhou, C., Zou, M., Liao, J., **Du, Y.**, "Study on Inspection of the Initial Rotor Position of BLDC Based on High-frequency Signal Injection", *IEEE Transportation Electrification Conference and Expo Asia-Pacific*, pp. 1-4, 2014.
URL: `https://doi.org/10.1109/ITEC-AP.2014.6940758`

P5. **Du, Y.**, Lam, J.,#, Sachanandani K.#, Jawed, M. K., "Modeling the locomotion of articulated soft robots in granular medium", Submitted to *the International Journal of Robotics Research*, 2021.
URL: `https://arxiv.org/abs/2103.03993`

P6. **Du, Y.**, Zhang, G.,#, Tsang D.#, Jawed, M. K., "Deep-CNN based real-time robotic multi-class weed identification", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021. (*Submitted*)
URL: `https://youtu.be/ci66YtdtfQk`

P7. **Du, Y.**, Mallajosyula, B.#, Sun, D.#, Chen, J.#, Zhao, Z.#, Rahman, M., Quadir, M., Jawed, M. K., "Compact mobile robot for precision weed management in row crops", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021. (*Submitted*)
URL: `https://youtu.be/QjwI7DM3CIg`

Conference Proceedings and Presentations

C1. **Du, Y.***, Miller, A., Jawed, M. K.,"Simple untethered flagellated robot in fluids and granular media", American Physical Society March Meeting, Online, March 14-19, 2021. (*Oral*)

C2. **Du, Y.***, Deng, Z. , Fang, Z., Wang, Y., Nagata, T., Bansal, K., Quadir, M., Jawed, M. K.,"Vision and force based autonomous coating with rollers", International Conference on Intelligent Robots and Systems (IROS), Online, Oct 25, 2020. (*Oral*)

C3. **Du, Y.***, Lam, J., Sachanandani K., Jawed, M. K.,"Locomotion of Soft Robots with Flexible Flagella in Granular Medium", 1^{st} Southern California Mechanics Workshop, San Diego, CA, Jan 2020. (*Oral*)

C4. **Du, Y.***, Lam, J., Sachanandani K., Jawed, M. K.,"Locomotion of Soft Robots with Flexible Flagella in Granular Medium", American Physical Society March Meeting, Boston, MA, March 4-8, 2019. (*Oral*)

C5. Qin L.*, **Du, Y.**, Huang, W., Jawed, M. K., "Numerical Simulations for Physics-based Training of Robots for Manipulation of Flexible Rods", American Physical Society March Meeting, Boston, MA, March 4-8, 2019. (*Oral*)

C6. **Du, Y.***, Jawed, M. K.,"Locomotion of Soft Robots with Flexible Flagella in Granular Medium", Southern California Robotics Symposium, Caltech, CA, April 2019. (*Poster*)

Grant Writing

G1. Collected preliminary data for Grant # 2021-67022-34200, "Autonomous Robotic Systems for Precision Weed Control in Flax", National Institute of Food and Agriculture, **United States Department of Agriculture**, $453,190, 2021 - 2025. PIs: Mukhlesur Rahman and Mohi Quadir (North Dakota State University), M. Khalid Jawed (UCLA)

G2. Wrote $\sim$ 33% of the project narrative for a proposal titled "Smart and Connected Robotic Infrastructure for Data-driven Sustainable Agriculture", **National Science Foundation**, $1.2M, 2021. PIs: Rajit Gadh (UCLA), M. Khalid Jawed (UCLA), Wei Wang (UCLA) and Mukhlesur Rahman (North Dakota State University), M. Khalid Jawed (UCLA). Received ratings of (1) Very Good, (2) Very Good, (3) Very Good/Good, and (4) Fair; but eventually declined.

Professional Service

Reviewer

- Three papers for IEEE International Conference on Robotics and Automation (ICRA), 2021

Prefessional membership

- American Physical Society
- Institute of Electrical and Electronics Engineers

Advising and mentoring experience

Undergraduate Student Research Program (SRP) 199 : Wenjie Mo, Da Chen, Yu Zhou, Guofeng Zhang, Darren Tsang, "Low-cost autonomous agricultural robot for weed control" , 2020-2021

Undergraduate Student Research Program (SRP) 199 : Andrew Miller, Arthur Lovekin, "Bacteria-inspired flagellated robot turn by buckling soft tails", 2019-2021

Undergraduate Student Research Program (SRP) 199 : Keerthi Pradaa Balajee, "Bacteria-inspired soft robot capable of traveling through granular media", 2019

Undergraduate Student Research Program (SRP) 199 : Taiki Nagata, "Collaborative robotic drawing simulation in Vrep with constant force", 2019

Undergraduate Student Research Program (SRP) 99 : Karunesh Schanandani, Jacqueline Lam,"2D movement control of soft robots in low Reynolds number of fluid", 2019

Undergraduate Summer Intern : Zihang Zhao, Visiting Undergraduate Student, "Build a compact agriculture robot for weed control", 2019

Teaching and Leadership Experience

Department of Electrical Engineering, UCLA, Los Angeles, CA Sep 17 - Sep 20
Teaching Associate for *ECE 205A Matrix Analysis for Scientists and Engineers* (Graduate)
Student evaluation: **8.0/9.0**

Department of Mechanical Engineering, UCLA, Los Angeles, CA Sep 17 - Sep 20
Teaching Assistant for *M20 Introduction to Computer Programming with MATLAB* (Undergraduate)
Student evaluation: **8.0/9.0**

Department of Physics & Astronomy, UCLA, Los Angeles, CA Mar 18 - Jun 18
Teaching Assistant for *Physics 5C Physics for Life Sciences Majors: Electricity, Magnetism, and Modern Physics Physics 1C Physics for Scientists and Engineers: Electrodynamics, Optics, and Special Relativity* (Undergraduate)
Student evaluation: **8.0/9.0**

Department of Psychology, UCLA, Los Angeles, CA — Sep 17 - Sep 19
Teaching Assistant for *Psychology 120B Sensation & Perception* (Undergraduate)
Student evaluation: **8.0/9.0**

Yuan • Meng Tibet, Tibet, China — Jun 13 - Sep 13
Team Creator and Leader of the first volunteer team at HIT to teach in Tibet

Selected Honors and Awards

Graduate

2018-2021 **Graduate Division Fellowship** from UCLA Graduate Division ($ 49,097.72 per year)
2016 **Best Passage Award** from UCLA Graduate Division for sharing the story "How I get to UCLA"

Undergraduate

2012-2016 **National Scholarship** from Ministry of Education of the People's Republic of China with first GPA ranking for four years in Department of Automotive Engineering
2015 **Top Ten Students** of Harbin Institute of Technology, Weihai for combined top 1% GPA, excellent publications and outstanding leadership evaluated by classmates and staff in the department. I was the only junior gaining this honor while others were seniors
2015 **Honorable Mention** from COMAP for Mathematical Contest in Modeling (MCM)
2015 **Outstanding Leader Award** from Harbin Institute of Technology for academic excellence and fantastic student club activity organization
2014 **Best-organized Volunteer Team Leader** from Harbin Institute of Technology for establishing the first volunteer team of college students to teach in Tibet and building long-term cooperation with the local government
2013 **First Prize** from Heilongjiang Provincial Education Department in Mathematics Competition for College Students; 8% of students were awarded in 2013
2013 **First Prize** from College Foreign Language Teaching Committee and College Foreign Language Teaching Research Association in National English Competition for College Students; 6% of students were awarded in 2013
2013 **Most Creative Award** from Department of Automotive Engineering for the lowest cost and most efficient pressure oil pump design; 1 out of 10 teams was awarded

Technical Skills

Programming: MATLAB, Python, C/C++, ROS, HTML, JavaScript

Modeling & Designing: CATIA, Solidworks, AutoCAD, Mathematica, COMSOL, Simulink/Carsim, Davinci Resolve

Languages: English, Chinese, Korean

References

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