Yuhao Jiang

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Summary

Ph.D. Candidate in Mechanical Engineering with a focus on robotic systems. Solid background in mechanism design, prototyping and testing, dynamic system identification, simulation, and control. Looking for opportunities to apply my experience in R&D, system automation, and related areas in the industry.

Education

Arizona State University
Ph.D. in Mechanical Engineering — *Jan. 2019 - Apr. 2023 (expected)*

University of Florida
Master of Science in Mechanical Engineering — *Sep. 2015 - May. 2017*

Donghua University
Bachelor of Engineering in Mechanical Engineering — *Sep. 2011 - Jul. 2015*

Technical Skills

- **Programming Languages and Technologies** : Python, Matlab, ROS, Linux
- **Simulation and FEA**: MuJoCo, PyChrono, ANSYS, COMSOL
- **Hardware Technologies** : UR5 robotic arm, ATI F/T sensor, Arduino, ESP32, Dynamixel Servos, Brushless Motor Control (ODrive, SimpleFOC), NI-DAQ, OptiTrack
- **Manufacturing Technologies** : 3D printing (Ultimaker, Markforged), Laser cutting, CNC, Mold Making, Laminate Fabrication
- **Control Technologies** : PID control, Adaptive Control, Data-driven Control, Model Predictive Control
- **Optimization and Machine Learning Technologies** : CMA-ES, Deep Neural Network, Differential evolution optimization, OpenCV

Publications

Google Scholar: Yuhao Jiang

- **Y. Jiang**, F. Chen, and D. M. Aukes, "Tunable Dynamic Walking via Soft Twisted Beam Vibration," IEEE Robotics and Automation Letters, pre-print available at: https://doi.org/10.48550/arxiv.2211.00715.
- **Y. Jiang**, M. Sharifzadeh, and D. M. Aukes, "Reconfigurable Soft Flexure Hinges via Pinched Tubes," 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020, pp. 8843-8850, https://doi.org/10.1109/IROS45743.2020.9341109.
- **Y. Jiang**, M. Sharifzadeh, and D. M. Aukes, "Shape Change Propagation Through Soft Curved Materials for Dynamically-Tuned Paddling Robots," 2021 IEEE 4th International Conference on Soft Robotics (RoboSoft), 2021, pp. 230-237, https://doi.org/10.1109/RoboSoft51838.2021.9479208.
- M. Sharifzadeh, **Y. Jiang**, A. Lafmejani, D. M. Aukes, "Compensating for Material Deformation in Foldable Robots via Deep Learning – A Case Study," 2022 IEEE International Conference on Robotics and Automation (ICRA), 2022, https://doi.org/10.1109/ICRA46639.2022.9811752.
- M. Sharifzadeh, **Y. Jiang**, A. Lafmejani, K. Nichols, and D. M. Aukes, "Maneuverable gait selection for a novel fish-inspired robot using a CMA-ES-assisted workflow," in Bioinspiration & Biomimetics, vol. 16, no. 5, pp. 056017, August 2021, https://doi.org/10.1088/1748-3190/ac165d.
- M. Sharifzadeh, **Y. Jiang**, and D. M. Aukes, "Reconfigurable Curved Beams for Selectable Swimming Gaits in an Underwater Robot," in IEEE Robotics and Automation Letters, vol. 6, no. 2, pp. 3437-3444, April 2021, https://doi.org/10.1109/LRA.2021.3063961.
- Sharifzadeh, M, **Jiang, Y**, Khodambashi, R, & Aukes, D. "Increasing the Life Span of Foldable Manipulators With Fabric." Proceedings of the ASME 2020 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference. Volume 10: 44th Mechanisms and Robotics Conference (MR). Virtual, Online. August 17–19, 2020. V010T10A087. ASME, https://doi.org/10.1115/DETC2020-22757.

Conference Talks

ICRA 2022:

- **Conference proceedings talk:** "Compensating for Material Deformation in Foldable Robots Via Deep Learning – a Case Study", https://youtu.be/AwS4vabv-JQ.
- **Workshop presentation:** "Modular Robots Using Soft Curved Reconfigurable Anisotropic Mechanisms".

ICRA 2021:

- **Conference proceedings talk:** "Reconfigurable Curved Beams for Selectable Swimming Gaits in an Underwater Robot", https://youtu.be/EszTDc9slyw.

Robosoft 2021:

- **Conference proceedings talk:** "Shape Change Propagation Through Soft Curved Materials for Dynamically-Tuned Paddling Robots".

IROS 2020:

- **Conference proceedings talk:** "Reconfigurable Soft Flexure Hinges via Pinched Tubes", https://youtu.be/J5heXXD6mVo.

Patents

- "Mechanisms for steering robotic fish"– US Patent No. 11124281B2 – Date of Patent: Sep 21, 2019;
- "Pinched Tubes for Reconfigurable Robots" (submitted);
- "Soft, Curved, Reconfigurable Buckling Beams for Underwater and Terrestrial Autonomous Vehicles" (submitted).

Academic Services

Reviewer

- **Journal Reviewer:** Soft Robotics (SoRo), Journal of Field Robotics (JFR), IEEE Transactions on Robotics (T-RO), IEEE Robotics and Automation Letters (RA-L), ASME Journal of Mechanisms and Robotics (JMR).
- **Conference Reviewer:** IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), International Conference on Robotics and Automation (ICRA), International Conference on Soft Robotics (Robosoft), ACM Symposium on Computational Fabrication (SCF).

Organizing Workshops

- **ICRA 2023 Workshop:** "Breaking the Mold: Empowering Soft Robots with Reconfigurable Nonlinearity" (under review), https://www.scrambots.com/icra-2023-workshop.
- **Robosoft 2021 Workshop:** "Breaking the Mold: Challenging Current Paradigms in Soft Robotics", https://www.scrambots.com/robosoft-2021-workshop.

Technical Experience (Selected)

Dynamic System Identification for a Fan-damper VAV System — **DiCE Lab, University of Florida**
Graduate Student Researcher, PI: Dr. Prabir Barooh — *Dec. 2016 - May. 2017*

- Established fan-air pressure model, damper-air pressure model, air converging and diverging model;
- Built the pressure balance equilibrium to connect models together;
- Solved steady-state value and obtained relationship between air flow rate, fan speed, and damper position using Newton's iteration method;
- Controlled the thermal environment in multiple zones based on determining cooling air's flow rate with the control of fan speed and damper position.

Speech Interaction Control System for Flight Control — **Aviation Industry Corporation of China**
Intern, Flight Control Engineer — *Jun. 2014 - Sep. 2014*

- Identified the details of voice commands, developed corresponding codes, optimized loop statements, and improved the recognition rate;
- Developed GUI using Matlab Simulink;
- Established non-specific voice control for mini RC drones to achieve various maneuver motions.