

JUNBANG LIANG

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EDUCATION

Columbia University

M.Sc. in Computer Science, GPA: 4.2/4.0

New York, NY, USA

Exp May 2025

The University of Auckland

B.Eng. (Hons.) in Mechatronics Engineering, GPA: 8.7/9.0

Auckland, NZ

May 2023

Awards: Overall Winner of Summer Research, Final Year Project Award, Senior Scholar Award

TECHNICAL SKILLS

Languages Python, Matlab

Other Tools ROS, CAD, Blender, Microcontroller Programming, 3D Printing, Composite Manufacturing, Machining, Silicone Molding

RESEARCH EXPERIENCE

Columbia University

Dreamitate: Real-World Visuomotor Policy Learning via Video Generation

New York City, USA

Mar 2024 - Present

- Proposed a visuomotor policy learning framework that fine-tunes video generative model to learn manipulation via video generation.

The University of Auckland

Flexible Flat Cable Assembly

Auckland, NZ

Mar 2023 - Sep 2023

- Developed a method that combines object pose estimation using CAD models and multiview fusion to perform precise FFC assembly with less than 0.1 mm tolerance.

Bioinspired Tailsitter UAV

Mar 2022 - Mar 2023

- Developed a bioinspired tailsitter UAV based on tendon-driven shape-morphing wings with aerofoil-shaped artificial feathers.

Kirigami Grippers

Feb 2022 - Aug 2023

- Proposed a new type of soft kirigami gripper based on compression actuation that significantly enhances the grasping force exertion of kirigami grippers, capable of picking up objects of 26 times its own weight.
- Sensorized soft kirigami grippers for single-grasp based identification of objects, achieving 94% accuracy on common food item classification.

Mechanically Programmable Jamming

Nov 2021 - Mar 2022

- Proposed and patented a novel variable stiffness structure based on an articulated mesh. The stiffness increases by 27 times when actuated and used to develop variable stiffness grippers and an elbow assistive device.

LightSense

Jun 2021 - Mar 2022

- Designed an actuation and control system for a large-scale midair suspended extended reality art display.

WORK EXPERIENCE

Columbia University

Research Assistant

New York City, USA

Mar 2023 - Present

- Research on video generation for robotics.

The University of Auckland

Research Assistant, with New Dexterity

Auckland, NZ

Mar 2022 - Aug 2023

- Research on kirigami grippers and flexible flat cable assembly.

Graduate Teaching Assistant

Feb 2023 - Jul 2023

- Led tutorials and graded assignments for MECHENG 201 and MECHENG 705.

Summer Research Internship

Nov 2021 - Mar 2022

- Research on mechanically programmable jamming.

Research Assistant, with Arc/sec Lab

Jun 2021 - Mar 2022

- Involved with developing the LightSense art installation.

Sunfed

Auckland, NZ

Laboratory Assistant

Dec 2019 - Jan 2020

- Involved with research and development of a plant-based meat recipe.

Walter & Wild

Auckland, NZ

Engineering Assistant

Jan 2019 - May 2019

- Installed food production lines, optimized operation efficiency and translated for engineers from overseas.

PUBLICATIONS

1. **J. Liang***, R. Liu*, E. Ozguroglu, S. Sudhakar, A. Dave, P. Tokmakov, S. Song, and C. Vondrick, "Dreamitate: Real-World Visuomotor Policy Learning via Video Generation," in *Conference on Robot Learning, 2024*.
2. **J. Liang**, J. Buzzatto, B. Busby, H. Jiang, S. Matsunaga, R. Haraguchi, T. Mariyama, B. MacDonald, M. Liarokapis, "On Robust Assembly of Flexible Flat Cables Combining CAD and Image Based Multiview Pose Estimation and a Multi-Modal Robotic Gripper," in *IEEE Open Journal of the Industrial Electronics Society, 2024*.
3. J. Buzzatto, H. Jiang, **J. Liang**, B. Busby, A. Lynch, R. Godoy, S. Matsunaga, R. Haraguchi, T. Mariyama, B. MacDonald, M. Liarokapis, "Multi-Layer, Sensorised Kirigami Grippers for Delicate yet Robust Robot Grasping and Single-Grasp Object Identification," in *IEEE Access, 2024*.
4. R. Liu, **J. Liang**, S. Sudhakar, H. Ha, C. Chi, S. Song, and C. Vondrick, "Paperbot: Learning to Design Real-world Tools Using Paper," in *arXiv preprint, 2024*.
5. **J. Liang**, J. Buzzatto, B. Busby, R. Godoy, S. Matsunaga, R. Haraguchi, T. Mariyama, B. MacDonald, M. Liarokapis, "Employing Multi-Layer, Sensorised Kirigami Grippers for Single-Grasp Based Identification of Objects and Force Exertion Estimation," in *IEEE/RSJ International Conference on Intelligent Robots and Systems, 2023*.
6. **J. Liang**, J. Buzzatto, M. Liarokapis, "A Tailsitter UAV Based on Bioinspired, Tendon-Driven, Shape-Morphing Wings with Aerofoil-Shaped Artificial Feathers," in *IEEE/RSJ International Conference on Intelligent Robots and Systems, 2023*.
7. J. Buzzatto, **J. Liang**, M. Shahmohammadi, S. Matsunaga, R. Haraguchi, T. Mariyama, B. MacDonald, M. Liarokapis, "A Soft, Multi-Layer, Kirigami Inspired Robotic Gripper with a Compact, Compression-Based Actuation System," in *IEEE/RSJ International Conference on Intelligent Robots and Systems, 2023*.
8. G. Gao, **J. Liang**, and M. Liarokapis, "Mechanically Programmable Jamming Based on Articulated Mesh Structures for Variable Stiffness Robots," in *IEEE/RSJ International Conference on Intelligent Robots and Systems, 2022*.
9. J. Buzzatto, M. Shahmohammadi, **J. Liang**, F. P. Sanches, S. Matsunaga, R. Haraguchi, T. Mariyama, B. MacDonald, and M. Liarokapis, "Soft, Multi-Layer, Disposable, Kirigami Based Robotic Grippers: On Handling of Delicate, Contaminated, and Everyday Objects," in *IEEE/RSJ International Conference on Intelligent Robots and Systems, 2022*.
10. S. Lin, J. Buzzatto, **J. Liang**, and M. Liarokapis, "An Adaptive, Reconfigurable, Tethered Aerial Grasping System for Reliable Caging and Transportation of Packages," in *IEEE International Symposium on Safety, Security, and Rescue Robotics, 2022*.

EXTRA-CURRICULAR ACTIVITIES

- Student volunteer for the 6th Annual Conference on Robot Learning. December 2022
- Team member of the University of Auckland Formula SAE. May 2021 - March 2022
- Team member of the University of Auckland Program for Space Systems. June 2020 - November 2021