JUNBANG LIANG

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EDUCATION

Columbia University New York, NY, USA
M.Sc. in Computer Science, GPA: 4.2/4.0 Exp Dec 2024

The University of Auckland Auckland, NZ
B.Eng. (Hons.) in Mechatronics Engineering, GPA: 8.7/9.0 May 2023
<u>Honors</u>: Overall Winner of Summer Research, Final Year Project Award, Senior Scholar

TECHNICAL SKILLS

Languages	Python, Matlab
Frameworks	ROS, OpenCV, Pytorch
Other Tools	Git, Autodesk Inventor, Adobe Photoshop, Premiere Pro, Blender, Arduino

RESEARCH EXPERIENCE

Columbia University New York City, USA
Research Assistant, with Computer Vision Lab at Columbia University Mar 2024 - Present

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

The University of Auckland Auckland, NZ
Research Assistant, with New Dexterity Mar 2022 - Aug 2023

- Developed a high-precision pose estimation algorithm that uses a multi-view template matching strategy to achieve robust sub-0.1mm precision in flat flexible cable assembly tasks.
- Sensorized soft kirigami grippers for single-grasp based identification of objects, achieving 94% accuracy on common food item classification using Random Forest Model.
- 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.

Summer Research Intern 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.
- Developed a low-cost variable stiffness gripper based on actuating the articulated mesh.
- Developed an elbow assistive device based on the articulated mesh. EMG experiments validated a notable reduction in muscle fatigue.

Research Assistant, with Arc/sec Lab Jun 2021 - Mar 2022

- Designed an actuation and control system for a large-scale midair suspended extended reality art display.
- Implemented ROS to Unity interface to integrate motor control with an extended reality system.

PROFESSIONAL EXPERIENCE

The University of Auckland Auckland, NZ
Graduate Teaching Assistant Feb 2023 - Jul 2023

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

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 and optimized operation efficiency. 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," arXiv preprint, 2024.

2. R. Liu, **J. Liang**, S. Sudhakar, H. Ha, C. Chi, S. Song, and C. Vondrick, "Paperbot: Learning to Design Real-world Tools Using Paper," arXiv preprint, 2024.

3. **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.*

4. **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.*

5. 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.*

6. 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.*

7. 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.*

8. 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.*