Wanjia Fu

Personal Information

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GitHub	https://github.com/julia-fu0528
Google Scholar	https://scholar.google.com/citations?user=Y7gW52cAAAAJ

Education

08/2022–05/2026 **Sc.B., Computer Science; A.B. Applied Mathematics**
GPA: **4.0** | Brown University, Providence, RI, USA

Awards

10/2025	CRA Outstanding Undergraduate Researcher Awards Nomination (**top 4** per year)
06/2025	Pathways@RSS 2025 Fellowship (**8%** acceptance rate)
06/2025	CVPR 2025 Travel Support Award ($1,000)
05/2025	Advanced Undergraduate Research SPRINT Fellowship
04/2025	Randy Pausch Undergraduate Research Fellowship ($13,350, **top 1** per year)
04/2025	**First Place Award** at 10th Annual Brown CS Research Symposium ($400, **top 1** per year)
01/2024	Undergraduate Teaching and Research Awards ($250)
05/2023	Undergraduate Teaching and Research Awards ($250)

Publications

∗ represents equal contribution.

[1] **Wanjia Fu***, Hongyu Li*, Ivy X. He, Stefanie Tellex, and Srinath Sridhar. *UniTac: Whole-Robot Touch Sensing Without Tactile Sensors*. Under review. (Link)

[2] Rao Fu*, Dingxi Zhang*, Alex Jiang, **Wanjia Fu**, Austin Funk, Daniel Ritchie, Srinath Sridhar. *GigaHands: A Massive Annotated Dataset of Bimanual Hand Activities.* **Highlight paper (2%)** accepted by CVPR 2025. (Link)

Presentations

1. **Wanjia Fu***, Hongyu Li*, Ivy X. He, Stefanie Tellex, and Srinath Sridhar. *Touch Your Robots Without Tactile Sensors*. Presented at ICRA 2025 Workshop "How do Robots Care", Atlanta, Georgia, 2025.
2. **Wanjia Fu***, Hongyu Li*, Ivy X. He, Stefanie Tellex, and Srinath Sridhar. *UniTac: Whole-Robot Touch Sensing Without Tactile Sensors.* Presented at RSS 2025 Workshop on Human-Robot Contact and Manipulation, Los Angeles, California, 2025

Research Experience

05/2025–Current **Visual-Tactile Dataset for Particle-Based Dynamics Models**
Brown University, Columbia University
Mentors: Prof. George Konidaris, Prof. Yunzhu Li, Dr. Kevin Smith, Hongyu Li

- Collect visuotactile dataset on single-hand and bimanual manipulation of deformable objects.
- 3D print, assemble UMI gripper and integrate tactile sensors into the Brown Interaction Capture System (BRICS).
- Implement deformable 3D gaussian splatting reconstruction for ground truth particle position and velocity.
- Implement and Aruco marker detection for gripper wrist and finger 6D pose.
- Train dynamics model on 150 instances of single-hand and bimanual manipulation of deformable objects.
- Deploy model predictive control (MPC) using the Franka Research 3 arm model.

06/2025–Current **Large Model for Visuo-Tactile for Human Manipulation**
Brown University, MIT
Mentors: Prof. Srinath Sridhar, Prof. Paul Liang, Rao Fu

- Collect visuotactile dataset using tactile gloves and the Brown Interaction Capture System.

- Collect 2000 sequences of data with 22 volunteers tasks including static recognition and dynamic compliance.
- Label the collected tactile and 40-view RGB video data for vision tactile cross retrieval and tactile-conditioned video generation.

03/2025–Current **Whole-Robot Touch Sensing Without Tactile Sensors in Dynamic Setting**
Brown University | Mentor: Prof. Srinath Sridhar.
- Extend UniTac to localize touch on Boston Dynamic's Spot quadruped when it is walking rather than standing.
- Train and deploy walking policy using reinforcement learning in IsaacSim for data collection in simulation.

11/2024–03/2025 **UniTac: Whole-Robot Touch Sensing Without Tactile Sensors**
Brown University | Mentors: Prof. Srinath Sridhar, Prof. Stefanie Tellex, Hongyu Li
- Leveraged built-in joint torque sensors to achieve live whole-body touch sensing across various robot platforms.
- Localize to within 7.2 centimeters at around 2,000 Hz on an RTX 3090 GPU without additional sensors to the robot.
- Collected joint data with touch on 104 points on Spot and 10 on the Franka arm to train regression model.
- Trained a 4-layer MLP model that maps joint torques and joint positions to touch locations.
- Demonstrated touch-based human-robot interaction, including bio-inspired quadruped choreography.

09/2024–11/2024 **GigaHands: A Massive Annotated Dataset of Bimanual Hand Activities**
Brown University | Mentors: Prof. Srinath Sridhar, Prof. Daniel Ritchie, Rao Fu
- Synchronized RGB videos across 51 BRICS camera views for 2D, 3D key points and MANO model fitting.
- Worked on 3D dynamic gaussian splatting on multiple camera views of hand object interactions.
- Collected data for the GigaHands dataset, with over 50 actions with text annotations.
- Generated contact heatmap across bimanual hand-object and hand-hand activities of diverse scenes.

01/2024–09/2024 **Vibration Haptics: Hand Contact Detection and Localization with IMU**
Brown University | Mentors: Prof. Srinath Sridhar, Hongyu Li
- Designed portable wrist hardware device with Inertial Measurement Unit (IMU) for sensor data collection.
- Built a neural network model to improve hand-object contact detection and localization.
- Integrated IMU sensor and data visualization into BRICS through hardware assembling and software calibration.

09/2023–12/2023 **Shaped-Based Skill Transfer by Learning Policy on Object Parts**
Brown University | Mentor: Prof. George Konidaris, Skye Thompson
- Incorporated Segment-Anything model to segment images of object parts and back projected them into point clouds.
- Worked on Robot Operating System (ROS) and bimanual KUKA manipulators with multisense cameras.

06/2023–08/2023 **Pinhole Camera Models in Computer Vision vs. Computer Graphics**
Brown University | Mentor: Prof. James Tompkin.
- Employed front-end and back-end development to create a website tutorial on camera projection matrices
- Improved upon 2 existing tutorials on affine transformations and the fundamental matrix for course development

Teaching

09/2024 – 12/2024 **Head Teaching Assistant**
CSCI 1430 Introduction to Computer Vision

01/2024 – 05/2024 **Undergraduate Teaching Assistant**
CSCI 1430 Introduction to Computer Vision

Skills

Technical Skills (*Fluent*) Python, HTML, CSS; (*Experience*) Java, C++, C, Javascript, OpenGL, Golang, React
Language Trilingual proficiency in English, Spanish (Awarded C1 by El Instituto Cervantes), Chinese

Leadership & Extracurriculars

09/2023 – 05/2024 **Brown IgniteCS**
- Designed, developed, and taught AI courses as guest lecturer for 30 students at Nathanael Greene Middle School.
- Designed, developed, and taught the coding club on HTML, CSS at the Sophia Academy for 1.5 hours per week.

09/2022 – Current **Moli East Asian Dance Company**
- Lead 35 members per year as co-secretary chair, co-captain, co-performance director each year, respectively.
- Organize members, logistics, and finance, communicate with student activities office and financial supervisors.