Wanjia Fu

PERSONAL INFORMATION

Email	wanjia_fu@brown.edu
Homepage	https://wanjia-fu.com/
GitHub	https://github.com/julia-fu0528
Google Scholar	https://scholar.google.com/citations?user=Y7gW52cAAAAJ

RESEARCH INTERESTS

My research is centered at the intersection of **robotics**, **computer vision**, and **machine learning**. I am interested in how multimodality in robotics, especially vision and tactile, can improve the robot's understanding of and interactions with both the inherent state and the exterior environment. More specifically, I'm excited with contact-rich dexterous manipulation, dynamic models for robot learning, tactile sensing, and human robot interactions.

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 (**4/1200** per year)
08/2025	Pathways@RSS 2025 Fellowship (**8%** acceptance)
06/2025	CVPR 2025 Travel Support Award
05/2025	Advanced Undergraduate Research SPRINT Fellowship
04/2025	Randy Pausch Undergraduate Research Fellowship ($13,350, **1/1200** per year)
	First Place Award, 10th Annual Brown CS Research Symposium (**1/26**)
01/2024	Undergraduate Teaching and Research Awards
05/2023	Undergraduate Teaching and Research Awards

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.

[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 Computer Vision and Pattern Recognition (CVPR) 2025.

RESEARCH EXPERIENCE

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

- Collect visuotactile dataset on single-hand and bimanual manipulation of deformable objects.
- Implement deformable 3D gaussian splatting reconstruction and Aruco marker detection
- 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 and Prof. Paul Liang.

- Collect visuotactile dataset using tactile gloves and the Brown Interaction Capture System (BrICS).
- 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 downstream QA, retrieval, and reconstruction.

03/2025–Current	**Whole-Robot Touch Localization 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 Localization Without Tactile Sensors
Brown University | Mentors: Prof. Srinath Sridhar and Prof. Stefanie Tellex

- Leveraged built-in joint torque sensors to achieve live whole-body touch sensing across various robot platforms.
- Collected joint data with touch on 104 points on Spot and 10 on the Franka arm to train regression model.
- 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 and Prof. Daniel Ritchie

- 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

- 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.

- Worked with Segment-Anything (SAM) unprojection and Robot Operating System (ROS) on KUKA arms

06/2023–08/2023 Pinhole Camera Models in Computer Vision vs. Computer Graphics
Brown University | Mentor: Prof. James Tompkin.

- Developed front-end and back-end website tutorial on camera projection and perspective projection

TEACHING

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

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

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

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

- Design, develop a series of AI courses and teach as guest lecturer for 30 students at Nathanael Greene Middle School
- Design, develop, and teach 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