

# Wanjia Fu

## PERSONAL INFORMATION

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

## EDUCATION

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08/2022–05/2026	<b>Sc.B., Computer Science; A.B. Applied Mathematics</b> GPA: 4.0   Brown University, Providence, RI, USA
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## AWARDS

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10/2025	CRA Outstanding Undergraduate Researcher Awards Nomination (4/100 per year)
08/2025	Pathways@RSS 2025 Fellowship (8% acceptance rate)
06/2025	CVPR 2025 Travel Support Award
05/2025	Advanced Undergraduate Research SPRINT Fellowship
04/2025	Randy Pausch Undergraduate Research Fellowship (\$13,350, 1/100 in 2025)
04/2025	<b>First Place Award</b> at 10th Annual Brown CS Research Symposium (\$400, 1/26 in 2025)
01/2024	Undergraduate Teaching and Research Awards
05/2023	Undergraduate Teaching and Research Awards

## PUBLICATIONS

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\* 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 CVPR 2025.

## RESEARCH EXPERIENCE

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### 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 downstream QA, retrieval, and reconstruction.

### 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

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## 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

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## 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

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## 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

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## 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