Jiaying [Vina] Wei

T: +1 6073799630

E: jwei3@andrew.cmu.edu

Education

2023 - Present
Carnegie Mellon University
Ph.D. Candidate in Computational Design, School of Architecture
Advisor: Prof. Joshua Bard
Co-advisor: Prof. Daniel Cardoso Llach
External committee member: Prof. Jiaoyang Li

2021-2023
Carnegie Mellon University
Master of Science in Computational Design, School of Architecture
Advisor: Prof. Joshua Bard
Co-advisor: Prof. Daniel Cardoso Llach

2015-2020
Cornell University
Bachelor of Architecture, College of Architecture, Art, and Planning

Publications

2025 Jiaying Wei, Juney Lee, and Joshua Bard. “Sequencing Optimization of Stability-Aware Robotic Assembly for Discrete Frame Structures.” Proceedings of IASS Annual Symposia, vol. 2025, no. 3, pp. 1–10, International Association for Shell and Spatial Structures (IASS), 2025.

Yuning Wu, Emek Erdolu, Jiaying Wei, Jean Oh, and Daniel Cardoso Llach. “Robot in the Loop: A Human-Centered Approach to Contextualizing AI and Robotics in Construction.” Construction Robotics, vol. 9, no. 1, p. 1, Springer International Publishing, 2025.

2024 Yuning Wu, Jiaying Wei, Jean Oh, and Daniel Cardoso Llach. “Towards Human-Centered Construction Robotics: A Reinforcement Learning-Driven Companion Robot for Contextually Assisting Carpentry Workers.” IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), pp. 90–97, IEEE, 2024.

2023 Jiaying Wei and Joshua Bard. “A Hierarchical Gesture-Guided Framework for Multi-Manipulator Fabrication and Collaboration.” 33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), pp. 438–445, IEEE, 2024.

Jiaying Wei, Daniel Cardoso Llach, and Joshua Bard. “Responsive Robotic Assembly System With Heterogeneous Materials: A Case Study with Unprocessed Wood.” ACADIA 2023: Habits of the Anthropocene: Scarcity and Abundance in a Post-Material Economy, vol. 2, pp. 352–360, 2023.

2023 Jiaying Wei, Peter Schaldenbrand, Joong Ho Choi, Eunsu Kang, and Jean Oh. “Collaborative Robotic Painting and Paint Mixing Demonstration.” Companion Publication of the 2023 ACM Designing Interactive Systems Conference, pp. 292–296, 2023.

Research Experience

Carnegie Mellon University — 2024 - present

Doctoral Research Assistantship

- **Robotic Plastering with Diffusion Policy**
  PI: Joshua Bard
  Developing an imitation-learning workflow for robotic plastering using diffusion policy, with data collection, model training, and deployment on heavy-payload industrial robotic systems.

2021-2023

Graduate Research Assistantship

- **Rethinking Automation with Construction**
  PI: Daniel Llach Cardoso, Jean Oh
  Developed mobile-robot navigation and sensing workflows for human-centered construction robotics, integrating SLAM, UGV hardware, IoT interaction, and construction-site observation.
- **Independent Research : Robotic Pigment Mixing with Machine Learning**
  Advisor: Eunsu Kang
  Developed a robotic pigment-mixing and painting workflow using machine-learning-based color prediction and dataset collection.
- **Binder-jetting 3D printing Concrete**
  PI: Joshua Bard
  Aggregate mixture experiments and testings; Actuated printing bed design and fabrication;Geometry and structure design

2019

Undergraduate Research Assistantship

- **Self-Built Housing System in Urban-Rural China**
  PI: Leslie Lok
  Urban Development Paradigm; Construction system of local materials and resources; Housing typology study

Teaching Experience

Carnegie Mellon University — Spring 2026

48-757 Architectural Robotics with Perception
Sole Instructor

- Designed and taught a new graduate-level course introducing perception-enabled robotic workflows for architectural design and fabrication. Topics included ROS-based robotic systems, computer vision, depth sensing, object detection/segmentation, motion planning, human-robot interaction, and integrated final project development.

Fall 2025

48-555/48-755 Introduction to Architectural Robotics
Teaching Assistant / Co-Instructor

- Assignment development for students to master principal robot planning skills for ABB robot motion and execution
- Supervise and mentor final projects

Spring 2025 **Fundamentals of Computational Design**
Teaching Assistant
- Syllabus module developement
- Student project mentoring and reviews

Fall 2024 **48-555/48-755 Introduction to Architectural Robotics**
Teaching Assistant / Co-Instructor
- Assignment development for students to master principal robot planning skills for ABB robot motion and execution
- Supervise and mentor final projects

Spring 2024 **Fundamentals of Computational Design**
Teaching Assistant
- Grasshopper Kangaroo labs for computational design
- Student project mentoring and reviews

Fall 2023 **Generative Modeling**
Teaching Assistant
- student office hours for debugging and technical support

Advising & Mentoring

2026 **CMU MSCD Thesis Committee Member / Advisor**
Advisee: Carla Flores Trávez, “Playful computation: Encounters with ephemeral surfaces. “, Master of Science in Computational Design, CMU

Fellowships

Summer 2025 **TCS Fellowship**

Invited Talks

2024 **AI Panel at CMU AIAS NEQ Conference**
Invited panelist

Service

2024-2025 **CMU School of Architecture Public programs committee**

Professional Experience

2020-2021 **Commercial Sector, AECOM, China**
Junior Architect

Summer 2018 **Hasting Architecture**
Intern

Research Methods & Technical Platforms

Robotics	ROS/ROS2, Manipulator planning, Multi-robot planning, SLAM Navigation, robot hardware integration, IoT
Perception and Algorithm	Computer Vision, 3D reconstruction, Object detection and tracking, Deep learning, Imitation learning, Python, C++, Linux, Git
Design & Fabrication	Industrial Robotic fabrication, Rhino/GH, Unity, Digital fabrication

Languages

Native	**Chinese**
Professional	**English**
B1	**French**