



Jiaying [Vina] Wei

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Education

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| 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

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| 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

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| Carnegie Mellon University | 2024 - present | Doctoral Research Assistantship <ul style="list-style-type: none"> • Robotic Plastering with Diffusion Policy
PI: Joshua Bard
Developing an robot learning workflow through expert data. |
| | 2021-2023 | Graduate Research Assistantship <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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

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| Carnegie Mellon University | Spring 2026 | 48-757 Architectural Robotics with Perception
Sole Instructor <ul style="list-style-type: none"> • 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
Senior Teaching Assistant <ul style="list-style-type: none"> • 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 Senior Teaching Assistant - 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
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Fellowships

Summer 2025	TCS Fellowship
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Invited Talks

2024	AI Panel at CMU AIAS NEQ Conference Invited panelist
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Service

2024-2025	CMU School of Architecture Public programs committee
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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