Ruxin Xie

Computational Design Researcher

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A vision, a woven wing—loud, mechanical, alive.
Threads converge in rhythmic precision,
the hum of circuits,
the poised command of a robotic hand.

Lovingly crafted, placed with grace,
where form and spirit find their space.
In every line, a warmth unfolds,
and purpose finds a story told.

SKILLS

- Rhino
- Grasshopper
- Python
- Adodesk Fusion 360
- Adobe Creative Suite
- Autodesk Revit

- RhinoScript
- ROS
- PLC Programming (TwinCAT)
- ABB Robot Setup & Operation
- COMPAS
- Circuit Python Playground

- Waterjet
- 3-Axis CNC
- Website Design
- Project Management
- Vendor Communication
- ...

EXPERIENCE

RESEARCH ASSOCIATE   *Princeton, NJ*

ADR LAB | Princeton University   *2021.01 - Now*

- Led computational design and project management for Timbrelyn, a robotically fabricated timber stage installation at the 2024 Bethel Woods Art and Architecture Festival in Bethel, NY, drafting the initial design proposal that secured one of three permanent buildings for the festival.
- Developed computational design workflow for circular design research using reclaimed timber 2x4, collaborating with supervisor Arash Adel.
- Managed module robotic fabrication and onsite assembly, completing installation within three days and coordinating comprehensive project documentation and purchasing logistics.
- Designed robotic end effectors, including timber grippers, automated nail guns, automatic tool change system, and CNC saw cutting stations, enhancing the precision and efficiency of robotic operations.
- Collaborated with colleague Daniel Ruan and set up and integrated PLC-based control systems for ABB robotic applications using Bechoff Automation PLC via TwinCAT, ensuring seamless centralized real-time operation and control.
- Delivered technical expertise in 3D modeling, shop drawings, and fabrication for lab members' research, enhancing project functionality and integration.
- Contributed to academic publications by creating comprehensive diagrams, renderings, posters, and other technical materials, ensuring timely and efficient project execution.

TECHNICAL DESIGNER   *San Jose, CA*

Gensler   *2021.08 - 2023.12*

- Produced construction documents and 3D models, prioritizing practicality and aesthetics, conducting building code compliance checks and due diligence, actively participating in large-scale campus design projects across all phases (Concept, SD, DD, CD), and creating physical architectural models for internal and external presentations.
- Implemented computational workflows within Gensler's Northwest region's design technology sector by delivering tutorials on Rhino-Grasshopper-Revit-Dynamo integration, managing Rhino/Revit models on BIM360, and enforcing BIM standards.
- Managed projects from Concept to Construction, including serving as Construction Admin Consultant for Apple's "The Observatory" building in Cupertino, CA, by assisting with site documentation, engineering coordination, and sample logistics.
- Collaborated with interior design teams on facade designs for Google stores in Oakbrook, IL and Santa Monica, CA, delivering high-quality renderings, diagrams, and technical drawings for client presentations.
- Mentored interns as a "buddy" in the annual internship program and developed presentation materials to effectively communicate designs to clients, fabricators, and contractors.

RESEARCH ASSISTANT   *Ann Arbor, MI*

University of Michigan   *2021.03 - 2021.07*

Advisor: Prof. Mania Aghaei Meibodi & Prof. Wesley McGee

- Conducted literature review research on robotic 3D printing building enclosure system.

RESEARCH ASSISTANT   *Ann Arbor, MI*

University of Michigan   *2019.05 - 2021.07*

Advisor: Prof. Sean Ahlquist

- Engaged in a two-year research with a primary focus on computational-aided structural design, material research, and fabrication techniques. This research revolved around the optimization of structural bracket design and customized foam tile design using Grasshopper.
- Conducted comprehensive material tests and collaborated with the School of Engineering to analyze results, aiming to fine-tune and optimize structural design solutions.
- Constructed and installed the "Playscape" exhibit for Exhibit Columbus 2019 in Columbus, IN, the Tech-Twilight 2019 exhibit at the Ann Arbor Hands-on Museum, as well as the inclusive installations "Pond" and "Playscape" at Michigan State University.
- Researched, scripted, and fabricated structural components and customized foam tile flooring for the Biennale Architettura 2021 exhibition in Venice, Italy.

RESEARCH ASSISTANT   *Ann Arbor, MI*

University of Michigan   *2020.06 - 2020.09*

Advisor: Prof. Kathy Velikov and Prof. Matias del Campo

- Designed and developed a parametric 3D building massing generator with integrated city code compliance features.
- Employed DIVA for Grasshopper to perform extensive thermal, daylight, and solar radiation simulations.
- Conducted a literature review and spearheaded the development of an Embodied Carbon Benchmark Study and a Life Cycle Assessment (LCA) methodology for multiple design scenarios.

EDUCATION

M.S. IN ARCHITECTURE DESIGN AND RESEARCH

University of Michigan, Ann Arbor, MI, USA   GPA: 4.00/4.00   *2020.08 - 2021.07*

M.ARCH IN ARCHITECTURE

University of Michigan, Ann Arbor, MI, USA   GPA: 3.985/4.00   *2018.07 - 2020.05*

B.ARCH IN ARCHITECTURE

Xiamen University, Xiamen, Fujian, China   GPA: NA   *2013.09 - 2018.06*

PUBLICATION

- Mozaffari, S., Bruce, M., Clune, G., Xie, R., McGee, W., & Adel, A. (2023). Digital design and fabrication of clay formwork for concrete casting. Automation in Construction, 154, 104969. https://doi.org/10.1016/j.autcon.2023.104969
- Bruce, M., Clune, G., Xie, R., & Adel, A. (2021). Cocoon: 3D printed clay formwork for concrete casting. ResearchGate. https://www.research-gate.net/publication/364639955_Cocoon_3D_Printed_Clay_Formwork_for_Concrete_Casting
- Velikov, K., del Campo, M., Denit, L., Hasan, K. N., Xie, R., & Boyce, B. (2022). Design Engine: Generative Multi-Objective Performance Design Scenarios. In K. Dörfler, S. Paracho, J. Scott, B. Bogosian, B. Farahi, J. López, V. Noel (Eds.), Realignments | Papers for the ACADIA 2021 Conference (pp. 122-133).