RUXIN XIE

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EDUCATION

University of Michigan, Ann Arbor, MI, USA **2021.07**
- M.S. in Digital and Material Technologies (M.S.D.M.T.). GPA 4.0/4.0
- Thesis: Cocoon: 3D printed clay formwork for concrete casting
- Advisor: Prof. Arash Adel

University of Michigan, Ann Arbor, MI, USA **2020.05**
- M.Arch in Architecture with high distinction. GPA 3.985/4.0
- Thesis: Architecture {AI}
- Advisor: Prof. Matias del Campo, Prof. Sandra Manninger

Xiamen University, Xiamen, Fujian, China **2018.06**
- B.Arch in Architecture
- Thesis: Sponge at Crossroad
- Advisor: Prof. Jie Han, Prof. Liangliang Wang, Prof. Suyv Li

PUBLICATION

Peer-reviewed paper accepted for presentation at the ACADIA 2025 Conference (forthcoming).

Mozaffari, S., Bruce, M., Clune, G., **Xie, R.**, McGee, W., and Adel, A. 2023. "Digital Design and Fabrication of Clay Formwork for Concrete Casting." *Automation in Construction* 154: 104969. Link

Bruce, M.*, Clune, G.*, **Xie, R.***, Mozaffari, S., and Adel, A. 2022. "Cocoon: 3D Printed Clay Formwork for Concrete Casting." *In Realignments: Toward Critical Computation, Proceedings of the 41st ACADIA Conference*, 400–409. CumInCAD. (* Authors contributed equally to the research.) Link

Velikov, K., del Campo, M., Denit, L., Hasan, K. N., **Xie, R.**, and Boyce, B. 2022. "Design Engine: Generative Multi-Objective Performance Design Scenarios." In Realignments | Papers for the ACADIA 2021 Conference, edited by K. Dörfler, S. Paracho, J. Scott, B. Bogosian, B. Farahi, J. López, and V. Noel, 122–133.

RESEARCH INTEREST

Exploring computational design, robotics, and material innovation to create adaptive, human-centered environments.

RESEARCH EXPERIENCE

Research Associate, Princeton University **2024.01 - Now**

My work focuses on the computational design robotic setup and mechanical tooling design for various robotic applications. It integrates structured methodologies for developing efficient workflows, precision tools, and systems designed to project-specific requirements.

i. Led the computational design and management of *Timbrelyn*, a robotically fabricated timber architectural installation for the 2024 Bethel Woods Art and Architecture Festival in Bethel, NY. Drafted the proposal that secured its selection as one of three permanent festival buildings. Actively led and

participated in all phases of the project, overseeing robotic fabrication and completing the on-site assembly in three days.

ii. Developed robotic workflows for circular design using reclaimed 2x4 timber. Designed robotic end effectors, including timber grippers, automatic nail guns, tool change systems, and CNC saw stations, to improve precision and efficiency. Integrated PLC systems for ABB robots using TwinCAT 3.0.

Research Assistant, University of Michigan **2019.05 - 2021.07**
Advisor: Prof. Sean Ahlquist

i. Engaged in a two-year research with a primary focus on computational design and advanced fabrication including textile research, structural design, and fabrication techniques. This research revolved around human-centered knitting method, optimization of structural components for knitting installation, and customized flooring design.

ii. Conducted comprehensive structural tests and collaborated with the School of Engineering and industrial partners to analyze the test results, aiming to fine-tune and optimize structural design solutions.

Research Assistant, University of Michigan **2020.06 - 2020.09**
Advisors: Prof. Kathy Velikov, Dr. Matias del Campo

i. 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.

ii. Conducted the literature review and spearheaded the development of an Embodied Carbon Benchmark Study and a Life Cycle Assessment (LCA) methodology for multiple design scenarios.

Research Assistant, University of Michigan **2021.03 - 2021.07**
Advisors: Dr. Mania Aghaei Meibodi, Prof. Wesley McGee

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

PROFESSIONAL EXPERIENCE

Technical Designer, Gensler, San Jose, CA **2021.08 - 2023.12**

i. Produced construction documents and 3D models, conducted building code compliance checks and due diligence, participated in large-scale campus design projects across all phases (Concept, SD, DD, CD), and created physical models for internal and external presentations.

ii. Implemented computational workflows within Gensler's design technology sector, instructed tutorials on Rhino-Grasshopper-Revit-Dynamo integration, on Rhino/Revit models with BIM360, and on BIM standards enforcement.

iii. Contributed to design execution from concept to construction, served as construction admin consultant for Apple's new "Observatory" building in Cupertino, CA, assisted with site documentation, engineering coordination, and sample logistics.

iv. 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.

v. Mentored interns in the annual internship program and developed presentation materials to effectively communicate designs to clients, fabricators, and contractors.

EXHIBITION

Timbrelyn 2024.09
Bethel Woods Art and Architecture Festival 2024 | Bethel, NY | PI: Arash Adel
Led computational design and management of the robotically fabricated timber workflow. Drafted the design proposal that secured its selection as the permanent festival installation. Oversaw and participated in all phases of the project.

Robotically Fabricated Structure 2022.03
Taubman College ARCH 708 Systems Engagement at Matthaei Botanical Gardens | Ann Arbor, MI | PI: Arash Adel
As the lead computational designer, collaborated with designers to transform initial napkin sketches into fully programmed digital definitions.
Worked closely with fabricators to integrate robotic constraints, establishing a feedback-informed design system.

Cocoon 2022.03
Taubman College 2021+2022 Architecture Student Show | Online
The annual Student Show features faculty-selected projects from the past academic year, showcasing diverse ideas and approaches from studio work. This year's projects reflect the challenges of the pandemic and a period of disciplinary evolution

Topology Optimized Building Envelope 2021.10
Plastic Architecture at The Cooper Union | New York, NY | PI: Mania Aghaei Meibodi
Proposed using topology optimization to represent mesh relaxation, led design prototyping, and resolved fabrication constraints through iterative optimization.

Social Equilibria 2021.06
Biennale Architettura 2021 | Venice, Italy | PI: Sean Ahlquist
Refined prototypes and fabrication processes, and further developed the structural component design.

Playscape 2019.10
TechTwilight 2019 at AAHOM | Ann Arbor, MI | PI: Sean Ahlquist
Researched material systems, prototyped foam tiles, and developed lightweight polycarbonate structural components.

Playscape 2019.08
Exhibit Columbus | Columbus, IN | PI: Sean Ahlquist
First outdoor installation, exploring diverse materials to create innovative environments and engage a wider audience.

Pond 2019.06
Exhibition at Michigan State University | East Lansing, MI | PI: Sean Ahlquist
Researched and prototyped custom foam tile floor puzzles.

HONORS AWARDS

Honorable Mention 2022.04
Taubman College Announces Annual Student Show Awards

Rackham Graduate Student Research Grant 2021.05

Taubman College Merit-based Tuition Scholarship 2020.03

Honorable Mention 2018.08
The "Street-Corner Urbanism" Conceptual Design Competition, Sydney, Australia

Excellent Awards 2015.08
The 2nd Tangible Fabrication Competition for College Students from Mainland China and Taiwan, Fuzhou, Fujian, China

First Prize 2015.05
The 5th Tangible Fabrication Student Competition at Xiamen University, Xiamen, Fujian, China

CERTIFICATION

Autodesk Certified Professional in Revit for Architectural Design 2021.06
Autodesk

SKILLS

Robotics
ROS, PLC Programming (TwinCAT 3.0), COMPAS(FAB, RRC), ABB/KUKA/UR Robot Operation, Robotic Path Planning and Simulation, Robotic End Effector Design.

Programming
Python, C#, RhinoScript, Next.js

Software
Rhinoceros 3D, Grasshopper, Autodesk Fusion 360, Adobe Creative Suite, Autodesk Revit, MAYA, Rendering Softwares (Enscape, Keyshot, Vray)

Rapid Prototyping
3D Printing, 3-Axis CNC Machining, CNC Knitting, Waterjet Cutting, Zünd Cutting, Metalworking, Welding, Woodworking, Ceramics Fabrication.

WORKSHOP

RadLab: The Future is Muddy – Ceramic 3D Printing | Princeton University
2025.11 | Led by Ruxin Xie, RadLab Event Series, Princeton StudioLab

TALKS

Reviewer
MIT $100K Pitch 2025 2025.10
Invited by MIT to serve as a reviewer of submissions (Oct 21–30, 2025) for the annual entrepreneurship competition run by the MIT $100K Entrepreneurship Competition programme.

Reviewer
San Jose State University DSIT 29 - Design Process Mid Review 2023.10
Course Instructor: Jeremy Nguyen

Reviewer
San Jose State University Interior Design Final Review 2022.05
Program Director: Prof. MeiZhen Seah