

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	Mozaffari, S., Bruce, M., Clune, G., Xie, R. , McGee, W., and Adel, A. 2023. "Digital Design and Fabrication of Clay Formwork for Concrete Casting." <i>Automation in Construction</i> 154: 104969. Link
	Bruce, M.*, Clune, G.*, Xie, R.* , Mozaffari, S., and Adel, A. 2022. "Cocoon: 3D Printed Clay Formwork for Concrete Casting." In <i>Realignments: Toward Critical Computation, Proceedings of the 41st ACADIA Conference</i> , 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 <i>Realignments Papers for the ACADIA 2021 Conference</i> , 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 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. Led the computational design and management of <i>Timbrelyn</i>, 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.

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

	<u><i>Topology Optimized Building Envelope</i></u> 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. <u><i>Social Equilibria</i></u> 2021.06 Biennale Architettura 2021 Venice, Italy PI: Sean Ahlquist Refined prototypes and fabrication processes, and further developed the structural component design. <u><i>Playscape</i></u> 2019.10 TechTwilight 2019 at AAHOM Ann Arbor, MI PI: Sean Ahlquist Researched material systems, prototyped foam tiles, and developed lightweight polycarbonate structural components. <u><i>Playscape</i></u> 2019.08 Exhibit Columbus Columbus, IN PI: Sean Ahlquist First outdoor installation, exploring diverse materials to create innovative environments and engage a wider audience. <u><i>Pond</i></u> 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
PROFESSIONAL EXPERIENCE	Technical Designer at 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 as a "buddy" in the annual internship program and developed presentation materials to effectively communicate designs to clients, fabricators, and contractors.

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.

SYMPOSIUM CONFERENCE

ACADIA 2020 | Workshop 03 ART: Augmented Robotic Telepresence

Led by Ebrahim Poustinchi, Online

Princeton Advanced Manufacturing Symposium

April 2024, Princeton, NJ

TALKS

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

Panelist

AIA Talk: Women In The AEC Industry 2022.01

Gensler, San Jose, CA