

Sida Dai, *LEED AP, Ph.D.*

10/2024

Email: sidad@vt.edu

EDUCATION

- 12/2021 **Ph.D.**
Clemson University, School of Architecture
Dissertation: *Reinforcement Learning Based Design Methodology for Building Performance: A Case of Building Facades with Kinetic Elements*
- 05/2017 **M.Arch**
University of Virginia, School of Architecture
- 07/2015 **B.Arch**
Huaqiao University, College of Architecture and Urban Plan

PROFESSIONAL APPOINTMENTS

- 2024 - present. **Assistant Professor**
School of Architecture, Virginia Tech, Blacksburg, Virginia
- 2023 - 2024. **Lecturer**
School of Architecture, Clemson University, Clemson, South Carolina
- 2023 - 2024. **Affiliate Faculty**
Institute for Intelligent Materials, Systems and Environments, Clemson University, Clemson, South Carolina
- 2021 - 2024. **Postdoctoral Fellow**
School of Computing, Clemson University, Clemson, South Carolina (Research 70%, Teaching 30%)

PUBLICATIONS

- [1]**Sida Dai**, Jasmine Davidson, Brygg Ullmer, Winifred Elyse Newman, Miriam K Konkel. *"Generative AI syntheses of platform, content, visuals, and kinetics for cyberphysical computationally-mediated posters and broader applications"*, IUI'24: 29th Annual ACM Conference on Intelligent User Interfaces, March 18 - 21, 2024, Greenville, South Carolina. USA.
- [2]**Sida Dai**, Anastasia Maurina, Alvin Fernandez Komar. *"Blending Crafts and Algorithm: A New Model for Teaching Computational Origami in Architecture"*, Conference on the Integrated Education, June 10–12, 2024, San Francisco, CA. USA
- [3]**Sida Dai***, Brygg Ullmer, Winifred Elyse Newman. *"MorphMatrix: A Comprehensive Toolkit Facilitating Shape-Changing Interface Design"*, TEI'24: International Conference on Tangible Embedded and Embodied Interaction, February 11–14, 2024, Cork, Ireland. ACM (26% acceptance rate, ***Contact Author**)
- [4]Brygg Ullmer, **Sida Dai**, Alexandre Gomes de Siqueira, Millon McLendon IV, Laila Shafiee, Winifred Elyse Newman, Miriam K Konkel. *"Variations on a Hexagon: Iterative Design of Interactive Cyberphysical Tokens and Constraints"*, TEI'24: International Conference on Tangible Embedded and Embodied Interaction, February 11–14, 2024, Cork, Ireland. ACM (26% acceptance rate)

[5]Yiyun Liu, **Sida Dai***, Carlos R Barrios Hernandez, Mostafa Alani, Nyoman Dewi Pebryani. *"Manufacturing Methodology for Precast Concrete Tiles with Morphing Shapes"*, SIGRADI'23: The Ibero-American Society of Digital Graphics Conference, November 29–20, 2023, Maldonado, Uruguay (***Contact Author**)

[6]**Sida Dai**, Michael Kleiss, Mostafa Alani, Nyoman Dewi Pebryani. *"Reinforcement Learning-Based Generative Design Methodology for Kinetic Facade."* In 2022 Association for Computer-Aided Architectural Design Research in Asia Conference (CAADRIA). 2022. (30.7% acceptance rate)

[7]Alani, Mostafa, Michael C. Kleiss, Muwafaq Shyaa Alwan, and **Sida Dai**. *"Dynamic Environmental Plugins: Programmable Architectural Elements Reactive to Socio-environmental Conditions."* In Distributed, Ambient and Pervasive Interactions. Smart Environments, Ecosystems, and Cities: 10th International Conference, DAPI 2022, Held as Part of the 24th HCI International Conference, HCII 2022, Virtual Event, June 26 – July 1, 2022, Proceedings, Part I, pp. 363-371. Cham: Springer International Publishing, 2022.

[8]Crocker, Grace F.*, **Sida Dai***, Brandon E. Ross, Michael Carlos Kleiss, Pinar Okumus, Negar Elhami-Khorasani, and Seth Moore. *"Failure Modes of 3D-Printed Tessellated-Tile Beams."* In Structures Congress 2022, pp. 364-376. 2022. (**Co-First Author**)

[9]Crocker, Grace F., Katie E. Bender, Riley Blasiak, James Lang, Seth Moore, Olivia Wright, **Sida Dai** et al. *"Undergraduate Student Experience in a Multidisciplinary Architecture-Civil Engineering Research Project."* In 2022 American Society for Engineering Education (ASEE) Southeastern Section Conference. 2022.

[10]**Sida Dai** and Michael Kleiss. *"Shape Grammars in Computational Generative Design for Origami"* In 2020 Association for Computer-Aided Architectural Design Research in Asia Conference (CAADRIA). 2020.

TEACHING EXPERIENCE

Instructor of Record: **ARCH 2015/16: Architecture Design Labs**
Fall 2024 (scheduled)
Virginia Tech, School of Architecture

ARCH 5756 Advanced Design Laboratory
Summer 2024
Virginia Tech, School of Architecture

ARCH 2700 Structures I
Fall 2023 (24 students), Spring 2024 (76 students)
Clemson University, School of Architecture

RESEARCH EXPERIENCE

NSF Award: **MRI: Development of Enodia: A Highly Reconfigurable, HPC-Backed Instrument Enabling Multifaceted Interactive Visualization**. Award Number:1828611, Principal Investigator: Brygg Ullmer, Clemson University. 12/2021-5/2024

- Participated in the design and construction of the prototype interactive device.
- Responsible for connecting and collaborating with various research groups.
- Responsible for the kinetic and LED illuminated parts of the device, including: joint design, mechanical structure, motion algorithm, code development, and utilizing multiple digital fabrication tools to create the prototype.
- Contributed to the writing of several related research proposals.
- Prepared and participated related exhibitions, presented the project and engaged with the audience.
- Assisted the Principal Investigator (PI) in instructing Ph.D. students and research assistants in tangible design and digital fabrication skills, including CNC machining, laser cutting, and 3D printing techniques.

NSF Award: *Collaborative Research: Tessellated Structural-Architectural Systems for Rapid Construction, Repair, and Disassembly*. Award Number:1762899, Principal Investigator: Michael Kleiss, Clemson University. 08/2018-12/2021

- Designed interlocking tessellated patterns for novel structural systems.
- Fabricated full-size tessellated architectural beam structures using CNC machine.
- Developed a program to correct 3D printing errors.
- 3D printed numerous prototypes and tested their performance with a Universal Testing Machine (UTM).

Industrial Upgrade as A Design Process. Advisor: Peter Waldman, University of Virginia. 08/2017-05/2018

- Researched on the manufacturing industry migration from China to Africa and its effect on building/city.
- Designed a continuous construction process based on program shift.

OTHER TEACHING EXPERIENCE

- 10/18/2023 **Reviewer for Architecture Design Studio**, Tuskegee University, AL, United States
05/12/2023 **Origami and Kinetic Facade Workshop 2**, Universitas Katolik Parahyangan, Indonesia
05/11/2023 **Origami and Kinetic Facade Workshop 1**, Universitas Katolik Parahyangan, Indonesia
01/26/2023 **Computational Origami Workshop**, Appalachian State University, NC, United States
02/26/2019 **Shape Grammar Workshop**, Clemson University, SC, United States
02/07/2020 **Shape Grammar Workshop**, Clemson University, SC, United States

PRESENTATIONS

- 04/27/2023 **“Architecture Workflow Based on Rhino”**, Clemson University, United States
03/04/2023 **“Exploring the Evolution, Classification, and Design of Kinetic Facades”**, Webinar: Kinetic and Smart Architecture: A Sustainable Design for Future, Universitas Katolik Parahyangan, Indonesia
02/24/2023 **“Reinforcement Learning-Based Generative Design Methodology For Kinetic Facade”**, Clemson University, United States
06/17/2022 **Tessellated Structural-Architectural Systems Workshop**, SOM, New York City, NY, United States
02/25/2022 **“Shape Grammar in Origami”**, Clemson University, United States
06/02/2021 **“Parametric Design in Puzzle Beams”** Tessellated Structural-Architectural Systems symposium, University at Buffalo, United States
04/01/2021 **“Puzzle Structures”**, Focus on Creative Inquiry (FoCI) Poster Forum, Clemson University, United States
06/17/2019 **“Shape Grammar in Computational Generative Design for Origami”**, International Conference on Computational Creativity(ICCC), UNC Charlotte, United States

EXHIBITIONS

- 04/08 - 04/10/2022 **National Museum of American History, Washington, D.C**
The 2022 ACCelerate Creativity + Innovation Festival
- 05/06 - 05/08/2022 **Artisphere, Greenville, SC**
The 2022 Artisphere Art Festival

ADDITIONAL EXPERIENCE AND SKILLS

- Coding Skills: C, C++, Java, Python, Processing, MySQL, Arduino
- Software Skills: Rhino, Grasshopper, Revit, Unity, UE4, Blender, Lumion, Enscape, SketchUp, Adobe Suite
- Fabrication Skills: CNC, Laser Cutting, 3D Printing, Soldering, Woodshop Tools, KUKA Robot
- Reviewer: Conference: CAADRIA, TEI, EDRA, ASEE, CAAD Future, AMPS
Journal: New Review of Hypermedia and Multimedia
- Session Chair: AMPS 2024