

# Yuan Liao

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Yuan Liao is a lecturer at the University of Tennessee where he teaches architectural design and building structures. His research focuses on deployable structures and kinetic architecture, emphasizing collaborative transformation in both design and research.

## Education

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2018 - 2024	<b>Ph.D. in Architecture</b> University of Illinois at Urbana-Champaign, School of Architecture Dissertation: Deployable Structures And Their Applications In Architecture: Geometric Design And Kinematics Of Mirrored Scissor Assemblies
2015 - 2018	<b>Master of Architecture</b> University of Illinois at Urbana-Champaign, School of Architecture
2010 - 2014	<b>Bachelor of Arts</b> in Architecture and Environmental Design China Academy of Art, Department of Environmental Design, Shanghai

## Teaching Experience

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2024 - Pres	<b>Lecturer</b> University of Tennessee Knoxville, School of Architecture <i>ARCH 571: Architecture &amp; Urbanism Studio</i> <i>ARCH 261 Tectonics and Stereotomics</i>
2019 - 2024	<b>Teaching Assistant</b> University of Illinois at Urbana-Champaign, School of Architecture <i>ARCH 536: Planning &amp; Design of Structure Systems (Fall 2022, 2021, 2020, 2019)</i> <i>ARCH 435: Structural Systems &amp; Construction Methods (Spring 2024, 2023, 2022, 2021, 2020)</i> <i>ARCH 433: Design of Steel and Reinforced Concrete Structures (Fall 2023)</i> <i>Design Studio of the Discover Architecture Program (Summer 2023)</i>

## Publications

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### Journal Articles

2024	Liao, Y. and Krishnan S. "Deployable scissor structures: Classification of modifications and applications." <i>Automation in Construction</i> 165 (2024): 105547. <a href="https://doi.org/10.1016/j.autcon.2024.105547">https://doi.org/10.1016/j.autcon.2024.105547</a>
2023	Liao, Y. and Krishnan S. "A Mirrored Approach to Generate Spatial Deployable Assemblies Using Tripod-Scissor Units." <i>ASME Journal of Mechanisms and Robotics</i> 16.6 (2024): 061015. <a href="https://doi.org/10.1115/1.4063872">https://doi.org/10.1115/1.4063872</a>

- 2023 Liao, Y., Kiper, G. and Krishnan S. "Mobility analysis of tripod scissor structures using screw theory." *Mechanism and Machine Theory* 191 (2024): 105468.  
<https://doi.org/10.1016/j.mechmachtheory.2023.105468>
- 2022 Liao, Y. and Krishnan, S. "Geometric Design and Kinematics of Spatial Deployable Structures using Tripod-Scissor Units." *Structures*. 38 (2022): 323-339.  
<https://doi.org/10.1016/j.istruc.2022.01.009>
- 2020 Krishnan, S. and Liao, Y. "Geometric Design of Deployable Spatial Structures Made of Three-Dimensional Angulated Members." *ASCE Journal of Architectural Engineering*. 26.3 (2020): 04020029. [https://doi.org/10.1061/\(ASCE\)AE.1943-5568.0000416](https://doi.org/10.1061/(ASCE)AE.1943-5568.0000416)

### Conference Papers

- 2022 Liao, Y., Li, Y. and Krishnan, S. "Deployability and structural performance of spatial scissor units made of zigzag bars." *Proceedings of the IASS 2022 Symposium affiliated with APCS 2022*, Beijing, China, September 19-22, 2022.
- 2021 Liao, Y. "Modeling and Analysis of Tripod-scissor Deployable Structures Using Mirrored Assembly Methods." *Proceedings of the IASS Annual Symposium 2020/21 and the 7th International Conference on Spatial Structures* Guilford, UK, August 23-28, 2021.
- 2021 Liao, Y. "Geometric Design of Deployable Antenna Frame Using Hyperboloid Scissor Structure." *Earth and Space 2021, ASCE*. Apr. 21-23, 2021, 1047-1058. [Winner of the Best Student Paper Competition]  
<https://ascelibrary.org/doi/abs/10.1061/9780784483374.097>
- 2019 Krishnan, S. and Liao, Y. "Integrating Shelter Design and Disaster Education in Architectural Curriculum." *The Annual Conference of American Society for Engineering Education (ASEE) 2019*, Tampa, Florida, June 15 - 19, 2019.  
<https://doi.org/10.18260/1-2--32990>
- 2017 Liao, Yuan and Krishnan, Sudarshan. "Geometric Design and Kinematics of Curvilinear Deployable Structures." *Proceedings of the IASS Annual Symposium 2017*, Hamburg, Germany, September 25-29, 2017.

### Honors and Awards

- 2021 - 2023 **Teachers Ranked as Excellent/Outstanding**  
 Evaluated by the students of the School of Architecture, UIUC  
 TA of Arch 433 (Fall 2023)  
 TA of Arch 435 (Spring 2022)  
 TA of Arch 536 (Fall 2021)  
 TA of Arch 435 (Spring 2021)
- 2022 **Conference Presentation Award**  
 Awarded \$350 by UIUC Graduate College
- 2021 **Runner-up of the Best Student Paper Competition**  
 Awarded by the American Society of Civil Engineers (ASCE),  
 in the 2021 Earth and Space Conference
- 2020 **Creative & Performing Arts Fellowship**

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	Awarded \$4,200 by The College of Fine and Applied Arts (FAA), UIUC
2019	<b>University Fellowship</b> Awarded \$1,044 by UIUC
2018	<b>2018 SARAs National Design Award</b> Awarded by the Society of American Registered Architects (SARAs)
2018	<b>3<sup>rd</sup> Place of The AIA Chicago Award</b> Awarded by American Institute of Architects (AIA)
2018	<b>Gertrude Lempp Kerbis Fellowship for Architectural Research</b> Awarded \$20,000 by UIUC
2017	<b>2<sup>nd</sup> Prize of The Image of Research, Graduate Research Competition</b> Awarded \$200 by UIUC Graduate College
2013	<b>Silver Medal of 2013 Chinese Architectural Art “Young Designers Prize”</b>

### Service and Organizations

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2024	<b>Reviewer</b> , Engineering Structures, Elsevier
2023	<b>Reviewer</b> , Journal of Asian Architecture and Building Engineering, Taylor and Francis
2023	<b>Reviewer</b> , ACSA112 Annual Conference, Association of Collegiate Schools of Architecture
2022	<b>Reviewer</b> , The Open Civil Engineering Journal, BENTHAM Open
2023-Pres	<b>Member</b> , Advancing Architecture, Engineering and Construction (AdvanceAEC)
2021-Pres	<b>Student Member</b> , International Association for Shell and Spatial Structures (IASS)
2021-Pres	<b>Student Member</b> , American Society of Civil Engineers (ASCE)
2020-Pres	<b>Member</b> , International Association of Structures and Architecture (IASA)