Curriculum Vitae

Name:	Sichen Yuan
Position:	Assistant Professor
Affiliation:	Department of Aerospace Engineering and Mechanics, The University of Alabama
Mailing address:	251 Shelby Lane, NERC 2007, Tuscaloosa, AL, 35487-0280
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Google scholar:	https://scholar.google.com/citations?user=E16W5FQAAAAJ&hl=en

Areas of Research Interests

Robotics, tensegrity structures, deployable structures, smart structures and materials, nonlinear dynamics and control, vibrations, finite element, numerical optimization, additive manufacturing, computational solid mechanics.

Professional Experience

08/2023 – Present, **Assistant Professor**, Department of Aerospace Engineering and Mechanics, The University of Alabama
09/2019 – 05/2023, **Assistant Professor**, A. Leon Linton Department of Mechanical, Robotics and Industrial Engineering, Lawrence Technological University

Education

B.S. Mechanical Engineering Shanghai Jiao Tong University, Shanghai, China, 2012.
M.S. Mechanical Engineering, University of Southern California, Los Angeles, USA, 2014.
Ph.D. Mechanical Engineering, University of Southern California, Los Angeles, USA, 2019

Grants

1. Tensegrity Autonomous Deployable Millirobots for Next-Generation Gastrointestinal Diagnostics, 04/2024 – 03/2027, *American Heart Association*, 24SCEFIA1259736, $300,000.00 (**Role: PI**)

2. CRII:OAC:A Data-Driven Closed-Loop Platform for Optimal Design of Deployable Pin-Jointed Structures, 09/2021 - 08/2023, *National Science Foundation*, 2104237, $174,484.00 **(Role: PI)**

3. Structure Design and Optimization of a 2.5-meter L-Band Deployable Mesh Antenna, 06/2019 - 04/2020, *Navy STTR*, $46,000.00 (**Role: Senior Personnel,** PI: Bingen Yang, University of Southern California**)**

Publications

[*] Corresponding author.

Book:

1. **Yuan, S.**[*] and Yang, B., 2023 Cable-Network Structures: Form Finding, Optimal Design and Shape Control. *Elsevier* (*Book proposal accepted and contract signed with Elsevier, to be published in 2024*)

Book Chapter:

1. **Yuan, S.**[*] and Yang, B., 2022. A New Strategy for Form Finding and Optimal Design of Space Cable Network Structures. *In Nonlinear Approaches in Engineering Application* (pp. 245-285). *Springer, Cham.*

Journal papers:

1. **Yuan, S.**[*] and Zhu, W., 2023. A Cartesian Spatial Discretization Method for Nonlinear Dynamic Modeling and Vibration Analysis of Tensegrity Structures. *International Journal of Solids and Structures*, 270, p.112179.

2. Mehditabar, A., Razmkhah, S., Sadrabadi, S.A.[*], Peng, X., **Yuan, S.** and Abot, J.L., 2023. Three-dimensional thermoelastic analysis of a functionally graded truncated conical shell with piezoelectric layers. *International Journal of Computational Materials Science and Engineering*, 12(03), p.2350003.

3. Zhou, K., Wang, Z., Gao, Q., **Yuan, S.** and Tang, J., 2023. Recent advances in uncertainty quantification in structural response characterization and system identification. *Probabilistic Engineering Mechanics*, p.103507.

4. **Yuan, S.**[*], 2022. Review of Root-Mean-Square Error Calculation Methods for Large Deployable Mesh Reflectors. *International Journal of Aerospace Engineering*, 2022.

5. Ansari Sadrabadi, S.[*], Dadashi, A., **Yuan, S.**, Giannella, V. and Citarella, R.[*], 2022. Experimental-Numerical Investigation of a Steel Pipe Repaired with a Composite Sleeve. *Applied Sciences*, 12(15), p.7536.

6. **Yuan, S.**[*] and Zhu, W., 2021. Optimal self-stress determination of tensegrity structures. *Engineering Structures*, 238, p.112003.

7. **Yuan, S.**[*] and Jing, W., 2021. Optimal shape adjustment of large high-precision cable network structures. *AIAA Journal*, 59(4), pp.1441-1456.

8. **Yuan, S.**[*], Yang, B. and Fang, H., 2019. Self-standing truss with hard-point-enhanced large deployable mesh reflectors. *AIAA Journal*, 57(11), pp.5014-5026.

9. **Yuan, S.** and Yang, B.[*], 2019. The fixed nodal position method for form finding of high-precision lightweight truss structures. *International Journal of Solids and Structures*, 161, pp.82-95.

10. **Yuan, S.**, Yang, B.[*] and Fang, H., 2018. The Projecting Surface Method for improvement of surface accuracy of large deployable mesh reflectors. *Acta Astronautica*, 151, pp.678-690.

11. Shi, H., **Yuan, S.** and Yang, B.[*], 2018. New methodology of surface mesh geometry design for deployable mesh reflectors. *Journal of Spacecraft and Rockets*, 55(2), pp.266-281.

12. Zhang, H., Luan, N.[*], Zhang, S., Gui, H., and **Yuan, S.,** 2012. Cooperative Control of Cranio-maxillofacial Surgical Robot Based on Force-feedback. *Machinery & Electronics*, 5, pp.018.

Conference papers:

1. Tan, N., Woo, D.O., Zhou, K., Kazoleas, C., Zhang, J. and Yuan, S., 2024. On-Orbit Dynamic Thermal Modeling of Large Deployable Mesh Reflectors. *In AIAA SCITECH 2024 Forum* (p. 2040).

2. Kazoleas, C., Mehta, K. and **Yuan, S.**, 2022. Prototype Design and Manufacture of a Deployable Tensegrity Microrobot. *In ASME International Mechanical Engineering Congress and Exposition* (Vol. 86649, p. V02BT02A055). American Society of Mechanical Engineers.

3. **Yuan, S.** and Zhu, W., 2022. A New Approach to Nonlinear Dynamic Modeling and Vibration Analysis of Tensegrity Structures. *In ASME International Mechanical Engineering Congress and Exposition* (Vol. 86670, p. V005T07A104). American Society of Mechanical Engineers.

4. **Yuan, S.**, Jing, W. and Jiang, H., 2021, November. A Deployable Tensegrity Microrobot for Minimally Invasive Interventions. *In ASME International Mechanical Engineering Congress and Exposition* (Vol. 85598, p. V005T05A061). American Society of Mechanical Engineers.

5. **Yuan, S.** and Yang, B., 2021. Shape adjustment of large deployable mesh reflectors under thermal strain. *In AIAA Scitech 2021 Forum* (p. 1148).

6. **Yuan, S.**, Yang, B. and Fang, H., 2020. Direct root-mean-square error for surface accuracy evaluation of large deployable mesh reflectors. *In AIAA SciTech 2020 Forum* (p. 0935).

7. **Yuan, S.**, Yang, B. and Fang, H., 2019. Enhancement of Large Deployable Mesh Reflectors by the Self-Standing Truss with Hard-Points. *In AIAA Scitech 2019 Forum* (p. 0752).

8. **Yuan, S.**, Yang, B. and Fang, H., 2018. Form-finding of large deployable mesh reflectors with elastic deformations of supporting structures. *In 2018 AIAA spacecraft structures conference* (p. 1198).

9. **Yuan, S.** and Yang, B., 2016, February. Design and optimization of tension distribution for space deployable mesh reflectors. *In 26th AAS/AIAA space flight mechanics meeting* (Vol. 158, pp. 765-776). Escondido, CA: Univelt.

10. **Yuan, S.**, Yang, B. and Fang, H., 2016. Improvement of surface accuracy for large deployable mesh reflectors. *In AIAA/AAS Astrodynamics Specialist Conference* (p. 5571).

11. **Yuan, S.**, Zhang, H., Wang, N. and Luan, N., 2011, September. Motion study of a redundant 7-DOF operation robot. *In 2011 international conference on electrical and control engineering* (pp. 3056-3060). IEEE.

Presentations and Dissertation:

1. **Yuan, S.**, Form Finding and Shape Control of Space Deployable Truss Structures, *Ph.D. dissertation*, University of Southern California, 2019.

2. Yang, B. and **Yuan, S.**, 2018, June. The Fixed Nodal Position Method for Form Finding of High-Precision Large Deployable Mesh Reflectors. *In The 4th International Workshop on Space Deployable Structures (IWSDS)*, Shanghai, China.

Teaching Experiences

Academic advisor for the following students:

Post-doc: Saeid Ansari Sadrabadi

Ph.D.: Na Tan, Christian Kazoleas, Jiajun Zhang, Dauren Baltabay

Instructor for:

AEM 341	Aerospace Structures
EGE 2013	Statics
EME 3013	Mechanics of Materials

EME 3043   Dynamics
EME 3112   Introduction to Projects
EME 4212   Competition Projects 1
EME 4221   Competition Projects 2
DIS 8613   Ph.D. in Mechanical Engineering Dissertation

Faculty advisor for:

LTU SAE Supermileage Team
LTU SAE Baja Team
LTU Intelligent Ground Vehicle Competition (IGVC) Team

Co-organizer for:

"LTU Automotive Engineering" summer camp

Leadership and Service

2020 – Present, **Vice Chair**, Vibrations Technical Committee of Dynamic Systems and Control Division (DSCD) in ASME.

2023 – Present, **Member**, ASME Technical Committee on Multibody Systems and Nonlinear Dynamics.

2023, **Topic Chair** for *the 35th Conference on Mechanical Vibration and Noise (VIB)*, 2023 IDETC/CIE.

2022, **Topic Chair** for *the 34th Conference on Mechanical Vibration and Noise (VIB)*, 2022 IDETC/CIE.

2022, **Guest Editor** of Special Issue "Design, Analysis and Measurement of Space Deployable Structures" in *International Journal of Aerospace Engineering*

Reviewer of the journals:

Engineering Structures, Journal of Spacecraft and Rockets, Acta Astronautica, Journal of Aerospace Engineering, AIAA Journal, Journal of Sound and Vibration, Journal of Vibration and Acoustics, International Journal of Structural Stability and Dynamics, Applied Mathematical Modelling, Aerospace Science and Technology, International Journal of Mechanical Sciences, Engineering Computations

Awards

AHA's Second Century Early Faculty Independence Award, 2024

Outstanding Service as Topic Chair for the 34th Conference on Mechanical Vibration and Noise (VIB) at the 2022 IDETC/CIE.

USC Viterbi Fellowship, 2014.

Professional Membership

Member   American Society of Mechanical Engineers (ASME)
Member   American Institute of Aeronautics and Astronautics (AIAA)