ZHENGHUI SHA

Assistant Professor
J. Mike Walker Department of Mechanical Engineering
The University of Texas, Austin, TX, USA

Contact Information

Address: The University of Texas at Austin, Bldg. ETC., Rm 4.142
204 E. Dean Keeton Street, Austin, TX 78712
Phone: 1-512-471-1818 (Office)
Email Address: zsha@austin.utexas.edu
Research Lab: https://sidilab.net

Education

Degree: **Doctor of Philosophy,** Mechanical Engineering, Purdue University, USA
Major: Complex Systems Engineering and Design
Minor: Graduate Certificate in Applied Statistics
Completed: August 2015

Degree: **Master of Science,** Mechanical Engineering, Xi'an Jiaotong University, China
Major: Mechatronics
Completed: April 2010

Degree: **Bachelor of Science,** Mechanical Engineering, Xi'an University of Technology, China
Major: Measurement Control and Instrumentation
Minor: Computer Science
Completed: June 2006

Academic Appointment

Assistant Professor, August 2021– Present
J. Mike Walker Department of Mechanical Engineering, The University of Texas, Austin, TX

Adjunct Assistant Professor, August 2021– August 2022
Department of Mechanical Engineering, The University of Arkansas, Fayetteville, AR

Assistant Professor, January 2017 – August 2021
Department of Mechanical Engineering, The University of Arkansas, Fayetteville, AR

Postdoctoral Fellow, January 2016 – December 2016
Department of Mechanical Engineering, Northwestern University, Evanston, IL

Postdoctoral Research Associate, August 2015 – December 2015
School of Mechanical Engineering, Purdue University, West Lafayette, IN

Industrial Experience

Mechanical Engineer Summer Intern, May 2008 – August 2008
*Heavy Industry & New-tech Limited Company of Lanshi Group***,** Lanzhou, China

Awards and Honors

1. **Young Engineer Award**, Computers and Information in Engineering (CIE) Division, American Society of Mechanical Engineers, 2022.
2. **Outstanding Faculty Members of the Year Award**, Associated Student Government and the Graduate Professional Students Congress, The University of Arkansas, 2021.
3. **2020 Journal of Mechanical Design Reviewer with Distinction Award**, Journal of Mechanical Design, 2021.
4. **Technical Committee Leadership Award**, Computers and Information in Engineering (CIE) Division, American Society of Mechanical Engineers, 2020.
5. **Outstanding Teaching Award**, Department of Mechanical Engineering, The University of Arkansas, 2019 – 2020.
6. **ASME Robert E. Fulton SEIKM Best Paper Award** for
   M. H. Rahman, C. Xie, and **Z. Sha**, "A Deep-Learning Based Approach to Predicting Sequential Design Decisions," *ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Anaheim, CA, Aug. 18-21, 2019.
7. **ASME CIE Best Dissertation Award of The Year** (2017) for
   Z. Sha, "Decision-Centric Foundations for Complex Systems Engineering and Design," Purdue University. *Ph.D. Advisor*: Jitesh H. Panchal.
8. **ASME Robert E. Fulton SEIKM Best Paper Award** for:
   Z. Sha, and J. H. Panchal, "Estimating the Node-Level Behaviors in Complex Networks from Structural Datasets," *ASME 2013 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, Portland, OR.
9. **Open Education Resources (OER) Initiative Award,** Associated Student Government (ASG), the University of Arkansas, 2017.
10. **NSF CMMI Conference Fellowship**, awarded by NSF Division of Civil, Mechanical, and Manufacturing Innovation (CMMI), 2012.
11. **Chinese National Scholarship for Outstanding Student Overseas**, awarded by China Scholarship Council, 2010.
12. **Si-Yuan Innovation Scholarship**, awarded by Xi'an Jiaotong University, 2007 – 2010.
13. **Outstanding Graduate Student Leader**, awarded by the School of Mechanical Engineering at Xi'an Jiaotong University, 2008.
14. **Excellent Social Practice**, awarded by the School of Mechanical Engineering at Xi'an Jiaotong University, Top 5 in the School, 2007.
15. **Top 10 Student Leader**, awarded by the Student Union, Xi'an University of Technology, 2006.
16. **First-Class Freshman Scholarship**, Xi'an University of Technology, 2002.

Publications ([*]Advisees; [#]Corresponding Author)

Ph.D. Dissertation

Z. Sha, "Decision-Centric Foundations for Complex Systems Engineering and Design," presented to the faculty of The School of Mechanical Engineering, August 2015, Purdue University: West Lafayette, Indiana. Electronic copy available at http://docs.lib.purdue.edu/dissertations/AAI3734360/

M.S. Thesis

Z. Sha, "Theoretical and Experimental Studies on Design of Numerical Controlled Die Spotting Press," presented to the faculty of The School of Mechanical Engineering, April 2010, Xi'an Jiaotong University, Xi'an, China. Electronic copy available at:
https://drive.google.com/file/d/0B41k4IQqo9DEOVBfMFlPSHBHeTA/view

Book Chapters

B1. **Z. Sha**[#], Y. Lu, C. McComb, Z. Yang, A. Tran, D. Liu, F. Ahmed, B. Song, B. O'Halloran, B. Lane, A. K. Mishra, H. Yeung, M. Lawton, L. Mirabella, R. Rai, D. Wu, "Promoting Data Science in Mechanical Engineering Research and Education: An Exploration of the Hackathon Mechanism," *Emotional Engineering*, Volume 9, (Editor: Shuichi Fukuda), Publisher: Springer Cham, 2022. https://doi.org/10.1007/978-3-031-05867-7.

B2. K. Trinh[*], **Z. Sha**[#], "Towards the Design of Artificial Swarms Using Network Motifs," *Recent Trends and Advances in Model-Based Systems Engineering*, (Editors: Azad M. Madni, Barry Boehm, Daniel Erwin, Mahta Moghaddam, Michael Sievers, Marilee Wheaton), Springer International Publishing, ISBN: 978-3-030-82083-1, 2022. DOI: 10.1007/978-3-030-82083-1.

B3. W. Chen[#], Faez Ahmed, Y. Cui, **Z. Sha**, N. Contractor, **"**Data-driven preference modeling in engineering systems design," *Handbook of Engineering Systems Design*, (Editors: Anja Maier, Joseph Oehmen, Pieter E. Vermaas), Springer. DOI: https://doi.org/10.1007/978-3-030-46054-9.

Before Joining UT Austin

B4. **Z. Sha**[#] and J. H. Panchal, "A Decision-Centric Framework for Modeling Evolutionary Complex Networked Systems," *Advances in Computers and Information in Engineering Research, ACIER Book Series vol. 2*, (Editors: J. G. Michopoulos, C. J. J. Paredis, D. W. Rosen, and J. M. Vance), *Advances in Computers and Information in Engineering Research*, Volume 2. ASME, 2021. ISBN: 9780791862025. DOI: https://doi.org/10.1115/1.862025.

Journal Articles

J1. X. Li[*], C. Xie, **Z. Sha**[#], "Design Representation for Performance Evaluation of 3D Shapes in Part-Aware Generative Design", *Design Science.* Under review.

J2. Y. Xiao[*], F. Ahmed, **Z. Sha**[#], "Graph neural network-based design decision support for shared mobility systems," *Journal of Mechanical Design*. Under review.

J3. M. H. Rahman[*], E. A. Bayrak, **Z. Sha**[#], "Empirical Evidence and Computational Assessment on Design Knowledge Transferability," *Design Science.* Under review.

J4. **Z. Sha**[#], Y. Cui, Y. Xiao[*], A. B. Stathopoulos, N. Contractor, Y. Fu, W. Chen, "A Network-Based Discrete Choice Model for Decision-Based Design," *Design Science*. Accepted.

J5. H. O. Demirel[#], M. Goldstein, X. Li[*], and **Z. Sha**, "Human-Centered Generative Design Framework: An Early Design Framework to Support Concept Creation and Evaluation," *International Journal of Human-Computer Interaction*, pp: 1-12, 2023. https://doi.org/10.1080/10447318.2023.2171489.

J6. X. Li[*], Y. Wang, **Z. Sha**[#], "Deep-Learning Methods of Cross-Modal Tasks for Conceptual Design of Product Shapes: A Review," *Journal of Mechanical Design*, volume 145, issue 4, pp: 041401 (20). DOI: https://doi.org/10.1115/1.4056436.

J7. L. Poudel[*], S. Elagandula[*], W. Zhou, **Z. Sha**[#], "Centralized and Decentralized Planning for Multi-Robot Additive Manufacturing," *Journal of Mechanical Design.* In press. https://doi.org/10.1115/1.4055735. (**Feathred Articled by JMD**).

J8. V. Krishnamurthy[#], L. Poudel[*], M. Ebert, D. Weber[*], R. Wu, W. Zhou, E. Akleman, **Z. Sha**, "LayerLock: Layer-wise Collision-free Multi-Robot Additive Manufacturing Using Topologically Interlocked Space-Filling Shapes," *Computer-Aided Design*, 152 (2022) 103392, *Computer-Aided Design*, 2022. https://doi.org/10.1016/j.cad.2022.103392.

J9. X. Li[*], C. Xie, **Z. Sha**[#], "A Predictive and Generative Design Approach for 3D Mesh Shapes Target-Embedding Variational Autoencoder," *Journal of Mechanical Design*, Transactions of the ASME, volume 144, issue 11, pp: 114501 (7). DOI: https://doi.org/10.1115/1.4054906.

J10. L. Poudel[*], L. G. Marques, R. A. Williams, Z. Hyden, P. Guerra, O. L. Fowler, S. J. Moquin, **Z. Sha**, W. Zhou[#], "Swarm Manufacturing: Architecting A Cooperative 3D Printing

System," *Journal of Manufacturing Science and Engineering*, Aug 2022, 144(8): 081004 (15 pages). https://doi.org/10.1115/1.4053681.

J11. Y. Xiao[*], **Z. Sha**[#], "Robust Design of Complex Socio-Technical Systems against Seasonal Effects: A Network Motif-Based Approach," *Design Science*, 8, E2. https://doi.org/10.1017/dsj.2021.27.

J12. Y. Cui, F. Ahmed, **Z. Sha**, L. Wang, Y. Fu, N. Contractor, W. Chen[#], "A Weighted Statistical Network Modeling Approach to Product Competition Analysis," *Complexity*, vol. 2022, Article ID 9417869, 16 pages, 2022. https://doi.org/10.1155/2022/9417869.

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J13. Y. Bi, Y. Qiu, J. Xie, **Z. Sha**, M. Wang, Y. Fu, N. Contractor, W. Chen[#], "Modeling Multi-Year Customers' Considerations and Choices in China's Auto Market Using Two-Stage Bipartite Network Analysis," *Networks and Spatial Economics*, 2021. https://doi.org/10.1007/s11067-021-09526-9.

J14. L. Poudel[*], W. Zhou, **Z. Sha**[#], "Resource-Constrained Scheduling for Multi-Robot Cooperative 3D Printing", *Journal of Mechanical Design*, Transactions of the ASME, volume 143, issue 7, pp: 072002 (12), July 2021: https://doi.org/10.1115/1.4050380.

J15. M. Rahman[*], C. Xie, **Z. Sha**[#], "Predicting Sequential Design Decisions Using the Function-Behavior-Structure Design Process Model and Recurrent Neural Networks," *Journal of Mechanical Design*, Transactions of the ASME, volume 143, issue 8, pp: 081706 (12), 2021.

J16. A. E. Bayrak, **Z. Sha**[#], "Integrating Sequence Learning and Game Theory to Predict Design Decisions under Competition," *Journal of Mechanical Design*, *Transactions of the ASME*, volume 143, issue 5, pp: 051401 (9), 2021.

J17. L. Poudel[*], W. Zhou, **Z. Sha**[#], "A Generative Approach for Scheduling Multi-Robot Cooperative 3D Printing," *Journal of Computing and Information Science in Engineering, Transactions of the ASME,* volume 20, issue 6, pp: 061011 (12), Dec 2020.

J18. M. H. Rahman[*], C. Xie, **Z. Sha**[#], "Combining Static and Dynamic Data in Deep Learning to Predict Sequential Design Decisions*," Thematic Collection on Deep Learning for Design, Design Science,* vol. 6, e15, DOI: 10.1017/dsj. 2020.12.

J19. J. Xie, Y. Bi, **Z. Sha**, M. Wang, Y. Fu, N. Contractor, G. Lin, W. Chen[#], "Data-Driven Dynamic Network Modeling for Analyzing the Evolutions of Product Competition," *Journal of Mechanical Design*, *Transactions of the ASME*, volume 142, issue 3, pp: 031112 (14), 2020.

J20. L. Poudel[*], C. Bair, J. McPherson, **Z. Sha**[#], W. Zhou[#], "A Heuristic Scaling for Multi-Robot Cooperative 3D Printing*", Journal of Computing and Information Science in Engineering, Transactions of the ASME*, volume 20, issue 12, pp: 041002 (12), 2020.

J21. Z. Zhang, L. Poudel[*], **Z. Sha**, W. Zhou, D. Wu[#], "Prediction of Tensile Strength of Components Fabricated by Cooperative 3D Printing," *Journal of Computing and Information Science in Engineering, Transactions of the ASME*, volume 20, issue 2, pp: 021002 (10), 2020.

J22. M. H. Rahman[*], C. Schimpf, C. Xie, **Z. Sha**[#], "A CAD-Based Research Platform for Design Thinking Studies," *Journal of Mechanical Design*, *Transactions of the ASME*, volume 141, issue 12, pp: 121102 (12), 2019.

J23. **Z. Sha**[#], A. Chaudhari, J. H. Panchal, "Modeling Participation Behaviors in Design Crowdsourcing Using A Bipartite Network-Based Approach," *Journal of Computing and Information Science in Engineering, Transactions of the ASME*, volume 19, issue 3, pp: 031010 (10), 2019.

J24. A. Chaudhari, **Z. Sha**, J. H. Panchal[#], "Analyzing Participant Behaviors in Design Crowdsourcing Contests using Causal Inference on Field Data," *Journal of Mechanical Design, Transactions of the ASME*, Vol. 140, Issue 9, 091401-091401-12, 2018.

J25. M. Wang, **Z. Sha**, Y. Huang, N. Contractor, Y. Fu, W. Chen[#], "Predicting Products' Co-Considerations and Market Competitions for Technology-driven Product Design: A Network-based Approach," *Thematic Collection on Network-based Modeling and Analysis in Design, Design Science*, Vol. 4, e9, 2018.

J26. **Z. Sha**[#], Y. Huang, S. J. Fu, M. Wang, N. Contractor, Y. Fu, W. Chen, "A Network-Based Approach to Modeling and Predicting Product Co-Consideration Relations," *Complexity, special issue on Emerging Applications of Complex Networks*, vol. 2018, Article ID 2753638, 14 pages.

J27. L. Poudel[*], **Z. Sha**[#], W. Zhou, "Mechanical Strength of Chunk-Based 3D Printed Parts for Cooperative 3D Printing*", Procedia Manufacturing*, vol. 26, pp. 962-972, 2018.

J28. J. H. Panchal[#], **Z. Sha**, K. N. Kannan, "Understanding Design Decisions under Competition Using Games with Information Acquisition and a Function Optimization Experiment," *Journal of Mechanical Design, Transactions of the ASME*, volume 139, issue 9, pp: 091402 (12), 2017.

J29. **Z. Sha**, V. Saeger, M. Wang, Y. Fu, W. Chen[#], "Analyzing Customer Preference to Products' Optional Features in Supporting Product Configuration," *SAE International Journal of Materials and Manufacturing*, Vol. 10, Issue 3, 2017.

J30. **Z. Sha**, K. A. Moolchandani, J. H. Panchal and D. A. DeLaurentis[#], "Modeling Airlines' Decisions on City-Pair Route Selection Using Discrete Choice Models," *AIAA Journal of Air Transportation*, Vol. 24, No. 3, pp. 63-73, 2016.

J31. **Z. Sha**, K. N. Kannan, and J. H. Panchal[#], "Behavioral Experimentation and Game Theory in Engineering Systems Design," *Journal of Mechanical Design, Transactions of the ASME*, volume 137, issue 5, pp: 051405 (10), 2015.

J32. **Z. Sha**, J. H. Panchal[#], "Estimating Local Decision-Making Behavior in Complex Evolutionary Systems," *Journal of Mechanical Design, Transactions of the ASME*, volume 136, issue 6, pp: 061003 (11), 2014.

J33. Q. Le, **Z. Sha**, and J. H. Panchal[#], "A Generative Network Model for Product Evolution", *Journal of Computing and Information Science in Engineering, Transactions of the ASME*, volume 14, issue 11, pp: 011003 (11), 2014.

J34. **Z. Sha**, J. H. Panchal[#], "Towards the Design of Complex Evolving Networks with High Robustness and Resilience," *Procedia Computer Science*, Volume 16, pp. 522-531, 2013.

J35. **Z. Sha**[#], S. Zhao, "Design and Simulation of Hydraulic Dual-Cylinder Synchronous Control System Based on MRFAC," *Machine Tools & Hydraulics*, volume 5, pp: 89-96, 2013. (In Chinese)

J36. J. Xie[#], D. Kang, B. Woo, J. Lee, **Z. Sha**, and S. Zhao, "Optimum Design of Transverse Flux Machine for High Contribution of Permanent Magnet to Torque Using Response Surface Methodology," *Journal of Electrical Engineering & Technology*, volume 7, issue 5, pp: 745-752, 2012.

J37. G. Yan[#], S. Zhao, and **Z. Sha**, "Simulation of semisolid die-casting process of a four-way valve of HPb59-1 alloy for air-conditioner", *Transactions of Nonferrous Metals Society of China*, volume 20, pp: s931- s936, 2010.

Journal Articles (Under preparation)

U1. J. Clay[*], X. Li[*], M. H. Rahman[*], D. Zabelina, M. Goldstein, C. Xie, **Z. Sha**[#], "From Design Cognition to Design Performance: A Clustering-Based Correlation Analysis," *Design Studies*.

U2. Y. Bi, J. Xie, **Z. Sha**, M. Wang, Y. Fu, W. Chen[#], "Modeling Spatiotemporal Heterogeneity of Customer Preferences in Engineering Design," *International Journal of Production Research.*

Refereed Conference Papers

C1. T. Kii, K. Yaji[#], K. Fujita, **Z. Sha**, C. C. Seepersad, "Data-Driven Multifidelity Topology Design With a Latent Crossover Operation," *ASME 2023 International Design Engineering Technical*

Conferences & Computers and Information in Engineering Conference, Boston, Massachusetts, Aug. 20-23, 2023. Under review.

C2. R. Stone[*], W. Zhou, E. Akleman, V. Krishnamurthy, **Z. Sha**[#], "Print as a Dance Duet: Communication Strategies for Collision-Free Arm-Arm Coordination in Cooperative Three-Dimensional Printing," *ASME 2023 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Boston, Massachusetts, Aug. 20-23, 2023. Under review.

C3. S. Chen[*], A. E. Bayrak, **Z. Sha**[#], "Multi-Agent Bayesian Optimization for Unknown Design Space Exploration," *ASME 2023 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Boston, Massachusetts, Aug. 20-23, 2023. Under review.

C4. P. Gavino[*], Y. Xiao[*], Y. Cui, W. Chen, **Z. Sha**[#], "Evolutionary Co-Mention Network Analysis via Social Media Mining," *ASME 2023 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Boston, Massachusetts, Aug. 20-23, 2023. Under review.

C5. J. Clay[*], X. Li[*], R. Jiang, O. Demirel, M. Goldstein, D. Zabelina, C. Xie, **Z. Sha**[#], "Generative Design Thinking: Discerning the Concepts With an Evolving Thinking Model," *ASME 2023 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Boston, Massachusetts, Aug. 20-23, 2023. Under review.

C6. D. Weber[*], W. Zhou, **Z. Sha**[#], "Job Placement for Cooperative 3D Printing," *The ASME 2023 Manufacturing Science and Engineering Conference (MSEC),* New Brunswick, NJ. June 12-16, 2023.

C7. Y. Cui, Y. Xiao[*], **Z. Sha**, W. Chen[#], "Network-Based Analysis of Heterogeneous Consideration-then Choice Customer Preferences with Market Segmentations," *2023 Conference on Systems Engineering Research (CSER),* Hoboken, New Jersey. Mar. 16-17, 2023.

C8. Y. Xiao[*], Y. Cui, W. Chen, **Z. Sha**[#], "Product Competition Analysis for Engineering Design: A Network Mining Approach," *2023 Conference on Systems Engineering Research (CSER),* Hoboken, New Jersey. Mar. 16-17, 2023.

C9. D. Weber[*], W. Zhou, **Z. Sha**[#], "Z-Chunking for Cooperative 3D Printing of Large and Tall Objects," *The Thirty-Third Annual International Solid Freeform Fabrication Symposium*, Austin, TX. July 25-27, 2022.

C10. Y. Xiao[*], F. Ahmed, **Z. Sha**[#], "Travel Links Prediction In Shared Mobility Networks Using Graph Neural Network Models," *ASME 2022 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, St. Louis, Missouri, Aug. 14-17, 2022.

C11. X. Li[*], Y. Wang, **Z. Sha**[#], "Deep Learning of Cross-Modal Tasks for Conceptual Design of Engineered Products: A Review," *ASME 2022 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, St. Louis, Missouri, Aug. 14-17, 2022.

C12. Y. Xiao[*], Y. Cui, N. Raut, J. H. Januar, J. Koskinen, N. Contractor, W. Chen, **Z. Sha**[#], "Information Retrieval and Survey Design For Two-Stage Customer Preference Modeling," *Proceedings of the Design Society*, Volume 2: DESIGN2022, May 2022, pp. 811-820. DOI: https://doi.org/10.1017/pds.2022.83.

C13. M. Rahman[*], A. E. Bayrak, **Z. Sha**[#], "A Reinforcement Learning Approach to Predicting Human Design Actions Using a Data-Driven Reward Formulation," *Proceedings of the Design Society*, Volume 2: DESIGN2022, May 2022, pp. 1709 - 1718. DOI: https://doi.org/10.1017/pds.2022.173

C14. S. S. Tanu[*], L. Zhang, D. Gauri, **Z. Sha**[#], "An Exploratory Study on Fairness-Aware Design Decision-Making," *the 55th Hawaii International Conference on System Science (HICSS)*, January

4-7, 2022, Maui, HI. (**Best Paper Award Nominee** in Knowledge Innovation and Entrepreneurial Systems Track)

C15. J. Clay[*], M. H. Rahman[*], D. Zabelina, C. Xie, **Z. Sha**[#], "The Psychological Links Between Systems Thinking and Sequential Decision Making in Engineering Design," In: Gero J.S. (eds) Design Computing and Cognition'20. Springer, Cham. pp. 63-79, 2022. https://doi.org/10.1007/978-3-030-90625-2_4.

C16. M. H. Goldstein[#], J. Sommer, N. T. Buswell, X. Li[*], **Z. Sha**, O. Demirel, "Uncovering Generative Design Rationale in the Undergraduate Classroom," *2021 IEEE Frontiers in Education Conference (FIE)*, 2021, pp. 1-6, DOI: 10.1109/FIE49875.2021.9637365.

C17. X. Li[*], M. H. Goldstein, O. Demirel, **Z. Sha**[#], "Exploring Generative Design Thinking for Engineering Design and Design Education," *2021 ASEE Midwest Section Conference*, Virtually hosted in Fayetteville, AR, Sep. 13-15, 2021. DOI: 10.18260/1-2-1125.1153-38349.

Before Joining UT Austin

C18. S. Elagandula[*], L. Poudel[*], W. Zhou, **Z. Sha**[#], "Enabling Multi-Robot Cooperative Additive Manufacturing: Centralized vs. Decentralized Approaches," *Proceedings of the ASME 2021 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. Volume 2: 41st Computers and Information in Engineering Conference (CIE). Virtual, Online. August 17–19, 2021. V002T02A042. https://doi.org/10.1115/DETC2021-71343.

C19. M. Rahman[*], C. Xie, **Z. Sha**[#], "Representation Learning of Design Thinking to Cluster Design Behaviors," *Proceedings of the ASME 2021 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*. Volume 6: 33rd International Conference on Design Theory and Methodology (DTM). Virtual, Online. August 17–19, 2021. V006T06A051. ASME. https://doi.org/10.1115/DETC2021-72406.

C20. J. Clay[*], X. Li[*], M. H. Rahman[*], D. Zabelina, C. Xie, **Z. Sha**[#], "Modeling and Profiling Student Designers' Cognitive Competencies in Computer-Aided Design," *Proceedings of the Design Society*, 1, 2157-2166. doi:10.1017/pds.2021.477.

C21. X. Li[*], C. Xie, **Z. Sha**[#], "Part-Aware Product Design Agent Using Deep Generative Network and Local Linear Embedding," *The 54th Hawaii International Conference on System Science (HICSS)*, January 5-8, 2021, Kauai, HI. (**Best Paper Award Nominee** in Knowledge Innovation and Entrepreneurial Systems Track. Total submissions: 1,449 papers)

C22. Y. Xiao[*], **Z. Sha**[#], "Towards Engineering Complex Sociotechnical Systems Using Network Motifs: A Case Study on Bike-Sharing Systems," *ASME 2020 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Virtual Conference, Aug. 17-19, 2020.

C23. L. Poudel[*], L. G. Marques, R. A. Williams, Z. Hyden, P. Guerra, O. L. Fowler, S. J. Moquin, **Z. Sha**, W. Zhou[#], "Architecting The Cooperative 3D Printing System", *ASME 2020 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Virtual Conference, Aug. 17-19, 2020.

C24. Y. Cui, F. Ahmed, **Z. Sha**, L. Wang, Y. Fu, W. Chen[#], "A Weighted Network Modeling Approach for Analyzing Product Competition," *ASME 2020 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Virtual Conference, Aug. 17-19, 2020.

C25. S. Elagandula[*], L. Poudel[*], **Z. Sha**, W. Zhou[#], "Multi-Robot Path Planning for Cooperative 3D Printing", the ASME 2020 15th International Manufacturing Science and Engineering Conference (MSEC), June 22-26, 2020, Cincinnati, OH.

C26. M. Rahman[*], C. Xie, **Z. Sha**[#], "A Deep Learning-Based Approach to Predicting Sequential Design Decisions," *ASME 2019 International Design Engineering Technical Conferences & Computers*

and Information in Engineering Conference, Anaheim, CA, Aug. 18-21, 2019. (**ASME Robert E. Fulton SEIKM Best Paper Award**)

C27. J. Xie, Y. Bi, **Z. Sha**, M. Wang, Y. Fu, N. Contractor, W. Chen[#], "A Dynamic Network Analysis Approach to Understanding the Impact of Engineering Design on Evolutions of Market Competition," *ASME 2019 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Anaheim, CA, Aug. 18-21, 2019. (**Ranked top 10% among the submission**)

C28. L. Poudel[*], W. Zhou, **Z. Sha**[#], "Computational Design of Scheduling Strategies for Multi-Robot Cooperative 3D Printing*", ASME 2019 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Anaheim, CA, Aug. 18-21, 2019.

C29. C. T. Schimpf[#]**,** X. Huang, **Z. Sha**, C. Xie, "Developing Instructional Design Agents to Support Novice and K-12 Design Education", The *126th ASEE Annual Conference & Exposition*, Tampa, FL, June 16-19, 2019.

C30. **Z. Sha**, Y. Bi, M. Wang, A. B. Stathopoulos, N. Contractor, Y. Fu, W. Chen[#], "Comparing Utility-Based and Network-Based Approaches in Modeling Customer Preferences for Engineering Design," the *22nd International Conference on Engineering Design*, ICED19, Delft, Netherlands, Aug. 5-8, 2019.

C31. Y. Bi, J. Xie, **Z. Sha**, M. Wang, Y. Fu, W. Chen[#], "Modeling Spatiotemporal Heterogeneity Customer Preferences in Engineering Design," *ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Quebec City, Canada. 2018. Paper number: DETC2018-86245.

C32. **Z. Sha**[#], A. Chaudhari, J. H. Panchal, "Modeling Participation Behaviors in Design Crowdsourcing Using A Bipartite Network-Based Approach," *ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Quebec City, Canada. 2018. Paper number: DETC2018-85686. (**ASME Robert E. Fulton SEIKM Best Paper Finalist**)

C33. M. Rahman[*], M. Gashler, C. Xie, **Z. Sha**[#], "Automatic Clustering of Sequential Design Behaviors," *ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Quebec City, Canada. 2018.

C34. J. Fu, **Z. Sha**, Y. Huang, M. Wang, Y. Fu, N. Contractor, W. Chen[#], "Modeling Customer Choice Preferences in Engineering Design using Bipartite Network Analysis*," ASME 2017 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Cleveland, Ohio, Aug. 6-9, 2017.

C35. **Z. Sha**, M. Wang, Y. Huang, N. Contractor, Y. Fu, W. Chen[#], "Modeling Product Co-Consideration Relations: A Comparative Study of Two Network Models," *the 21st International Conference on Engineering Design, ICED17*, Vancouver, Canada, Aug. 21-25, 2017.

C36. **Z. Sha**, J. H. Panchal[#], "A Degree-Based Decision-Centric Model for Complex Networked Systems," *ASME 2016 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Charlotte, NC. 2016.

C37. M. Wang, **Z. Sha**, Y. Huang, N. Contractor, Y. Fu, W. Chen[#], "Forecasting Technological Impacts on Customers' Co-consideration Behaviors: A Data-driven Network Analysis Approach," *ASME 2016 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Charlotte, NC. 2016.

C38. K. A. Moolchandani, **Z. Sha**, A. Maheshwari, J. Thekinen, N. Davendralingam, J. H. Panchal and D. A. DeLaurentis[#], "Hierarchical Decision-Modeling Framework for Air Transportation Systems," the *16th AIAA Aviation Technology, Integration, and Operations Conference*, June 13 - 17, 2016, Washington D. C.

C39. **Z. Sha**, K. Moolchandani, A. Maheshwari, J. Thekinen, J. H. Panchal, and D. A. DeLaurentis[#], 2015, "Modeling Airline Decisions on Route Planning Using Discrete Choice Models," the *15th AIAA Aviation Technology, Integration, and Operations Conference*, Aviation Forum, Dallas, TX.

C40. N. Davendralingam, **Z. Sha**, K. A. Moolchandani, A. Maheshwari, J. H. Panchal, and D. A. DeLaurentis[#], "Scientific Foundations for Systems Engineering: Challenges and Strategies," *ASME 2015 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Boston, MA.

C41. **Z. Sha**, J. H. Panchal[#], "Estimating Linking Preferences and Behaviors of Autonomous Systems in the Internet using Discrete Choice Models," *2014 IEEE International Conference on Systems, Man, and Cybernetics (SMC) Conference*, San Diego, CA, 2014.

C42. B. Nagiligari, J. Shah, **Z. Sha**, S. K. Thirugnanam, A. Jain, and J. H. Panchal[#], "Integrated Part Classification for Product Cost and Complexity Reduction," *ASME 2014 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Buffalo, NY, 2014.

C43. **Z. Sha**, J. H. Panchal[#], "Estimating the Node-Level Behaviors In Complex Networks from Structural Datasets," *ASME 2013 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Portland, OR, 2013. (**ASME Robert E. Fulton SEIKM Best Paper Award**).

C44. B. Hawthorne, **Z. Sha**, J. H. Panchal, and M. Farrokh[#], "Developing Competencies for the 21st Century Engineer," *ASME 2012 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Chicago, IL, 2012.

C45. **Z. Sha**, Q. Le, and J. H. Panchal[#], "Using SysML for Conceptual Representation of Agent-based Models," *ASME 2011 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Washington DC, 2011.

C46. **Z. Sha**, G. Ameta[#], "Life-cycle Assessment of An Electric Rice Cooker: A Case Study," *ASME 2011 International Mechanical Engineering Congress and Exposition*, Denver, CO, 2011.

C47. J. Xie[#], S. Zhao, **Z. Sha**, and J. Liang, "Position Servo Control of the Slider in Double Toggle Mechanical Press Using Bezier Curve Model and Fuzzy Control," *IEEE 2011 International Conference on Automation Science and Engineering*, Trieste, Italy, 2011. DOI: 10.1109/CASE.2011.6042424.

C48. J. Xie[#], S. Zhao, **Z. Sha**, and J. Liang, "An Online Adaptive Fast Control Approach Based on Local Linearization and Its Application to a Large Inertia System," *2011 ASME Annual Dynamic Systems and Control Conference,* Arlington, VA, 2011.

C49. J. Xie[#], S. Zhao, **Z. Sha**, and J. Liang, "Hybrid Control Using Sampling PI and Fuzzy Control Methods for Large Inertia and Time Delay System," *Lecture Notes in Electrical Engineering*, volume 100, pp. 387-393, Proceedings of *International Conference on Electric and Electronics*, Nanchang, China. 2011.

C50. J. Xie[#], S. Zhao**, Z. Sha**, and J. Liang, "Slider Position Servo Control of the Double Toggle Mechanical Press Directly Driven by Transverse Flux Machine," *Advanced Materials Research*, volume 201, pp. 2360-2365, Proceedings of the *International Conference on Manufacturing Science and Engineering*, Guilin, China, 2011.

C51. J. Xie[#], S. Zhao, **Z. Sha**, and J. Liang, "Optimum Design of Toggle Transmission System in Double Toggle Mechanical Press Using Response Surface Methodology Combined with Experimental Design," *Applied Mechanics and Materials*, Volume 86, pp. 858-862, 2011.

C52. G. Yan[#], S. Zhao, and **Z. Sha**, "Parameters Optimization of Semisolid Die-casting Process for Air-Conditioner' Triple Valve in HPb59-1 Alloy", *Advanced Materials Research*, Volume 129-131, pp. 936-941, 2010.

Refereed Abstracts and Extended Abstracts

A1. Y. Xiao, **Z. Sha**, "Socio-Technical Systems Engineering and Design: A Meso-Level Network-Based Approach," *DTM Broader Participation (B-Part) Fellows and Student Poster Session, ASME 2022 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, St. Louis, Missouri, Aug. 14-17, 2022. (**Top-ten abstracts and won the Travel Award**).

A2. X. Li, **Z. Sha**, "Human-Supervised Deep Generative Design Framework for Conceptual Design of Product Shapes," *DTM Broader Participation (B-Part) Fellows and Student Poster Session, ASME 2022 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, St. Louis, Missouri, Aug. 14-17, 2022. (**Top-ten abstracts and won the Travel Award**).

A3. Y. Xiao, Y. Cui, W. Chen, J. Koskinen, N. Contractor, **Z. Sha**, "A Network-Based Approach to Modeling Product Co-consideration and Choice Relations," *Sunbelt 2022 – The XLII International Sunbelt Social Networks Conference*, July 12-16, 2022, Cairns, Australia.

A4. Y. Cui, Y. Xiao, **Z. Sha**, N. Contractor, J. Koskinen, W. Chen, "Network-based Customer Preference Modeling," *Sunbelt 2022 – The XLII International Sunbelt Social Networks Conference*, July 12-16, 2022, Cairns, Australia.

Before Joining UT Austin

A5. S. S. Tanu, L. Zhang, D. Gauri, **Z. Sha**, "Towards Fairness-Aware Design Decision-Making," *ASME 2021 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Virtual Conference, Aug. 17-20, 2021. Extended abstract for presentation-only at the Special Session: Lightning Talks on New & Revisiting Directions on the 33rd International Conference on Design Theory and Methodology.

A6. X. Li, C. Xie, **Z. Sha**, "Generative Design of Authentic 3D Shapes from 2D Sketches Using Target-Embedding Variational Autoencoder", *ASME 2021 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Virtual Conference, Aug. 17-20, 2021. Extended abstract for presentation-only submission to the Special Session: Lightning Talks on New & Revisiting Directions on the 33rd International Conference on Design Theory and Methodology.

A7. Y. Xiao, **Z. Sha**, "A Network Motifs-Based Approach to Improving Robustness of Complex Socio-Technical Systems Against Seasonal Effects," *Networks 2021: A Joint Sunbelt and NetSci Conference,* Washington DC, July 6-11, 2021. Extended Abstract and Oral Presentation.

A8. X. Li, C. Xie, **Z. Sha**, "Part-Aware Product Design Using Deep Generative Network," *ASME 2020 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, St. Louis, MO, Aug. 16-19, 2020. Extended abstract for presentation only at the 32nd International Conference on Design Theory and Methodology.

A9. **Z. Sha**, L. Godfrey, M. Gashler, "Modeling Sequential Design Decisions Using Fine-Grained Empirical Data," *2018 Design Science Research (DSR) Workshop*, Montreal, Canada, August 23-25, 2018. *Peer-reviewed extended abstract*.

A10. L. Poudel, W. Zhou, **Z. Sha**, "Towards Autonomous Digital Additive Manufacturing (ADAM)," *ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Quebec City, Canada. 2018. Abstract and Video Presentation.

A11. M. Wang, **Z. Sha**, Y. Huang, S. J. Fu, Y. Fu, N. Contractor, W. Chen, "Data-Driven Vehicle Preference Modeling and Prediction: A Multidimensional Network Analysis Approach," the *7th International Conference on Collaborative Innovation Networks (COINs17)*, Detroit, MI. 2017. Extended abstract.

A12. **Z. Sha**, M. Wang, Y. Huang, N. Contractor, Y. Fu, W. Chen, "Forecasting Technological Impacts on Customers' Co-consideration Behaviors – A network-based framework to analyze the impact of new technologies on the vehicle market," The *7th International Conference on Design Computing and Cognition (DCC'16)*, Evanston, IL. 2016. Extended abstract.

A13. **Z. Sha**., K. Moolchandani, J. H. Panchal, D. DeLaurentis, "Modeling Airlines Decisions On Route Selection Using Discrete Choice Models - Data and Supplementary Materials," *Purdue University Research Repository*, 2015. doi:10.4231/R74747TG. Report.

Poster Presentations and Reports

P1. X. Li, **Z. Sha**, "A Human-Supervised Deep Generative Design Framework for Conceptual Design of Product Shapes," Frontiers in Design Representation (FinDeR) Summer School, the University of Maryland, College Park, MD, July 25-29, 2022.

P2. D. Weber, **Z. Sha**, "Z-Chunking for Cooperative 3D Printing of Large and Tall Objects*," CIE Graduate Research Poster Competition, ASME 2022 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference,* St. Louis, Missouri, Aug. 14-17, 2022.

P3. **Z. Sha**, D. Zabelina, M. Goldstein, O. Demirel, C. Xie, J. Clay, A. Brown, J. Standridge, X. Li, M. Rahman, S. Srinivasan, "Educating Generative Design in Engineering," *2022 IUSE Summit – Propelling Change: Moving from Strategy Toward Effective & Equitable Undergraduate STEM Education*, Abstract and Poster Presentation, June 1-3, 2022, Washington DC.

P4. X. Li, **Z. Sha**, "3D Mesh Shape Generation for Additive Manufacturing from 2D Sketches," *2021 CAMDI Research Symposium*, Lightning Talks & Poster Presentation, November 12, The University of Texas at Austin.

P5. L. Poudel, **Z. Sha**, "Multi-Robot Cooperative 3D Printing and Planning," *2021 CAMDI Research Symposium*, Lightning Talks & Poster Presentation, November 12, The University of Texas at Austin.

P6. D. Weber, L. Poudel, W. Zhou, **Z. Sha**, "Swarm Manufacturing: Cooperative 3D Printing," March 4, The University of Texas at Austin. **Honorable Mention**.

P7. S. S. Tanu, **Z. Sha**, "Design for Market System with Fairness-Aware Design Decision-Making," *Arkansas National Science Foundation EPSCoR 2021 Annual Conference*, DART Poster Competition, Virtual Conference, September 13-14, 2021.

Before Joining UT Austin

P8. Y. Xiao, **Z. Sha**, "Robust Design of Complex Socio-Technical Systems using Complex Networks*,"* *CIE Graduate Research Poster Competition, ASME 2021 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Virtual Conference, Aug. 17-20, 2021. **Travel Award.**

P9. J. Clay, M. H. Rahman, D. Zabelina, C. Xie, X. Li, **Z. Sha**, "Systems Thinking Factors as Predictors of Success in Engineering Design," *The Ninth International Conference On Design Computing and Cognition (DCC)*, June 29 – July 1, 2020, Atlanta, GA.

P10. L. Poudel, W. Zhou, **Z. Sha**, "Swarm 3D Printing and Assembly for Autonomous Manufacturing*",* NSF Research Poster Competition*, The International Mechanical Engineering Congress and Exposition (IMECE)*, Salt Lake City, UT, Nov. 8-14, 2019.

P11. M. Rahman, **Z. Sha**, "Towards Building an AI-Integrated Computer-Aided Design Platform for Design Research," NSF Research Poster Competition*, The International Mechanical Engineering Congress and Exposition (IMECE)*, Salt Lake City, UT, Nov. 8-14, 2019.

P12. L. Poudel, W. Zhou, **Z. Sha**, "A Computational Framework to Cooperative 3D Printing Schedule," ASME-CIE Graduate Research Poster Competition*, ASME 2019 International Design*

Engineering Technical Conferences & Computers and Information in Engineering Conference, Anaheim, CA, Aug. 18-21, 2019. **Travel Award.**

P13. **Z. Sha**, Q. Li, "An Integrated Game-Theoretic Framework for Secure Strategies Development against Insider Threat in Power Systems," Industry Aboard Meeting, Cybersecurity Center for Secure Evolvable Energy Delivery Systems (SEEDS), Department of Energy, April 18-20, Fayetteville, AR.

P14. **Z. Sha**, J. H. Panchal, "A Decision-centric Framework for Design and Modeling of Complex Evolutionary Systems," ASME-CIE Graduate Research Poster Session, the *33rd Computers and Information in Engineering Conference*, Portland, OR, Aug. 2013.

P15. **Z. Sha**, J. H. Panchal, "Extracting and Executing Agent-based Models from SysML representations," ASME-CIE Graduate Research Poster Session, the *31st Computers and Information in Engineering Conference*, Washington DC, Aug. 2011.

Media Coverage

M1. "Decentralized And Centralized Planning For Multi-Robot Additive Manufacturing," Featured Article, Journal of Mechanical Design Companion Website, March, 2023.

M2. "Top 10 Industry 4.0 Trends & Innovations in 2021," StartUs Insights, 2022.

M3. "Mini Car 3D Printed and Assembled Automatically by AMBOTS," 3DPrinting.com, July 29, 2022.

M4. "Swarm 3D Printing Heralds Future of Lights-Out Manufacturing," 3DPrinting.com, April 19, 2022.

M5. "3D Printing Robot Swarm," The Henry Ford's Innovation Nation with Mo Rocca, CBS, May 29, 2021.

M6. "AMBOTS, Collaborative Mobile 3D Printers, Usher in New Era of Digital Factory," 3D Printing Industry, March 19, 2019.

M7. "AMBOTS Brings Autonomous Collaboration to Manufacturing," All3DP (All About 3D Printing), March 27, 2019.

M8. "The Five Coolest Things on Earth This Week," General Electric, May 24, 2019.

Grants

Research

Extramural grants:

1. "**A Multidimensional Network-Based Approach to Modeling Urban Growth in Texas Triangle Megaregion**," Department of Transportation via the Center for Cooperative Mobility for Competitive Megaregions (CM2), 01/2023 – 08/2023. *Total*: $55,161. Role: PI. Co-PI: M. Zhang.
2. "**REU Supplement: Data-Driven Customer Preference Modeling Based on Product Competition Networks**," National Science Foundation, 06/2022 – 05/2023. *Total*: $16,000. Role: PI.
3. "**SBIR Phase II: Swarm 3D Printing and Assembly for Autonomous Manufacturing**," National Science Foundation via AMBOTS Inc., 08/2021 – 07/2026. *Total: $1,000,000. Subaward: $95,771*. Role: Subaward PI. Project PI: Z. Hyden.
4. "**A Hierarchical Multidimensional Network-based Approach for Multi-Competitor Product Design,"** National Science Foundation, 06/2020 – 05/2024. *Total*: *$154,367 (Transferred to UT: $145,206)*. Role. PI.

5. "**Educating Generative Designers in Engineering,"** National Science Foundation, 10/2019 – 09/2024. *Total*: *$2,180,230 (Transferred to UT: $2,019,533)*. *Share: $1,126,178*. Role: PI; Co-PIs: O. Demirel, M. Goldstein, C. Xie, and D. Zabelina.

Before Joining UT Austin

6. "**IUCRC Phase I: The University of Arkansas: Center for Infrastructure Trustworthiness in Energy Systems (CITES),**" National Science Foundation, 07/01/2021 - 06/20/2026. *Total: $525,000*. Role: Senior Personnel.
7. "**RII Track-1: Data Analytics that are Robust and Trusted (DART): From Smart Curation to Socially Aware Decision Making,**" National Science Foundation and Arkansas Economic Development Commission (AEDC), 07/2020 – 06/2025. *Total*: *$24M ($20M from NSF + $4M from AEDC). Share: $499,856*. Role: Participating Project PI. DART PI: AEDC.
8. **"SmartCAD: Guiding Engineering Design with Science Simulations,"** National Science Foundation, subcontracted from The Concord Consortium, 04/2019 – 09/2020. *Total*: *$2,192,610*; *Subaward*: *$94,534 (Year 1) + $108,629 (Year 2)*. Role: Subaward PI. PI: C. Xie.
9. **"SBIR Phase I: Swarm 3D Printing and Assembly for Autonomous Manufacturing,"** National Science Foundation, subcontracted from AMBOTs Inc., 07/2019 – 06/2020. *Total*: $225,000, *Subaward*: $74,925. *Share: $40,064*. Role: Subaward Co-PI. Subaward: PI: W. Zhou. PI: Z. Hyden.
10. **"EAGER: A Fine-Grained Data-Driven Approach to Studying Sequential Decision-Making in Engineering Systems Design,"** National Science Foundation, 09/2018 – 08/2020. *Total*: *$225,000*. *Share: $177,675*. Role: PI. Co-PI: C. Xie.

Internal grants

11. "**KAUST Gifted Summer Research Program (KGSP),**" Texas Global, The University of Texas at Austin, 07/08/2022-08/12/2022. *Total*: *$3,000*. Faculty host.

Before Joining UT Austin

12. "**A Swarm Printing and Assembly Platform***,"* The Chancellor's Commercialization Fund, Walton Family Charitable Support Foundation, Office of Economic Development, The University of Arkansas, 06/2019 – 06/2020. *Total: $49,670*. Co-PI.
13. "**Customer Choice Modeling for Electric Vehicle Design: A Comparative Study**," The Office of the Vice Provost for Research and Innovation, The University of Arkansas. *Total*: $12,000. PI.
14. "**Design of Artificial Swarms Using Network Motifs: A Simulation Study**," Honors College Research Grant, 01/2019 – 05/2020. *Total: $2,250*. PI.
15. "**Annual FEP Honors Research Experience**," First-Year Engineering Program, The University of Arkansas. 08/2018 – 04/2020. *Total: $2,000*. Faculty mentor.
16. **"Enabling Large-Scale Network Analysis in Complex Systems Design**,**"** Engineering Research and Innovation Seed Funding Program (ERISF), College of Engineering, The University of Arkansas, 07/2018 – 06/2019. *Total*: $24,801. Co-PI.
17. **"Mining and Modeling Engineering Design Thinking Using Big Data Analytics**,**"** Engineering Research and Innovation Seed Funding Program (ERISF), College of Engineering, The University of Arkansas, 06/2017 – 07/2018. *Total*: $24,948. PI.
18. **"A Data-Driven Game-Theoretic Approach to Modeling Multi-Competitor Decision Making in Engineering Design,"** Provost's Collaborative Research Grant, The University of Arkansas, 11/2017 – 07/2018. *Total: $2,000*. PI.

Teaching and Events

19. "**2022 ASME CIE Hackathon (In-person)**", Computers and Information in Engineering Division, American Society of Mechanical Engineering (ASME), 08/2022. *Total: $18,902 from ASME TEC Council + $5,000 from the CIE Division*. Event Co-Chair.

Before Joining UT Austin

20. "**2021 ASME CIE Hackathon (Virtual)**", Computers and Information in Engineering Division, American Society of Mechanical Engineering (ASME), 08/2021. *Total: $7,500*. Event Co-Chair.
21. **"2020 ASME CIE Hackathon (Virtual)"**, Technical Events & Content Sector, American Society of Mechanical Engineering (ASME), 07/2020 – 12/2020. *Total: $27,650*. Event Chair.
22. **"Adopting Open Educational Resources in MEEG 4104 – Machine Elements Design",** Open Education Resources (OER) Grant, The University of Arkansas Libraries and the Global Campus, 05/2017 – 12/2017. *Total*: *$3,000*. PI.

Travel

23. **Faculty Travel Grant**, Graduate School, University of Texas at Austin, 2022-2023 *Total*: *$2,800*.

Before Joining UT Austin

24. **ORAU Travel Grants**, Oak Ridge Associated Universities (ORAU), 2017. *Total*: *$800*.
25. **University of Arkansas Travel Assistance Grant**, Vice Provost for Faculty Development and Enhancement, The University of Arkansas, 2017. *Total*: *$500*.
26. **Purdue COE Conference Travel Grant** for excellent Ph.D. candidate, College of Engineering (COE), Purdue, 2014. *Total: $500*.
27. **ASME CIE Travel Grant**, ASME Computers & Information in Engineering (CIE) division, 2013. *Total: $750*.
28. **PGSG Travel Grant**, Purdue Graduate Student Government (PGSG), 2013. *Total*: $880.
29. **DSCC Travel Grant**, ASME Dynamic System and Control Conference, 2011. *Total*: *$225*.

Technical Committee Services and Conference Organizers

1. *Organizing Committee Member*, The Thirty-Fourth Annual International Solid Freeform Fabrication Symposium – An Additive Manufacturing Conference, 2023.
2. *Co-Chair*, "2022 ASME-CIE Hackathon," the 2022 IDETC/CIE Conference, and the 42nd Computers and Information in Engineering Conference (CIE), 2022.
3. *Symposium Organizer*, "SEIKM: Systems Engineering and Complex Systems," CIE-15-01, the 42nd Computers and Information in Engineering Conference (CIE), 2022.
4. *Symposium Organizer*, "Design People: Entrepreneurship & Teams; Designer/Human Behavior in Design; Design Decision Making," DTM-03-02, the 34th International Conference on Design Theory and Methodology (DTM), 2022.
5. *Symposium Organizer*, "CIE Special Session: Artificial Intelligence and Machine Learning in Design and Manufacturing," CIE-03-03, the 41st Computers and Information in Engineering Conference (CIE), 2021.
6. *Symposium Organizer*, "CIE Special Session: Design, Simulation and Optimization for Additive Manufacturing," CIE-04-01, the 41st Computers and Information in Engineering Conference (CIE), 2021.
7. *Chair*, "2021 ASME-CIE Hackathon," at IDETC/CIE and the 41st Computers and Information in Engineering Conference (CIE), 2021.
8. *Symposium Organizer*, "Intelligence Augmentation for Human Systems Integration," a Special Joint Session between SEIKM and DTM Technical Committees at the 41st Computers and Information in Engineering Conference (CIE), 2021.
9. *Organizing Committee Chair*, "2020 ASME-CIE Hackathon," at The International Mechanical Engineering Congress and Exposition (IMECE), 2020.

10. *Symposium Organizer*, "Systems Engineering Information Knowledge Management (SEIKM)," CIE–29, the 40th Computers and Information in Engineering Conference (CIE), 2020.
11. *Symposium Organizer*, "SEIKM: Complex Systems Engineering and Design," CIE–16, the 40th Computers and Information in Engineering Conference (CIE), 2020.
12. *Program committee member*, "DCC 20 Workshop: Accelerating Design with Human-Machine Teaming," Atlanta, GA (Virtually), December 12-13, 2020.
13. *Advisory Board Member*, The Ninth International Conference On Design Computing and Cognition (DCC 20), Atlanta, GA, June 27-28, 2020.
14. *Organizing Committee Chair*, "2020 ASME-CIE Hackathon", at IDETC/CIE and the 40th Computers and Information in Engineering Conference (CIE), 2020.
15. *Award Chair*, ASME Computer and Information in Engineering Division, Systems Engineering, Information and Knowledge Management Technical Committee, 2019 – 2020.
16. *Panel Organizer*, "SEIKM Panel: The recent advances and future direction of model-based systems engineering," the 39th Computers and Information in Engineering Conference (CIE), 2019.
17. *Symposium Organizer*, "Human Behavior in Design," DTM–6, at the 31st International Conference on Design Theory and Methodology (DTM), 2019.
18. *Chair*, ASME Computer and Information in Engineering Division, Systems Engineering, Information and Knowledge Management Technical Committee, 2018 – 2019.
19. *Symposium Organizer*, "Systems Engineering Information Knowledge Management (SEIKM)," CIE–4, the 39th Computers and Information in Engineering Conference (CIE), 2019.
20. *Symposium Organizer*, "SEIKM: Design Informatics," CIE–15, the 39th Computers and Information in Engineering Conference (CIE), 2019.
21. *Symposium Organizer*, "SEIKM: Complex Systems Engineering and Design," CIE–19, the 39th Computers and Information in Engineering Conference (CIE), 2019.
22. *Program Committee Member*, the 33rd AAAI Conference on Artificial Intelligence, January 27 - February 1, Honolulu, Hawaii. 2018
23. *Program Chair*, ASME Computer and Information in Engineering Division, Systems Engineering, Information and Knowledge Management Technical Committee, 2017 – 2018.
24. *Program Committee Member*, Design Science Research (DSR) 2018, Workshop on Data-Driven Design and Learning, August 23-25, 2018, Montreal, Canada.
25. *Symposium Organizer*, "SEIKM: Design Informatics," CIE–2-13 at the 38th Computers and Information in Engineering Conference (CIE), 2018.
26. *Symposium Co-Organizer*, "SEIKM: Design of Complex Systems," CIE–2-17 at the 38th Computers and Information in Engineering Conference (CIE), 2018.
27. *Symposium Co-Organizer*, "Systems Engineering Information Knowledge Management (SEIKM General)," CIE–2-12 at 38th Computers and Information in Engineering Conference (CIE), 2018.
28. *Symposium Organizer*, "Evaluations and Assessment in Design Education," DEC–4 at 14th International Conference on Design Education (DEC), 2017.
29. *Co-Organizer*, "Lab Experiments on Individual and Interactive Decision Making in Design" workshop at the 37th Computers and Information in Engineering (CIE) Conference, 2017.
30. *Conference Coordinator and Student Affairs Leader*, the 7th International Conference on Design Computing and Cognition (DCC), 2016.

Invited Talks

1. "Towards A Decision-Centric Foundation for Advanced Design and Manufacturing Research," *Engineering Systems Design Group*, Texas A&M University, November 14, 2022.

2. "Swarm Manufacturing: A New Paradigm for Smart Factories," *Center for Additive Manufacturing and Design Innovation*, the University of Texas at Austin, March 25, 2022.
3. "System Integration and Design Informatics (SiDi) Lab Research Overview," *Northwestern University, the Integrated DEsign Automation Laboratory (IDEAL)*, August 13, 2021.
4. "Human-Machine Design Symbiosis: Transforming Engineering Systems Design with Augmented Intelligence," at the D*CC 20 Workshop: Accelerating Design with Human-Machine Teaming*, Atlanta, GA, Virtual, December 13, 2020.
5. "Towards Building A Decision-Centric Foundation for Advanced Design and Manufacturing Research," *The University of Texas at Austin*, Apr. 1, 2020.
6. "Educating Designers for Generative Engineering," online presentation invited by the Dean of the College of Science, Technology, Engineering & Mathematics, *The University of Arkansas at Fort Smith*, February 28, 2019.
7. "Modeling Sequential Decision-Making Behaviors in Engineering System Design," invited by Dr. Charles Xie, *The Concord Consortium*, Concord, MA, August 3, 2018.
8. "The Decision-Centric Foundations for Complex Systems Engineering and Design," invited by The Intelligence System Laboratory, *University of Central Florida*, Orlando, FL, September 16, 2017.
9. "Lab Experiments on Individual and Interactive Decision Making in Design – Introduction to Three Human-Subject Experiments," *Workshop 4, the ASME 2017 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Cleveland, Ohio, August 6, 2017.
10. "Modeling Stakeholders' Decision-Making in Support of Complex Systems Design," at the *Department of Industrial Engineering*, *The University of Arkansas*, April 28, 2017.
11. "Behavioral Experimentation and Game Theory in Engineering Systems Design," at the *Games for Design Research and Education Workshop at the 7th International Conference on Design Computing and Cognition*, June 25, 2016.
12. "Decision-Centric Foundations for Complex Systems Engineering and Design," at the Department of Mechanical Engineering, *The University of Arkansas*, Fayetteville, AR, February 26, 2016.
13. "Decision-Centric Foundations for Complex Systems Engineering and Design," at the Department of Mechanical Engineering, *Northwestern University*, Evanston, IL, October 7, 2015.
14. "Bottom-up Engineering and Design of Complex Systems," at the *New England Complex Systems Institute*, Boston, MA, September 16, 2015.

Invited Attendees/Panelists

1. *Participant*, "ERVA Visioning Event – Engineering the Future of Distributed Manufacturing." Invited by National Science Foundation-supported Engineering Research Visioning Alliance, Oak Ridge National Laboratory, Knoxville, TN, March 30-31, 2023.
2. *Panelist*, "The Role of Hackathon Mechanism in Promoting Data Science in Mechanical Engineering Research and Education: Perspectives from Academia and Industry." Systems Engineering Information Knowledge Management (SEIKM) Technical Committee Panel, ASME, St. Louis, MI, August 16, 2022.

Teaching

The University of Texas at Austin

- **Undergraduate Level**

  ME 338: Machine Elements (1x in Fall 2021)

  ME 366J: Mechanical Engineering Design Methodology (2x from Spring 2022 – Spring 2023)

- **Graduate Level**
  ME 391: Data-Driven Design and Decision-Making in Complex Systems (1x in Fall 2022)

The University of Arkansas

- **Graduate Level**
  MEEG 591V: Decision-Making in Complex Systems Design (1x in Fall 2019)
- **Undergraduate Level**
  MEEG 4103: Machine Element Design (3x from Spring 2020 – Spring 2021)
  MEEG 491V: Special Topics on Machine Element Design (3x from Spring 2020 – Spring 2021)
  MEEG 4104: Machine Element Design (6x from Spring 2017 – Fall 2019)
- **Guest Lecturer**
  MEEG2103: Introduction to Machine Analysis (1 lecture in Fall 2017)

Purdue University

- **Teaching Assistant and Lab Instructor**
  ME475: Automatic Control System (Fall 2014)
- **Guest Lecturer**
  ME597: Decision Making in Engineering Systems Design (1 lecture in Fall 2014)

Students Advised/In-progress

Ph.D.

1. *Pawornwan Thongmak* (she/her/hers) (01/2023 – present): "Multidimensional Network Analysis and Modeling of Landscape-Ecological Systems," The University of Texas at Austin.
2. Xiangyu Gao (01/2023 - present): Dissertation Topic TBD, The University of Texas at Austin.
3. *Siyu Chen* (she/her/hers) (09/2022 – present): "Multi-Agent Reinforcement Learning in Human-AI Teams." The University of Texas at Austin.
4. *Ronnie Frank Pires Stone* (09/2022 – present): "Real-Time Collision Avoidance for Multi-Robot Additive Manufacturing." The University of Texas at Austin.
5. *Xingang Li* (08/2019 – present): "Deep Learning for Generative Design." The University of Texas at Austin.
6. *Yinshuang Xiao* (she/her/hers) (08/2019 – present): "From Local to Global: Discover the Build Blocks Governing Complex System Structures and Performance Using Complex Network Theories." The University of Texas at Austin.
7. *Molla Hafizur Rahman* (08/2017 – 08/2022): "Engineering Design Thinking and Behaviors in Computer-Aided Systems Design: Modeling, Analysis, and Prediction." The University of Arkansas. *Job placement*: Applied AI/ML Associate Senior at JPMorgan Chase & Co.
8. *Sumaiya Sultana Tanu* (she/her/hers) (08/2020 – 01/2022): "Design for Market Systems with Fairness and Positive Targeting." The University of Arkansas. Transferred to Colorado State University.
9. *Laxmi P. Poudel* (08/2017 - 08/2021): "Computational Frameworks for Multi-Robot Cooperative 3D Printing and Planning", The University of Arkansas, August 2021. *Job placement:* Research Engineer at GE Global Research.

M.S.

1. *Cole Mensch* (01/2023 – Present): "Physical Validation of Coopertive 3D Printing in Job Partition, Placement, Scheduling and Planning." Degree for Thesis. The University of Texas at Austin.

2. *Tyler Daniel Corin* (08/2022 – present). Degree for Report. The University of Texas at Austin.
3. *Daniel Weber* (08/2021 – present): "Z-Direction Geometric Partitioning for Cooperative 3D Pringting and Planning." Degree for Thesis. The University of Texas at Austin.
4. *Sree Chintalapudi* (she/her/hers) (08/2017 – 12/2018): *"*Analyzing Customer Preferences in Community-based Digital Manufacturing System." Non-Thesis. The University of Arkansas. *Job placement*: Data Scientist at Walmart Inc.
5. *Jared Poe* (01/2020 – 07/2021): "Material Detection with Thermal Imaging and Computer Vision: Potentials and Limitations." Thesis. The University of Arkansas. *Job placement:* Structural Engineer at L3Harris Technologies.

B.S.

1. *Angel A. Leal,* (01/2023 – present): Experiential Learning at the McCombs School of Business. The University of Texas at Austin.
2. *Samantha Montemayor* (she/her/hers) (05/2022 – 08/2022): "Network-based Data Visualization and Product Competition Analysis," **NSF REU student**. The University of Texas at Austin.
3. *Michael Cardone* (05/2022 – Present): "Data Collection and Dynamic Evolution of Customer-Preferred Vehicle Attributes," **NSF REU student**. The University of Texas at Austin.
4. *Phillip A. Gavino* (01/2022 – Present): "Customer Preference Modeling for the Design of Vehicle Market Systems," Undergraduate Research Assistant. The University of Texas at Austin.
5. *Ali Alsadah* (07/2022-08/2022): "Geometry Partitioning in Cooperative 3D Printing (C3DP)," KAUST Gifted Summer Research Program (KGSP) Summer Research Intern. The University of Texas at Austin.
6. *Mohamed Alherz* (07/2022-08/2022): "Cross-Modal Representation Learning and Its Application in Engineering Design," KAUST Gifted Summer Research Program (KGSP) Summer Research Intern. The University of Texas at Austin.
7. *Saivipulteja Elagandula and Logan Davis* (08/2018 – 08/2021): "Uncertainty Quantification in the Design of Artificial Swarming Systems," **FEP Honor Research Experience**. The University of Arkansas.
8. *Anusha Bhattacharyya* (she/her/hers) (08/2019 – 07/2020): "Integrating Heuristics in the Moldering of Human Sequential Decision-Making in Engineering Design," **FEP Honor Research Experience**. The University of Arkansas.
9. *Collin Corcoran* (04/2018 – 05/2019): "A Study on Customer Choice behaviors on 3DHubs Using Fixed-Effect and Random-Effect Models." The University of Arkansas.
10. *Khoinguyen Trinh* (04/2018 – 05/2019): *"*Analyzing Swarming System Dynamics Based on Network Motif Theory," **Honor Thesis**. The University of Arkansas.
11. *Eindra Nwe* (they/them/theirs) (04/2018 – 03/2019): *"*Game-Theoretic Analysis of Insider Threat in Power Systems." The University of Arkansas.
12. *Chandler Bair* (05/2017 – 05/2018): *"*Coordinating Swarm 3D Printing Robots with Heuristics." The University of Arkansas.
13. *Kelab Porter* (05/2017 – 10/2017): *"*Game Theory and Behavioral Experimentation in Engineering Design." The University of Arkansas.

Trainees

1. John Clay (08/2019-Present): "Cognitive Competencies Associated with Engineering Design Thinking," Research Scientist Assistant.

Senior Design Teams

1. *Andy Hassun, Allen Hewson, Hannah Long, Brendan Maclea*, "Reprogramming Mobile Platform for Swarm Manufacturing Project Proposal," The University of Texas at Austin, Spring 2023.

2. *Tristan Bueler, Michael Walters, Brandon Lowell, William Connell*, "Feasibility Analysis of Hydrokinetic Turbines," The University of Texas at Austin, Fall 2021.
3. *Gracen Kopp, Daven Sipe, Lexie Burris, Larenz Hampton, and Jacob Velliquette*, "Scott Family Amazeum Exhibit Design Project: Design of A Digital Kaleidoscope," Sponsor: Scott Family Amazeum, The University of Arkansas, 2020 – 2021.
4. *Kara Puntriano, Kelsey Nagel, Christian Lowery, Jake Petersen*, "Scott Family Amazeum Exhibit Design Project: Design of An Outdoor Musical Pipe Organ System," Sponsor: Scott Family Amazeum, The University of Arkansas, 2019 – 2020.
5. *Macario Blyden, Colby Breithaupt, Tucker Brown, Eindra New, William Woodward, "*Tyson Package Sorting," Sponsor: Tyson Foods, Inc., The University of Arkansas, 2018 – 2019.
6. *Madison Whitby Adrian Ferrufino, Nicholas Myers, Tyler Jehle, Dakota Keys*, "Design of A Bolt-on Device for Health Monitoring and Prognostic of Conveyor Systems," Sponsor: Tyson Foods, Inc., The University of Arkansas, 2017 – 2018.

Thesis/Dissertation Committee

Ph.D. Dissertation Committee

1. *Jian Chu*, "Automated Drill Bit Forensics: Enhancing Efficiency and Accuracy through Image Processing and Machine Learning," The University of Texas at Austin, December 2023. **Member**.
2. *Hanyu Zhu,* "Biomimetic Porous Structure for Bone Tissue Engineering," The University of Texas at Austin, August 2024. **Member**.
3. *Yinshuang Xiao,* "Socio-Technical Systems Engineering and Design: A Meso-Level Network-Based Approach," The University of Texas at Austin, December 2023 (expected). **Chair**.
4. *Molla Hafizur Rahman,* "Engineering Design Thinking and Behaviors in Computer-Aided Systems Design: Modeling, Analysis, and Prediction," The University of Arkansas, August 2022. **Chair**.
5. *Laxmi Poudel,* "Computational Frameworks for Multi-Robot Cooperative 3D Printing and Planning," The University of Arkansas, August 2021. **Chair**.
6. *Wei Du,* "Fairness Aware Federated Learning," The University of Arkansas, May 2021. **Member**.
7. *Yu Jin* (she/her/hers), "Geometric Quality Inspection of Additive Manufacturing," The University of Arkansas, May 2020. **Member**.
8. *Charlie DeStefano*, "A Study of Fault Adaptive Strategies for Manufacturing Robots," The University of Arkansas, May 2019. **Member**.

M.S. Thesis Committee/Reader

1. *Daniel H. Weber*, "Partitioning and Placement for Cooperative 3D Printing," The University of Texas at Austin, December 2022. **Chair**.
2. *Jared Poe*, "Integrating Material Detection with Servo Motor Control Using Computer Vision of Thermal Images," The University of Arkansas, May 2021. **Chair**.
3. *Jonathan Ashley*, "The Effect of Incorporating End-User Customization into Additive Manufacturing Designs," The University of Arkansas, Dec. 2018. **Member**.
4. *Marvin Arroyo Rujano*, "A Generative Statistical Approach for Data Classification in a Biologically Inspired Design Tool," The University of Arkansas, Dec. 2018. **Member**.

BS Honor Thesis

1. *Khoinguyen Trinh, "*Analyzing Swarming System Dynamics Based on Complex Network Theory," The University of Arkansas, May 2019. **Advisor**.
2. *Jacob Brown*, *"*Baseline Data from Servo Motors in a Robotic Arm for Autonomous Machine Fault Diagnosis," University of Arkansas, May 2018. **Member**.

Services

College and Department Committee Services

1. *Committee member,* PhD Qualifying Exam Committee, Manufacturing and Design Area, the Walker Department of Mechanical Engineering, The University of Texas at Austin, Spring, 2023.
2. *Committee member,* Tenure-Track Assistant Professor Search Committee, Walker Department of Mechanical Engineering, The University of Texas at Austin, Fall 2022 – Spring 2023.
3. *Committee member*, Graduate Students Recruiting Committee (GSRC), Walker Department of Mechanical Engineering, The University of Texas at Austin, Fall 2022 – Spring 2023.
4. *Pilot participant*, Broadening Participation in Engineering (BPE) Plan for Cockrell School of Engineering, Associate Dean for Diversity, Equity, and Inclusion, The University of Texas at Austin, Spring 2022.
5. *Committee member,* PhD Qualifying Exam Committee, Manufacturing and Design Area, the Walker Department of Mechanical Engineering, The University of Texas at Austin, Spring, 2022.
6. *Committee member,* Tenure-Track Assistant Professor Search Committee, Walker Department of Mechanical Engineering, The University of Texas at Austin, Fall 2021 – Spring 2022.
7. *Member*, System Dynamics and Controls Committee, Department of Mechanical Engineering, The University of Arkansas, 2019 - 2021.
8. *Member and Co-Chair*, Design and Manufacturing Committee, Department of Mechanical Engineering, The University of Arkansas, 2017 - 2021.
9. *Committee member,* Tenure Track Assistant Professor Search Committee, Department of Mechanical Engineering, The University of Arkansas, Fall 2017 – Spring 2018.

Editorial Service

1. Guest Editor, Special Issue on Industrial Knowledge Graph-enabled Cognitive Intelligence-Driven Mass Personalization, Advanced Engineering Informatics.

Reviewer

Journals

1. Journal of Mechanical Design
2. Journal for Computing and Information Science in Engineering
3. Design Science
4. Computer-Aided Design
5. Systems Engineering
6. IISE Transactions
7. Artificial Intelligence for Engineering Design, Analysis and Manufacturing
8. Journal of Operational Research Society
9. 3D Printing and Additive Manufacturing
10. Virtual and Physical Prototyping
11. Research in Transportation Economics
12. IEEE Access
13. IEEE System, Man, and Cybernetics – Systems
14. IEEE Transaction on Automation Science and Engineering
15. Structural and Multidisciplinary Optimization
16. Robotics and Computer-Integrated Manufacturing
17. Technology in Society

18. Advances in Information Systems
19. Electronic Commerce Research and Applications

International Conferences

1. AAAI Conference on Artificial Intelligence
2. ASME Computers and Information in Engineering Conference
3. Design Computing and Cognition Conference
4. Design Automation Conference
5. Conference on Systems Engineering Research
6. International Conference on Design Theory and Methodology
7. IEEE International Conference on Automation Science and Engineering
8. ASME Manufacturing Science and Engineering Conference
9. ASME International Mechanical Engineering Congress & Exposition
10. International Tools and Methods of Competitive Engineering Symposium

Proposals

1. NSF Engineering Design and System Engineering (EDSE) program. Panelist for the ERI solicitation https://www.nsf.gov/pubs/2021/nsf21574/nsf21574.htm. 2021.
2. The eFellows Program, administered by the American Society for Engineering Education (ASEE) with funding provided by the National Science Foundation (NSF), 2021 Cohort.
3. Honors College Research Grant proposal, Honor College, The University of Arkansas, 2018 and 2019.
4. Book proposal: "Optimization Techniques," Author: Vikrant Sharma, Editorial Assistant: Shikha Garg, CRC Press, Taylor & Francis Group, 2019.
5. The Student Undergraduate Research Fellowship (SURF) Program, Arkansas Department of Higher Education, 2018.

Mentors and Judges

1. *Judge*, Graduate Poster Competition, Graduate Student Recruitment Weekend, the Walker Department of Mechanical Engineering, The University of Texas at Austin, March 4, 2022-2023.
2. *Mentor*, 2022 ASME-CIE Hackathon: Explore the Digital Frontiers in Mechanical Engineering, St. Louis, MO. Aug. 13-14, 2022.
3. *Mentor*, 2022 Create-a-thon, the Walker Department of Mechanical Engineering, and Texas Inventionworks, The University of Texas at Austin, Apr. 9-10, 2022.
4. *Mentor*, Longhorn Racing Electric, the University of Texas at Austin, November 2021 - Present.
5. *Mentor*, 2021 Makeathon in Collaboration with Chevron, Student Engineering Council, the University of Texas at Austin, Oct. 22-23, 2021.
6. *Mentor*, 2020 ASME-CIE Hackathon: Identifying, Extracting, Analyzing of Value from Large Unstructured Data Sets in Mechanical Engineering, Virtual, Aug. 15-16, 2020.
7. *Facilitator,* 2019 NSF workshop for Engineering Design and Systems Engineering Program: Positioning EDSE Research for Sustained Societal Impact, Purdue University, Oct. 7-8, 2019.
8. *Facilitator*, Engineering Summer Academy (ESA), Outreach and Summer Programs, College of Engineering, The University of Arkansas, summer 2018 and summer 2019.
9. *Mentor*, 2018-2019 First-year Engineering Program (FEP), Honors Research Experience, College of Engineering, The University of Arkansas.
10. *Judge*, ASME CIE Graduate Student Poster Competition, the 39th Computers and Information in Engineering Conference (CIE), 2019.

11. *Judge*, Student Poster Competition of NSF-Sponsored Project, at ASME 2018 International Mechanical Engineering Congress & Exposition, 2018.
12. *Judge*, Next Generation Mobility Challenge, Net Impact, Toyota Mobility Foundation, 2016.

Professional Affiliations

1. *Member*, American Society of Mechanical Engineers (ASME)
2. *Member*, American Society of Engineering Education (ASEE)
3. *Member*, Design Society
4. *Member*, Network Science Society
5. *Member*, Golden Key International Honor Society, since 2013