Jianguo Zhao | Curriculum Vitae

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Education

Michigan State University — **East Lansing, MI**
Ph.D. in Electrical Engineering — *05/2015*

Shenzhen Graduate School, Harbin Institute of Technology — **Shenzhen, China**
M. E. in Mechatronic Engineering — *12/2007*

Harbin Institute of Technology — **Harbin, China**
*B. E. in Mechanical Engineering (*with the highest honor*)* — *07/2005*

Work Experience

Colorado State University — **Fort Collins, CO**
Associate Professor in Mechanical Engineering — *07/2021 - Now*

Colorado State University — **Fort Collins, CO**
Assistant Professor in Mechanical Engineering — *08/2015 - 07/2021*

Michigan State University — **East Lansing, MI**
Research and Teaching Assistant — *08/2008 - 05/2015*

Johnson Electric — **Shenzhen, China**
Electrical Engineer — *02/2008 - 07/2008*

Honors and Awards

Finalist, Best Student Paper (student author: Zhe Chen) — **2024**
2024 IEEE/ASME International Conference on Advanced Intelligent Mechatronics

Research Initiation Award, CRII — **2018**
National Science Foundation (NSF)

Finalist, Best Student Paper (student author: Jiefeng Sun and Ben Pawlowski) — **2018**
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

First Prize, Fitch H. Beach Award — **2015**
College of Engineering, Michigan State University
Highest honor among all the graduating PhD students

Finalist, Best Student Paper — **2014**
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Outstanding Research Award — **2012**
2nd annual Engineering Graduate Research Symposium, Michigan State University

Second Place **2012**
ASME student mechanism & robot design competition (graduate division)

Outstanding Research Award **2011**
1st annual Engineering Graduate Research Symposium, Michigan State University

Research Grants

Current Projects

1. PI at CSU, **Collaborative Research: Artificially-Evolved Modular Robotic Swimmers for Enhanced Mobility in Challenging Hydrodynamic Environments**
   Collaborators: Bo Cheng, PI at PSU, George Lauder, PI at Harvard
   National Science Foundation: CNS-2334883, 09/01/2024—08/31/2027, $300,000
2. PI, **Transforming Infrastructure Inspection by Integrating a UAS with a Continuum Robotic Arm and AI-enabled Multimodal Sensing for Comprehensive Damage Assessment**,
   Collaborators: Yanlin Guo, Co-PI at CSU, Hussam Mahmoud, Co-PI at CSU.
   Center for Transformative Infrastructure Preservation and Sustainability (CTIPS), 08/15/2024—08/14/2026, $60,000.
3. PI, **Advanced All-Terrain Robot with Tensegrity-Based Locomotion for Public Safety**
   Colorado Office of Economic Development and International Trade (COEDIT), 06/01/2024—05/31/2025, $60,000 with $20,000 CSU match
4. PI, **I-Corps: Advanced All-Terrain Robot: Navigating Cluttered Environments with Tensegrity-Based Locomotion**
   National Science Foundation: TI-2337430, 09/15/2023—08/31/2025, $50,000
5. PI at CSU, **Collaborative Research: Omnidirectional Perching on Dynamic Surfaces: Emergence of Robust Behaviors from Joint Learning of Embodied and Motor Control**,
   Collaborators: Bo Cheng, PI at PSU, Jack Langelaan, Co-PI at PSU
   National Science Foundation: CMMI-2230321, 08/15/2023—08/14/2026, $352,630.
6. PI at CSU, **Collaborative Research: ARM-SoRo: Adaptive, Rapid, and Multifunctional Soft Robots with Reconfigurable Shapes and Motions Enabled by Tunable Elastic Instabilities**,
   Collaborator: Jie Yin, PI at NCSU
   National Science Foundation: CMMI-2126039, 12/1/2021—12/15/2025, $314,756, plus $32,000 REU supplement funding

Completed Projects

1. PI at CSU, **Soft actuator for providing shoulder stability during overhead tasks/load carrying to reduce the risk of musculoskeletal disorders**
   Supplemental Funding for US-India Collaborative Research for NSF Award CMMI-2126039
   Collaborator: Sitikantha Roy, PI at IIT, New Delhi, India)
   National Science Foundation, 8/15/2022—8/15/2023, $62,951
2. PI at CSU, **Design and Control of Smart Actuator-less Gripper for Aerial Manipulation**
   Supplemental Funding for US-India collaborative research for NSF Award IIS-1815476
   Collaborator: Spandan Roy, PI at IIIT, Hyderabad, India
   National Science Foundation, 8/15/2022—8/15/2023, $49,996
3. PI at CSU, **Design and Development of Self-Reconfigurable Ground Robots**
   Collaborator: Thomas Murphey, PI at Opterus R & D

DARPA STTR, 05/15/2020—05/15/2021, $68,000.

4. PI at CSU, **RI: Small: Collaborative Research: Vision-guided Control of Robust Perching: From Biological to Robotic Flyers**
   Collaborator: Bo Cheng, PI at Penn State
   National Science Foundation: IIS-1815476, 08/15/2018—07/31/2023, $250,000 plus $32,000 REU supplement.
5. PI, **CRII: RI: Embedded and continuous shape morphing using twisted-and-coiled artificial muscle**
   National Science Foundation: IIS-1755766, 06/01/2018—05/31/2022, $191,000.
6. PI at CSU, **NeTS: Small: Networked Robotic Gerridae for Sensing and Communications in Aquatic Environments**
   Collaborators: Matt Mutka, PI at MSU, Li Xiao, Co-PI at MSU
   National Science Foundation, Subcontracted from MSU, 02/01/2016—09/30/2017, $50,000

Internal Funding

1. "Adaptive Robots Enabled by Reconfigurable Modules", CSU Energy Institute Summer Internship for Zhe Chen, $5,000 , summer, 2022.
2. "Adaptive Robots Enabled by Reconfigurable Modules", CSU Energy Institute Summer Internship for Brandon Tighe, $5,000 , summer, 2021.
3. "Adaptive Robots Enabled by Reconfigurable Modules", CSU Energy Institute Undergraduate Fellows Award for Brandon Tighe, $5,000 , summer, 2019.
4. "Low-cost solar tracking system enabled by artificial muscles and origami folding", CSU Energy Institute Undergraduate Fellows Award for Jordan Julian, $5,000 , 05/15/2018—08/30/2018
5. "Autonomous Perching for Small Robotic Flyers", CSU Energy Institute Undergraduate Fellows Award for Brad Pospeck, $3,650 , 02/01/2017—08/30/2017

Publications

Google Scholar: H-index: 32; total citations: 2945 (as of Oct 17, 2024),
Advised students; * corresponding author

Journal Articles

1. M. Saikot, F. Wu, E. Lerner, Bo Cheng*, and J. Zhao*, Tunable Mechanism Enables Robust Surface Perching under Different Landing Impacts and Orientation Misalignment, **Advanced Intelligent Systems**, under revision.
2. R. Yadav, B. Jones, S. Gupta, A. Sharma,J. Sun, J. Zhao*, and S. Roy*, An Integrated Approach to Aerial Grasping: Combining a Bistable Gripper with Adaptive Control, **IEEE/ASME Transactions on Mechatronics**, under review.
3. E. Lerner, Z. Chen, J. Zhao*, Reconfigurable Origami with Variable Stiffness Joints for Adaptive Robotic Locomotion and Grasping, **Philosophical Transactions of the Royal Society A**, 2024.
4. Z. Chen, J. Sun, J. Zhao*, Tuning Modules with Elastic Instabilities On-the-Fly for Reconfigurable Shapes and Motions, **IEEE/ASME Transactions on Mechatronics**, vol. 29, no, 4, pp. 3117-3127, 2024.
5. J. Sun*, E. Lerner, B. Tighe, C. Middlemist, J. Zhao*, Embedded Shape Morphing for Morphologically Adaptive Robots, **Nature Communications**, vol. 14, no, 1, 2023.

6. S. Spiegel, J. Sun, J. Zhao*, A Shape-Changing Wheeling and Jumping Robot Using Tensegrity Wheels and Bistable Mechanism, **IEEE/ASME Transactions on Mechatronics**, vol. 28, no, 4, pp. 2073-2082, 2023.
7. W. Wang, J. Sun, S. Vallabhuneni, B. Pawlowski, H. Vahabi, K. Nellenbach, A. C. Brown, F. Scholle, J. Zhao*, A. K. Kota*, "On-demand, Remote and Lossless Manipulation of Biofluid Droplets," **Material Horizons**, vol. 9, pp. 2863-2871, 2022.
8. H. Hsiao, J. Sun, H. Zhang, and J. Zhao*, *A Mechanically Intelligent and Passive Gripper for Aerial Perching and Grasping,* **IEEE/ASME Transactions on Mechatronics**, vol. 27, no, 6, pp. 5243-5253, 2022.
9. Z. Chen, B. Tighe, and J. Zhao*, *Origami-Inspired Modules Enable A Reconfigurable Robot with Programmable Shapes and Motions* **IEEE/ASME Transactions on Mechatronics**, vol. 27, no, 4, pp. 2016-2025, 2022.
10. J. Sun and J. Zhao*, *Physics-based Modeling of Twisted-and-Coiled Actuators Using Cosserat Rod Theory,* **IEEE Transactions on Robotics**, vol. 38, no. 2, pp. 779-796, 2022.
11. H. Zhang, E. Lerner, B. Cheng, and J. Zhao*, *Compliant Bistable Grippers Enable Passive Perching for Micro Aerial Vehicles,* **IEEE/ASME Transactions on Mechatronics**, vol. 26, no. 5, pp. 2316-2326, 2021.
12. J. Sun, B. Tighe, Y. Liu, and J. Zhao*, *Twisted-and-Coiled Actuators with Free Strokes Enable Soft Robots with Programmable Motions*, **Soft Robotics**, vol. 8, no. 2, 2021.
13. D. Zhou, Y. Liu*, X. Tang, J. Zhao, *Differential Sensing Method for Multidimensional Soft Angle Measurement Using Coiled Conductive Polymer Fiber*, **IEEE Transactions on Industrial Electronics**, vol. 68, no. 1, pp. 401-411, 2021.
14. Y. Tang, Y. Chi, J. Sun, T. Huang, O. H. Maghsoudi, A. Spence, J. Zhao, H. Su, J. Yin*, *Leveraging Elastic instabilities for Amplified Performance (LEAP): high-speed and high-force soft machines,* **Science Advances**, vol. 6, no. 19, pp. eaaz6912, 2020.
15. P. Liu, S. P. Sane, J.-M. Mongeau, J. Zhao, and B. Cheng*, *Flies land upside down on a ceiling using rapid visually-mediated rotational maneuvers,* **Science Advances**, vol. 5, no. 10, pp. eaax1877, 2019.
16. J. Sun and J. Zhao*, *An Adaptive Walking Robot with Reconfigurable Mechanisms using Shape Morphing Joints,* **IEEE Robotics and Automation Letters** , vol. 4, no. 2, pp. 724 - 731, 2019.
17. H. Zhang, B. Cheng, and J. Zhao*, *Optimal trajectory generation for time-to-contact based aerial robotic perching*, **Bioinspiration and Biomimetics**, vol. 14, no. 1, p. 016008, 2019.
18. B. Pawlowski, J. Sun, J. Xu, Y. Liu, and J. Zhao*, *Modeling of Soft Robots Actuated by Twisted-and-Coiled Actuators,* **IEEE/ASME Transactions on Mechatronics**, vol. 24, no. 1, pp. 5-15, 2019.
19. X. Tang, K. Li, Y. Liu*, D. Zhou, and J. Zhao, *A general soft robot module driven by twisted and coiled actuators,* **Smart Materials and Structures**, vol. 28, no. 3, p. 035019, 2019.
20. X. Tang, K. Li, W. Chen, D. Zhou, S. Liu, J. Zhao, and Y. Liu*, *Temperature self-sensing and closed-loop position control of twisted and coiled actuator,* **Sensors and Actuators A: Physical**, vol. 285, pp. 319-328, 2019.
21. A. DeMario and J. Zhao*, *Development and Analysis of a 3D-Printed Miniature Walking Robot with Soft Joints and Links,* **ASME Journal of Mechanisms and Robotics**, vol. 10, no. 4, pp. 041005, 2018.
22. C. Liu, B. Gao*, J. Zhao, and S. Shah, *Orbitally stabilizing control for the underactuated translational*

oscillator with rotational actuator system: Design and experimentation, **Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering**, 2018

23. X. Tang, K. Li, Y. Liu*, J. Zhao, *Coiled Conductive Polymer Fiber Used in Soft Manipulator as Sensor,* **IEEE Sensors Journal**, vol. 18, no. 15, pp. 6123-6129, 2018.
24. R Chen, G Wang, J. Zhao, J Xu*, K Chen, *Fringe Pattern Based Plane-to-Plane Visual Servoing for Robotic Spray Path Planning,* **IEEE/ASME Transactions on Mechatronics**, vol. 23, no. 3, pp. 1083-1091, 2018.
25. X. Tang, Y. Liu*, K. Li, W. Chen, J. Zhao, *Finite element and analytical models for twisted and coiled actuator,* **Materials Research Express**, vol. 5, no. 1, p. 015701, 2018.
26. F. Jiang, J. Zhao*, A. K Kota, N. Xi, M. Mutka, and L. Xiao, *A Miniature Water Surface Jumping Robot,* **IEEE Robotics and Automation Letters**, vol. 2, no. 3, pp. 1272-1279, 2017.
27. H. Zhang and J. Zhao*, *Bio-inspired Vision Based Robot Control Using Featureless Estimations of Time-to-Contact,* **Bioinspiration and Biomimetics**. vol. 12, no. 2, pp. 025001, 2017.
28. B. Gao*, Z. Zhu, J. Zhao, and L. Jiang, *Inverse Kinematics and Workspace Analysis of a 3 DOF Flexible Parallel Humanoid Neck Robot,* **Journal of Intelligent & Robotic Systems**, vol. 87, no. 2. pp. 211-229, 2017.
29. Z. Shen, Y. Liu*, J. Zhao, X. Tang and W. Chen, *Design and Experiment of a Small Legged Robot Operated by the Resonant Vibrations of Cantilever Beams*, **IEEE Access**, vol. 5, pp. 8451-8458, 2017.
30. J. Zhao, T. Zhao, N. Xi, M. Mutka, and L. Xiao, *MSU tailbot: Controlled Aerial Maneuvering for a Miniature Running and Jumping Robot Using Its Tail*, **IEEE/ASME Transactions on Mechatronics**, vol. 20, no. 6, pp. 2903-2914, 2015.
31. J. Zhao, B. Song, N. Xi, L. Sun, H. Chen, and Y. Jia, *Non-vector Space Approach for Nanoscale Motion Control*, **Automatica**, vol. 50, no. 7, pp. 1835-1842, 2014.
32. B. Song, J. Zhao, N. Xi, H. Chen, K. Lai, R. Yang, and L. Chen *Compressive Feedback based Motion Control for Nanomanipulation—Theory and Application*, **IEEE Transactions on Robotics**, vol. 30, no. 1, pp. 103-114, 2014.
33. C. Zhang, J. Xu, N. Xi, J. Zhao, and Q. Shi, *A Robust Surface Coding Method for Optically Challenging Objects Using Structured Light*, **IEEE Transactions on Automation Science and Engineering**, vol. 11, no. 3, pp. 775-788, 2014
34. B. Gao and J. Zhao, *Dynamical Modelling and Controllability Analysis of an Underactuated 2-Dimensional TORA System on a Slope*, **International Journal of Advanced Robotic Systems**, vol. 11, pp. 70, 2014.
35. B. Gao, H. Song, J. Zhao, S. Guo, L. Sun, and Y. Tang, *Inverse Kinematics and Workspace Analysis of a Cable-Driven Parallel Robot with a Spring Spine*, **Mechanism and Machine Theory**, vol. 76, pp. 56-59, 2014.
36. B Gao, Z. Zhu, J. Zhao, and B. Huang, *A Wireless Swing Angle Measurement Scheme Using Attitude Heading Reference System Sensing Units Based on Microelectromechanical Devices*, **Sensors**, vol. 14, no. 12, pp. 22595-22612, 2014.
37. J. Zhao, J. Xu, B. Gao, N. Xi, F. Cintron, M. Mutka, and L. Xiao, *MSU Jumper: A Single-Motor-Actuated Miniature Steerable Jumping Robot*, **IEEE Transactions on Robotics**, vol. 29, no. 3, pp. 602-614, 2013.
38. B. Gao, J. Xu, J. Zhao, and X. Huang, *Stabilizing control of an underactuated 2-dimensional TORA*

with only rotor angle measurement, **Asian Journal of Control**, vol. 15, no. 5, pp. 1477-1488, 2013.

39. H. Chen, N. Xi, B. Song, L. Chen, J. Zhao, K. Lai, and R. Yang, *Infrared Camera Using a Single Nano-photodetector*, **IEEE Sensors Journal**, vol. 13, no. 3, pp. 949-958, 2013. (**Featured article on the cover of the journal**)
40. B. Gao, J. Xu, J. Zhao, and N. Xi, *Combined Inverse Kinematic and Static Analysis and Optimal Design of a Cable-Driven Mechanism with a Spring Spine*, **Advanced Robotics**, vol. 26, no. 8-9, pp. 923-946, 2012.
41. B. Gao, J. Xu, J. Zhao, N. Xi, Y. Shen, and R. Yang, *A Humanoid Neck System Featuring Low Motion-Noise*, **Journal of Intelligent and Robotic Systems**, vol. 67, no. 2, pp. 101-116, 2012.
42. F. Cintron, K. Pongaliur, M. W. Mutka, L. Xiao, J. Zhao, and N. Xi, *Leveraging Height in a Jumping Sensor Network to Extend Network Coverage*, **IEEE Transactions on Wireless Communications**, vol. 11, no. 5, pp. 1840-1849, 2012.
43. J. Zhao, B. Li , X. Yang, and H. Yu, *Geometrical Method to Determine the Reciprocal Screws and Applications to Parallel Manipulators*, **Robotica**, vol.27 , no. 6, pp. 929-940, 2009.
44. B. Li, X. Yang, J. Zhao, and P. Yan, *Minimum Time Trajectory Generation for a Novel Robotic Manipulator*, **International Journal of Innovative Computing, Information and Control**, vol.5, no. 2, pp. 369-378, 2009.
45. B. Li, J. Zhao, X. Yang, and Y. Hu, *Kinematic Analysis of a Novel Three Degree-of-freedom Planar Parallel Manipulator*, **International Journal of Robotics & Automation**, vol. 24, no. 2, pp. 158-165, 2009.
46. B. Li, X. Yang, Y. Hu, Y. Wang, and J. Zhao, *Dynamic Modeling and Design for the Parallel Mechanism of a Hybrid Type Parallel Kinematic Machine*, **Journal of Advanced Mechanical Design, Systems, and Manufacturing**, vol. 1, no. 4, pp 481-492, 2007.

Book Chapters

1. B. Gao, N. Xi, J. Zhao, and Jing Xu, *Development of a Low-Noise Bio-Inspired Humanoid Robot Neck*, in Biologically Inspired Robotics, Edited by Yunhui Liu and Dong Sun, CRC Press, 2011.

Peer-Reviewed Conference Articles

1. B. Jones, M. Saikot, J. Zhao, Bistable Spring Steel Grippers for Passive Grasping, IEEE International Conference on Soft Robotics (**RoboSoft**), April 14-17, 2024, San Diego, CA, USA.
2. A. Singh, J. Sun, J. Zhao, Controlling the Shape of Soft Robots Using the Koopman Operator, American Control Conference (**ACC**), 31 May - 02 June 2023, San Diego, CA, USA.
3. H. Hsiao, F. Wu, J. Sun, and J. Zhao, *A novel passive mechanism for flying robots to perch onto surfaces,* in 2022 IEEE International Conference on Robotics and Automation (**ICRA**), 23-27 May 2022, Philadelphia, PA, USA.
4. J. Sun and J. Zhao, *Modeling and simulation of soft robots driven by artificial muscles: an example using twisted-and-coiled actuators,* in 2022 American Control Conference (**ACC**), 08-10 June 2022, Atlanta, GA, USA, Invited Paper.
5. E. Lerner, H. Zhang, and J. Zhao, *Design and Experimentation of a Variable Stiffness Bistable Gripper,* IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2020, pp. 9925-9931.
6. J. Sun and J. Zhao, *Integrated Actuation and Self-Sensing for Twisted-and-Coiled Actuators with*

Applications to Innervated Soft Robots, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2020, pp. 8795-8800.

7. J. Sun, B. Tighe, and J. Zhao, *Tuning the Energy Landscape of Soft Robots for Fast and Strong Motion,* IEEE International Conference on Robotics and Automation (**ICRA**), Paris, France, 2020, pp. 10082-10088.
8. B. Pawlowski, CW Anderson, J. Zhao, *Dynamic Control of Soft Robots Using Reinforcement Learning,* ASME Dynamic Systems and Controls Conference (**DSCC**), October 8–11, 2019, Park City, Utah, DSCC2019-9181, V002T14A006; 9 pages.
9. H. Zhang, J. Sun, and J. Zhao, *Compliant Bistable Gripper for Aerial Perching and Grasping,* IEEE International Conference on Robotics and Automation (**ICRA**), May 20 - 24, 2019, Montreal, Canada, pp. 1248-1253.
10. H. Zhang and J. Zhao, *Vision Based Surface Slope Estimation for Unmanned Aerial Vehicle Perching,* ASME Dynamic Systems and Controls Conference (**DSCC**), September 30-October 3, 2018, Atlanta, Georgia, pp. V002T21A004, 8 pages.
11. B. Pawlowski, J. Sun, and J. Zhao, *Dynamic Modeling of Soft Manipulators Actuated by Twisted-and-Coiled Actuators,* IEEE Conference on Decision and Control (**CDC**), December 17-19, 2018, Miami Beach, FL, pp. 409-414.
12. J. Sun, B. Pawlowski, and J. Zhao, *Embedded and Controllable Shape Morphing with Twisted-and-Coiled Actuators,* IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), October, 1-5, 2018, Madrid, Spain, pp. 5912-5917. (**Finalist for the best student paper award**)
13. B. Pawlowski and J. Zhao, *Modeling of Soft Manipulators with Couplings between Actuations and Body Deformations,* American Control Conference (**ACC**), June 27-29, 2018, Milwaukee, Wisconsin, pp. 1951-1956.
14. H. Zhang and J. Zhao, *An Integrated Unmanned Aerial Vehicle System for Vision Based Control,* ASME 2017 Dynamic Systems and Control Conference (**DSCC**), October 12-14, 2017, Tysons Corner, Virginia, pp. V003T39A011, 8 pages.
15. A. DeMario and J. Zhao, *A Miniature, 3D-Printed, Walking Robot with Soft Joints,* ASME **IDETC/CIE** International Design Engineering Technical Conferences & Computers & Information in Engineering Conference, August 6-9, 2017, Cleveland, Ohio, pp. V05BT08A025, 9 pages.
16. A. Abbas and J. Zhao, *Twisted and Coiled Sensor for Shape Estimation of Soft Robots,* IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), September 24-28, 2017, Vancouver, Canada, pp. 482-487.
17. B. Pawlowski and J. Zhao, *Development and Modeling of a Miniature Jumping Robot Based on NiTi Wires,* The 7th Annual IEEE Int. Conf. on CYBER Technology in Automation, Control, and Intelligent Systems (**CYBER**), July 31 – August 4, 2017, Hawaii, USA, pp. 460-465.
18. H. Zhang, B. Cheng, and J. Zhao, Extended Tau Theory for Robot Motion Control, IEEE International Conference on Robotics and Automation (**ICRA**), May 29 - June 3, 2017, Singapore, pp. 5321–5326.
19. A. Abbas and J. Zhao, A Physics Based Model for Coiled and Twisted Actuator, IEEE International Conference on Robotics and Automation (**ICRA**), May 29 - June 3, 2017, Singapore, pp. 6121–6126.
20. C. Liu, R. Chen, J. Xu, J. Zhao, H. Chen, N. Xi, and K. Chen, Set space visual servoing of a 6-DOF manipulator, IEEE International Conference on Robotics and Automation (**ICRA**), May 29 - June 3, 2017, Singapore, pp. 4422–4428.
21. F. Jiang, H. Zhang, and J. Zhao, *Kinematics and Statics for Soft Continuum Manipulators with Heterogeneous Soft Materials,* ASME 2016 Dynamic Systems and Control Conference (**DSCC**),

October 12-14, 2016, Minneapolis, MN, pp. V002T25A004, 9 pages.

22. J. Zhao and A. Abbas, *A Low Cost Soft Coiled Sensor for Soft Robots,* ASME 2016 Dynamic Systems and Control Conference (**DSCC**), October 12-14, 2016, Minneapolis, MN, pp. V002T26A006; 9 pages.
23. H. Zhang and J. Zhao, *Biologically Inspired Vision Based Control Using Featureless Time-to-Contact Estimations,* IEEE/ASME International Conference on Advanced Intelligent Mechatronics (**AIM**), July 12-15, 2016, Banff, Alberta, Canada, pp. 1133–1138.
24. C. Liu, J. Xu, J. Zhao, H. Chen, K. Chen, *Non-vector space visual servo for multiple pin-in-hole assembly robot,* IEEE International Workshop on Advanced Robotics and its Social Impacts (**ARSO**), July 08-10, 2016, Shanghai, China, pp. 134–140.
25. J. Zhao, H. Sheng, and N. Xi, *Non-vector Space Landing Control for a Miniature Tailed Robot*, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), Sept. 28 - Oct. 02, 2015, Hamburg, Germany, pp. 2154 - 2159.
26. J. Zhao, B. Song, and N. Xi, *Non-vector Space Stochastic Control for Nano Robotic Manipulations*, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), Sept. 14-18, 2014, Chicago, Illinois, USA, pp. 852-857. (**Finalist for the best student paper award**)
27. H. Huang, J. Zhao, and N. Xi, *Featureless Visual Tracking Based on Non-vector Space Theory*, **IFAC World Congress 2014**, 2014, 19:7318-7323.
28. J. Zhao, W. Yan, N. Xi, M. Mutka, and L. Xiao, *A Miniature 25 Grams Running and Jumping Robot*, IEEE International Conference on Robotics and Automation (**ICRA**), May 31- June 7, 2014, Hong Kong, China, pp. 5115-5120.
29. J. Zhao, T. Zhao, N. Xi, F. Cintron, M. Mutka, and L. Xiao, Controlling Aerial Maneuvering of a Miniature Jumping Robot Using Its Tail, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), November 3-7, 2013, Tokyo Big Sight, Japan, pp. 3802-3807.
30. B. Gao, H. Song, J. Zhao, and C. Gong, Dynamics and energy-based control of TORA system on a slope, In IEEE International Conference on Cyber Technology in Automation, Control, and Intelligent Systems (**CYBER**), May 26-29, 2013, Nanjing, China, pp. 373-378.
31. J. Zhao, N. Xi, L. Sun, and B. Song, Stability Analysis of Non-vector Space Control via Compressive Feedbacks, 51st IEEE Conference on Decision and Control (**CDC**), December 10-13, 2012, Maui, Hawaii, pp. 5685-5690.
32. J. Zhao, N. Xi, F. Cintron, M. Mutka, and L. Xiao, A Single Motor Actuated Miniature Steerable Jumping Robot, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), October 7-12, 2012, Vilamoura, Algarve, Portugal, pp. 4274-4275. (video submission)
33. J. Zhao, Y. Jia, N. Xi, W. Li, B. Song, and L. Sun, Visual Servoing Using Non-vector Space Control Theory, IEEE/ASME International Conference on Advanced Intelligent Mechatronics (**AIM**), July 11-14, 2012, Kaohsiung, Taiwan, pp. pp. 87-92.
34. J. Zhao, B. Song, N. Xi, K. Lai, H. Chen, and C. Qu, Compressive Feedback Based Non-vector Space Control, American Control Conference (**ACC**), Montreal, Canada, 2012, pp. 4090-4095.
35. B. Song, J. Zhao, N. Xi, K. Lai, R. Yang, and C. Qu, Non-vector Space Control for Nanomanipulations based on Compressive Feedbacks, IEEE International Conference on Robotics and Automation (**ICRA**), May 14-18, 2012, St. Paul, MN, USA, pp. 2767-2772.
36. J. Xu, J. Zhao, and R. Luo, A 3D imaging sensor for mobile manipulation, In IEEE International Conference on Cyber Technology in Automation, Control, and Intelligent Systems (**CYBER**), May 27-31, 2012, Bangkok, Thailand, pp. 315-320.

37. J. Zhao, B. Song, N. Xi, and K. Lai, Mutation Analysis Models for Visual Servoing in Nanomanipulations, IEEE Conference on Decision and Control (**CDC**), December 12-15, 2011, Orlando, FL, pp. 5683-5688.
38. B. Gao, J. Zhao, N. Xi, and J. Xu, Combined Kinematic and Static Analysis of a Cable-driven Manipulator with a Spring Spine, IEEE International Conference on Robotics and Automation (**ICRA**), May 9-13, 2011, Shanghai, China, pp. 2725-2730.
39. J. Zhao, N. Xi, B. Gao, M. Mutka, and L. Xiao, Development of a Controllable and Continuous Jumping Robot, IEEE International Conference on Robotics and Automation (**ICRA**), May 9-13, 2011, Shanghai, China, pp. 4614-4619.
40. J. Zhao, N. Xi, B. Gao, M. Mutka, and L. Xiao, Design and Testing of a Controllable Miniature Jumping Robot, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), October 18-22, 2010, Taipei, Taiwan, pp. 3346-3351.
41. B. Gao, N. Xi, Y. Shen, J. Zhao, and R. Yang, Development of a Low Motion-Noise Humanoid Neck: Statics Analysis and Experimental Validation, 2010 IEEE International Conference on Robotics and Automation (**ICRA**), May 3-8, 2010, Anchorage, Alaska, USA, pp. 1203-1208.
42. J. Zhao, R. Yang, N. Xi, B. Gao, X. Fan, M. Mutka, and L. Xiao, Development of a miniature self-stabilization jumping robot, IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), October 11-15, 2009, St. Louis, USA, pp. 2217-2222.
43. B. Gao, X. Zhang, H. Chen, and J. Zhao. Energy-based control design of an underactuated 2-dimensional TORA system, IEEE/RSJ International Conference on Intelligent Robots and Systems, (**IROS**), October 11-15, 2009, St. Louis, USA, pp. 1296-1301.
44. Y. Liu, N. Xi, J. Zhao, E. Nieves-Rivera, Y. Jia, B. Gao, and J. Lu, Development and sensitivity analysis of a portable calibration system for joint offset of industrial robot, In Intelligent Robots and Systems, (**IROS**), October 11-15, 2009, St. Louis, USA, pp. 3838-3843.
45. Y. Pei, F. Cintron, Matt W. Mutka, J. Zhao, and N. Xi, Hopping sensor relocation in rugged terrains, In Intelligent Robots and Systems, (**IROS**), October 11-15, 2009, St. Louis, USA, pp. 3856-3861.

Patents

1. **J. Zhao**, A. Demario, Miniature walking robot with soft joints and links, US Patent No: US20200039590A1, Issue Date: 6/14/2022
2. H. Zhang, J. Sun, and **J. Zhao**, Compliant bistable gripper for aerial perching and grasping, Patent No: US10787259B2, Issue Date: 9/29/2020.
3. N. Xi, **J. Zhao**, B. Gao, J. Xu, M. Mutka, and L. Xiao, *Jumping Robot*, Patent No. US9004201B2, Issue Date: 04/14/2015.
4. N. Xi, B. Song, **J. Zhao**, and K. Lai, *Non-Vector space sensing and control method for video rate imaging and manipulation in micro/nano environment*, Patent No. US20150042781A1, Issue Date: 02/21/2017.

Abstracts & Posters

1. M. Saikot, J. Zhao (2024). Perching onto Surfaces: Improving Aerial Robot Capabilities. Graduate Student Showcase, Nov. 16, Colorado State University.
2. S. Spiegel, J. Zhao (2024). Tensegrity wheels for All Terrain Robots. CSU Demo day, Nov. 16, Colorado State University. **Top Prize Winner ($2K)**.

3. E. Lerner, J. Zhao (2022). Shape Morphing Amphibious Robot. Graduate Student Showcase, Nov. 16, Colorado State University.
4. Z. Chen, B. Tighe, J. Zhao, (2022). Origami-Inspired Modules Enable A Reconfigurable Robot with Programmable Shapes and Motions. Graduate Student Showcase, Nov. 16, Colorado State University.
5. A. Singh, J. Sun, J. Zhao, (2022). Controlling the Shape of Soft Robots Using the Koopman Operator. Graduate Student Showcase, Nov. 16, Colorado State University.
6. J. Sun and J. Zhao, Versatile and controllable shape morphing using twisted-and-coiled actuators, APS March Meeting, Session A30: Morphing Matter: From Soft Robotics to 4D Printing I, 2020.
7. H. Zhang and J. Zhao, Biologically inspired vision based aerial robot perching, APS March Meeting, Session U22: Robophysics II, 2020.
8. J. Sun, B. Pawlowski, and J. Zhao, Soft manipulators with programmable motion using twisted-and-coiled actuators, SPIE Electroactive Polymer Actuators and Devices (EAPAD) XXI 10966, 109660Q, Denver, 2019.
9. J. Julian and J. Zhao, Reconfigurable Compliant Mechanisms for Adaptive Robotic Locomotion, the annual Celebrate Undergraduate Research and Creativity Showcase (CURC), 2019. (**High Honor Award**)
10. B. Tighe and J. Zhao, Adaptive Robots Enabled by Reconfigurable Modules, the annual Celebrate Undergraduate Research and Creativity Showcase (CURC), 2019.
11. B. Tighe and J. Zhao, Adaptive Robots Enabled by Reconfigurable Modules, Multicultural Undergraduate Research Art and Leadership Symposium (MURALS), 2019. (**Second Place**)
12. H. Zhang, J. Sun, and J. Zhao, Compliant Bistable Gripper for Aerial Perching and Grasping, Graduate Student Showcase, Colorado State University, 2018.
13. J. Sun and J. Zhao, An Adaptive Walking Robot with Reconfigurable Mechanisms, Graduate Student Showcase, Colorado State University, 2018.
14. B. Pawlowski and J. Zhao, Learning-based control of Soft Manipulators, Graduate Student Showcase, Colorado State University, 2018.
15. J. Larchar and J. Zhao, Fabrication of a Soft-Robotic Fish, the annual Celebrate Undergraduate Research and Creativity Showcase (CURC), 2018. (**Highest Honor Award**)
16. H. Zhang and J. Zhao, Vision-based Aggressive Perching for Aerial Robots, Graduate Student Showcase, Colorado State University, 2017.
17. J. Sun and J. Zhao, Shape morphing of a soft body actuated by twisted and coiled actuators (TCAs), Graduate Student Showcase, Colorado State University, 2017.
18. B. Pawlowski and J. Zhao, Modeling of Soft Manipulators Enabled by Twisted-and-Coiled Actuators, Graduate Student Showcase, Colorado State University, 2017.
19. B. Pawlowski and J. Zhao, Miniature Hybrid Wheeling and Jumping Robot, the annual Celebrate Undergraduate Research and Creativity Showcase (CURC), 2017.
20. H. Zhang and J. Zhao, Bio-inspired vision based control using time-to-contact, Graduate Student Showcase, Colorado State University, 2016.
21. A. DeMario and J. Zhao, Development of a Miniature Legged Robot using Multi-Material 3D Printing, Graduate Student Showcase, Colorado State University, 2016. (**FOREVER GREEN AWARD**)
22. A. Abbas and J. Zhao, Actuation and Self-Sensing for Twisted-and-Coiled Artificial Muscle, Graduate Student Showcase, Colorado State University, 2016.

Media Coverage

1. **Popular Science**: This robot trio mimics the life cycle of a frog, 10/04/2023.
2. **CSU Source**: Morphing robots designed at CSU can grip, climb and crawl like insects, 10/02/2023.
3. **Science News Explores**: New robot can pick up a single drop of liquid, 02/15/2023.
4. **Popular Science**: This robot's delicate touch scoops up liquid droplets without causing a splash, 11/25/2022.
5. **CSU Source**: Soft skills: Researchers invent robotic droplet manipulators for hazardous liquid cleanup, 11/16/2022.
6. **New Atalas**: Unpowered MIP gripper allows drones to passively perch and grasp, 06/16/2022.
7. **New Atalas**: Mechanical gripper allows drones to hang from objects, 12/08/2020.
8. **CSU Source**: Artificial muscle made of sewing thread enables new motions for soft robots, 07/10/2020.
9. **TechXplore**: How robots are being inspired by insects, 08/20/2019.
10. **9News**: CSU creating robots of the future, 03/25/2019.
11. **CSU Source**: These robots are small, shape-shifting, and they adapt to their surroundings, 03/05/2019.
12. **MIT Technology Review**: This robot can melt and re-form its legs to change how it walks, 02/13/2019.
13. **IEEE Spectrum**: Robot Melts Its Bones to Change How It Walks, 02/12/2019.
14. **Lansing State Journal**: MSU Team Creates Jumping Robot, Printed, 08/28/2013.
15. **Time**: This Jumping Robot Uses a Tail for Stabilization, 08/15/2013.
16. **Engadget**: Michigan State University's Tailbot is a diminutive daredevil, 08/14/2013.
17. **Popular Science**: Watch This Tiny Robot Leap Over Walls, 08/15/2013.
18. **Slate**: These Tiny Tailed Robots Could Be the Future of Collecting and Monitoring Data, 08/29/2013.
19. **NewAtlas**: Payload-carrying tailed robots could form leaping mobile sensor networks, 08/26/2013.
20. **Phys.org**: Tiny robot able to reorient itself during jumps using actuated tail, 08/16/2013.
21. **IEEE Spectrum**: Tiny Jumping Robot Finds Room for a Tail, 08/16/2013.
22. **MSU Today**: More bounce to the ounce: Mini-robot attract attention, 04/19/2012.
23. **The Verge**: Tiny robot can jump 3 feet high, fall, pick itself up again, 11/28/2011.
24. **IEEE Spectrum**: World's Cleverest Jumping Robot Gets Faster, More Agile, 11/28/2011.
25. **IEEE Spectrum**: Brilliant Little Jumping Robot Only Needs One Motor, 06/06/2011.

Invited Talks

1. Invited Speaker, *Passive Perching Mechanisms with Physical Intelligence for Flying Robots*, Workshop on Bio-inspired Soft Aerial Robotics, IEEE-RAS International Conference on Soft Robotics (RoboSoft), April 14, 2024.
2. Invited Speaker, *Embedded Shape Morphing for Morphologically Adaptive Robots*, Workshop on

Shape Morphing in Soft Robots: Debates, Challenges and Future Directions, IEEE-RAS International Conference on Soft Robotics (RoboSoft), April 14, 2024.

3. *Physical Artificial Intelligence for Adaptive Robotic Systems*, Mechanical Engineering Graduate Seminar, Johns Hopkins University, Nov 9, 2023 (Host: Chen Li).
4. Invited Speaker, *A Shape-Changing Wheeling and Jumping Robot Using Tensegrity Wheels and Bistable Mechanism*, Soft Robotics: Matter Structure and Intelligence, 2023 SES Annual Technical Meeting, Oct 10, 2023.
5. *Physical Artificial Intelligence for Adaptive Robotic Systems*, University Science Club, Colorado State University, March 8, 2023 (Host: Carol Blair).
6. Invited Speaker, *Reconfigurable Robots with Shape Morphing Joints* , Workshop on "Self-Assembling and Reconfigurable Systems", International Conference on Robotics and Automation (ICRA), June 30, 2020.
7. Invited Speaker, *Adaptive Miniature Walking Robot with Soft Joints and Links*, Workshop on Design and Control of Small Legged Robots, Robotics: Science and Systems, Carnegie Mellon University, June 20, 2018.
8. *Biologically Inspired Approach for Robot Design and Control*, The Mechanical Engineering Department, New Jersey Institute of Technology, Feb 3, 2015.
9. *Biologically Inspired Approach for Robot Design and Control*, The Mechanical Engineering Department, Colorado State University, Jan 22, 2015.
10. *Biologically Inspired Approach for Robot Design and Control*, The Mechanical Engineering Department, Temple University, Nov 11, 2014
11. *Design and Control of Biologically Inspired Miniature Jumping Robots*, The Mechanical Engineering Department, State University of New York at Stony Brook, April 9th, 2014.
12. *Biologically Inspired Miniature Jumping Robots*, Introduction to Robotics Engineering Summer Camp for High School Students, Michigan State University, July 23, 2013.
13. *Biologically Inspired Miniature Jumping Robots*, Robotics Engineering Focused Seminar for High School Teachers, Michigan State University, June 25, 2013.

Teaching

Spring, 2024: MECH564: Fundamentals for Robot Mechanics and Control (8 students)

Fall, 2023: MECH307: Mechatronics and Measurement Systems (50 students)

Spring, 2023: MECH564: Fundamentals for Robot Mechanics and Control (9 students)

Spring, 2022: MECH564: Fundamentals for Robot Mechanics and Control (16 students)

Spring, 2022: MECH529: Advanced Mechanical System (13 students)

Fall, 2021: MECH630: Biologically Inspired Robotics (3 students)

Spring, 2021: MECH564: Fundamentals for Robot Mechanics and Control (13 students)

Spring, 2021: MECH529: Advanced Mechanical System (13 students)

Fall, 2020: MECH307: Mechatronics and Measurement Systems (66 students)

Spring, 2020: MECH564: Fundamentals for Robot Mechanics and Control (18 students)

Spring, 2020: MECH529: Advanced Mechanical System (4 students)

Fall, 2019: MECH681A: Biologically Inspired Robotics (9 students)

Spring, 2019: MECH564: Fundamentals for Robot Mechanics and Control (31 students)
Spring, 2019: MECH307: Mechatronics and Measurement Systems (137 students)
Fall, 2018: MECH529: Advanced Mechanical System (23 students)
Spring, 2018: MECH307: Mechatronics and Measurement Systems (167 students)
Spring, 2018: MECH564: Fundamentals for Robot Mechanics and Control (19 students)
Fall, 2017: MECH681A: Biologically Inspired Robotics (17 students)
Spring, 2017: MECH307: Mechatronics and Measurement Systems (138 students)
Spring, 2017: MECH564: Fundamentals for Robot Mechanics and Control (29 students)
Spring, 2016: MECH564: Fundamentals for Robot Mechanics and Control (12 students)

Teaching at Michigan State University

Fall, 2014: TA for ECE415: Computer Aided Manufacturing
Fall, 2013: TA for ECE415: Computer Aided Manufacturing
Fall, 2012: TA for ECE331: Microprocessors and Digital Systems
Fall, 2012: TA for ECE415: Computer Aided Manufacturing

Student Supervision

Current Graduate Students

1. Zhe Chen, PhD student, 08/2019-now, topic: Adaptive robots
2. Elisha Lerner, PhD student, 08/2021-now, topic: Origami robot
3. Mahmud Saikot, PhD student, 08/2023-now, topic: robotic fish
4. Sudheera Kariyawasam, PhD student, 08/2024-now, topic: perching mechanism

Completed Graduate Students

1. **Jiefeng Sun**, 08/2017-08/2022, Ph.D., 2022,
   Thesis: Soft and shape morphing robots driven by twisted-and-coiled actuators
   Current position: Assistant Professor, Arizona State University
2. **Haijie Zhang**, 08/2015-12/2021, Ph.D., 2021,
   Thesis: Biologically inspired perching for aerial robots
   Current position: Data Scientist at Optum
3. **Clint Middlemist**, 08/2023-12/2024, M.S. Thesis, 2024
   Thesis: Shape Morphing Robotic Fish
4. **Bryce Jones**, 08/2023-08/2024, M.S. Thesis, 2024
   Thesis: Bistable Prestressed Spring Steel Grippers for Aerial Perching and Grasping
5. **Ajai Singh**, 05/2021-05/2023, M.S. Thesis, 2022
   Thesis: Modeling, Simulation, and Control of Soft Robots Using Koopman Operator Theory
6. **Brandon Tighe**, 05/2021-05/2022, M.S. Thesis, 2022,
   Thesis: The Manufacturing and soft robotic applications of free stroke twisted and coiled actuators
7. **Billy Hsiao**, 08/2019-12/2021, M.S. Project, 2021,
   Topic: robot perching
8. **Ben Pawlowski**, 08/2017-12/2019, M.S. Thesis, 2019,

Thesis: Modeling of soft manipulators enabled by twisted-and-coiled actuators

9. **Ali Abbas**, 10/2015-12/2017 M.S. Thesis, 2018,
   Thesis: Modeling of Twisted and Coiled Artificial Muscle for Actuation and Self-Sensing
10. **Anthony DeMario**, 08/2016-12/2017, M.S. Thesis, 2018,
    Thesis: Design, modeling, and optimization of 3D printed compliant mechanisms with applications to miniature walking robots
11. **Fawad Ahmad**, 05/2017-12/2017, M.S. Project, 2018, (Co-advised with A. A. Maciejewski),
    Topic: vision-based control
12. **Jiang Fei**, 01/2016-08/2016, M.E. Project, 2016,
    Topic: Water surface jumping robots

Undergraduate Students for Research

1. Alex Leadbetter, 05/2024 - now, topic: robotic fish
2. Josh Chrisler, 01/2024 - now, topic: robotic wheg
3. Andrew Stefka, 06/2023 - now, topic: Tensegrity robots
4. Jerry Lu, 2024 summer, origami robot
5. Anisha Kalla, 01/2023 - 05/2024
6. Quincy Humphrey, 01/2024 - 05/2024
7. Alyssa Fournier, 2024 summer, Airborn REU participant, wheg robot
8. Jacob Brannon, 2023 summer, Airborn REU participant, robot perching
9. Walter Jordan, 08/2022-08/2023, topic: mobile additive manufacturing
10. Bryce Jones, 08/2022-08/2023, topic: intelligent gripper
11. Sydney Spiegel, 01/2019-05/2023, topic: tensegrity robot
12. Nick Woolsey, 2022 summer, Airborn REU participant, topic: intelligent gripper
13. Clint Middlemist, 01/2021-08/2023, topic: shape morphing
14. Ben Burdess, 2021 summer, topic: reconfigurable robots
15. Simon Hempel-Costello, 2021, 2022 summer, topic: flying robots
16. Heaven Smith, 01/2019-12/2021, topic: collapsible robots
17. Elisha Lerner, 01/2019-05/2021, topic: perching mechanism
18. Brandon Tighe, 05/2018-05/2021, topic: shape morphing structures
19. Sebastian Mettes, 8/2019-12/2019, topic: tensegrity robots
20. Jordan Julian, 01/2018-05/2019, topic: Printable Robots
21. Jeffrey Larchar, 01/2017-05/2018, topic: Soft robots
22. Ben Pawlowski, 08/2016-08/2017, topic: Jumping robots
23. Bradley Pospeck, 09/2016-09/2017, topic: Miniature flying robots
24. David Trinko, 01/2016-08/2016, topic: Soft manipulators actuated by twisted and coiled muscle
25. Anthony DeMario, 08/2015-08/2016, topic: 3D printable robots
26. Jeff Gier, 08/2015-05/2016, topic: Hybrid wheeling and jumping robot

Undergraduate Honor Thesis

1. **Kyle Vorreiter**, Mining system design for Lunarobotic competition, Spring, 2020
2. **Daniel Probasco**, Autonomy for NASA Robotic Mining Competition, Spring, 2019.

Undergraduate Students for Senior Design

1. **2022 Senior Design:** Develop a robotic system for autonomous methane sampling: Nick Shipe, Vincent Berardi, Tristan Kim.
2. **2021-2022 Senior Design:** NASA Robotic Mining Competition: Carissa Vos, Hunter Pearson, Corbyn Berg, Mike Irlbeck, Noah Kolda, Logan Litchfield, Dylan Clem, Zelin Yang, Ryan Bushue.
3. **2020-2021 Senior Design:** NASA Robotic Mining Competition: Connor Worrell, James Henander, Kyle Ciccarelli, Lex Pollicita, Yeshel Bin Akmal, Alden Truesdale, Jonathan Jacobson, Colby Richardson
4. **2019-2020 Senior Design:** NASA Robotic Mining Competition: Brooks Classick, Mason Deal, Jade Lee, Zach Scott, Jacob Sheradin (ECE), Kyle Vorreiter, Wallace Nathan, Stansbury Rick (ECE), Nikita Khlopotin
5. **2018-2019 Senior Design:** NASA Robotic Mining Competition: Jeff Larchar, Jordan Jullian, Daniel Probasco, Andrew Bragg, Thomas Brink, Justin Hundley, Taylor Nave, Brennan O'Connor **1st Place in E-Days, 3rd Place in Autonomy during the national competition**
6. **2017-2018 Senior Design:** NASA Robotic Mining Competition: Jacob Bryant, Mattie Belford, Muadh Al-Nadabi, Hunter Shively

High School Students

1. Feiyu Wu, Poudre High School, Fort Collins, Colorado, 07/2020-08/2023, topic: Flying Robots
2. Cole Elliott, Animas High School, Durango, Colorado, 04/2018-05/2018, topic: Mobile Robots

Students/teachers supervised at Michigan State University

1. Ruowan Ji, ECE, 01/2015-07/2015, topic: Water jumping robots
2. Yirui Wu, ECE, 03/2015-07/2015, topic: Flying robots
3. Zachary Farmer, ECE, 09/2014-05/2015, topic: Embedded Vision Systems
4. Hongyi Shen, ECE, 04/2014-05/2015, topic: Vision based control for miniature tailed robots
5. Weihan Yan, ECE, 04/2013-06/2014, topic: Jumping Robots
6. Chenli Yuan, ECE, 05/2013-12/2013, topic: Embedded Vision Systems
7. Jianying Tang, ECE, 02/2013-08/2013, topic: wireless control using smart-phone
8. Tianyu Zhao, ME, 05/2012-08/2013, topic: Tailed jumping robot
9. Alexander Ellis Dutch, ME, 09/2010-05/2011, topic: jumping robot
10. Philip Rutkowski, Haslett Middle School, 06/2014-07/2014, topic: soft robotic gripper
11. Karl Balke, Cass Technical High School, 06/2013-07/2013, topic: jumping robot

Member of M.S. Dissertation Committees

1. Walter Jordan (Advisor: Mostafa Yourdkhani), M.S., 2024
2. Katrina Weinmann, (Advisor: Steve Simske), M.S., 2021
3. Ahmad A H Almarkhi, (Advisor: Anthony A. Maciejewski), M.S., 2020
4. Javier Fernando Cely Monroy, (Advisor: Anthony A. Maciejewski), M.S., 2019

Member of Ph.D. Dissertation Committees

1. Abigail Waugh, (Advisor: Kirk McGilvray)
2. Katrina Weinmann, (Advisor: Steve Simske)
3. Michael Greer, (Advisor: Anthony A. Maciejewski)
4. Erick Havenhill, (Advisor: Soham Ghosh), Ph.D., 2024

5. Ahmad A H Almarkhi, (Advisor: Anthony A. Maciejewski), Ph.D., 2021
6. Biyun Xie, (Advisor: Anthony A. Maciejewski), Ph.D., 2019
7. Zach Asher, (Advisor: Thomas Bradley), Ph.D., 2018

Professional Membership and Services

Professional Memberships

Member: American Society of Mechanical Engineering (ASME)

Member: IEEE Robotics and Automation Society (RAS), Dynamic Systems & Control Division, Control System Society (CSS)

Editorship

1. Associate Editor, IEEE Transactions on Robotics (TRO), 2022-now
2. Technical Editor, IEEE/ASME Transactions on Mechatronics (TMECH), 2021-2024
3. Guest Editor, International Journal of Intelligent Robotics and Applications, Focused Issue on Flexible Mechatronics for Robotics, 2021
4. Associate Editor at Large, American Control Conference (ACC) (2021, 2022)
5. Associate Editor, IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM) (2019, 2020, 2021)
6. Associate Editor, IEEE International Conference on Robotics and Automation (ICRA) (2017, 2018, 2020, 2021)
7. Associate Editor, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (2017, 2018, 2019)
8. Associate Editor, Modeling, Estimation and Control Conference (MECC) (2022)
9. Editor, the Newsletter of ASME Dynamic Systems and Control Division (DCSD) (2019)
10. Associate Editor, the Newsletter of ASME Dynamic Systems and Control Division (DCSD) (2016-2018)

Conference Program and Organizing Committees

1. Virtual Technologies Chair, American Control Conference (ACC), 2023
2. Best Student Paper Award Committee, 2020 ASME Dynamic Systems & Control Conference (DSCC), 2020
3. Program Committee member, International Symposium on Flexible Automation (IFSA) (2018)
4. Program Committee member, IEEE Conference on Robotics and Biomimetics (ROBIO) (2015-2017)
5. Organizing Co-Chair, IEEE Int. Conf. on CYBER Technology in Automation, Control, and Intelligent Systems (Cyber), 2017.
6. Workshop/Tutorial Chairs, IEEE International Conference on Real-time Computing and Robotics (RCAR), 2017.

Conference Session Chairs or Co-Chair

1. 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (WeAT19 Soft Robot Applications II), Virtual
2. 2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (WeBT23 Grippers & Other End Effectors), Virtual
3. 2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (MoAT12: Soft

Material Robotics I), Vancouver, Canada
4. 2016 ASME Dynamic Systems and Control Conference (DSCC) (11-1 TA6: Robotic Manipulators), Minneapolis, MN

Reviewer for Funding Agencies

1. NSF Panelist: 2017, 2019, 2020, 2021, 2023, 2024 (three times)
2. NOAA Ocean Exploration Ad-hoc reviewer (2023)
3. NSF Ad-hoc reviewer (2020)
4. Swiss National Science Foundation: Ad-hoc reviewer (2019, 2022)
5. HongKong Research Grants Council (RGC): Ad-hoc reviewer (2016)
6. Great Lakes Fishery Commission (GLFC): Ad-hoc reviewer (2021, 2024)
7. Dutch Research Council (NWO): Ad hoc reviewer (2024)

Reviewer for Archived Journals

Science Robotics; Nature Communications; Nature Machine Intelligence; Advanced Science; Advanced Intelligent Systems; Materials Today; Soft Robotics; IEEE Transactions on Robotics (TRO); IEEE/ASME Transactions on Mechatronics (TMECH); International Journal of Robotics Research (IJRR); IEEE Robotics Automation Letters (RAL); Bioinspiration and Biomimetics (B&B); ASME Journal of Mechanisms and Robotics (JMR); IEEE Transactions on Automation Science and Engineering (TASE); Sensors and Actuators A: Physical; Smart Materials and Structures (SMS); Automatica; ASME Journal of Dynamic Systems, Measurement and Control (JDSMC)

Reviewer for International Conferences

1. IEEE International Conference on Soft Robotics (RoboSoft): 2018-
2. IEEE International Conference of Robotics and Automation (ICRA): 2011-
3. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): 2011-
4. International Conference on Advanced Robotics (ICAR): 2011
5. IEEE International Conference on Robotics and Biomimetics (Robio): 2011-
6. International Conference on Control, Automation, Robotics and Vision (ICARCV): 2012
7. American Control Conference (ACC): 2013-
8. International Federation of Automatic Control (IFAC) World Congress: 2013-
9. ASME Dynamic Systems and Control Conference: 2016-
10. IEEE/ASME Advanced Intelligent Mechatronics (AIM): 2016-

Institutional and Community Services

University Committees

Faculty Council Committee on Libraries, Committee Member: 08/2019-08/2022

College Committees

AI Task Force Committee, 2024
AI Cluster Hire Committee member, 2024

Department Committees

Search Committee Chair for Tenure-Track Assistant/Associate Professor in AI, 2024
Search Committee Member for CCAF in Mechatronics, 2024

Graduate Education Committee: 2023 - now
Search Committee Member for Tenure-Track Assistant/Associate Professor in CFD, 2023
Mechanical Engineering Advisory Board (MEAB), Committee Member: faculty representative, 2016-2019
Search Committee Member for Assistant Professor of Practice, Fall, 2018

Outreach and Community Service

- Hosted lab visits for FIRST Tech Challenge team at Liberty Common High School, 11/2024
- Hosted lab visits for ENvision Engineering Summer Program, 06/2024
- Participated in a whole day open house hosted by the Little Shop Of Physics (LSOP) as a Science Partner, 02/2024
- Participated in a whole day Spring Science Extravaganza hosted by the Little Shop Of Physics (LSOP) as a Science Partner, 04/2023
- Participated in a whole day Spring Science Extravaganza hosted by the Little Shop Of Physics (LSOP) as a Science Partner, 04/2022
- STEM-X summer camp, present research to K12 students, 06/2021
- Participated in a whole day open house hosted by the Little Shop Of Physics (LSOP) as a Science Partner, 02/2020
- Participated in a whole day open house hosted by the Little Shop Of Physics (LSOP) as a Science Partner, 02/2019
- Presented biologically inspired robotics at the Front Range Teen Science Cafe, 04/2016