Andrew P. Sabelhaus

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EDUCATION

PH.D. MECHANICAL ENGINEERING — University of California, Berkeley
Dissertation title: *Tensegrity Spines for Quadruped Robots* — August 2019
Dissertation Committee: *Alice M. Agogino (Chair), Andrew Packard, Claire Tomlin, Murat Arcak*

M.S. MECHANICAL ENGINEERING — University of California, Berkeley
Thesis: *Mechanism and Sensor Design for SUPERball, a Cable-Driven Tensegrity Robot* — Dec. 2014
Thesis Committee: *Alice M. Agogino, Dennis Lieu*

B.S. MECHANICAL ENGINEERING — University of Maryland, College Park
Minor in Computer Science — May 2012

APPOINTMENTS

Boston University	Assistant Professor
Department of Mechanical Engineering	2022 - Present
Division of Systems Engineering	2022 - Present
Center for Information Systems and Engineering	2022 - Present
Carnegie Mellon University	Postdoctoral Research Fellow
Deptartment of Mechanical Engineering	2019 - 2021
NASA Ames Research Center	Visiting Technologist
Intelligent Systems Division	2015 - 2019
University of California, Berkeley	Graduate Research Fellow
Department of Mechanical Engineering	2012-2019

FUNDING + AWARDS

6. **NSF Cyberinfrastructure for Sustained Scientific Innovation (CSSI), Standard Grant.** National Science Foundation. Title: *Discrete Simulation of Flexible Structures and Soft Robots.* $169,987. 2022-2025.
5. **Intelligence Community Postdoctoral Research Fellowship.** Office of the Director of National Intelligence. Title: *Rapid Deployment of Hard-to-Control Robots with Optimality Tradeoffs.* Full funding, 2020-2022.
4. **NASA Space Technology Research Fellowship.** National Aeronautics and Space Administration. Title: *Trajectory Tracking in Nonlinear, High-Order, Underactuated Robotic Systems.* Full funding, 2015-2019.
3. **CITRIS Tech for Social Good Development Grant.** University of California Center for Information Technology Research in the Interest of Society (CITRIS). Title: *Laika, The Robot Transport for Disaster Relief.* Block grant, 2018.
2. **Markowski-Leach Foundation Award.** *Awarded to LGBTQ individuals at San Francisco Bay Area institutions who "are likely to make a substantial contribution to society."* 2013-2014, re-awarded 2016-2018.
1. **NSF Graduate Research Fellowship.** National Science Foundation. Full funding, 2012-2015.

RESEARCH OUTPUT SNAPSHOT

Peer-Reviewed Publication Count:			Total Citations:	h-index:
	1st-Author or PI:	All:		
Conference:	7	12	813* (343†)	13* (7†)
Journal:	4	9		
Total:	11	21		

**Via Google Scholar, https://scholar.google.com/citations?user=ze69yEMAAAAJ&hl=en.*
†Via Web of Science, https://www.webofscience.com/wos/author/record/1791313.

MOST RECENT PUBLICATIONS

17. A.P. Sabelhaus, Z. Patterson, A. Wertz, C. Majidi, ``Safe Supervisory Control of Soft Robot Actuators.'' *Under Review, Soft Robotics*. Available, arXiv:2208.01547

16. X. Huang, Z.J. Patterson, A.P. Sabelhaus, W. Huang, K. Chin, Z. Ren, M.K. Jawed, C. Majidi, ``Design and Closed Loop Motion Planning of an Untethered Swimming Soft Robot using 2D Discrete Elastic Rods Simulations,'' *Advanced Intelligent Systems*, To Appear.

15. A.P. Sabelhaus, R.K. Mehta, A. Wertz, C. Majidi, ``In-Situ Sensing and Dynamics Predictions for Electrothermally-Actuated Soft Robot Limbs,'' *Frontiers in Robotics and AI*, Vol. 9, May 2022. doi:10.3389/frobt.2022.888261

14. M. Zadan, D.K. Patel, A.P. Sabelhaus, J.Liao, A. Wertz, L. Yao, C. Majidi, ``Liquid Crystal Elastomer with Integrated Soft Thermoelectrics for Shape Memory Actuation and Energy Harvesting,'' *Advanced Materials*, April 2022. doi:10.1002/adma.202200857

13. A. Wertz*, A.P. Sabelhaus*, C. Majidi, ``Trajectory Optimization for Thermally-Actuated Soft Planar Robot Limbs,'' *IEEE International Conference on Soft Robotics (RoboSoft)*, April 2022. *Equal Contribution. doi:10.1109/RoboSoft54090.2022.9762226

12. Z.J. Patterson, A.P. Sabelhaus, C. Majidi, ``Robust Control of a Multi-Axis Shape Memory Alloy-Driven Soft Manipulator,'' *IEEE Robotics and Automatics Letters*, April 2022. doi:10.1109/LRA.2022.3143256

11. A.P. Sabelhaus, K. Zampaglione, E. Tang, L.H. Chen, A.K. Agogino, A.M. Agogino, ``Double-Helix Linear Actuators.'' *Journal of Mechanical Design (ASME)*, Vol. 143, Issue 10, Oct. 2021. doi:10.1115/1.4050739

10. A.P. Sabelhaus, C.Majidi, ``Gaussian Process Dynamics Models for Soft Robots with Shape Memory Actuators.'' *IEEE International Conference on Soft Robotics (RoboSoft)*, April 2021. doi:10.1109/RoboSoft51838.2021.9479294

9. Z. Ren, X. Huang, M. Zarepoor, A.P. Sabelhaus, C. Majidi, ``Shape Memory Alloy (SMA) Actuator with Embedded Liquid Metal Curvature Sensor for Closed-Loop Control.'' *Frontiers in Robotics and AI*, Vol. 8, Mar. 2021. doi:10.3389/frobt.2021.599650

8. A.P. Sabelhaus, H. Zhao, E. Zhu, A.K. Agogino, A.M. Agogino, ``Model-Predictive Control with Inverse Statics Optimization for Tensegrity Spine Robots.'' *IEEE Transactions on Control System Technology*, Vol. 29, Issue 1, Jan. 2021. doi:10.1109/TCST.2020.2975138

7. A.P. Sabelhaus, A.H. Li, K.A. Sover, J. Madden, A. Barkan, A.K. Agogino, A.M. Agogino, ``Inverse Statics Optimization for Compound Tensegrity Robots.'' *IEEE Robotics and Automation Letters*, July 2020. doi:10.1109/LRA.2020.2983699

6. Z. Patterson, A.P. Sabelhaus, K. Chin, T. Hellebrekers, C. Majidi, ``An Untethered Brittle Star Robot for Closed-Loop Underwater Locomotion.'' *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Oct. 2020. doi:10.1109/IROS45743.2020.9341008

5. A.P. Sabelhaus, L.A. Janse van Vuuren, A. Joshi, E. Zhu, H.J. Garnier, K.A. Sover, J. Navarro, A.K. Agogino, V. SunSpiral, A.M. Agogino, ``Design, Simulation, and Testing of a Flexible Actuated Spine for Quadruped Robots.'' *Preprint Only*, 2018 Available, arXiv:1804.06527

4. L.H. Chen, M.C. Daly, A.P. Sabelhaus, L.A. Janse van Vuuren, H.J. Garnier, M.I. Verdugo, E. Tang, C.U. Spangenberg, F. Ghahani, A.K. Agogino, A.M. Agogino, ``Modular Elastic Lattice Platform for Rapid Prototyping of Tensegrity Robots.'' *ASME International Design Engineering Technical Conferences (IDETC) / 41st Mechanisms and Robotics Conference*, Aug 2017. doi:10.1115/DETC2017-68264

3. A.P. Sabelhaus, A.K. Akella, Z.A. Ahmad, V. SunSpiral, ``Model-Predictive Control of a Flexible Spine Robot.'' *American Control Conference (ACC)*, IEEE, May 2017. doi:10.23919/ACC.2017.7963738

2. A.P. Sabelhaus, H. Ji, P. Hylton, Y. Madaan, C. Yang, J. Friesen, V. SunSpiral, A.M. Agogino, ``Mechanism Design and Simulation of the ULTRA Spine, a Tensegrity Robot.'' *ASME International Design Engineering Technical Conferences (IDETC) / 39th Mechanisms and Robotics Conference*, Aug 2015. doi:10.1115/DETC2015-47583

1. A.P. Sabelhaus, J. Bruce, K. Caluwaerts, P. Manovi, R.F. Firoozi, S. Dobi, A.M. Agogino, V. SunSpiral, ``System Design and Locomotion of SUPERball, an Untethered Tensegrity Robot.'' *IEEE International Conference on Robotics and Automation (ICRA)*, May 2015. doi:10.1109/ICRA.2015.7139590