

STEVEN MAN

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EDUCATION

Carnegie Mellon University

08/2023 - Present

Ph.D. Robotics, Advisors: Dr. Sarah Bergbreiter and Dr. Aaron Johnson, QPA: 4.08/4

- National Science Foundation Graduate Research Fellow 2025
- Tau Beta Pi Fellow 2024-2025
- Coursework: Robot Dynamics Analysis, Optimal Control and Reinforcement Learning, Robot Learning, Embodied AI Safety.

University of California Santa Barbara

08/2019 - 06/2023

B.S. Mechanical Engineering, High Honors, GPA: 3.97/4

ACADEMIC RESEARCH

Robotics Institute, CMU – Pittsburgh, PA

08/2023 – Present

Graduate Student under Dr. Aaron Johnson and Dr. Sarah Bergbreiter

- Primary Research: Simulating and prototyping dynamic walking robots to study control and scaling laws of dynamic bipeds
- Building physics-informed world-models for data-efficient model-learning
- Mentorship: Mentoring 6 undergraduate researchers on building various scaled biped robots and developing control strategies for stable, efficient walking over uneven terrains

Robotics Institute Summer Scholars, CMU – Pittsburgh, PA

06/2022 – 08/2022

Undergraduate Researcher for Dr. Sarah Bergbreiter

- Created the first micro-scale Delta robot using Two-Photon Polymerization to study 3D-printing applications in micro-robots, achieving less than 5 micron trajectory tracking precision and accuracy error
- Modeled micro-robot motion using Simscape Multibody and analyzed its trajectory using TEMA software
- First-authored paper currently being submitted to *Science Robotics*

Hawkes Lab, UCSB – Santa Barbara, CA

01/2021 – 06/2023

Undergraduate Researcher for Dr. Elliot Hawkes

- Built robots to mimic embryo cells to study how the robot cluster can collectively change shapes
- Designed Printed Circuit Boards and 3D-Printed assemblies to rapidly prototype embryo-inspired robots
- Developed Arduino algorithms for light sensing and motor actuation using a photo-diode network

Pennathur Lab, UCSB – Santa Barbara, CA

01/2022 – 06/2023

Undergraduate Researcher for Dr. Sumita Pennathur, UCSB

- Characterized a Liquid-Metal Microfluidic Energy Transducer to maximize electrical energy harvesting
- Learned to fabricate microfluidic devices using Deep Reactive Ion Etcher, Electron-Beam Metal Deposition, Atomic Layer Deposition, and Photolithography at UCSB's Nanofabrication facility

PUBLICATIONS & PRESENTATIONS

Papers

- **S. Man**, S. Narita, J. Macera, N. Oke, A. M. Johnson, and S. Bergbreiter, "Zippy: The smallest power-autonomous bipedal robot," IEEE International Conference on Robotics and Automation, 2025. (Accepted)
- W. E. Heap, **S. Man**, V. Bassari, S. Nguyen, E. B. Yao, N. A. Tripathi, N. D. Naclerio, and E. W. Hawkes, "Large-scale vine robots for industrial inspection," IEEE Robotics Automation Magazine, 2024.
- **S. Man***, S. Kim*, S. Bergbreiter. "The microDelta: downscaling microscale Delta robot enables ultra-fast and high precision movement," *Science Robotics*, 2025. (Under Review)

- **S. Man**, S. Kim, S. Bergbreiter. "The MicroDelta: a 3D-printed Micro-scale Delta Robot," *Robotics Institute Summer Scholars Working Papers Journal*, 2022. (REU Catalog)

Presentations

- **S. Man**, S. Bergbreiter, and A. M. Johnson. "Hip–Leg Coordinated Quasi-Passive Biped Walker for Energy Efficiency and Step Ascension," *Dynamic Walking Conference, Pensacola, FL, 2024* (Poster Presentation)
- W. Heap, **S. Man**. "Novel Miniaturized Apical Extension Robot For Small Bowel Endoscopy," *UCSB ME153 Mechanical Engineering Design Fair, Santa Barbara, CA, 2022* (Poster Presentation)
- **S. Man**, M. Devlin, E. Hawkes. "Embryo Cell Robot Dynamics," *UCSB Undergraduate Research and Creative Activities Poster Colloquium, Santa Barbara, CA, 2022* (Poster Presentation)

GRANTS & AWARDS

- *National Science Foundation Graduate Research Fellowship* | 2025
- *Tau Beta Pi Fellowship* | 2024
- *UCSB Mechanical Engineering Capstone Innovation Award (\$1500)* | 2023
- *UCSB New Venture Competition Tech Push 3rd Place + People's Choice (\$2000 + \$2500)* | 2023
- *UCSB Edison STEM Research Scholarship (\$2000)* | 2022
- *UCSB Gene & Susan Lucas Research Fund (\$1000)* | 2021, 2022
- *UCSB URCA Research Grant (\$750)* | 2021
- *LA Hacks 2021, 1st Place (\$500 worth of hardware)* | 2021
- *SB Hacks VII, 2nd Place (\$300 worth of hardware)* | 2021

INDUSTRY EXPERIENCE

SpaceX – Redmond, WA 06/2023 – 08/2023

Space Lasers Mechanical Engineering Intern

- Designed, assembled, and tested a robotic optical alignment production stand to manufacture flight-level satellite hardware in 8 weeks
- Implemented and optimized a robot automation procedure to reduce takt time by 50% compared to previous generation stands while achieving micron-precision alignment

Johns Hopkins University Applied Physics Laboratory – Laurel, MD 06/2021 – 09/2021

Mechanical Engineering Intern

- Built a mechatronic assembly for the *NASA Dragonfly Mission* Thermal Trim Device Tests to study the system's capacity to exchange heat with Titan's cryogenic atmosphere
- Performed thermal balance tests on the device in a thermal chamber and analyzed its performance

PROJECTS

Apical Robotics Capstone | UCSB – Santa Barbara, CA 09/2022 - 06/2023

- Developed the largest soft robot ever (100 ft long) for industrial pipe inspection applications and performed an onsite demonstration with the team for Bechtel Corp
- Led the design and testing of a blower fan module capable of high-volume (60 cfm) rapid flow reversal
- Designed and built an electronics and communication system to supply the power required for pressurized robot locomotion, transmit live video feed, and perform feedback control on pressure and growth speed
- Winner of UCSB Mechanical Engineering Capstone Innovation Award and New Venture Competition Tech Push (3rd out of 50)

Vine Endoscopy Robot | UCSB – Santa Barbara, CA 03/2022 - 06/2022

- Designed a soft vine robot for medical endoscopic applications and highly-precise fabrication technique
- Constructed a compact RF motor control circuit to allow for both extension and retraction of robot tip
- Rapidly prototyped vine robot tip mounts using 3D-printing and reduced growing friction by 50%

Ionic Skies Capstone | UCSB – Santa Barbara, CA 06/2020 - 06/2021

- Designed a gravity-driven launcher with a pulley mechanism to launch an ionic wind aircraft
- Used Python to numerically model the relationship between take-off velocity and launch mass