MICAH OEVERMANN

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EDUCATION

PhD in Mechanical Engineering *December 2025*
Texas A&M University, College Station, USA
Dissertation Title: Design, Modeling, and Nutational Instabilities of Soft Pendulum Driven Spherical Robots

B.S. in Mechanical Engineering *December 2021*
Texas A&M University, College Station, USA

Study Abroad - Engineering Mechanics *Summer 2019*
Arts et Métiers ParisTech, Aix-en-Provence, France

ACADEMIC POSITIONS HELD

Robotics and Automation Design Lab Janurary 2022 - Present
Graduate Research Assistant *College Station, TX*

- Led a small team of grad students and engineers on the full-stack development of the RoboBall II prototypes from CAD to concrete
- pioneered a novel outer shell manufacturing design, control, and simulation environments in Drake
- led teams of 5, 3, and 2 undergraduates in the three summer programs, all resulting in conference or journal publications
- collaborated with the Robotic Space Simulator team on the modeling of two 7-dof Stewart platforms
- Collaborated with external partners at Los Alamos and Southwest Research Institute for exchange of ideas and potential partnerships

Biomechanical Environments Laboratory (BMEL) January 2019 - May 2019
Undergrad Research Assistant *College Station, TX*

- Applied concepts of linear elastic theory in the development of a biaxial tissue testing platform
- Implemented the use of a novel fish hook – line technique on organic samples to reduce clamp stresses
- Presented final design on a poster in a public research symposium

PROFESSIONAL POSITIONS HELD

BakerRisk Engineering Consultants August 2020 - December 2020
Student Co-op, Blast Testing Group *San Antonio, TX*

- Instrumented destructive full-scale structural testing with Deflagration, Vapor Cloud, and Shock Tube methods
- Manufactured mounts for specimens and piezoelectric pressure or force instrumentation
- Prioritized safety with no major injuries while working around debris fields

Pine Cove Camps Summers of 2018-'19-'20
Extreme Activites Coordinator *Columbus, TX*

- Lead setup and facilitation of skeet and rifle ranges, water activities, and a high ropes course

TEACHING EXPERIENCE

Guest Speaker December 2024
Introduction to Robotic Manipulators MEEN 612 *College Station, TX*

- Lecture Title: *Introduction to Simulating Robot Arms in pyDrake*

Guest Speaker December 2024
Intuitive and Counterintuitive Mechanisms MEEN 689 *College Station, TX*
- Lecture Title: *Designing for Assembly: lessons from RoboBall II Pendulum*

Numerical Methods Helpdesk August 2019 - December 2019
Student Worker for MEEN 357 *College Station, TX*
- Assist students with Python code portions of projects and homework

Volunteer Teaching Assistant August 2018 - December 2018
Kinesiology 199 - Whitewater Kayaking *College Station, TX*
- provided one-on-one instruction and feedback of basic paddling techniques

Python Teaching Assistant August 2018 - December 2018
Student Assistant for Intro Engineering Course ENGR 102 *College Station, TX*
- Assisted in the instruction of freshman engineering students with the basics of coding in python

FUNDING AND SCHOLARSHIPS

Lou & CC Burton '42 Scholarship ◇ $10,000 *Awarded 2020-2021*
Lechner Scholarship ◇ $10,000 *Awarded 2017-2020*
CITGO Petroleum Corp. Scholarship *Awarded 2018-2019*
Pat Wilburn Honorary Scholarship *Awarded 2017-2019*

HONORS AND AWARDS

Best Presentation Award *September 2023*
OSU International Mechatronics Conference and Exposition, 2023

Senior Capstone: Best in MEEN *December 2021*
Texas A&M University, College Station, USA

PUBLICATIONS

Journal Articles

Empirical Contact Models for Soft Spherical Robots in Drake
Oevermann, Micah J., Dhruv Datta, Dylan Hilburn, Derek J. Pravecek, Rishi Jangale, Aaron Villanueva, and Robert O. Ambrose
IEEE Robotics and Automation Letters (2025). 2025

Empirically Compensated Setpoint Tracking for Spherical Robots With Pressurized Soft-Shells
Pravecek, Derek J, **Micah J Oevermann**, Gray C Thomas, and Robert O Ambrose
IEEE Robotics and Automation Letters (2025). 2025

Peer Reviewed Conference Papers

Scaling of RoboBall: A Parametric Robot Family for Crater Exploration
Jangale, Rishi V, Aaron Villanueva, Garrett Jibrail, **Micah J Oevermann**, Derek J Pravecek, Meghali P Dravid, and Robert O Ambrose
2025 IEEE Aerospace Conference, 2025

A Pressure Model and Control System for a Pressurized Pendulum Driven Spherical Robot
Micah J Oevermann, Meghali P Dravid, Derek J Pravecek, Will Olejnik, and Robert O Ambrose
2025 22nd International Conference on Ubiquitous Robots (UR), 2025

Design of a Soft Shell for a Spherical Exploration Robot Traversing Varying Terrain
Dravid, Meghali Prashant, **Micah Oevermann**, David McDougall, David Dugas, and Robert Ambrose
2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024

A Soft Spherical Robot for Lunar Crater Exploration
Micah Oevermann, Meghali Prashant Dravid, Garrett Jibrail, Jared Janak, Rishi Jangale, David McDougall, David Dugas, and Robert O Ambrose
AIAA SCITECH 2024 Forum, 1961, 2024, 2024

Roboball: An all-terrain spherical robot with a pressurized shell
Micah Oevermann, Derek Pravecek, Garrett Jibrail, Rishi Jangale, and Robert O Ambrose
2024 IEEE International Conference on Robotics and Automation (ICRA), 2024

Presented Abstracts

A System for Exploring Craters and Shadowed Regions of the Lunar South Pole
Dravid, Meghali, **Micah Oevermann**, and Robert Ambrose
ASCE Space and Earth Conference, 2024

RoboBall Recap: Past, Current, and Future Inflatable Spherical Robots
Jangale, Rishi, **Micah Oevermann**, Garrett Jibrail, Derek Pravecek, Meghali Dravid, Aaron Villanueva, and Robert Ambrose
40th Anniversary of the IEEE International Conference on Robotics and Automation, 2024

Persistent intelligence, Surveillance and Reconnaissance for the Lunar Surface
Ambrose, Robert, **Micah Oevermann**, Meghali Dravid, and Garrett Jibrail
AIAA ASCEND Conference, 2023

Design and Dynamics of Rugged Soft Shells for a Pendulum-Driven Spherical Robot
Micah Oevermann, Meghali Dravid, Garrett Jibrail, and Robert Ambrose
OSU International Mechatronics Conference and Exposition, 2023

Works Under Review

Relaxation Dynamics in Oblate Spherical Rolling Robots
Oevermann, Micah J. and Robert O. Ambrose
Proceedings of the IEEE International Conference on Robotics and Automation (ICRA) (2026). 2026

Derivation and Control of Coupled 3D Dynamics for Fast Locomotion in 2-DOF Pendulum-Driven Spherical Robots
Pravecek, Derek, Rishi Jangale, **Oevermann, Micah**, Aaron Villanueva, Joeseph Garrett Jibrail, and Robert O. Ambrose
IEEE Transactions on Robotics (2026). 2026

Novel Robotic Fleet for Sample Recovery in Lunar Craters: A Concept of Operations
Jangale, R., D. Pravecek, S. Lam, D. McDougall, M. Treviño IV, A. Villanueva, J. Land, H. De Leon, **Oevermann, M.**, and R. Ambrose
IEEE Transactions on Field Robotics (2025). 2025