Harsh G. Bhundiya

U.S. Citizen • bhundiya@umd.edu • Google Scholar • LinkedIn

ACADEMIC APPOINTMENTS:

Postdoctoral Research Fellow **2025 – present**
University of Southern California
Department of Astronautical Engineering

EDUCATION:

Massachusetts Institute of Technology **2025**
Ph.D., Department of Aeronautics and Astronautics
Massachusetts Institute of Technology **2022**
M.S., Department of Aeronautics and Astronautics, GPA: 5.0/5.0
California Institute of Technology **2020**
B.S., Mechanical Engineering with Minor in Aerospace, GPA: 4.0/4.0

AWARDS AND HONORS:

- NASA Space Technology Graduate Research Fellow, **2023-2025**
- MIT School of Engineering Communication Fellow, **2022-2025**
- MathWorks Engineering Fellow, **2022-2023**
- Tau Beta Pi Fellow, **2022-2023**

JOURNAL PUBLICATIONS:

Superscript * denotes the corresponding author.

J1. **H.G. Bhundiya***, Z.C. Cordero, and M.A. Marshall, "Passive Gravity Gradient Capture during In-Space Assembly and Manufacturing," *AIAA Journal* (submitted).

J2. **H.G. Bhundiya**, M.A. Marshall, and Z.C. Cordero*, "Fabrication Time Diagrams for In-Space Manufacturing of Large Reticulated Structures," *Journal of Manufacturing Science and Engineering*, 146(12), 2024. DOI

J3. J.Z. Zhang, **H.G. Bhundiya**, K.D. Overby, F. Royer, J.H. Lang, Z.C. Cordero*, W.F. Moulder, S.K. Jeon, and M.J. Silver, "Electrostatically Actuated X-Band Mesh Reflector with Bend-Formed Support Structure," *Journal of Spacecraft and Rockets*, 61(6), 2024**.** DOI

J4. **H.G. Bhundiya**, Z.C. Cordero*, "Bend-Forming: A CNC Deformation Process for Fabricating 3D Wireframe Structures," *Additive Manufacturing Letters*, 6, 2023. DOI

J5. **H.G. Bhundiya**, F. Royer, and Z. Cordero*, "Engineering Framework for Assessing Materials and Processes for In-Space Manufacturing," *Journal of Materials Engineering and Performance*, 31(2), 2022. DOI

CONFERENCE PRECEEDINGS:

C1. **H.G. Bhundiya**, Z.C. Cordero, M.A. Marshall, "Passive Gravity Gradient Capture for In-Space Assembly and Manufacturing," AIAA/AAS Astrodynamics Specialist Conference (Boston, MA), Aug. 2025.

C2. **H.G. Bhundiya**, Z.C. Cordero, "Radially Expanding Euler Paths for Assembly of Truss Structures," International Symposium on Space Technology and Science (Tokushima, Japan), Jul. 2025.

C3. **H.G. Bhundiya**, Z.C. Cordero, M.A. Marshall, S. Mohan, D. Sternberg, and K. Lo, "Ground Testing of Spacecraft Attitude Dynamics During In-Space Assembly and Manufacturing," AIAA Scitech Forum (Orlando, FL), Jan. 2025. DOI

C4. **H.G. Bhundiya**, J.Z. Zhang, K.D. Overby, F. Royer, J.H. Lang, Z.C. Cordero, W.F. Moulder, S.K. Jeon, and M.J. Silver, "Electrostatically Actuated X-Band Mesh Reflector with Bend-Formed Support Structure," AIAA Scitech Forum (National Harbor, MD), Jan. 2023. DOI

C5. F. Royer, J.Z. Zhang, K.D. Overby, E.Y. Zhu, **H.G. Bhundiya**, J.H. Lang, and Z.C. Cordero, "Electrostatically Actuated Thin-Shell Space Structures," AIAA Scitech Forum (National Harbor, MD), Jan. 2023. DOI

C6. **(*Awarded 2022 AIAA Spacecraft Structures Best Paper*) H.G. Bhundiya**, F. Royer, and Z. Cordero, "Compressive Behavior of Isogrid Columns Fabricated with Bend-Forming," AIAA SciTech Forum (San Diego, CA), Jan. 2022. DOI

C7. **H.G. Bhundiya**, M. Hunt, and B. Drolen, "Measurement of the Effective Radial Thermal Conductivities of 18650 and 26650 Lithium-Ion Battery Cells," NASA Thermal and Fluid Analysis Workshop (Galveston, TX), Aug. 2018. DOI

INTELLECTUAL PROPERTY:

P1. **H.G. Bhundiya**, Z.C. Cordero, "Computer Numerical Control (CNC) Deformation Process for Forming 3D Wireframe Structures." US Patent Application No. 18/147,674. December 28, 2022.

INVITED TALKS:

T1. California Institute of Technology, ME10 Class Guest Lecture, "Constructing Large Structures in Space," Pasadena, CA, Nov 2025

T2. NASA Langley Research Center, "Rapid In-Space Assembly and Manufacturing of Next-Generation Space Structures," Hamton, VA, August 2025.

T3. Johns Hopkins University Applied Physics Laboratory, "Rapid In-Space Assembly and Manufacturing of Next-Generation Space Structures," Laurel, MD, July 2025.

T4. NASA Goddard Spaceflight Center, "Rapid In-Space Assembly and Manufacturing of Next-Generation Space Structures," Greenbelt, MD, July 2025.

T5. AIAA Emerging Spacecraft Structures Technology Workshop, "Passive Gravity Gradient Capture for In-Space Assembly and Manufacturing," Boulder, CO, June 2025.

T6. MIT Small Satellite Collaborative Seminar, "Fabrication Time Diagrams for In-Space Manufacturing of Reticulated Structures," Boston, MA. October 2024.

T7. AIAA Emerging Spacecraft Structures Technology Workshop, "Fabrication Time Diagrams for In-Space Manufacturing of Reticulated Structures," Boston, MA. July 2024.

T8. Indian Institute of Technology Gandhinagar, "In-Space Manufacturing of Large Electrostatically-Actuated Mesh Reflectors," Gujarat, India, January 2024.

T9. AIAA Emerging Spacecraft Structures Technology Workshop, "Spacecraft Dynamics during In-Space Manufacturing," Stanford, CA, August 2023.

T10. U.S. National Congress of Computational Mechanics, "Bend-Forming: A CNC Deformation Process for Fabricating 3D Wireframe Structures," Albuquerque, NM, July 2023.

T11. AFRL Space Vehicles Directorate, "In-Space Manufacturing of Large Electrostatically-Actuated Mesh Reflectors," Albuquerque, NM, July 2023.

MENTORING AND ADVISING:

Masters Researchers:

- Arad Firouzkouhi — USC Astro — Fall 2025 – present (co-advised)

Undergraduate Researchers:

- Atharva Shah — MIT AeroAstro — Fall 2024 – Summer 2025
- Brennan Hoppa — MIT AeroAstro — Spring 2022 – Summer 2022
- Jack Ansley — MIT AeroAstro — Spring 2022 – Summer 2022

PROFESSIONAL SERVICE:

- **Technical Manuscript Reviewer:** Acta Astronautica, Journal of Spacecraft and Rockets, AIAA Scitech Forum
- **Member:** American Institute of Aeronautics and Astronautics (AIAA) Spacecraft Structures Technical Committee

TEACHING EXPERIENCE:

California Institute of Technology
Department of Mechanical Engineering
2019 ME 11 Thermodynamics, Fluid Dynamics (*Teaching Assistant*)
2019-2020 ME 12 Statics, Dynamics, Mechanics of Materials (*Teaching Assistant*)

OUTREACH ACTIVITIES:

- **Educational Blogger,** maintains an educational blog titled "Harsh World of Mechanics" focused on everyday applications of mechanics of materials and structures (2021-present)
- **Lecturer,** Cambridge Science Festival (2023). Gave a lecture titled "Manufacturing Large Structures in Space" at the Cambridge Science Festival hosted by the MIT Museum.
- **Instructor,** MIT Educational Studies Program (2022-2024). Taught a biannual class on "Geometry and Beauty of Soap Bubbles" to >100 middle school and high school students.