Harsh G. Bhundiya

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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. DOI

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. DOI

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, Dec 2022.

INVITED TALKS:

T1. Johns Hopkins University Applied Physics Laboratory Lunar Surface Innovation Consortium, "High-Level Planning for Multi-Agent Construction of Large Space Structures," Virtual, Dec 2025.

T2. The Aerospace Corporation, "Rapid In-Space Assembly and Manufacturing of Next-Generation Space Structures," Los Angeles, CA, Dec 2025.

T3. California Institute of Technology, ME10 Class Guest Lecture, "Constructing Large Structures in Space," Pasadena, CA, Nov 2025

T4. NASA Langley Research Center, "Rapid In-Space Assembly and Manufacturing of Next-Generation Space Structures," Hampton, VA, Aug 2025.

T5. Johns Hopkins University Applied Physics Laboratory, "Rapid In-Space Assembly and Manufacturing of Next-Generation Space Structures," Laurel, MD, Jul 2025.

T6. NASA Goddard Spaceflight Center, "Rapid In-Space Assembly and Manufacturing of Next-Generation Space Structures," Greenbelt, MD, Jul 2025.

T7. AIAA Emerging Spacecraft Structures Technology Workshop, "Passive Gravity Gradient Capture for In-Space Assembly and Manufacturing," Boulder, CO, Jun 2025.

T8. MIT Small Satellite Collaborative Seminar, "Fabrication Time Diagrams for In-Space Manufacturing of Reticulated Structures," Boston, MA. Oct 2024.

T9. AIAA Emerging Spacecraft Structures Technology Workshop, "Fabrication Time Diagrams for In-Space Manufacturing of Reticulated Structures," Boston, MA. Jul 2024.

T10. Indian Institute of Technology Gandhinagar, "In-Space Manufacturing of Large Electrostatically-Actuated Mesh Reflectors," Gujarat, India, Jan 2024.

T11. AIAA Emerging Spacecraft Structures Technology Workshop, "Spacecraft Dynamics during In-Space Manufacturing," Stanford, CA, Aug 2023.

T12. U.S. National Congress of Computational Mechanics, "Bend-Forming: A CNC Deformation Process for Fabricating 3D Wireframe Structures," Albuquerque, NM, Jul 2023.

T13. AFRL Space Vehicles Directorate, "In-Space Manufacturing of Large Electrostatically-Actuated Mesh Reflectors," Albuquerque, NM, Jul 2023.

MENTORING AND ADVISING:

Masters Researchers:

- Arad Firouzkouhi USC Astro Fall 2025 – present

Undergraduate Researchers:

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

- **Mentor,** Consortium for Space Mobility and ISAM Capabilities (2025-26). Mentored teams of undergraduate students for C3 Capstone Challenge.
- **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.