

RASHI JAIN, Ph.D.

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EDUCATION

Ph.D. in Aeronautical and Astronautical Engineering *June 2025*
Purdue University, West Lafayette, IN.

Dissertation: Resilience Potential—Metric Development and Application to Lunar Habitats.

M.S. in Aeronautical and Astronautical Engineering *August 2021*
Purdue University, West Lafayette, IN.

B.S. in Mechanical and Aerospace Engineering *August 2018*
University of Texas at Arlington, Arlington, TX. .

WORK EXPERIENCE

Founder *October 2025 – Present*
Aerospace Research Lab, Wilsonville, OR.

Graduate Research Assistant *August 2021 – June 2025*
Value through Reliability, Safety, and Sustainability (VRSS) Lab, Purdue University, West Lafayette, IN.

Crew Journalist *December 2024*
Mars, Desert Research Station, Mars Society, Hanksville, UTAH.

Associate Researcher *August 2018 - 2019*
Biomechanics, Robotics, and Dynamics Laboratory, University of Texas at Arlington, TX.

Design Engineer *May – June 2016*

Society for Research and Initiatives for Sustainable Technologies and Institutions, Ahmedabad, India.

PUBLICATIONS

Peer-Reviewed Journal Articles

1. **Rashi Jain**, Meghan Cilento, Jacqueline Ulmer, and Karen Marais. (2024). “Control Effectiveness: Metric Development and Application to Resilient Lunar Habitat Design.” AIAA Journal. Vol 62 (9). <https://doi.org/10.2514/1.J063849>.
2. Abhishek Chatterjee, **Rashi Jain**, Alan Bowling. (2022). “Modeling and Simulation of Rocking Block Dynamics subjected to Base Motion using an Energetic Restitution Law.” Journal of Earthquake Engineering. UQ-2020-4473.R1. <https://doi.org/10.1080/13632469.2021.1927903>.

Conference Proceedings Paper

1. **Rashi Jain**, and Karen Marais. (2025). “Designing Safety into Extra-terrestrial Habitats: Lessons from Space Mission Anomalies and Accident Mitigation,” Proceedings of 13th International Association for the Advancement of Space Safety Conference: Building a Safe, Secure, and Sustainable Space. Prague, Czech Republic.

Dissertations

1. **Rashi Jain**. (2025). “Resilience Potential—Metric Development and Application to Lunar Habitats.” Ph.D. Dissertation. School of Aeronautics and Astronautics, Purdue University.

In Preparation

1. **Rashi Jain**, and Karen Marais, “Enhancing Resilience in Space Systems: A Functional Decomposition Approach,” in 76th International Astronautical Congress. Sydney, Australia.
2. **Rashi Jain**, and Karen Marais, “Lunar Habitat Design: Modeling and Evaluating Resilience using Control-Oriented Dynamic Computational Modeling,” in 76th International Astronautical Congress. Sydney, Australia.

TALKS

Invited Talks

1. **Rashi Jain** and Seungho Rhee “Living on Moon – doing it the right way,” to Student Analog Astronaut Training Program by Space and Earth Analogs Research Chapter of Purdue (June 2023), Purdue University, West Lafayette, IN.

Conference

1. **Rashi Jain**, “Designing Safety into Extra-terrestrial Habitats: Learnings from past Space Mission Anomalies and Accident Mitigation.” 13th International Association for the Advancement of Space Safety. (October 2024). Prague, Czech Republic.

Posters, Symposiums, and Other Technical Presentations

1. **Rashi Jain**, Megan Rush, and Karen Marais, “Control Effectiveness and Resilience Potential—the two metrics for evaluating and selecting safety controls.” Resilient Extra-terrestrial Habitat Institute in Annual Review to NASA. (May 2024). West Lafayette, IN.
2. **Rashi Jain**, Jacqueline Ulmer, and Karen Marais, “Resilience Potential Metric—First ideas on the selecting controls for the unexpected.” Resilient Extra-terrestrial Habitat Institute in Annual Review to NASA. (May 2023). West Lafayette, IN.
3. **Rashi Jain**, “Surviving the unexpected—Extra-Terrestrial Habitats” Graduate Women in Engineering Symposium. (March 2023). Purdue University, West Lafayette, IN.
4. **Rashi Jain**, “Sketchbook for capturing a safety control’s potential.” Poster Presentation in First International Workshop on Interdisciplinary Paradigms for Semi-Autonomous Deep Space Habitation. (October 2022), San Antonio, TX.
5. **Rashi Jain**, “CDCM: Control-oriented Dynamic Computational & Modeling Platform.” Poster Presentation in Industrial Advisory Committee, Ray W. Herrick Laboratories. (October 2022). Purdue University, West Lafayette, IN.
6. **Rashi Jain**, Meghan Cilento, and Karen Marais, “Resilience Quantification.” Resilient Extra-terrestrial Habitat Institute in Annual Review to NASA (May 2022), West Lafayette, IN.

AWARDS/HONORS

1. Finalist in Student Paper Award *December 2024*
13th International Association for the Advancement of Space Safety

2. Student Analog-Astronaut Training Program Finalist *May 2024*
SEARCH (Student Club), Purdue University
3. Inspiration Award *June 2015*
Aloha Mind Math, Entrepreneurship for Kids
4. Outstanding Freshman Scholarship *August 2014 - 2018*
University of Texas at Arlington.

CERTIFICATIONS

1. **L1 High Powered Rocketry, 2024.** TRA ID: #30756. Tripoli.
2. **Student Pilot License, 2023.** #4866194. Federal Aviation Administration.
25+ flying hours in a Piper Warrior.

TEACHING EXPERIENCE

Graduate Teaching Assistant

1. AAE 351—Aerospace Systems Design *January 2021 – May 2021*
2. AAE 364—Control Systems Laboratory *August 2020 – December 2020*

Grader

1. AAE 432—Orbital Mechanics *January 2020 – May 2022*
2. AAE 334L—Aerodynamics Laboratory *August 2019 – December 2019*

Supplementary Instruction Leader

1. MATH 2326—Calculus III *August 2017 – December 2017*
2. MAE 2323—Dynamics *January 2018 – May 2018*

Tutor

PROFESSIONAL ACTIVITIES & SERVICE

Professional Membership

1. Member, American Institute of Aeronautics and Astronautics *2014 - Present*

2. Member, Sigma Gamma Tau *2019 - Present*

Other Service and Outreach

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| 1. Graduate Mentor, Leading Women Towards Space Careers | <i>2024 - 2025</i> |
| 2. Member, Purdue Pilots | <i>2023 – Present</i> |
| 3. Mentor & Professional Chair, Aero-Assist | <i>2020 - 2021</i> |
| 4. Engineer, R.O.V.E.R Society | <i>2017 - 2018</i> |
| 5. Secretary and Research Division Founder, Aero Mavs | <i>2015 - 2017</i> |

PROFESSIONAL DEVELOPMENT WORKSHOPS

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| 1. Business Databases, Purdue University | <i>2025</i> |
| 2. AI Tools for Literature Review | <i>2024</i> |
| 3. LinkedIn | <i>2024</i> |
| 4. Research with Scite.ai | <i>2023</i> |
| 5. Conducting a Literature Review | <i>2022</i> |

VOLUNTEER ACTIVITIES

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| Lab Technician, Indra Gandhi Memorial Hospital | <i>2013</i> |
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