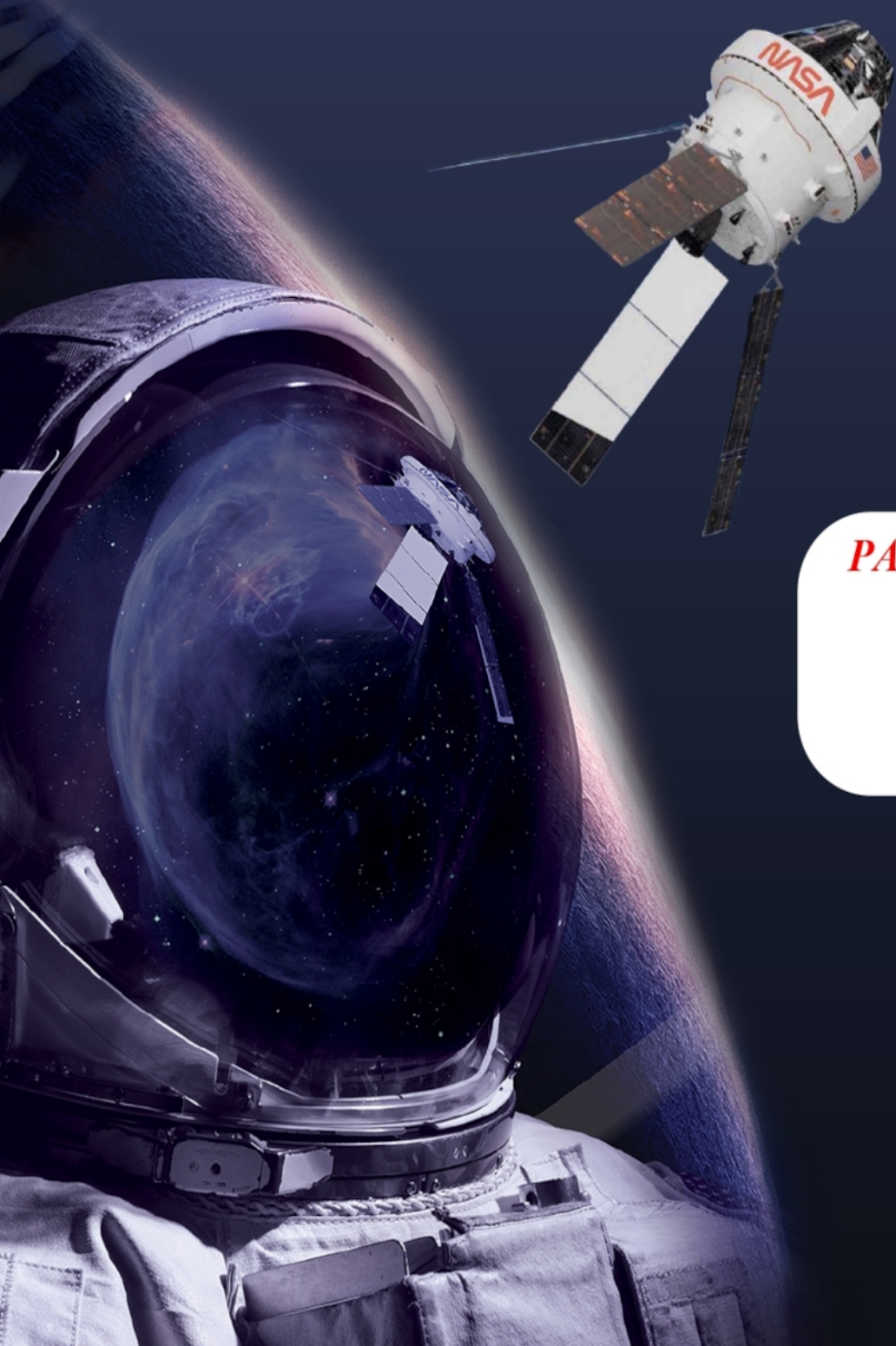




**SPACE  
STUDIES  
PROGRAM**

**2024**  
JUNE 8 - AUGUST 3



***PARTICIPATION REPORT***

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Lastly, I am profoundly grateful to my family and friends, whose steadfast faith in me and encouragement have been a constant source of strength, inspiring me to strive for higher accomplishments. This acknowledgment reflects my deep appreciation for everyone who contributed to making this experience transformative and meaningful.

## ISU SSP24 Experience: Overview & Summary

### Overview

Participating in the 36th International Space University (ISU) Space Studies Program (SSP24) was a transformative experience. Hosted at Rice University, Houston, Texas, this year's session was historic, with a record-breaking 156 participants representing 36 nationalities. This diversity of backgrounds created an unparalleled intercultural, interdisciplinary, and international environment.

### Core Lecture Series and Workshops

The program began with the Core Lecture Series, which provided a solid foundation in space science, engineering, policy, and applications. Workshops added a practical dimension to the theoretical knowledge gained, including:

- **Geographic Information Systems (GIS):** Hands-on sessions on mapping and geospatial analysis.
- **Drone Technologies and Remote Sensing:** Exploring UAV design, safety, and their applications in Earth observation.
- **Spacecraft Telecommunications:** Learning to calculate link budgets for rockets, satellites, and lunar landers.
- **Mars Exploration Rover Workshop:** Designing a rover to navigate challenging extraterrestrial terrains.
- **Satellite Applications in Industry:** Gaining insights into how satellite technologies are employed in sectors like oil and gas.

### Departmental Activities

As part of the Space Applications Department, I delved into satellite communication systems, Earth observation, and geospatial technologies. Professional visits, including one to ExxonMobil, demonstrated the real-world applications of these technologies. Collaborative departmental projects further enhanced my technical and problem-solving skills.

### Team Project - International Lunar University (ILU)

The Team Project was a cornerstone of SSP24. As Project Management Team Lead and Chief Editor for the International Lunar University project, I led efforts to envision a global lunar education initiative. This role involved managing a multidisciplinary team and delivering a comprehensive final report and presentation.

### Extracurricular Highlights and Team Building

SSP24 emphasized holistic development through engaging extracurricular activities, including:

- **Geocaching Competition:** My team secured first place, demonstrating teamwork and strategy in this high-tech treasure hunt.
- **Team Building Activities:** Participating in a Rube Goldberg machine-building workshop fostered collaboration and creative thinking.
- **Astronaut and Artemis Panels:** Interacting with astronauts and spaceflight experts to learn about the future of human exploration.



- **Cultural Nights:** Celebrating diversity through music, dance, and cuisine from around the globe.
- **NASA Lab Visits:** Exclusive tours of Johnson Space Center and other facilities offered insights into cutting-edge space exploration initiatives.

### **Achievements and Reflections**

Winning the Geocaching Competition in the Department of Space Application Challenge, earning the President's Cup for Health & Wellness for organizing daily early morning yoga sessions, and securing second place in the Space Masquerade were some of the highlights of my active participation and achievements during SSP24. The workshops, team-building exercises, and cross-cultural interactions significantly enriched my experience and broadened my perspective. Additionally, I was honored to be selected as the Project Management Team Lead and Chief Editor for the International Lunar University project, roles that further deepened my engagement and leadership experience.

### **Conclusion**

SSP24 was not just an academic program but a life-changing journey. The exposure to cutting-edge space technologies, collaboration with brilliant minds from around the world, and an emphasis on international cooperation have left me inspired and motivated to contribute to the global space community.

## *Detail Report*



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## 1 | Introduction

The Space Studies Program (SSP) 2024, hosted by the International Space University (ISU), is an unparalleled educational journey designed to bring together individuals from diverse professional and cultural backgrounds. Spanning over eight intensive weeks, the program offers a unique platform for participants to immerse themselves in the multidisciplinary field of space studies, fostering both personal and professional growth.

At the heart of SSP lies its emphasis on collaboration and innovation. Participants, ranging from engineers and scientists to policymakers, entrepreneurs, and artists, are united by a shared passion for space. Through a carefully crafted curriculum that balances theoretical knowledge with hands-on experiences, SSP24 provides an environment where individuals can engage with cutting-edge technologies, explore interdisciplinary topics, and tackle real-world challenges in the space sector.

Beyond academics, the program is a melting pot of cultures and perspectives. Participants from all corners of the globe converge, bringing with them unique viewpoints shaped by their national, professional, and personal experiences. This diversity enriches discussions, fosters creative problem-solving, and builds an enduring sense of camaraderie among participants.

The eight-week program is structured to maximize learning and engagement. Participants attend lectures by leading experts in various fields, engage in workshops to develop practical skills, and work on interdisciplinary team projects addressing pressing challenges in the space industry. Professional visits to renowned space organizations and cultural activities further broaden participants' horizons, offering insights into the industry and the host city's vibrant heritage.

More than just an educational program, SSP24 is a transformative experience. It equips participants not only with knowledge and skills but also with the mindset to thrive in an interconnected, international space ecosystem. The relationships forged during the program form the foundation of a global network of professionals who continue to collaborate long after the program concludes, driving innovation and progress in the space sector.

### 1.1 | Overview of International Space University (ISU)

The International Space University (ISU) is a unique academic institution solely focused on advancing space education and exploration. Founded in 1987 in Strasbourg, France, ISU has established itself as a global leader in preparing individuals for impactful roles in the space industry. The university's core mission is to inspire and train the next generation of space leaders by fostering collaboration and innovation across disciplines.

ISU's portfolio includes flagship programs like the Space Studies Program (SSP) and the Master of Space Studies (MSS), along with tailored professional development courses. These programs cater to participants ranging from young graduates to seasoned professionals, offering a blend of theoretical education and practical experience. The university's global reach is reflected in its extensive alumni network of over 5,600 individuals from more than 110 countries, all of whom contribute to the diverse and vibrant ISU community.

In addition to its academic offerings, ISU serves as a platform for dialogue and collaboration among space agencies, private companies, and policymakers. By organizing conferences, workshops, and outreach initiatives, ISU fosters discussions on critical topics such as sustainability, equity in space access, and the commercialization of space technologies. The Strasbourg campus, with its state-of-the-art facilities, further supports ISU's mission by providing an environment designed to encourage creativity, teamwork, and innovation.



**Figure 1.1:** ISU Central Campus in Strasbourg, France

## 1.2 | ISU's Educational Philosophy (3Is: Interdisciplinary, International, Intercultural)

ISU's educational philosophy is rooted in the "3Is"—Interdisciplinary, International, and Intercultural—principles that define its approach to space studies.

**Interdisciplinary:** ISU integrates a wide range of disciplines, including engineering, space science, law, business, humanities, and human spaceflight. This comprehensive approach ensures that participants can address complex space challenges from multiple perspectives and foster innovation through cross-disciplinary collaboration.

**International:** The space sector is inherently global, and ISU reflects this by bringing together participants from diverse countries and professional backgrounds. This international community fosters cross-border collaboration, mirroring real-world projects like the International Space Station.

**Intercultural:** ISU emphasizes the importance of cultural understanding and diversity. Through team-building activities, cultural nights, and informal interactions, participants learn to navigate and appreciate different cultural perspectives, a vital skill for working in global teams.

This philosophy prepares participants not only to excel in technical and academic areas but also to become leaders who can navigate the complex, multicultural dynamics of the global space industry.

## 1.3 | History of the Space Studies Program (SSP)

The Space Studies Program (SSP) was established in 1987 as ISU's flagship initiative. Over the years, SSP has grown into one of the most respected and sought-after programs in the space industry. Each session is hosted by a different city, offering participants the



opportunity to explore unique cultural and professional environments while engaging with local space organizations and infrastructure.

The program's alumni include astronauts, scientists, entrepreneurs, and policymakers who have made significant contributions to the space sector. With over 5,600 alumni, SSP has created a global network of professionals who continue to shape the future of space exploration.

SSP emphasizes hands-on learning, encouraging participants to engage in team projects, workshops, and professional visits. This practical approach, combined with the program's interdisciplinary curriculum, equips participants with the knowledge, skills, and connections needed to thrive in the fast-evolving space industry.

#### 1.4 | SSP24 Overview: Venue, Dates, and Theme

SSP24 was hosted by Rice University in Houston, Texas, from June 8 to August 3, 2024. This marked a significant return to Houston, known as "Space City," after 27 years. Houston's rich history in space exploration, particularly its ties to NASA's Johnson Space Center, provided an inspiring backdrop for the program.

Rice University, famously linked to President John F. Kennedy's 1962 speech declaring the Moon landing as a national goal, offered world-class facilities and a vibrant intellectual atmosphere. The program theme, "Innovating for the Future of Space Exploration," emphasized sustainability, international collaboration, and the integration of emerging technologies.

SSP24 featured core lectures, elective workshops, professional visits, and interdisciplinary team projects addressing real-world challenges. The curriculum was enriched by cultural nights, networking events, and field trips, creating an environment where participants could grow both academically and personally.



**Figure 1.2:** Glimpse of Registration



**Figure 1.3:** Rice University (Host Institute)

## 2 | Program Overview

The Space Studies Program (SSP) 2024 was an intense and transformative professional development experience organized by the International Space University (ISU). Over eight weeks, I joined participants from a wide variety of professional and cultural backgrounds to dive into a multidisciplinary exploration of space science, technology, policy, and applications. The program struck a perfect balance between academic rigor, hands-on learning, and cultural exchange, making it both professionally enriching and personally rewarding.

SSP24 covered a broad range of topics across technical and non-technical fields, such as engineering, space sciences, management, policy, humanities, and law. Through lectures, workshops, team projects, and cultural events, I fully experienced ISU's "3Is" philosophy—Interdisciplinary, International, and Intercultural—which shaped the program and allowed me to learn and grow alongside others with a shared passion for space.

### 2.1 | Hosting Institution: Rice University and NASA Johnson Space Center

SSP24 was hosted at Rice University, in collaboration with NASA's Johnson Space Center (JSC), in Houston, Texas. Being in "Space City," the birthplace of so many historic space missions, added a layer of inspiration to the entire experience. Rice University's connection to space history—most famously as the site of President John F. Kennedy's "We choose to go to the Moon" speech—made it the perfect setting for this program.

The 300-acre campus was a beautiful and welcoming space, offering modern facilities for both academic and social activities. NASA JSC played an integral role in the program by granting us access to world-class facilities such as the Space Vehicle Mock-Up Facility, the Mission Control Center, and the Neutral Buoyancy Laboratory. Standing in these iconic spaces and interacting with experts made me appreciate Houston's deep legacy as a hub of space innovation.

### 2.2 | SSP24 Participants: Demographics and Backgrounds



**Figure 2.1:** Participants Demographics

One of the most remarkable aspects of SSP24 was the unprecedented diversity of its participants. For the first time in the history of ISU's Space Studies Program, the event brought together an incredible 156 participants from 36 different nationalities, setting a new record. This rich tapestry of cultures and perspectives created an inspiring and dynamic environment.

I had the privilege of collaborating with individuals from diverse backgrounds—scientists, engineers, educators, policymakers, entrepreneurs, and students. This unique mix of expertise and viewpoints sparked thought-provoking discussions and fostered innovative problem-solving, encouraging me to step beyond my own experiences.

The program also struck a perfect balance between early-career professionals and seasoned experts, cultivating an inclusive and collaborative atmosphere where knowledge flowed freely. I was deeply inspired by the unique journeys and accomplishments of my peers, and I am confident that the connections I made will endure well beyond this program.

## **2.3 | Sponsors and Supporters**

The success of SSP24 was made possible through the support of many generous sponsors and supporters. Organizations like NASA, ESA, JAXA, ISRO, Axiom Space, and Intuitive Machines played a key role in ensuring the program's accessibility and high standards. Their contributions ranged from financial support to providing professional expertise and resources.

It was also inspiring to see how academic institutions like Texas A&M University and industry leaders like Collins Aerospace and Jacobs Engineering supported the program. Their commitment to advancing space education gave us unparalleled opportunities to learn from experts and engage with the cutting edge of space exploration.

## **2.4 | Daily Life: Accommodation, Meals, Transport, and Facilities**

Living on the Rice University campus during SSP24 made the experience all the more immersive. The modern dormitories were comfortable and conveniently located near program venues, making it easy to transition between lectures, workshops, and social events. Meals were provided at the university dining hall, which catered to a range of dietary preferences. I also had the chance to explore Houston's vibrant food scene during free evenings, which added a cultural dimension to my stay.

Transportation for all program activities, including professional visits and cultural outings, was well-organized by ISU's logistics team. The campus facilities themselves were excellent, with classrooms, libraries, and collaborative spaces that made it easy to focus on learning and teamwork. During downtime, I appreciated the recreational areas that allowed us to unwind and connect informally with fellow participants.

Every aspect of daily life was designed to ensure that we could fully engage with the program while enjoying the unique atmosphere of Rice University and the wider Houston area.





**Figure 2.2:** Sports Facility



**Figure 2.3:** Professional Swimming Pool



**Figure 2.4:** Campus Tour



**Figure 2.5:** Lecture Hall

### 3 | Academic Curriculum

The academic curriculum of SSP24 was a transformative experience that expanded my understanding of the space industry while challenging me to think beyond my own expertise. Designed to be both rigorous and engaging, the curriculum integrated lectures, workshops, professional visits, and collaborative projects, offering a well-rounded exploration of the multifaceted world of space.

#### 3.1 | Core Lecture Series

The core lecture series formed the foundation of the academic program. These lectures were delivered by leading experts from space agencies, academia, and private industry, providing insights into a wide range of topics that are critical to the global space sector. The topics were interdisciplinary, covering areas such as satellite engineering, space law, mission design, and the ethical challenges of space exploration. I particularly enjoyed the lectures on space debris management and planetary defense, which addressed pressing issues that require innovative solutions. Each lecture built on the others, giving us a comprehensive understanding of the challenges and opportunities in the space domain. What stood out was the passion and expertise of the lecturers. They not only shared their knowledge but also personal experiences that highlighted the realities of working in the space sector. Their stories of triumphs and setbacks were both inspiring and grounding, reminding us of the dedication required to succeed in this field.

**Figure 3.1:** Core Lecture**Figure 3.2:** Core Lecture Glimpse 2

### 3.2 | Workshops

The workshops were where the theory met practice. These hands-on sessions allowed us to apply the knowledge gained from the lectures to solve real-world problems. The workshops were split into fundamental and elective categories, each serving a distinct purpose in the curriculum.

The fundamental workshops were mandatory and covered essential topics like orbital mechanics, satellite design, and space mission planning. These sessions were incredibly engaging, especially when we used simulation tools to design mission trajectories and analyze spacecraft performance. For someone like me, with a keen interest in applications, these practical exercises were eye-opening.

The elective workshops provided the flexibility to explore specific interests. I chose workshops on space robotics and spacecraft telecommunications. The robotics workshop involved programming and controlling robotic arms, mimicking the operations of space robots used for satellite repair or planetary exploration. The telecommunications session delved into the complexities of ensuring reliable communication in deep-space missions, a topic I found both challenging and rewarding.

**Figure 3.3:** Robotics Workshop**Figure 3.4:** Lunar Surface Rescue Workshop



### 3.3 | Professional Visits

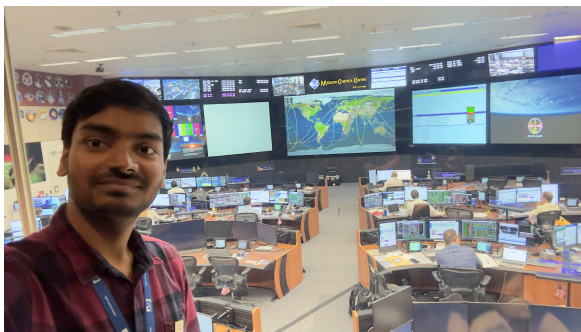
One of the most exciting aspects of SSP24 was the professional visits. These excursions gave us an insider's view of some of the most significant organizations in the space sector and their cutting-edge operations.

Visiting NASA Johnson Space Center (JSC) was a surreal experience. Walking through the Space Vehicle Mock-Up Facility, where astronauts train for missions, and seeing the historic Mission Control Center gave me a profound appreciation for the scale and complexity of human spaceflight. The Neutral Buoyancy Laboratory was another highlight, showcasing the meticulous preparation required for extravehicular activities.

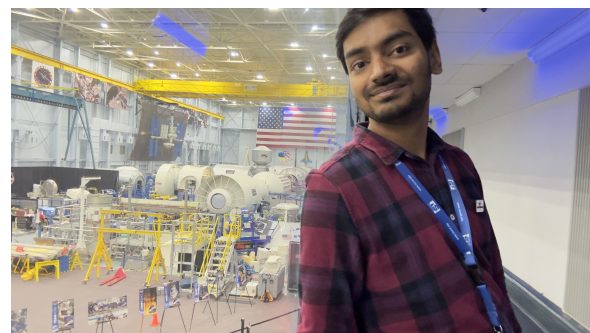
Our trip to Spaceport Ellington introduced us to the growing world of commercial space operations. Learning about the development of commercial spaceports and their integration into the global space ecosystem was fascinating and gave me a new perspective on the industry's evolution.

At SpaceX's Boca Chica Starbase, I stood in awe of the Starship prototypes. Hearing directly from engineers about the ambitious plans for Mars colonization left a lasting impression. The combination of audacity and practicality that defines SpaceX was palpable during this visit.

Finally, the Lone Star Flight Museum provided a unique historical perspective. It traced the journey from aviation pioneers to modern space exploration, reminding us of the interconnectedness of these fields and the advancements that made space travel possible.



**Figure 3.5:** ISS Mission Control Room, NASA JSC



**Figure 3.6:** Space MockUp Facility



**Figure 3.7:** NASA



**Figure 3.8:** Lunar Surface Rescue Workshop

### 3.4 | Theme Day

The theme day focused on "Sustainability in Space Exploration," a topic that resonated deeply with everyone in the program. The day started with keynote speeches from industry

leaders who emphasized the importance of sustainable practices, from minimizing space debris to ensuring equitable access to space resources.

The breakout sessions were particularly engaging, as we brainstormed practical solutions to current sustainability challenges. Working in interdisciplinary groups allowed us to consider diverse perspectives and propose innovative ideas. The discussions were thought-provoking, and I left the session with a stronger sense of responsibility toward promoting sustainable practices in my own work.

### 3.5 | Team Projects

The team projects were a cornerstone of SSP24, designed to challenge and inspire participants to tackle real-world space-related issues through interdisciplinary and intercultural collaboration. Each team worked on a distinct topic, applying the knowledge gained throughout the program while leveraging the diverse expertise of its members.

#### 3.5.1 | Overview of Team Projects

The team projects at SSP24 addressed some of the most compelling challenges and opportunities in space exploration and development. Each project required a multidisciplinary approach and close collaboration among team members. The key team projects included:

- **International Lunar University (ILU):** This project aimed to conceptualize a lunar research and education hub aligned with the Artemis program's objectives of sustainable lunar exploration. It envisioned the Moon as a center for scientific research, international collaboration, and educational advancement.
- **Environmental Sustainability Assessment of Space Projects:** This project sought to create a framework to evaluate and reduce the environmental impact of space missions. It emphasized sustainability practices, including minimizing debris and optimizing resource utilization in space operations.
- **Defining Mars-Forward Capabilities of the Lunar Gateway:** The focus of this project was to analyze how the Lunar Gateway could be leveraged as a stepping stone for future Mars exploration. It assessed the Gateway's design, operational capabilities, and role in supporting long-term interplanetary missions.
- **Smart Transportation Systems Enabled by Space Technologies:** This team explored how space-based technologies, such as satellite communication and navigation, could enhance terrestrial and extraterrestrial transportation systems. The project emphasized the integration of advanced space technologies to improve safety, efficiency, and accessibility.

Each project demanded technical rigor, financial planning, policy analysis, and cultural awareness, reflecting the complexity of space-related challenges. Being part of this collaborative environment was both intellectually stimulating and deeply rewarding.

#### 3.5.2 | My Team Project: International Lunar University (ILU)

As a member of the team working on the **International Lunar University (ILU)**, I had the privilege of contributing to an ambitious and forward-thinking initiative. The primary objective was to establish a research and education hub on the Moon that would foster international collaboration and innovation.



Figure 3.9: Team ILU

**Objectives and Vision** Our project centered on the following objectives:

- Developing a clear vision and mission for ILU, emphasizing its role as a center for interdisciplinary learning and research.
- Designing sustainable infrastructure capable of supporting long-term lunar habitation and academic activities.
- Creating a curriculum that integrated engineering, space science, humanities, and policy, ensuring a well-rounded educational approach.
- Establishing governance models and identifying funding mechanisms to ensure operational feasibility and sustainability.

**Challenges and Solutions** Throughout the project, we encountered several challenges, including logistical considerations, resource management, and long-term sustainability. Addressing these issues required creative problem-solving and collaboration among team members. We explored innovative approaches, such as leveraging in-situ resource utilization (ISRU) for infrastructure development and designing modular systems that could adapt to evolving needs.

### 3.5.3 | Team Dynamics and Collaboration

Working in an international and interdisciplinary team was one of the most enriching aspects of the project. Our team included members with expertise in engineering, law, policy, and business, which brought diverse perspectives to every discussion. While this diversity was a strength, it also posed challenges in aligning priorities and managing differing viewpoints.

Effective communication was key to overcoming these challenges. Regular team meetings, role delegation, and open discussions helped us stay on track and make informed decisions. These experiences reinforced the importance of adaptability, empathy, and collaboration in achieving complex goals.



### 3.5.4 | Interim Presentations and Feedback

The interim presentation was a critical milestone in our project. It gave us an opportunity to present our initial findings and proposals to a panel of mentors and peers. Their feedback was invaluable in identifying gaps in our approach and refining our ideas.

For example, we received constructive criticism regarding the feasibility of certain infrastructure designs and the scalability of our curriculum model. Using this feedback, we revised our methodologies, improved our analysis, and strengthened our arguments for the final deliverables.

### 3.5.5 | Final Reports and Presentations

Our final deliverables included a comprehensive report and a public presentation. The report documented our findings, methodologies, and recommendations in detail, showcasing the depth of our research and analysis. As the Lead Editor, I worked to ensure the report was cohesive, professional, and aligned with the project's objectives.



**Figure 3.10:** Final Presentation Day (a)



**Figure 3.11:** Final Presentation Day (b)

The final presentation was a proud moment for our team. We presented our work to an audience that included industry experts, faculty, and fellow participants. The Q&A session that followed was particularly rewarding, as it allowed us to engage with the audience and address their thoughtful questions. This experience validated the effort we had put into the project and highlighted the real-world relevance of our work.

### 3.5.6 | Reflections and Impact

The International Lunar University project was a transformative experience for me. It not only deepened my understanding of lunar exploration and sustainable development but also enhanced my skills in teamwork, problem-solving, and cross-cultural communication.

The opportunity to work on a project of this magnitude with such a talented and diverse team was a highlight of SSP24.

Looking back, I am immensely proud of what we achieved as a team. The experience has inspired me to continue exploring ways to contribute to international collaboration and innovation in space exploration and education. I am confident that the lessons learned from this project will guide me in my future endeavors.



**Figure 3.12:** Team ILU Group Picture on Final Presentation Day

## 4 | Departmental Focus

The SSP24 program offered a variety of departments, each focusing on a unique aspect of space studies. This departmental structure allowed participants to dive deeply into their areas of interest while engaging in interdisciplinary collaboration. Below is a brief overview of all departments, followed by a detailed account of my experience in the Space Applications Department.

### 4.1 | Overview of Departments

- **Space Applications (APP):** This department explored how space technologies can be applied to address Earth-based challenges, including satellite remote sensing, navigation systems, and communication networks.
- **Space Engineering (ENG):** The focus was on the technical aspects of spacecraft and systems design, propulsion, and mission architecture, with hands-on activities to reinforce engineering principles.
- **Space Sciences (SCI):** Participants delved into planetary science, astronomy, and astrobiology, with opportunities to analyze scientific data and explore cutting-edge tools for space research.
- **Human Performance in Space (HPS):** This department examined the physiological and psychological impacts of spaceflight, covering topics such as life support systems, space medicine, and microgravity research.
- **Space Humanities (HUM):** The department addressed the societal, cultural, and ethical dimensions of space exploration, combining insights from history, philosophy, and the arts.
- **Space Policy, Economics, and Law (PEL):** Participants analyzed the regulatory, economic, and political frameworks governing space activities, including treaties, commercial ventures, and international cooperation.
- **Space Management and Business (MGB):** This department emphasized project management, entrepreneurship, and strategic planning for space missions and businesses.

### 4.2 | Space Applications Department: Detailed Overview

I chose the Space Applications Department (APP) because of my interest in utilizing space technologies to solve real-world problems. The department's focus on satellite-based applications, such as remote sensing, telecommunications, and navigation systems, aligned with my academic and professional goals.

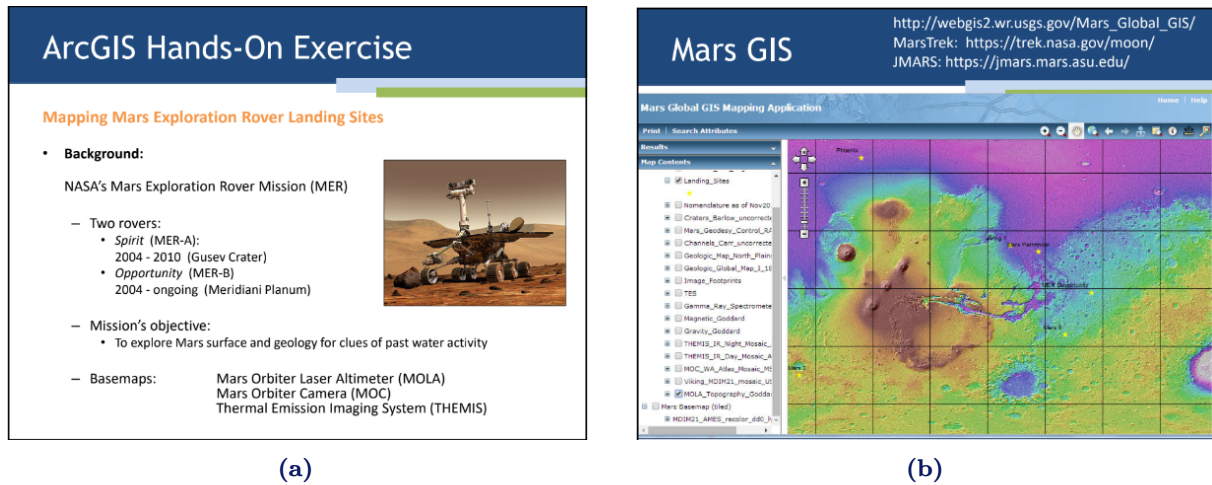
The curriculum offered a balance of theory and practice, with hands-on activities designed to complement the lectures. We explored tools like Geographic Information Systems (GIS), satellite payload operations, and data processing workflows. The interdisciplinary nature of the department also allowed us to collaborate with other teams on projects that addressed both technical and societal challenges.

#### 4.2.1 | Activities in the Department of Space Applications

The department provided a wide range of activities that engaged us in applying theoretical concepts to practical scenarios:



- **Workshops:** These hands-on sessions introduced us to GIS, satellite communication systems, and remote sensing applications. I particularly enjoyed learning how to process satellite imagery for environmental monitoring and disaster management.



**Figure 4.1:** GIS & Mars Exploration Rover Workshop showing images (a) and (b).

- **Field Exercises:** Activities such as the *Ground Truth Field Trip: Artemis Astronaut Orienteering Training* and the *Ground Truth Satellite Surveys with Unmanned Aerial Vehicles/Drones Workshop* included geocaching competitions and drone-based surveys. These exercises helped us validate satellite data through ground truth measurements and were both intellectually stimulating and enjoyable.



**Figure 4.2:** Ground Truth Field Trip: Artemis Astronaut Orienteering Training images (a) and (b).



**Figure 4.3:** Ground Truth Satellite Surveys with Unmanned Aerial Vehicles/Drones



■ **SpaceApps Geocaching Challenge:** The SpaceApps Geocaching Challenge was an exciting and immersive two-day activity designed to combine technology, creativity, and problem-solving. Participants were divided into two groups, each consisting of 5 teams: the Blue Team and the Red Team.

- **Day 1:** The Blue Team visited the Houston Zoo, while the Red Team explored Rice Village. Both teams worked on designing geocaching games in their respective locations, incorporating clues, waypoints, and puzzles to create an engaging experience.
- **Day 2:** The teams swapped their geocaching games. The Blue Team solved the geocaching game created by the Red Team, while the Red Team tackled the game designed by the Blue Team. The challenge required not only technical and problem-solving skills but also effective collaboration and time management.

My team, Xplorers, secured the **1st Prize** for creating the best and most creative geocaching game with the theme "Dora the Xplorer", and solving the opposing team's geocaching game in the minimum time. This activity was an excellent demonstration of teamwork, creativity, and the application of space-based technologies for recreational and educational purposes.



(a) Rice Village



(b) Houston Zoo

**Figure 4.4:** Space Apps Dept Challenge: Geocaching images (a) and (b).



**Figure 4.5:** Geocaching Winner Pose

- **Interdepartmental Collaboration:** We collaborated with participants from the Space Policy and Space Management departments to explore the economic and legal implications of space applications, further broadening our understanding of the field.

#### 4.2.2 | Professional Visits and Interactions

The department organized several professional visits that provided insights into the practical applications of space technologies:

- **NASA Johnson Space Center (JSC):** Visiting NASA JSC was a highlight of the program. We learned about Positioning, Navigation, and Timing (PNT) systems that support Artemis missions and Earth observation projects. The behind-the-scenes look at NASA's operational capabilities was truly inspiring.



**Figure 4.6:** Space Center Houston Professional Visit)

- **ExxonMobil:** This visit showcased how satellite technologies are integrated into the oil and gas industry for environmental monitoring, resource optimization, and operational safety. It was fascinating to see how space applications are making an impact in non-space industries.



**Figure 4.7:** Satellite Technologies for Oil and Gas Applications (ExxonMobil Campus Houston Professional Visit)

- **Lone Star Flight Museum:** The exhibits provided a historical perspective on aerospace technologies, connecting the evolution of aviation with modern space applications. This visit added cultural and historical context to our technical learning.





**Figure 4.8:** Lone Star Flight Museum Professional Visit)

### 4.3 | Personal Contributions and Insights

#### 4.3.1 | Key Learnings from Space Applications Department

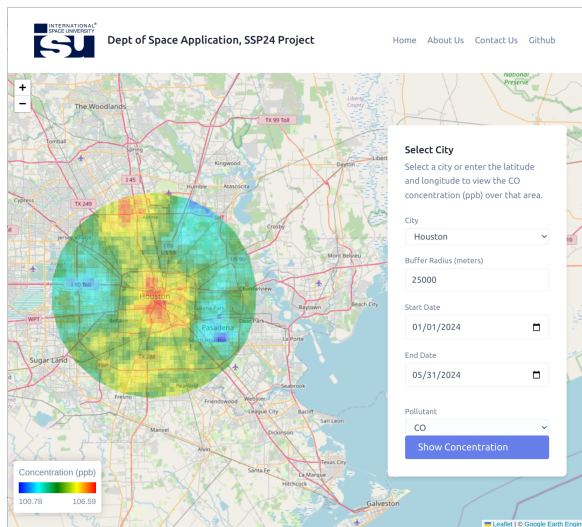
My experience in the Space Applications Department was deeply enriching. I gained practical skills in satellite data processing, improved my understanding of GIS tools, and learned how to design effective space-based solutions for global challenges. The workshops and field exercises allowed me to apply these skills in real-world scenarios, making the learning process both engaging and impactful.

#### 4.3.2 | Individual Assignments and Contributions

For my individual assignment, I focused on building and deploying the *SSTA-Smart-System-for-Tracking-Airpollution*, an AI-based cloud platform designed to predict the real-time concentration of aerosols over a region using Google Earth Engine. This project involved:

- Developing an AI model to analyze satellite data and predict aerosol concentrations with high accuracy.
- Integrating the model into a cloud-based platform for real-time tracking and visualization.

- Collaborating with *Mahesh Pathakoti*, Scientist/Engineer-SF, National Remote Sensing Centre, Indian Space Research Organisation (ISRO), India, to refine and validate the system.
- Presenting the platform and its capabilities to peers and mentors, incorporating feedback into the final deployment.



(a) Cloud Platform developed by me.



(b) QR code to access the Platform

**Figure 4.9:** Space Apps Dept Project images (a) and (b).

The project significantly enhanced my technical skills in AI, cloud computing, and satellite data processing while deepening my understanding of environmental monitoring. It was fulfilling to see theoretical knowledge applied to address real-world challenges, showcasing the societal impact of space technologies.

**Link to the platform:** <https://sst.drashutosh.space/>

#### 4.3.3 | Reflections on the Space Applications Department

My time in the Space Applications Department reaffirmed my passion for using space technologies to address Earth-based challenges. The interdisciplinary approach, combined with hands-on learning and professional exposure, equipped me with the tools and confidence to contribute meaningfully to this field. The collaborative environment, diverse perspectives, and innovative projects made this experience one of the most memorable aspects of SSP24.

## 5 | Cultural and Social Events

The cultural and social events at SSP24 were integral to the overall program experience, providing participants with opportunities to connect beyond the academic and professional setting. These events embodied ISU's emphasis on intercultural exchange and collaboration, creating a vibrant environment where participants could celebrate diversity, foster friendships, and recharge amidst the rigorous schedule.

### 5.1 | Welcome Event and Orientation

The SSP24 journey began with a welcome event and orientation at Rice University. This gathering was designed to help participants familiarize themselves with the campus, program structure, and one another. The session commenced with introductions by ISU faculty, staff, and the local organizing committee, who shared insights about the program's mission and expectations.



**Figure 5.1:** Opening Day, All Participants

The highlight of the orientation was a guided campus tour, during which participants explored the facilities, including lecture halls, dormitories, and common areas. Each participant also shared a brief self-introduction, offering a glimpse into the diverse backgrounds and aspirations represented in the cohort. The evening concluded with a lively welcome dinner, providing a relaxed atmosphere to begin forging connections with peers from around the globe.





(a) Representing My Host Country Japan



(b) Representing my Mother Country India

**Figure 5.2:** Diverse Role I played at SSP24, Opening Day Glimpse (a) and (b)

## 5.2 | Cultural Nights (Every Friday for Six Weeks)

Cultural Nights were a cornerstone of SSP24's social calendar, held every Friday evening for six weeks. Each week, participants representing different countries came together to showcase their heritage through engaging presentations, traditional cuisine, music, and performances. These nights fostered a profound appreciation for the diversity within the cohort and encouraged mutual understanding and respect.

In my group's presentation, we highlighted our country's rich cultural history and traditions, complemented by serving iconic dishes that offered a taste of home. The evenings were filled with vibrant energy, as participants dressed in traditional attire and shared personal stories that deepened the cultural exchange. These events underscored the program's commitment to creating a global community while celebrating individual identities.



(a) Representing Culture of India



(b) Representing Culture of Japan

**Figure 5.3:** Diverse Role I played at SSP24, Culture Night Glimpse (a) and (b)

## 5.3 | Space Masquerade Ball

The Space Masquerade Ball was a highly anticipated and memorable event, showcasing creativity, fun, and social interaction. Participants brought the theme to life with elaborate space-inspired costumes, representing everything from iconic astronauts to celestial objects and imaginative extraterrestrial beings.

I participated with the ISRO group to represent the *Bhartiya Space Station* and the historic *Chandrayaan-3* landing on the Moon through our costumes. I was dressed as the Chandrayaan-3 lander *Vikram*, complete with detailed design elements to emulate the spacecraft. Our group performance and costumes earned us the **2nd Prize**, celebrating India's achievements in space exploration.

The evening featured lively music, dancing, and a festive atmosphere that allowed everyone to unwind and bond. It was a night filled with laughter, camaraderie, and pride, offering a playful counterbalance to the intensity of the program's academic components while celebrating the spirit of innovation and collaboration in the space community.



**Figure 5.4:** Space Masquerade Ball Competition (Winner 2nd Prize)

## 5.4 | Alumni vs. Participants Football Match

The Alumni vs. Participants football match was a spirited and energizing event that brought together participants, alumni, and staff in a friendly competition. Held on the lush soccer fields of Rice University, the match showcased teamwork, determination, and light-hearted rivalry. Whether playing on the field or cheering from the sidelines, everyone contributed to the electric atmosphere.

The match ended with handshakes and smiles, embodying the shared values of sportsmanship and collaboration. This event highlighted the strong sense of community within SSP24, bridging generational connections between participants and alumni.

## 5.5 | Talent Night

Talent Night was a celebration of creativity and individuality, offering participants a platform to showcase their diverse talents and passions. The performances ranged from captivating musical renditions and energetic dance routines to poetry recitals and unique skills like magic tricks and martial arts.

While I chose to be part of the audience, I was deeply moved by the courage and artistry displayed by my peers. The event was an inspiring reminder of the many dimensions of talent within the SSP24 community, demonstrating that our cohort's abilities extended far beyond the realm of space studies.





**Figure 5.5:** Talent Night Glimpse

## 5.6 | ISS Livestream and Stargazing Nights

Among the most awe-inspiring experiences at SSP24 were the ISS Livestream and the stargazing nights, both of which brought participants closer to the cosmos.

During the ISS Livestream, we visited NASA's Mission Control Center, where we observed the live operations supporting the International Space Station (ISS). Although we didn't interact directly with the astronauts aboard the ISS, we gained a deep understanding of the intricacies involved in managing life and work in microgravity. It was fascinating to see the real-time coordination and problem-solving efforts that keep the ISS running smoothly. Notably, we also learned about the ongoing work of astronauts like Butch Wilmore and Sunita Williams, who are currently aboard the ISS contributing to critical missions.

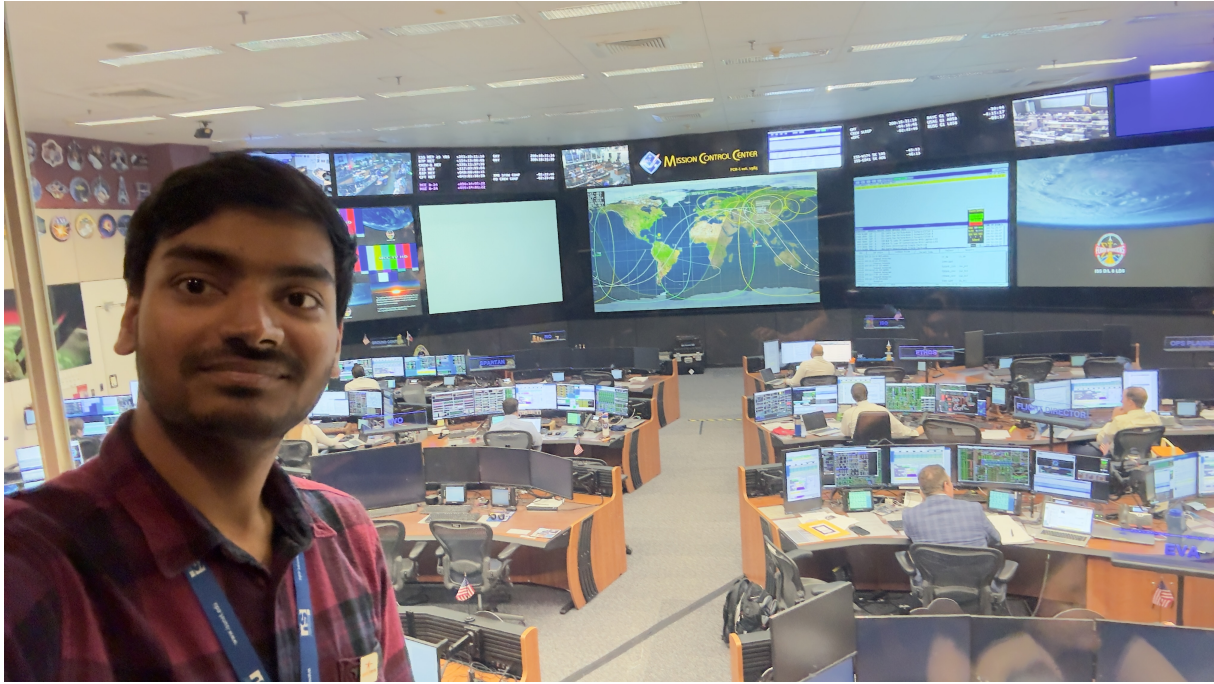
Adding to this excitement, we met several active astronauts during lectures and the Distinguished Guest Series. Their stories of training, challenges, and accomplishments provided invaluable insights into the realities of human spaceflight and left a lasting impression on all of us.

The stargazing nights offered a more grounded yet equally inspiring connection to space. Using telescopes, we observed celestial objects such as planets, constellations, and distant galaxies under the guidance of experts. These quiet evenings allowed us to reflect on the vastness of the universe and rekindled our collective passion for exploration. The serene setting and the shared enthusiasm among participants made these events a perfect balance to the program's intense schedule.

## 5.7 | Impact of Cultural and Social Events

The cultural and social events at SSP24 significantly enriched the overall program experience, offering a balance to the rigorous academic schedule. These activities were more than just recreational; they fostered intercultural understanding, strengthened bonds among participants, and nurtured a sense of belonging within the ISU community.

Each event brought its own unique flavor, from the laughter of the Space Masquerade Ball to the quiet awe of the stargazing nights. Collectively, these experiences created a holistic



**Figure 5.6:** Visiting ISS Mission Control



**Figure 5.7:** Interaction with Active & Retired Astronauts

journey that extended beyond academic and professional growth, leaving participants with lifelong friendships and a deeper appreciation for the power of collaboration across cultures.



## 6 | Field Trips and Excursions

The field trips and excursions during SSP24 were an essential component of the program, offering participants the opportunity to gain firsthand insights into space exploration and applications. These visits were meticulously planned to align with the academic themes and provided a blend of technical learning and cultural immersion.

### 6.1 | Boca Chica Starbase Visit

A self-organized trip to SpaceX's Starbase in Boca Chica, Texas, was one of the most eagerly anticipated activities among the participants. The journey began with a shared sense of excitement as we traveled together, eager to witness a scheduled Starship launch. Unfortunately, the launch was postponed, but the experience of visiting the iconic facility was nonetheless unforgettable.

While at Boca Chica, we marveled at the scale of the Starbase operations and got a close-up view of the impressive Starship prototypes and launch infrastructure. The visit sparked engaging discussions among participants about the challenges and innovations of reusable rocket technology and its potential to revolutionize human space exploration.



**Figure 6.1:** Starship at Boca Chica

Despite the postponed launch, the trip was a memorable opportunity for camaraderie, exploration, and inspiration, showcasing the transformative impact of private industry in

pushing the boundaries of space exploration.

## 6.2 | Axiom Space & Collins Aerospace Guided Tour

The tour of Ellington Spaceport, co-located at Houston's Ellington Airport, was another highlight. Known as the world's first truly urban commercial spaceport, this facility showcased its unique integration of aerospace infrastructure with urban settings. The guided tour included a visit to the advanced laboratory and office spaces, where technology incubators and large-scale hardware production facilities were located.

The visit also included interactions with representatives from Axiom Space and Collins Aerospace. At Axiom Space, we learned about their efforts to build the next-generation space station, focusing on human-rated space infrastructure and in-space manufacturing. Collins Aerospace provided an overview of their cutting-edge systems, including their work on astronaut spacesuits and advanced avionics. These discussions underscored the critical role of innovation in supporting human spaceflight and exploration.

## 6.3 | NASA Johnson Space Center (JSC)

The professional visit to NASA's Johnson Space Center (JSC) was a transformative experience. We toured several key facilities, including:

- **Building 9N (Space Vehicle Mock-up Facility):** This facility featured full-size mock-ups of the International Space Station (ISS) modules, the Orion spacecraft, and training areas for astronauts.
- **Christopher Kraft Mission Control Center:** Visiting the hub of real-time ISS operations was a powerful reminder of the complexity and precision required for space missions.
- **Neutral Buoyancy Laboratory (NBL):** Observing the massive pool used for astronaut training simulated the challenges of weightlessness and provided a glimpse into the meticulous preparation behind every extravehicular activity (EVA).

These visits offered a comprehensive understanding of NASA's contributions to human spaceflight and the legacy of innovation at JSC.

## 6.4 | Lone Star Flight Museum

The Lone Star Flight Museum, located near Ellington Airport, combined history and hands-on learning. The museum houses an impressive collection of historically significant aircraft and artifacts. Participants explored exhibits that highlighted the evolution of aviation and its intersection with space technology.

Interactive STEM-focused exhibits, including flight simulators, provided engaging opportunities to connect theoretical knowledge with practical applications. This visit emphasized the interconnectedness of aviation and space exploration and inspired many to reflect on the technological advancements achieved over the decades.

## 6.5 | Space Applications Department-Specific Visits

As part of the Space Applications department, I participated in visits tailored to the department's focus on space technologies and their societal benefits. Key activities included:

- **StormGeo Houston:** We explored the use of artificial intelligence in weather forecasting, including real-time flood prediction and data visualization technologies. This visit demonstrated the importance of space-based Earth observation systems in disaster management.
- **ExxonMobil Campus:** A professional visit to ExxonMobil showcased the integration of satellite technologies in industrial applications, such as training, safety, and environmental monitoring.



**Figure 6.2:** Discovery Supercomputer Facility at Exxon Mobil

- **Ground-Truth Field Trip at NASA's Gilruth Center:** This orienteering exercise mirrored the training provided to Artemis astronauts, emphasizing the role of Position, Navigation, and Timing (PNT) systems in planetary exploration.



**Figure 6.3:** Artemis Astronaut Orientation Training participation at NASA Gilruth Center

## 6.6 | Impact of Field Trips and Excursions

The field trips during SSP24 were instrumental in bridging theoretical knowledge with practical exposure. Each visit offered a unique perspective on the space industry, from the innovation-driven environment of private companies to the pioneering legacy of NASA. These experiences enriched my understanding of space exploration and its multifaceted applications, leaving a lasting impression on my academic and professional journey.



## 7 | Achievements and Highlights

### 7.1 | Personal Achievements at SSP24

Winning the **Geocaching Competition** in the Department of Space Applications Challenge, earning the **President's Cup for Health & Wellness** for organizing daily early morning yoga sessions, and securing **second place in the Space Masquerade Ball** were some of the highlights of my active participation and achievements during SSP24. These experiences not only showcased my creativity and leadership skills but also allowed me to actively engage with peers in a variety of dynamic activities.

#### 7.1.1 | Awards, Recognitions, and Contributions

- **Geocaching Competition:** My team secured **1st place** for designing and solving the most innovative geocaching game during the two-day challenge in the Department of Space Applications.



Figure 7.1: Winning Pose



Figure 7.2: Receiving Recognition for Daily Efforts: YOGA

- **President's Cup for Health & Wellness:** Organized and led daily early morning yoga sessions, promoting health and wellness among participants.

- **Space Masquerade Ball:** Collaborated with the ISRO group to represent the *Bhartiya Space Station* and *Chandrayaan-3's landing on the Moon*. I portrayed the *Chandrayaan-3 Lander Vikram* and secured **second place**.



**Figure 7.3:** Space Masquerade Performance grabbed 2nd prize

### 7.1.2 | Milestones in the *International Lunar University* Team Project

As the **Project Management Team Lead** and **Chief Editor**, I was responsible for coordinating interdisciplinary efforts and delivering a comprehensive report for the *International Lunar University (ILU)* project. Additionally, I developed a **cloud-based Learning Management System (LMS)** from scratch to establish the virtual presence of ILU, enabling seamless collaboration and educational outreach. The platform is live at <https://www.internationallunaruniversity.com/>.

## 7.2 | Group and Team Project Recognitions

The *SSTA-Smart-System-for-Tracking-Airpollution* was developed as my Department of Space Applications final project in collaboration with *Mahesh Pathakoti*, Scientist/Engineer-SF at NRSC, ISRO, India. This AI-powered cloud platform predicts the real-time concentration of aerosols using Google Earth Engine. The platform is live at <https://ssta.drashutosh.space/>.

### Key Highlights:

- Designed and deployed the platform using advanced AI and geospatial analysis techniques.
- Provided actionable insights into air pollution monitoring and its impact.
- Received recognition for innovation and practical implementation in environmental monitoring.

The combination of workshops, team-building exercises, and cross-cultural interactions at SSP24 significantly enriched my experience, broadening my perspective and deepening my appreciation for the interdisciplinary nature of space studies.

## 8 | Academic and Social Milestones

The academic and social milestones at SSP24 were carefully crafted to celebrate the journey of participants, encapsulating their achievements and fostering a sense of camaraderie. These milestones marked significant moments in the program, blending formal ceremonies with informal interactions to create a holistic experience.

### 8.1 | Opening Ceremony



**Figure 8.1:** Met with NASA JSC Director, Vanessa E. Wyche

The SSP24 Opening Ceremony was an inspiring event held at Rice University's prestigious venue. It was a moment of anticipation and excitement, as participants, faculty, and distinguished guests gathered to officially commence the program. The ceremony began with a warm welcome from ISU officials, including the SSP24 Academic Director and Rice University representatives. Their speeches emphasized the significance of interdisciplinary collaboration and the transformative journey ahead.

The highlight of the event was the keynote address, delivered by a renowned leader in the space industry. Their insights on the evolving landscape of space exploration set a motivational tone for the program. The evening also featured a cultural performance that celebrated Houston's identity as "Space City," linking the legacy of the Apollo missions to the aspirations of the Artemis era.



## 8.2 | Closing Ceremony

The Closing Ceremony was a bittersweet moment, marking the culmination of eight weeks of intensive learning and collaboration. Held in an elegant auditorium, the event brought together participants, faculty, sponsors, and special guests to reflect on the achievements of SSP24.

The program began with a recap of the journey, featuring a slideshow of memorable moments. The ISU Chancellor and Academic Coordinator delivered heartfelt speeches, highlighting the participants' growth and contributions. Each participant was called on stage to receive their Certificate of Completion, a proud moment that symbolized the effort and dedication invested in the program.



**Figure 8.2:** With SSP24 Director, Claudia Eyzaguirre and ISU Founder Robert D. Richards

One of the most touching moments of the evening was the alumni address, where a former SSP participant shared their post-program experiences and how ISU shaped their career. The ceremony concluded with a celebratory toast and group photographs, leaving everyone with a sense of accomplishment and nostalgia.

## 8.3 | Grand Dinner

The Grand Dinner was a celebratory event that perfectly encapsulated the spirit of SSP24. Hosted at a prestigious venue in Houston, it brought together participants, faculty, sponsors, and local organizing committee members in a formal yet festive setting.

The evening began with a welcome speech by the SSP24 Director, expressing gratitude to all who made the program a success. A sumptuous multi-course meal was served, interspersed with toasts and anecdotes from participants and faculty. One of the evening's highlights was the award ceremony, recognizing individuals and teams for their exceptional contributions to the program. Categories included academic excellence, team spirit, and cultural engagement.

The dinner ended with a live musical performance, providing a lively atmosphere for networking and informal conversations. It was a night of celebration, gratitude, and lasting memories, bringing a perfect closure to the program's social calendar.



**Figure 8.3:** Graduation Day Dinner Celebration

## 9 | Evaluation and Feedback

Evaluation and feedback were vital components of SSP24, ensuring that participants received constructive insights into their performance while fostering personal and professional growth. The assessment covered academic deliverables, collaborative efforts, and individual contributions, providing a holistic review of our progress throughout the program.

### 9.1 | Academic Performance Assessment

The academic assessment at SSP24 was designed to evaluate both individual and team performance across core lectures, workshops, and team projects. This comprehensive approach ensured that every participant had the opportunity to showcase their skills and knowledge.

#### 9.1.1 | Core Lecture Exam

The core lecture exam was one of the first major assessments and covered material from the initial weeks of the program. The exam included:

- **Multiple-Choice Questions:** These tested our understanding of key concepts across disciplines, such as propulsion systems, space policy, and satellite technology.
- **Interdisciplinary Essay:** This required us to integrate knowledge from various lectures to address a complex space-related challenge.

Preparing for the exam involved reviewing lecture slides, engaging in group discussions, and synthesizing knowledge from different fields. It was a valuable exercise that reinforced the importance of interdisciplinary thinking.

#### 9.1.2 | Workshops and Team Projects

The workshops were evaluated based on participation, problem-solving skills, and the quality of final deliverables. Each workshop was designed to be practical and interactive, encouraging us to apply theoretical concepts in real-world scenarios.

The team projects were assessed on three main deliverables:

1. **Team Project Plan and Literature Review:** This was an early deliverable that outlined our objectives, methodologies, and initial research. It was crucial in setting the direction for the project.
2. **Final Report:** A comprehensive document summarizing our findings, recommendations, and conclusions. This required clear articulation of complex ideas and collaboration among team members.
3. **Final Presentation:** This evaluated our ability to communicate the project's results effectively to an audience of peers, faculty, and industry experts.

The Q&A session during the presentation was particularly engaging, as it tested our depth of understanding and ability to respond to constructive feedback.

## 9.2 | Participant Testimonials

Testimonials from peers and mentors were a powerful aspect of the feedback process. Many participants shared how the program's interdisciplinary and intercultural nature expanded their horizons. A recurring theme in the testimonials was the transformative impact of working in diverse teams. One participant noted, "The program taught me the true meaning of collaboration and how different perspectives can lead to innovative solutions."

Receiving such feedback was not only motivating but also a reminder of the unique value SSP24 brought to each of us.

## 9.3 | Lessons Learned and Suggestions

Reflecting on my experience, I identified several key lessons:

- **Adaptability:** Working in a fast-paced, multicultural environment required flexibility and openness to new ideas.
- **Time Management:** Balancing multiple responsibilities, including lectures, workshops, and team deliverables, emphasized the importance of prioritization.
- **Effective Communication:** Collaborating with individuals from diverse professional backgrounds highlighted the need for clear and inclusive communication.

I also suggested a few improvements for future sessions:

- Providing additional preparatory materials for the core lectures.
- Allocating more time for hands-on activities during workshops.
- Incorporating more peer-to-peer feedback sessions to enhance collaboration and learning.

## 9.4 | Impact of Feedback and Evaluation

The feedback and evaluation mechanisms at SSP24 significantly contributed to my personal and professional development. Constructive critiques from mentors and peers provided valuable insights into my strengths and areas for improvement. This iterative process of assessment and reflection not only enhanced my learning but also prepared me to tackle interdisciplinary challenges in the future.



## 10 | Conclusion

The Space Studies Program (SSP24) has been an extraordinary journey of learning, collaboration, and personal growth. Over the course of eight weeks, I immersed myself in the multifaceted world of space exploration and applications. The program's structure, blending rigorous academic content with professional visits and cultural activities, provided a holistic experience that has left an indelible mark on me.

### 10.1 | Reflections on SSP24

Reflecting on SSP24, I am struck by the depth and breadth of experiences it offered. The core lectures and workshops laid a strong academic foundation, covering technical and non-technical aspects of the space industry. The interdisciplinary team projects, particularly my involvement in the International Lunar University (ILU) initiative, taught me the importance of collaboration, critical thinking, and adaptability.

The professional visits to NASA's Johnson Space Center (JSC) and meeting other industry leaders such as SpaceX, Blue Origin and Axiom Space were among the most impactful experiences. At JSC, I marveled at the Space Vehicle Mock-up Facility and the Neutral Buoyancy Laboratory. Meeting active astronauts and space scientists during the Distinguished Lecture series and informal interactions brought a human element to the scientific and technical discussions. Listening to insights from luminaries like Dr. John Connolly and Sunita Williams inspired me to strive for excellence in my academic and professional pursuits.

The cultural and social activities, including cultural nights and the Space Masquerade Ball, enriched my understanding of intercultural dynamics and fostered lifelong friendships. The program's commitment to the "3Is" philosophy—Interdisciplinary, International, and Intercultural—was evident in every aspect of SSP24, making it a truly transformative experience.

### 10.2 | Acknowledgements

I am deeply grateful to the International Space University (ISU) and the organizers of SSP24 for curating such a comprehensive and engaging program. My heartfelt thanks to the faculty, mentors, and guest speakers whose expertise and guidance illuminated our path. The Local Organizing Committee at Rice University ensured a seamless experience, providing state-of-the-art facilities and logistical support.

A special mention goes to the professionals and astronauts who shared their invaluable insights. Meeting experts at Axiom Space, witnessing the ambitious projects at SpaceX's Starbase, and exploring the innovative work at Intuitive Machines and Collins Aerospace underscored the potential of collaboration between academia and industry. Their passion and dedication to advancing humanity's reach into space were truly inspiring.

I also extend my gratitude to my fellow participants, whose diverse perspectives and camaraderie enriched my learning experience. The friendships and professional networks forged during SSP24 will undoubtedly continue to be a source of support and inspiration.

### 10.3 | Final Thoughts

As SSP24 concludes, I carry forward not just a wealth of knowledge but also a renewed sense of purpose. The program has equipped me with the skills, confidence, and network to contribute meaningfully to the global space sector. The lessons learned from working on the ILU project, engaging in hands-on workshops, and interacting with industry pioneers will guide me in my academic and professional endeavors.

SSP24 has reaffirmed my belief in the power of interdisciplinary and international collaboration to address the challenges and opportunities of space exploration. As I move forward, I am inspired to play an active role in shaping a future where space technology and exploration benefit humanity as a whole. This journey has been a remarkable chapter in my life, and I look forward to applying the knowledge and experiences gained to create lasting impact.

## **A | Additional Data and Resources**

This section contains supplementary materials, including:

- Links to past team projects and reports: [https://isulibrary.isunet.edu/index.php?lvl=cmspage&pageid=4&id\\_article=52](https://isulibrary.isunet.edu/index.php?lvl=cmspage&pageid=4&id_article=52)
- Access to e-books and academic resources: <https://isulibrary.isunet.edu>
- Space Application Department Final Project Link: <https://ssta.drashutosh.space>
- International Lunar University TP Final Project Link: <https://www.internationallunaruniversity.com> or <https://ilu.drashutosh.space>
- International Lunar University TP Final Report Submitted: [https://isulibrary.isunet.edu/index.php?lvl=notice\\_display&id=12064](https://isulibrary.isunet.edu/index.php?lvl=notice_display&id=12064)
- Contact me at <https://www.linkedin.com/in/drashutoshspace/>



## B | Gallery

Visual documentation of SSP24 captured moments of learning, collaboration, and celebration. Below are some highlights:



**Figure B.1:** Met with NASA JSC Director, Vanessa E. Wyche on Opening Day



**Figure B.2:** A proud moment with the founder of ISU during closing day.





**Figure B.3:** Talent Night: Participants showcasing their unique skills.



**Figure B.4:** Cultural Night: Participants showcasing their national traditions and food.



**Figure B.5:** Visit to the Gandhi Museum: A moment of cultural immersion.



**Figure B.6:** Space Masquerade Ball: Celebrating creativity in space-themed costumes.



**Figure B.7:** Space Masquerade Ball: My Team performance winning second place.





**Figure B.8:** Graduation Ceremony: Receiving certificates for successful program completion.



**Figure B.9:** Graduation Dinner: Formal end to the SSP24 program.



**Figure B.10:** Graduation celebration: Sharing the moment with faculty and peers.



**Figure B.11:** Panel discussion: Delving into lunar lander technologies.



**Figure B.12:** Panel with experts discussing advancements in space exploration.



**Figure B.13:** Mission Control Center: Observing the heart of NASA's operations.





**Figure B.14:** Iconic NASA logo: Capturing the spirit of innovation.



**Figure B.15:** Rocket Park: Exploring historic rockets at NASA JSC.





**Figure B.16:** Rocket Park: A closer look at iconic space exploration artifacts.



**Figure B.17:** A candid selfie capturing the SSP24 experience.



**Figure B.18:** Moments of joy with fellow participants.



**Figure B.19:** A bright day at Sunny Carter Training Facility, NASA JSC





**Figure B.20:** Robotics Competition



**Figure B.21:** Participants Competing at Robotics Competition





**Figure B.22:** International Yoga Day Celebration with SSP24 family



**Figure B.23:** TEDx ISU: Engaging with inspiring speakers and ideas.

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StormGeo  
Texas A&M University  
The Sasakawa International Center for Space Architecture  
Tohoku University  
UKSA, UK Space Agency

# SSP24 TEAM

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Head of Human Resources  
and Legal



**Bryan Ayekoe**  
Head of Finance



**Geraldine Moser**  
Head, Business  
Development Unit



**Joel Herrmann**  
Head of Information  
Technology Services



**Louise Taylor**  
Communication Assistant



### SSP24 Communications Team



**Shafei Li**  
External Relations Lead



**Jorge Salazar**  
Media Producer



**Inkyung Nari Lee**  
Communications Team Support

### SSP24 IT - AV Team



**Nicolas Moncussi**  
ISU Multimedia Specialist, IT Services



**Beranger Scherpereel**  
IT Assistant



**Aliyah M. Davies**  
IT Assistant



**Philippe Ouellet**  
IT Assistant

### SSP24 Assistants to the Academic and Logistics Office



**Léo Baud**  
Academic Assistant



**Thaïs Zandoná**  
Logistics Assistant

### SSP24 Participant Affairs Lead



**Philomena Bonis**  
Participant Affairs Lead

## SSP24 Local Organizing Committee (LOC)



**James Lewis**  
LOC Chair/Host



**Jackelynn Silva-Martinez**  
ISU SSP24 LOC-Co-Chair



**Josh Nelson**  
Alumni Conference POC



**Lesa Spivey**  
External Relations POC



**Reginald Desroches**  
President, Rice University



**Greg Marshall**  
Rice University Director of  
University Relations



**David Alexander**  
Rice University Space  
Institute Director, Space  
Sciences Department POC



**Ellie Mix**  
Rice University Events  
Specialist



**Hollie Evans**  
Rice University Campus  
Events Manager



**Judith Hayes**  
HPS Department POC



**Kris Lehnhardt**  
HPS Department POC



**John Connolly**  
ENG Department POC



**Emma Lehnhardt**  
MGB Department POC



**Ryan Schaefer**  
PEL Department POC



**Larry Toups**  
HUM Department POC



**Will Pomerantz**  
MGB Department POC



**Brian Rishikof**  
Sponsorship Lead



**Aida Silva**  
Space Center Houston POC

**Other Esteemed Members of the Local Organizing Committee Team**

**Adil Jafry**  
Host

**Ginger Kerrick**  
Host

**Hugues Mbezal Bogam**  
HPS POC

**Jerry E Miller**  
Host

**Kelly Humphries**  
Host

**Martha Hess**  
Host

**Melissa Telisky**  
Host

**Nick Skytland**  
Host

**Tuva Atasever**  
Host





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