

Event Report

Organised by Ecell, Jadavpur University

Title of the Event: Innovation in Space Unfolded - Dr. Jayanta Panda

Event Date: 23rd August, 2024

Event Time: 12 pm - 8:30 pm

Venue: Room 301, TEQUIP Building, Jadavpur University

Faculty Coordinator in Charge: Prof. Aranyak Chakraborty, Prof. Pranibesh Mandal

Student Coordinator in Charge:

Samayan Mazumder (Project Fellow, IIC)

Introduction

A captivating session titled "Innovation in Space Unfolded" was successfully held, featuring Dr. Jayanta Panda, an esteemed Aerospace Engineer at NASA's Ames Research Center. Dr. Panda's session shed light on cutting-edge innovations in space exploration, touching on his groundbreaking work at NASA, particularly in planetary probes, aeroacoustics, and rocket vehicle technology. The event also included a Panel Discussion with key figures from the innovation and startup ecosystem at the regional, state, and national levels. The discussion provided insights into how technological advancements and the space industry can intersect with entrepreneurial efforts, driving innovation forward.

Event Agenda and Structure

The event revolved around two key segments: the session led by Dr. Jayanta Panda and a panel discussion with innovation enablers. These components were designed to provide an in-depth exploration of space technology and innovation, as well as how startups and entrepreneurs can contribute to, and benefit from, advancements in this field.

1. Keynote Session with Dr. Jayanta Panda : The highlight of the event was Dr. Panda's keynote session, where he discussed his work in aerospace engineering and space exploration. His current projects include aeroacoustic and aerodynamic research related to a planetary probe being sent to Venus, as well as contributions to NASA's Artemis rocket vehicle, which is

designed for future lunar exploration missions. Dr. Panda also shared his interest in advancing measurement techniques, such as molecular Rayleigh scattering and fast-response PSP for wind tunnel testing, which play a crucial role in transonic and supersonic flow research.

2. Panel Discussion with Innovation and Startup Ecosystem Enablers : Following Dr. Panda's session, a panel discussion was held with innovation and startup ecosystem enablers. This panel featured representatives from regional, state, and national organizations that are instrumental in fostering innovation and entrepreneurship. The discussion revolved around the opportunities for startups in the aerospace sector, the support mechanisms available to them, and the potential for collaboration between space agencies, research institutions, and startups.

Overview of Dr. Jayanta Panda's Session

Dr. Panda's session provided a deep dive into the scientific and engineering challenges of space exploration. He began by discussing his role at NASA's Ames Research Center, where he is involved in solving complex aeroacoustic and aerodynamic issues related to planetary exploration. His current project focuses on designing a planetary probe to be sent to Venus, where extreme atmospheric conditions pose significant engineering challenges. Dr. Panda elaborated on the technologies being developed to ensure the success of the mission, including advancements in noise reduction and unsteady aerodynamics.

Another key topic was NASA's Artemis rocket vehicle , designed to carry astronauts to the Moon and beyond. Dr. Panda explained how his work in aeroacoustic environments is critical to ensuring the safety and stability of manned space missions. The importance of reducing noise levels during launch and in-flight phases, especially for manned vehicles, was emphasized. His contributions have helped define aeroacoustic environments that protect astronauts from harmful noise levels while optimizing the performance of the rocket vehicle.

Dr. Panda also highlighted his work on optical measurement techniques , such as molecular Rayleigh scattering and fast-response pressure-sensitive paint (PSP), which are used in wind tunnel testing. These techniques are vital for studying transonic and supersonic flows, which occur in high-speed aerodynamics and are particularly important in designing spacecraft and aircraft capable of operating in extreme conditions. His work in this area has advanced the understanding of turbulence, noise generation, and aeroacoustic sources, contributing to the development of quieter and more efficient aerospace vehicles.

Throughout the session, Dr. Panda underscored the importance of interdisciplinary collaboration in advancing space technology. He encouraged startups, researchers, and innovators to explore opportunities in aerospace, noting that the field is ripe for disruption and innovation.

Panel Discussion Highlights

The panel discussion featured innovation enablers from regional, state, and national levels, who discussed the evolving role of startups in the space sector. The panelists agreed that space exploration is no longer the sole domain of large government agencies ; instead, it has become increasingly open to private ventures and startups, thanks to advancements in technology and more accessible funding opportunities.

Key points addressed during the panel discussion included:

- Opportunities for Startups in Aerospace : Panelists emphasized that startups have the potential to play a critical role in developing new technologies for space exploration, such as satellite miniaturization, propulsion systems, and data analysis for space missions. Several examples of successful startup collaborations with NASA and other space agencies were shared.
- Innovation Enablers : The panelists discussed the various programs and initiatives at the regional and national levels that support innovation in aerospace. Government agencies, incubators, and venture capital firms are increasingly recognizing the potential of space technology startups and are offering funding, mentorship, and partnership opportunities to encourage their growth.
- Collaboration with Space Agencies : Startups were encouraged to explore collaborations with organizations like NASA, ISRO, and private space companies. These collaborations can provide startups with access to cutting-edge research, infrastructure, and expertise, which can accelerate the development of innovative products and services.

Conclusion

The "Innovation in Space Unfolded" event, featuring Dr. Jayanta Panda, provided a unique platform for attendees to gain insights into the complexities of space exploration and the role that innovation plays in advancing this field. Dr. Panda's extensive experience at NASA offered invaluable knowledge about the challenges and solutions in planetary exploration, aeroacoustics, and space vehicle design.

The panel discussion highlighted the growing intersection between space technology and the startup ecosystem. Participants left with a clearer understanding of how innovation enablers at various levels are working to support entrepreneurs and researchers in contributing to the future of space exploration.

The event underscored the importance of collaboration between research institutions, government agencies, and startups in pushing the boundaries of space technology. With opportunities in space exploration continuing to expand, the event served as a call to action for innovators and entrepreneurs to seize these emerging possibilities.

Attendees List:

Name	Department	Year
Shaikh Shoaib Ahmed	Construction Engineering	UG-1
Sayantan Paik	Mechanical	UG-1
Arkaroop nag	Civil engineering	UG-1
Shrinjita Biswas	Production engineering	UG-1
Arpan Banerjee	Instrumentation and Electronics Engineering	UG-1
Sombrata Biswas	Civil Engineering	UG-1
Sohini Pal	Etce	UG-1
Sabyasachi Sen	CSE	UG-1
Dipjyoti Dash	Mechanical	UG-1
Rahul Pandey	Computer Science and Engineering	UG-1
Shubham Sarkar	Mechanical Engineering	UG-1
Aindree Chatterjee	Production Engineering	UG-1
Pratham Das	Instrumentation and Electronics Engineering	UG-1
Aishani Roy	Civil Engineering	UG-1
Bitan Mukherjee	Information technology	UG-1
Sombrata Biswas	EE	UG-1
Chandrima Ghosh	Chemical Engineering	UG-1

Photos:-











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