

Newsletter

Volume 16 (2) | January 2025





SHAPING THE FUTURE OF AI, QUANTUM AND SPACE COLLABORATIONS IUSSTF Leading Innovations

CONTENTS

Cover story

04

Reaching for the Stars: Igniting the Next Generation of Space Pioneers through Indo-U.S. Collaboration

Ű	AMERICAN	GENEX SPAC
Space I	Experient	ial Learning Cent

At the Space Experiential Learning Centre (SELC) join us for an space equipment and hands on training. The Centre will be ope 11th across India. Don't miss this exciting opportunity to dive i Read more!



Feature

10

Quantum Sensors for Gravimetry: Innovating Subsurface Density Profiling



14 Hyper Local Air Quality : Al Enabled Context-Aware Content System



Perspective... Strengthening the Technological Ecosystem



Event diary

20

25th USISTEF Board Meeting and Award Ceremony for the Call on "Critical and Emerging Technology: Quantum Technologies and Artificial Intelligence for Transforming Lives"

25 Water Advanced Research and Innovation (WARI)

26 Khorana Program **27** Delegation Visit of the Bureau of Oceans and International Environmental and Scientific Affairs (OES) at IUSSTF

Editor-in-Chief Dr. Nisha Mendiratta Executive Director, IUSSTF

Production and Publication

Indo-U.S. Science and Technology Forum Fulbright House, 12 Hailey Road New Delhi - 110 001 **Editor** Dr. Chaitali Bhattacharya Principal Science Officer

Opinions

Opinions expressed in Connect do not necessarily reflect the opinion of IUSSTF or other organizations associated with publication of Connect.

Design and Circulation

Creative Edge Media and Services Pvt. Ltd. Aravali House, 431/D-22, Chhatarpur Hills New Delhi-110074, India **IUSSTF Team Contribution**

Dr. Babulal Chaudhary Dr. N Ms. Priya Thomas Ms. S

Dr. Nidhi Singh Ms. Subhashree Basu

Comments and Suggestions Please email the Connect Team at connect@iusstf.org



FROM THE EDITOR-IN-CHIEF'S DESK

ndia and the United States have a longstanding partnership in science and technology, which has continued to evolve through the initiatives on Strategic Partnerships. Together, the two nations are driving advancements in space, quantum technologies, artificial intelligence, and advanced & critical minerals. At the heart of this collaboration, the Indo-U.S. Science and Technology Forum (IUSSTF) plays a crucial role in fostering research, knowledge exchange, and innovation, benefiting both countries.

The U.S.-India space partnership is reaching new milestones with groundbreaking initiatives, including the first joint astronaut mission to the International Space Station and significant progress in commercial space technology. These developments are not only strengthening human spaceflight cooperation but also enabling the joint development of cutting-edge satellites like the NASA-ISRO Synthetic Aperture Radar. Additionally, both nations are working together to advance safe and sustainable space operations through coordinated training and strategic collaboration, ensuring long-term success in space exploration.

This edition of Connect brings to life some of the most exciting Indo-U.S. collaborations, emphasizing the transformative impact of science and technology. Our cover story highlights the incredible work of the Space Experiential Learning Center (SELC), an initiative designed to inspire and equip high school students with hands-on space education. By bridging the gap between theory and practice, SELC is nurturing the next generation of space explorers and scientists, ensuring that innovation in space continues to thrive.

Beyond space, technological breakthroughs in quantum and AI are shaping the future. Our feature articles showcase the immense potential of quantum sensors in mapping subsurface density and the role of AI in providing hyper-local air quality insights. These advancements, supported by the U.S.-India Science and Technology Endowment Fund (USISTEF), illustrate how Indo-U.S. cooperation is driving innovation to solve real-world challenges, from environmental monitoring to advanced computing.

Our event diary captures key moments of this dynamic collaboration. The IUSSTF Board Meeting and Award Ceremony recognized outstanding projects under AI and Quantum, highlighting the commitment of both nations to fostering strategic technology partnerships. The Khorana Program for Scholars continues to pave the way for young researchers, offering invaluable cross-border learning experiences through its orientation and webinar sessions. Meanwhile, the OES meeting reinforced the importance of strengthening cooperation in emerging technologies to address global challenges together.

Looking ahead, we spotlight a significant new announcement on Transforming Technology Solutions through Advanced Materials and Critical Minerals- By partnering and leveraging the complementary resources of both nations in research and innovation, India and the U.S. aim to unlock groundbreaking products that could revolutionize industries, driving progress and addressing global challenges. Advanced materials and critical minerals, often regarded as the supermaterials of the future, are essential for the technological advancements that promise to have transformative impact.

At IUSSTF, we believe in the power of partnerships to drive progress. This edition of Connect celebrates the passion, creativity, and dedication of the Indo-U.S. scientific community. We invite you to explore these stories and join us in shaping a future driven by innovation and collaboration.

Dr. Nisha Mendiratta Executive Director, IUSSTF



REACHING FOR THE STARS: IGNITING THE NEXT GENERATION OF SPACE PIONEERS THROUGH INDO-U.S. COLLABORATION TEAM GENEX SPACE

The dynamic Indo-U.S. space partnership has evolved from early collaborations to ambitious joint missions and educational initiatives, leveraging the unique strengths of both nations. This synergistic relationship has propelled advancements in space technology and exploration. The Indo-U.S. initiative on Strategic Partnerships further prioritizes space collaboration, fostering progress in areas like space situational awareness and debris mitigation. Crucially, initiatives like the Space Experiential Learning Center (SELC) by IUSSTF are inspiring the next generation of space pioneers. By providing hands-on learning experiences to high school students, SELC bridges the gap between theory and practice, contributing to a robust and globally connected space ecosystem.

Igniting the Next Generation of Space Pioneers through Indo-U.S. Collaboration

magine a world without GPS, weather forecasts, or live sports on television. These everyday conveniences, and countless others, are made possible by space technology. From satellites connecting continents to defense systems ensuring national security, our reliance on space science is immense. It fuels communication networks, aids precision agriculture, monitors natural disasters, and even underpins financial transactions. Space technology is woven into the fabric of our lives, often invisibly, highlighting the critical need to understand and advance this field. It's not just about innovation; it's about sustaining and improving life on Earth. Once confined to scientists and engineers within research organizations, space science is now accessible to governments, startups, academia, researchers, and students, fostering a dynamic and collaborative ecosystem. This democratization of space has paved the way for international partnerships that amplify the impact of individual achievements.

India and the United States stand as prime examples of the power of collaborative space exploration. Both nations have carved remarkable paths in space. India, with its cost-effective and innovative approach, has achieved extraordinary milestones, from the groundbreaking Mars Orbiter Mission (Mangalyaan) to the recent historic landing of Chandrayaan-3 on the Moon's south pole. These successes showcase India's growing prowess in interplanetary exploration and its commitment to pushing the boundaries of space science. The United States, a pioneer in space exploration, boasts a rich legacy of accomplishments, including the Apollo missions that first placed humans on the Moon and its continuing leadership in astronomical discoveries through powerful telescopes like the James Webb. These individual strengths have created a fertile ground for collaboration, where shared expertise and resources enhance the ambitions of both nations.



Engineers and technicians from NASA's jet propulsion laboratory work on the NASA -ISRO Synthetic Aperture Radar (NISAR) science instrument payload in a clean room, 2023

INDIA'S STELLAR JOURNEY IN SPACE

India's space program has undergone a remarkable transformation, particularly in the last decade. The Indian Space Research Organisation (ISRO) has achieved unprecedented milestones, demonstrating its ability to execute complex and cost-effective missions. From the ground breaking Mars Orbiter Mission (Mangalyaan), making India the first Asian nation to reach Mars, to the historic Chandrayaan-3 mission's successful landing on the Moon's south pole, ISRO has captured global attention and the hearts of 1.46 billion Indians. The Aditya-L1 mission, dedicated to studying the Sun, further showcases India's prowess in solar research.

Looking ahead, India is preparing for its prestigious Gaganyaan mission, which will send Indian astronauts into space for the first time, inspiring a new generation of space explorers. ISRO is also developing next-generation launch vehicles, including the Small Satellite Launch Vehicle (SSLV), Reusable Launch Vehicle Technology Demonstrator (RLV-TD), and human-rated rockets, ensuring India's continued leadership in space exploration.

A HISTORY OF COLLABORATION: THE INDO-U.S. SPACE PARTNERSHIP

The Indo-U.S. partnership in space science is a compelling narrative of collaborative exploration, technological advancement, and shared vision. Its roots extend back to the 1960s, with the United States' support for India's inaugural sounding rocket launch, the NIKE-Apache, in 1963. This pivotal event ignited a spark of cooperation that has continued to illuminate the path of space exploration for both nations.

Early collaborations like the Satellite Instructional Television Experiment (SITE), which leveraged the American ATS-6 satellite to broadcast educational programs to remote Indian villages, demonstrated the power of space technology to transform lives. SITE revolutionized rural education and showcased the potential of international partnerships to address societal challenges. The subsequent joint APPLE TV program further strengthened India's satellite communication capabilities, laying the groundwork for future advancements.



R. Aravamudan, A. P. J. Abdul Kalam, H. G. S. Murthy, D. Easwaradas and Ramakrishna Rao at NASA's Wallops Launch Station in Virginia (1963); They were part of a seven-member team dispatched by Vikram Sarabhai to train with NASA and learn the art of assembling and launching small rockets for collecting scientific data; Photo Credit: http://www.isrohistory.com/

Igniting the Next Generation of Space Pioneers through Indo-U.S. Collaboration



Villagers curiously watching TV programme during SITE Photo Credit : ISRO



Beginning of India's spaceward odyssey - Launch of the U.S. Nike Apache sounding rocket, Thumba, near Thiruvananthapuram, November 21, 1963

The decades that followed witnessed a steady expansion of joint projects, encompassing diverse areas such as satellite navigation systems and Earth observation missions. The ongoing NASA-ISRO Synthetic Aperture Radar (NISAR) mission stands as a testament to this enduring collaboration. By studying global environmental changes with cutting-edge radar technology, NISAR promises to provide critical insights into our planet's dynamic systems.



An ISRO official carries part of a space equipment on a bicycle. Photo Credit: thiruvananthapuramupdates.wordpress.com

This partnership extends beyond large-scale missions. India's astronaut candidate, Group Captain Shubhanshu Shukla, is poised to fly on the Axiom-4 mission, marking a significant milestone in Indo-U.S. human spaceflight cooperation. Moreover, Indian space startups are increasingly attracting recognition and support from the United States, receiving funding and mentorship from U.S. organizations and venture capital firms. This burgeoning commercial collaboration fuels innovation and promises to unlock new frontiers in space technology.

At the heart of this successful partnership lies a strong foundation of people-to-people connections. Scientists, engineers, and researchers from both countries have forged lasting relationships through shared projects and knowledge exchange. This vital exchange of ideas has not only enriched both space programs but also contributed to the growth of a vibrant global space community.



Group Captain Shubhanshu Shukla, pilot of Axiom Mission 4 and one of the four astronaut candidates to fly to space as part of the Indian Human Spaceflight Programme scheduled for spring 2025

The Indo-U.S. space partnership exemplifies the power of international collaboration to achieve extraordinary feats in the exploration of the cosmos. A prime example of this commitment to collaboration and future generations is the Space Experiential Learning Center (SELC).

THE SPACE EXPERIENTIAL LEARNING CENTER (SELC):

The Space Experiential Learning Center (SELC) is a groundbreaking initiative designed to ignite a passion for space science and technology in high school students across India. Located at the American Center, New Delhi, SELC provides immersive, hands-on learning experiences, fostering a deeper understanding of space and its applications. This program is a joint endeavor led by the Indo-U.S. Science and Technology Forum (IUSSTF) in collaboration with Genex Space, and funded by the U.S. Department of State.

SELC aims to bridge the gap between theoretical knowledge and practical application in space science. Through engaging activities and access to cutting-edge resources, the program inspires students to explore STEM fields and consider careers in the burgeoning space sector. It also strengthens Indo-U.S. collaboration in space education and fosters a new generation of space enthusiasts.

SELC's unique approach lies in its emphasis on experiential learning. By providing access to state-of-the-art equipment, including telescopes, rocket and satellite models, an ISS docking simulator, and an astronaut glove box, SELC allows students to engage directly with the principles and technologies of space exploration. The mini-museum showcasing Indo-U.S. collaboration further highlights the program's focus on international partnership. This hands-on approach, combined with expert interaction and real-world projects, has the potential to create a lasting impact on participating students, inspiring them to become future leaders in the space sector.



The program, offered through the Space and Astronomy Club, targets 60 high school students, primarily from the Delhi NCR region. Participants are selected through a competitive SELC Test.

SELC offers a comprehensive program that includes

• Hands-on Workshops: Skill development workshops

on topics like satellites, space missions, space robotics, and telescope building.

- Night Sky Observation Camps: Opportunities for students to explore astronomy and astrophotography through guided stargazing sessions.
- Field Excursions: Visits to space-related facilities and research centers.
- Expert Interactions: Opportunities to interact with and learn from leading space scientists and engineers.
- Indo-U.S. Space Conference: A platform for students to present their research and projects, fostering knowledge sharing and international collaboration.
- Outreach Programs: Space awareness workshops conducted in U.S. Consulate regions (Mumbai, Kolkata, Chennai, and Hyderabad) to broaden the program's impact.

SELC anticipates several key outcomes, including

• Increased student interest and engagement in STEM fields, particularly space science and technology.

- Development of critical thinking, creativity, and teamwork skills among participants.
- Enhanced understanding of space science principles and applications.
- A pipeline of skilled professionals for the growing space sector.
- Strengthened Indo-U.S. collaboration in space education.
- Increased public awareness of the importance of space science and technology.

SELC aims to create a ripple effect beyond the immediate participants. By fostering a new generation of space enthusiasts and professionals, the program contributes to the growth and dynamism of the Indian and global space communities. The knowledge and skills gained by SELC participants will empower them to contribute to future space missions, research projects, and technological advancements. Furthermore, the program's outreach activities will raise public awareness of space science, inspiring others to explore the wonders of the universe.



Visit www.iusstf.org to learn more about SELC



QUANTUM SENSORS FOR Gravimetry: Innovating Subsurface density profiling

U.S.-India Science and Technology Endowment Fund (USISTEF) Debayan Gupta (Ashoka University, Sonepat); Aishwarya Das Praveen (Dirac Labs Inc., Madison)

Despite the promise of quantum sensors in revolutionizing geophysical exploration, their real-world deployment faces several challenges. Miniaturization, stability, and data interpretation remain major hurdles, especially for field applications such as drone-based subsurface mapping. Quantum gravimeters and magnetometers are highly sensitive but require precise calibration to counteract environmental noise, platform movements, and external interference. Additionally, translating raw sensor data into actionable insights demands advanced computational techniques.

Quantum Sensors for Gravimetry: Innovating Subsurface Density Profiling

OBJECTIVE

To address above issue, Debayan Gupta from Ashoka University, Sonepat, and Aishwarya Das Praveen from Dirac Labs Inc., Madison, have partnered under the USISTEF initiative to develop quantum gravimeters and magnetometers for deployment on drones. This project combines quantum sensing technology with machine learning algorithms, enabling precise gravity measurements and generating detailed subsurface density maps. By leveraging Indo-U.S. scientific collaboration, this initiative aims to revolutionize geophysical exploration and navigation through cutting-edge advancements in guantum sensing and artificial intelligence.

With support from USISTEF, Dirac Labs and Ashoka University are embarking on an innovative initiative to advance quantum sensing technologies. This collaboration focuses on developing cutting-edge gravimeters and magnetometers, enabling more precise measurements of gravity and magnetic fields. These enhanced capabilities will provide critical insights into subsurface structures, unlocking new possibilities in exploration, navigation, and geophysical research.

At the heart of this project is the shared vision of applying quantum sensing technology to areas where even tiny variations in gravity or magnetism can offer vital clues about underground formations. For instance, mining companies can use such data to locate mineral deposits, and environmental researchers can Monitor structural changes in the Earth's subsurface over time. Despite these promising applications, developing and deploying quantum sensors with the precision required for accurate measurements remains a significant challenge. That's where the partnership between Dirac Labs (based in Madison, U.S.) and Ashoka University (in New Delhi, India) comes in.

BRINGING QUANTUM SENSING TO THE FIELD

Dirac Labs will take the lead in designing the hardware components of the project. The team will work on two core devices: a quantum gravimeter and a quantum



Prof. Debayan Gupta (Ashoka University) and Aishwarya Das (Dirac Labs) receiving the USISTEF Award

magnetometer. By employing specialized atomic and quantum mechanical principles, these instruments will be uniquely sensitive to small variations in gravitational and magnetic fields. Dirac Labs already has already developed a prototype quantum magnetometer capable of capturing highly precise readings. Over the coming months, the team will integrate this off-the-shelf sensor technology with an airborne platform—a step that involves significant engineering to stabilize the sensor in flight.

To accomplish this, Dirac Labs will develop platform calibration techniques ensuring that the airborne platform movements do not interfere with the sensor's delicate measurements. This step is critical as maintaining sensor stability, even as the platform experiences vibrations and shifts in orientation. Future work will focus on miniaturizing the magnetometer to fit more comfortably on smaller drone platforms. By doing so, these flying sensor arrays will be able to map subtle magnetic-field variations from above, offering rapid surveys of large areas—of huge value to mining companies, environmental agencies, and many others.

Following this progress with the magnetometer, Dirac Labs will also begin design work on a quantum gravimeter although the actual build of this device is not planned under the current grant. Gravimeters are notoriously tricky to design and even harder to miniaturize. In the future, if successfully developed, combining data from both a quantum magnetometer and a quantum gravimeter could reveal everything from mineral-rich deposits to hidden geological structures, taking subsurface exploration to new heights.

MACHINE LEARNING INSIGHTS FROM ASHOKA UNIVERSITY

While Dirac Labs focuses on the hardware development, Ashoka University will spearhead the development of machine learning algorithms to interpret the data generated by these quantum sensors. Led by Principal Investigator Professor Debayan Gupta, Ashoka University's research group will explore data-processing techniques that can transform raw sensor readings into clear, actionable insights about the subsurface.

One of the primary challenges in driving knowledge from sensor data lies in its complexity of the measurements. Gravitational and magnetic readings can be influenced by a range of factors, and field conditions are seldom ideal. To address this, the Ashoka University team will therefore design algorithms capable of accounting for noise, sensor drift, and environmental fluctuations. Their goal is to develop intuitive visualizations that map these readings to real-world subsurface features, making it easier for scientists, explorers, and industry experts to interpret and act upon the information. Through this data-driven approach, the project will harness advanced analytics for accurate subsurface profiling, unlocking new possibilities for geological exploration and resource mapping.

LEVERAGING INDO-U.S. PARTNERSHIPS

Beyond the impressive technical accomplishments, the partnership between Dirac Labs and Ashoka University highlights the transformative impact of international collaboration in advancing quantum sensing and

machine learning. As the American partner, Dirac Labs continues to push boundaries of innovation with its quantum magnetometer, which recently demonstrated promising results in an initial trial over a lake—capturing subtle magnetic anomalies with remarkable precision. This successful demonstration lays a strong foundation for further applications in resource exploration and environmental monitoring, while Ashoka University in New Delhi refines data-driven insights through its machine learning expertise. The partnership will offer abundant opportunities for knowledge exchange, including training workshops and site visits in both countries, ensuring that each team benefits from the other's specialized skills.



Prototype of Dirac Labs' Quantum Magnetometer MK-I



Team Dirac Labs in India visiting Former Air Commodore Sanjay Srivastava

TOWARD A QUANTUM-ENABLED FUTURE

Although the immediate applications focus on subsurface exploration and resource mapping, the future scope of quantum sensor data extends well beyond geological pursuits. A key long-term goal is to use data from gravimeters and magnetometers for advanced navigation systems. Unlike GPS, which relies on external satellite signals, quantum-based gravity and magnetic maps could allow autonomous vehicles, drones, and even spacecraft to navigate more independently by recognizing subtle, location-specific signatures of Earth's fields.

Such a vision of "field-based navigation" could drastically improve reliability in environments where GPS signals are weak or nonexistent—like deep underground mines, underwater settings, or other remote areas. As the project moves forward, the data and insights generated by this Indo–U.S. partnership may lay the groundwork for a new generation of navigation technologies.

LOOKING AHEAD

Over the next few years, Dirac Labs and Ashoka University will work diligently to meet their shared objectives. On the hardware side, Dirac Labs will aim to stabilize and miniaturize the quantum sensor suite, ensuring that it can be deployed efficiently on drones. On the software side, Ashoka University will continue refining machine learning algorithms to handle real-time data processing and produce meaningful maps of the subsurface.

Together, these endeavors promise to further Indo–U.S. collaborative science and technology goals. They also stand as a testament to how shared expertise and complementary strengths can advance cutting-edge fields like quantum sensing and data analytics. As research unfolds, it will not only contribute to our knowledge of the Earth's subsurface but may also chart a course for new forms of navigation, resource exploration, and scientific discovery. This story of collaboration, innovation, and strategic partnership captures the spirit of what science and technology can achieve when borders become bridges and researchers join forces to push the boundaries of what is possible.



HYPER LOCAL AIR QUALITY : AI ENABLED CONTEXT-AWARE CONTENT SYSTEM

U.S.-India Science and Technology Endowment Fund (USISTEF)

A Vaidyanathan (Personal Air Quality Systems Private Limited, PAQS, Bengaluru); Ram P Rustagi (University of Maryland, Baltimore (UMB)C)

India faces a severe air pollution crisis, with 63 of its cities ranking among the world's most polluted. While city-wide pollution levels are monitored at a macro scale, granular, hyper-local air quality (AQ) and microclimate variations remain largely untracked. This gap in data is critical, as air pollution imposes an estimated annual health cost of over ₹7,50,000 crore, disproportionately affecting vulnerable populations. By leveraging AI-driven predictive intelligence for precise hyper-local AQ monitoring, targeted interventions can be implemented, enhancing the quality of life for millions.

OBJECTIVE

The proposed project, led by A Vaidyanathan, Personal Air Quality Systems Private Limited, PAQS, Bengaluru in collaboration with Ram P Rustagi, University of Maryland, Baltimore (UMB)C, aims to address this gap by integrating data from ground sensors, public databases, satellite imagery, and real-time traffic inputs. Using AI/ ML algorithms, the initiative will develop an accurate predictive model for hyper-local AQ, delivering realtime insights via an API. PAQS has already deployed sensors in 23 cities and will leverage its IoT platform, alongside partnerships with ISRO and GRASP-Earth, to enhance predictive accuracy.

OUTCOME

PAQS has successfully deployed ground-level sensors across 23 cities, establishing a robust network for real-time environmental monitoring. This project aims to integrate ground data, publicly available datasets, and satellite observations with an advanced AI-driven engine, developed in collaboration with UMBC. The goal is to accurately predict hyper-local AQ and microclimate variations, enabling more precise environmental monitoring and data-driven decisionmaking.



Application of Outcomes and Learnings

PAQS has successfully deployed sensors across multiple Indian cities and developed an IoT platform that integrates real-time environmental data with official sources like Pollution Control Boards. Recent collaborations, including an MoU with ISRO (In-Space) and partnerships with GRASP-Earth for satellite data access, have strengthened the project's capacity to refine predictive models. With these advancements, PAQS is actively working on preliminary AI models that will serve as a foundation for scalable, data-driven air quality solutions, reinforcing longterm Indo-U.S. cooperation in environmental technology and innovation. The use cases of the solution is best depicted below:



The partnership between PAQS and the University of Maryland, Baltimore County (UMBC) has played a pivotal role in advancing Al-driven air quality prediction models. UMBC's Civil and Environmental Engineering (CEE) department brings expertise in Al-based modeling and computational analytics, while its business school provides critical knowledge in market scaling, commercialization, and entrepreneurship—essential for ensuring PAQS' solutions reach a global audience.

Enhancing Al-Driven Air Quality Monitoring through Multidisciplinary Expertise

 PAQS brings together a multidisciplinary team with specialized expertise in:Electronics Product Design: Developing and deploying cutting-edge air quality sensors for real-time environmental monitoring. Environmental Sciences: In-depth expertise in air pollution metrics, atmospheric modeling, and realtime environmental impact assessment to ensure accurate analysis. Al Modeling: Proficiency in sensor fusion, recurrent neural networks (RNN), long short-term memory (LSTM) networks, and geospatial analytics for predictive modeling.

As part of its collaborative efforts, PAQS is collaborating with academic institutions in Bangalore for satellite data interpretation, specifically in Aerosol Optical Depth (AOD) analysis, while also leveraging its MoU with ISRO (In-Space) for satellite data access. As the lead implementer, PAQS is deploying sensors in at least two cities, curating and integrating real-time data, and developing advanced hyper-local AQ models. Meanwhile, UMBC, supported by experts like Prof. Ram Rustagi and Dr. Manas Gaur, is guiding the adoption of AI models, integrating global air quality frameworks, and optimizing atmospheric dispersion techniques to enhance predictive accuracy. This collaborative approach ensures a robust AI-driven system for precise air quality forecasting. By combining PAQS' on-ground capabilities with UMBC's AI expertise, this collaboration is shaping an advanced, hybridized air quality prediction system that can be scaled globally.

IMPACT

Technological Advancements and Intellectual Property

PAQS has secured multiple patents for its innovative air quality modelling technologies. Through this project, PAQS and UMBC aim to further develop and patent a cutting-edge AI-based prediction engine for hyper-local air quality monitoring. This technology is designed to be **universally accessible**, — with potential applications as a software module, SDK, or mobile app—empowering individuals worldwide with real-time, location-specific air quality insights. Imagine a scenario where a citizen in a low-income country can access precise air quality data on their mobile phones, enabling informed decisions for better health outcomes. fostering data-driven decision-making for urban planning, public health, and environmental sustainability.

Future Prospects and Growth Opportunities

PAQS, with its established customer base and nationwide installations, is well-positioned for future expansion. The project has paved the way for the development of Alenabled, hyper-local air quality (AQ) intelligence, offering context-aware, personalized insights-a highly valuable asset in today's digital era of customized information and advisories.

Potential Future Developments

Monetization Models: PAQS aims to commercialize its offerings through multiple value-added services:

Societal Impact and Public Awareness

A key objective of this project is to create widespread awareness and engagement around air quality issues. By providing free API access for research institutions and NGOs, PAQS ensures that its technology leveraged for is public good, fostering data-driven environmental policies and health interventions. Through this initiative, the project aims to bridge the gap between advancements technological and grassroots-level impact, ultimately contributing to improved public health and sustainable urban development.

LEVERAGING INDO-U.S. PARTNERSHIPS

This project is closely aligned with the Indo-U.S. strategic S&T partnership, harnessing Al-driven modeling for hyperlocal air quality monitoring. By integrating diverse datasets, the solution enhances predictive accuracy and real-world applicability. The core data sources include:

- Pollution Data: Sensor-based, publicly available, and satellite-derived air quality metrics
- Weather Data: Temperature, humidity, wind patterns, and precipitation
- Traffic Data: Real-time vehicular movement and congestion patterns
- Other Environmental Factors: Additional dynamic influences on air quality

By utilizing these datasets, PAQS' AI engine generates highly accurate, context-aware air quality insights,

 - Hyper-local Air Quality Data Real-time, precise AQ insights
 - Personalized Advisory Services Al-driven health and environmental recommendations tailored to individuals
 - Institutional Solutions Custom AQ analytics for businesses, policymakers, and urban planners

Scaling and Investment Strategy

To further enhance its AI-driven predictive models and expand market reach, PAQS plans to raise \$4 million (~₹35 Cr) in funding. The next phase of growth will focus on finalizing hyper-local AQ models and APIs, enabling broader commercialization and deeper market penetration.

This initiative not only strengthens Indo-U.S. scientific cooperation but also paves the way for global adoption, reinforcing its long-term **impact on public health and sustainability**.

PERSPECTIVE...

Strengthening the Technological Ecosystem

The IUSSTF-Viterbi Program, a partnership between the Indo-U.S. Science and Technology Forum and USC's Viterbi School of Engineering, fosters research collaboration and capacity building in key engineering and technology areas. This 8-week internship program allows top Indian students access to world-class facilities and expert mentorship at USC, strengthening the technological ecosystem by nurturing future researchers and building U.S.-India R&D connections. This article highlights the program's impact through the experiences of **Chirayata Bhattacharyya** (IISc Bangalore) and her mentor, **Sreetama Sarkar** (USC). Chirayata's research on efficient object detection, conducted within Professor Beerel's E2S2C group, led to acceptance at IEEE WACV 2025. Their perspectives showcase the program's contributions to professional growth, cross-cultural exchange, and cutting-edge research.

Mentor Perspective: Fostering Global Collaboration and Growth





This year, I had the opportunity to mentor students from India under the IUSSTF-Viterbi Program for the first time. Our research group regularly hosts exchange students, and this program is particularly valuable for those considering a PhD, providing firsthand experience in a US research environment. Students work on cutting-edge research topics and build connections that often lead to long-term collaborations between Indian institutions and USC.

Mentoring Chirayata and other students also allowed me to reflect on my own journey, which began with an international internship during my undergraduate years. Our conversations extended beyond research to include cultural exchange – sharing recommendations for places to visit, foods to try, and experiences to savor in LA.

Sreetama Sarkar

My advice to young researchers participating in similar programs

is to prioritize learning over immediate results. Research is an iterative process, so setbacks are part of the journey. In the rapidly evolving field of AI, continuous learning through research papers is essential.

These exchange programs are more than internships; they are stepping stones toward global collaboration, professional development, and personal growth. They strengthen the technological ecosystem by fostering cross-cultural understanding and building lasting relationships between researchers in India and the U.S.





Mentee Perspective: Sunshine on My Shoulders- Time as an IUSSTF-Viterbi Scholar



Chirayata Bhattacharyya

th ha er ex

"Chirayata, you can send me the update by Friday. Will take a look at them by the weekend." "Sure. But Prof, won't you be travelling this weekend?" "I always have time for my students. Just send me the presentation in time." This exchange encapsulates the dedication and support I received during my transformative experience as an IUSSTF-Viterbi scholar in the summer of 2024 at the University of Southern California (USC). This seemingly small gesture speaks volumes about the

productive and rewarding environment I found at USC and in Los Angeles.

My internship within the Ming Hsieh Department of ECE, specifically with Professor Peter Beerel's Energy Efficient Secure and Sustainable Computing (E2S2C) group, perfectly aligned with my passion for the intersection of Artificial Intelligence and traditional Signal Processing. As a Signal Processing master's student at the Indian Institute of Science, Bangalore, I'm deeply interested in exploring how these fields can contribute to a greener and more inclusive world. The E2S2C group's philosophy resonated deeply with this perspective, and the welcoming atmosphere fostered by the brilliant minds within the group made me feel at home from the very first week.

This was my first time traveling outside India, and the IUSSTF's seamless logistical support allowed me to fully embrace the excitement of this opportunity. The welcome lunch on the first day, where I met Professor Beerel and other mentors, facilitated immediate engagement in research discussions. It reinforced the universal nature of research; skills and passion transcend geographical boundaries.

My project focused on improving the computational efficiency of object detection for autonomous driving datasets. While I had prior experience with object detection algorithms, this internship provided the opportunity to delve into the intricacies of backbone models. My mentor, Sreetama Sarkar, was an invaluable guide, readily available to answer my questions and provide insightful direction. The weekly group meetings not only exposed me to the diverse research being conducted by other scholars but also fostered a sense of community.

While much machine learning research emphasizes accuracy, our project prioritized reducing computational complexity. Given the growing carbon footprint of AI, I believe this focus is crucial. We must be mindful of the environmental impact of our research, and I am grateful for the opportunity to contribute to this important area. This work has been accepted for presentation at the IEEE Winter Applications in Computer Vision (WACV 2025), a leading conference in the field—a significant achievement for me.



Compared to India, the abundance of research resources in the US was noticeable, including quicker industry feedback. Working alongside international scholars broadened my perspective and affirmed my place within the global research community. While the fundamental principles of computational research are similar across countries, the exposure to diverse perspectives and the collaborative spirit of the environment fostered acceptance, generosity, and other crucial qualities for a researcher in a dynamic field like AI.

Beyond the research, I embraced the LA experience. Weekends were for exploration – downtown LA, the lights of Broadway, Santa Monica Beach, Hollywood, and the Griffith Observatory. A road trip to the Grand Canyon with fellow interns was a truly awe-inspiring experience, bringing to life the lessons I had learned in school.

l eagerly anticipate returning to this environment of curiosity, work, and exploration.



The IUSSTF-Viterbi Program strengthens the technological ecosystem by providing hands-on research experience, fostering US-India knowledge exchange, and promoting collaboration in critical areas like AI and sustainable computing. It cultivates a network of interconnected researchers, building lasting relationships between institutions. By investing in talent, promoting collaboration, and focusing on impactful research, this program is vital for a robust and globally connected technological future.

25[™] USISTEF BOARD MEETING AND AWARD CEREMONY FOR THE CALL ON "CRITICAL AND EMERGING TECHNOLOGY: QUANTUM TECHNOLOGIES AND ARTIFICIAL INTELLIGENCE FOR TRANSFORMING LIVES"

ndia and the United States are building a comprehensive roadmap for partnership in crucial areas of mutual interest while emphasizing the importance of leveraging complementary strengths and addressing critical challenges. On June 22, 2023, Hon'ble Prime Minister Shri Narendra Modi and President Joseph R. Biden, Jr., in their joint statement, welcomed the launch of a **\$2 million grant program under the U.S.-India Science and Technology Endowment Fund (USISTEF) for the joint development and commercialization of Artificial Intelligence (AI) and quantum technologies**.

USISTEF had designed a call for proposal on "**Critical** and Emerging Technology: Quantum Technologies and Artificial Intelligence for Transforming Lives" to strengthen links and enhance technology cooperation between the innovation ecosystems of both nations. In pursuance of the announcement made by the leaders, on July 12, 2023, Dr. Jitendra Singh, Former Hon'ble Minister of State (Independent Charge) for Science and Technology; and Minister of State for Prime Minister's Office; Personnel, Public Grievances and Pensions; Department of Atomic Energy; and Department of Space, Government of India and Mr. Eric Garcetti, U.S. Ambassador to India in the presence of USISTEF Co-Chairs, Dr. Sanjeev Varshney, Former Advisor and Head (International Cooperation Division), Department of Science and Technology (DST), Government of India and Mr. Drew Schufletowski, Former Minister-Counselor for Economic Affairs, Environment, Science and Technology, U.S. Embassy, New Delhi formally launched the special call at the American Center, New Delhi.

The Call for Proposals (CFP) opened on July 12, 2023, with an application submission deadline of September 20, 2023. Proposals were solicited in two categories: Quantum Technologies, aimed at supporting project teams from proof-of-concept through technology development and commercialization, and Artificial Intelligence, focused on helping teams deploy and commercialize a laboratory-validated prototype demonstrating advanced innovation and societal impact. The grant-in-aid offers support of up to INR 1,00,00,000/- (1 Crore) per project for up to a duration of 24 months.



25th USISTEF Board Meeting: Board Members with IUSSTF Team

Event Diary



25th USISTEF Board Meeting

In response to the call for proposals, IUSSTF received 196 applications—153 for Artificial Intelligence and 43 for Quantum Technologies. The secretariat conducted a preliminary screening before sharing the applications with the Binational Joint Technical Expert Panel for evaluation and recommendations.

The 35 project teams shortlisted under Artificial Intelligence presented their proposals to the Joint Expert Panel (JEP) over four days for the next stage of review. Similarly, the 14 shortlisted Quantum project teams made their presentations to the Joint Expert Panel (JEP) over two days. Each team outlined their overall goals, key innovations, roles and responsibilities of partners, and the nature of the U.S.-India collaboration.

Following the review, the JEP recommended 11 projects under Artificial Intelligence and 6 under Quantum for Financial Due Diligence. The Due Diligence (DD) Committee assessed the financial health of these 17 projects, evaluating business, legal, operational, and financial aspects. The DD recommendations were then submitted to the USISTEF Board for final approval.

25th USISTEF Board Meeting

The 25th meeting of the U.S.-India Science and Technology Endowment Board (USISTEB) was held under the cochairmanship of Dr. Praveen Somasundaram, Head of International Cooperation, Department of Science and Technology, Government of India (Indian Co-Chair), and Mr. Philip Cummings, Acting Minister Counselor, Economic Affairs Section, U.S. Embassy, New Delhi (U.S. Co-Chair - Acting), to finalize the awardees. During the meeting, the Board reviewed the 17 proposals and, by consensus, recommended all for support.

Award Ceremony

The U.S.-India Award Ceremony for the Initiative on Critical and Emerging Technology under the United States–India Science and Technology Endowment Fund was organized on October 10, 2024, at The Leela Palace, New Delhi. The event celebrated the awarding of 17 outstanding projects in Quantum Technologies and Artificial Intelligence, showcasing the strength of Indo-U.S. collaboration in driving innovation and creating a lasting impact.



Award Ceremony

The awardees were honored by Dr. Jitendra Singh, Hon'ble Minister of State (Independent Charge) for Science and Technology, and Minister of State for the Prime Minister's Office; Personnel, Public Grievances and Pensions; Department of Atomic Energy; and Department of Space, Government of India, and Mr. Eric Garcetti, U.S. Ambassador to India (U.S. Embassy India). Distinguished dignitaries who shared special addresses included Dr. Abhay Karandikar, Secretary, Department of Science and Technology (India DST), Government of India, and Dr. Seth Center, Acting Special Envoy, Office of the Special Envoy for Critical and Emerging Technology. The occasion was also graced by the presence of Prof. Ajay Kumar Sood, Principal Scientific Advisor to the Government of India (Office of the Principal Scientific Adviser to the Government of India). The ceremony featured special addresses from dignitaries, networking opportunities, and the premiere of the film that showcased the 17 awarded projects. The film effectively captured the scientific breakthroughs of each project. The event highlighted the critical role of bilateral partnerships in addressing global challenges, strengthening resilient supply chains, and fostering sustainable growth. The awarded projects reflect not only technological excellence but also a shared commitment to societal progress.

The projects would be supported under two themes

- **Quantum Technologies:** USISTEF invites joint proposals focusing on innovation pertinent to the scaling-up and application of emerging quantum technologies. The call for proposal could be on a specific area or a combination of different sub-categories that fall broadly under quantum technologies like quantum computing, quantum communication, quantum sensing and metrology, quantum cryptography, quantum algorithms, quantum imaging and quantum simulation involving hardware, software and algorithms or a system for specific applications. The aim is to support project teams having proof-of-concept through technology development and commercialization.
- **Artificial Intelligence:** USISTEF invites joint proposals to support a team deploy and commercialize a laboratory-validated prototype that ensures and demonstrates advanced innovation and societal impact. The call is open for trustworthy and explainable AI systems and technology solutions that are fair, transparent, safe, and have the potential to transform every walk of life. Focus areas may include, but are not limited to:

- Healthcare and Agriculture (including relevant priority areas such as biotechnology, devices, diagnostics, tools, and techniques)
- Cybersecurity (techniques and approaches to support secure communication)
- Education

- Financial and banking services
- Transportation
- Earth sciences
- Water resource management

S. No.	Project Title	Lead Indian Partner	Lead U.S. Partner			
Artificial Intelligence						
1	"To develop AI-enabled technology for oral cancer screening and treatment"	Pawan Gupta	Jonathan Celli Photodynamic Solutions Inc., Boston			
		Innovative Cancer Care and Rehabilitation Private Limited, Faridabad				
2	"Hyper local air quality - AI enabled context- aware content system"	A Vaidyanathan	Ram P Rustagi			
		Personal Air Quality Systems Private Limited, Bengaluru	University of Maryland, Baltimore			
3	"Artificial intelligence aided detection of plausible seizure events using a portable smartphone-based electroencephalography device"	Raja Aditya Kadambi	Elakkat Dharmarai Gireesh			
		Mocxa Health Private Limited, Bengaluru	AdventHealth, Orlando			
4	"AI-enabled integrated screening for lung health: ensuring last mile care delivery"	Shibu Vijayan	Vikas Gulani			
		Qure.ai Technologies Private Limited, Mumbai	University of Michigan, Michigan			
5	"A novel deep compressed sensing powered autofluorescence lifetime imaging device for rapid pathogen detection and classification in wound care diagnostics and biologics manufacturing"	Jagdish A Krishnaswamy	Weijian Yang			
		Adiuvo Diagnostics Private Limited, Chennai	University of California, Davis			
6	"AI-enabled decision support system for identifying and predicting mosquito breeding sites"	Aditya Sharma	Satish Cherukumalli			
		Sparrow Analytics Private Limited, Panchkula	Trakitnow Inc., Columbia			
7	"TimBre - a noninvasive screening and monitoring solution for lung ailments using acoustics & AI"	Rahul Pathri	Delian Coroama			
		Docturnal Private Limited, Secunderabad	Webmagnat LLC, Austin			

/

AWARDED TEAMS

S. No.	Project Title	Lead Indian Partner	Lead U.S. Partner
8	"AI-powered novel patented pocket medical scanner - non-invasive medical diagnostic device based on sound analysis - to screen, diagnose and monitor pneumonia."	Rajesh Palani Rajesh Laboratories Private Limited, Bengaluru	Sahana Sharan Elate Health Partners, Plano
9	"Beyond the black box: unveiling image data decisions in neuro oncology through GPT- powered explainable AI"	Swarnambiga Ayyachamy Saveetha Engineering College, Chennai	Girish Srinivasan PMX Inc., Palatine
10	"Multispectral SWIR imaging for surgical Augmentation of non-palpable Breast cancer Lesions (MIRABeL)"	Subhamoy Mandal Indian Institute of Technology, Kharagpur	May Dongmei Wang Georgia Institute of Technology, Atlanta
11	"Neel vahan live fish transportation system"	Suvo Sarkar Shuvoneel RAS System Private Limited, Pune	Pramod Sajja Paramount Software Solutions, Inc., Alpharetta

Quantum Technologies

1	"Development of Superconducting Single	Manjunath R Venkatesh	Robin Cantor
	Photon Detector (SNSPD) for Quantum	SuperQ Technologies India Pvt	STAR Cryoelectronics LLC,
	Communication"	Ltd, Bengaluru	Santa Fe
2	"CCORQS: Cryo-CMOS Coupled Oscillators enabling Robust Quantum Sensors"	Debashis Mandal Indian Institute of Technology, Kharagpur	Subhanshu Gupta Swaym Tech Inc., Pullman
3	"Optical parametric oscillator on a photonic chip"	Anil Prabhakar Indian Institute of Technology, Madras	Shayan Mookherjea University of California, San Diego
4	"CV-QKD-seeded quantum-noise stream	Sandeep Kumar Singh	Prem Kumar
	cipher encryption: codesign using advanced	Indian Institute of Technology,	Northwestern University,
	modulations"	Roorkee	Evanston
5	"Quantum gate characterization using pulse sequences"	Ankur Raina Indian Institutes of Science Education and Research, Bhopal	Mark Elo Tabor Electronics LLC, San Francisco
6	"Quantum sensors for gravimetry:	Debayan Gupta	Aishwarya Das Praveen
	innovating subsurface density profiling"	Ashoka University, Sonepat	Dirac Labs Inc., Madison

WATER ADVANCED RESEARCH AND INNOVATION (WARI)

WATER ADVANCED RESEARCH AND INNOVATION (WARI) FELLOWSHIP PROGRAM

The Water Advanced Research and Innovation (WARI) Fellowship Program, a collaborative initiative of the Department of Science and Technology (DST), Government of India, the University of Nebraska-Lincoln (UNL), the Daugherty Water for Food Global Institute (DWFI), and the Indo-U.S. Science and Technology Forum (IUSSTF), aims to foster long-term Indo-U.S. partnerships in water sciences and engineering. The program offers Indian students and scientists access to world-class research facilities at premier U.S. institutions, including the University of Nebraska-Lincoln, Daugherty Water for Food Global Institute, Purdue University, Texas Tech University, Oklahoma State University, University of Idaho, and the University of Texas at Austin, thereby promoting research, capacity building, and sustainable solutions to water challenges.

This year's call received an overwhelming response,

with applications reflecting a wide range of research interests under the broad domains of water sciences and engineering. Key areas of focus included **hydrology, water pollution, sustainable water infrastructure, climate change impacts on water systems, applications of data sciences and AI, and policy relevance in water sciences.**

The Selection Committee Meeting for the **2024-25 Batch** of **WARI Fellowship Program** (India to U.S. module) was successfully held on **November 19, 2024.** Following a robust three-tiered evaluation process, the Selection Committee finalized **10 candidates (5 interns and 5 fellows)** for the program, along with a waitlist of 10 candidates.

The meeting reaffirmed the WARI Program's role in addressing critical water issues and advancing Indo-U.S. collaborations in science and technology. The selected candidates will soon embark on their journey to contribute to cutting-edge research, capacity building, and long-term knowledge exchange in the vital field of water sciences.



IUSSTF Team with Experts

KHORANA PROGRAM

The Khorana Program, launched in 2008 by the Department of Biotechnology (DBT), WINStep Forward (WSF), and the Indo-U.S. Science and Technology Forum (IUSSTF), aims to foster strong Indo-U.S. scientific collaborations. Named in honor of Dr. Har Gobind Khorana, Nobel laureate, the program supports Indian students in biotechnology and allied fields by providing research internships at top U.S. universities for 10-12 weeks each summer. Over 490 students have benefited from this initiative, which continues to thrive in its 16th year.

2024 KHORANA SCHOLAR ORIENTATION AND CLOSE ¹ - OUT MEETING FOR THE CLASS OF 2024

A successful Khorana Program Orientation for the Batch of 2024 was hosted by WINStep Forward (WSF) in partnership with the Indo-U.S. Science and Technology Forum (IUSSTF) and the Department of Biotechnology (DBT) on September 29, 2024.

The virtual event emphasized the importance of cross-

border collaboration and encouraged scholars to embrace challenges, foster innovation, and serve as brand ambassadors for the program. Over **65 participants** attended the event, making it a vibrant and inspiring session.

KHORANA PROGRAM 2025 CALL WEBINAR

The **Department of Biotechnology (DBT)** and the **Indo-U.S. Science and Technology Forum (IUSSTF)** hosted a webinar for prospective Khorana Scholars to announce the **2025 Call for Applications** on October 3, 2024.

Over **150 participants** joined the session, which was marked by enthusiasm and insightful questions from attendees. The webinar provided valuable insights into the program's objectives, the application process, and how the Khorana Program supports scholars in their research journeys at premier U.S. institutions.

The session was a significant success, fostering excitement and engagement among future applicants.



Joint Webinar by DBT and IUSSTF for Prospective Applicants

Khorana Program for Scholars: 2025 Call

03 October 2024 | 11:30 AM to 12:30 PM (IST)



Event Diary

DELEGATION VISIT OF THE BUREAU OF OCEANS AND INTERNATIONAL ENVIRONMENTAL AND SCIENTIFIC AFFAIRS (OES) AT IUSSTF

The Indo-U.S. Science and Technology Forum (IUSSTF) hosted a high-level delegation from the U.S. Department of State's Bureau of Oceans and International Environmental and Scientific Affairs (OES) on August 26, 2024. Led by Ms. Jennifer R. Littlejohn, Acting Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs (OES), the delegation discussed opportunities to enhance Indo-U.S. collaboration in science, technology, and innovation.

Key discussions focused on the initiative in Strategic Partnerships and its potential to drive innovation and economic growth. Both sides explored avenues for joint research projects, technology transfer, and capacity building in areas like sustainable energy, artificial intelligence, biotechnology, and quantum computing.

The meeting aimed to strengthen the Indo-U.S. partnership and address global challenges through collaboration in science and technology. Both sides expressed their commitment to fostering future collaborations, including student and faculty exchange programs.



OES Meeting: Experts with IUSSTF Team





Call for Proposal

Transforming Technology Solutions through Advanced Materials and Critical Minerals

Quantum

Cybersecurity

Semiconductor

AI Systems

Biomaterials

Energy Security

Indo-U.S. Science and Technology Forum

Catalyzing Indo-U.S. Science and Technology Cooperation for 25 years !

Overview

In 2025, the United States and India announced the launch of the U.S.-India TRUST ("Transforming the Relationship Utilizing Strategic Technology") initiative. Among the many focal areas of this grand initiative, advanced materials and critical minerals - the transformative resources of the future have been recognized as crucial areas for collaboration. This domain, often addressed as the foundation of next-generation innovations, is pivotal to technological breakthroughs that will shape the future.

The call under **United States - India Science and Technology Endowment Fund (USISTEF)** is set to bolster collaborative efforts by supporting joint projects focused on these transformative areas. It aims to foster innovation, strengthen partnerships, and tackle the challenges surrounding supply chain resilience in these critical areas.

About the Fund:

The Governments of the United States of America (through the Department of State) and India (through the Department of Science & Technology) established the United States–India Science & Technology Endowment Fund (USISTEF) in 2009 for supporting promising joint U.S.-India entrepreneurial initiatives on co-developing products or technologies that are beyond the ideation stage, have significant potential to commercialization within 2-3 years and address critical societal challenge. USISTEF activities are implemented and administered through the binational **Indo-U.S. Science and Technology Forum (IUSSTF)**.

Objective

Through a competitive grants program, the USISTEF selects and supports promising joint U.S.-India technology innovation and entrepreneurial initiatives that are commercially viable and socially relevant. These joint initiatives can originate from U.S. and Indian entities including startups, government, academic, or commercial endeavors, and any combination thereof provided they focus on applied R&D, incorporate a business plan and proof of commercial concept, and have significant sustainable commercial potential.

Call Theme

The call will fund joint development and commercialization of **advanced materials and critical minerals supporting the requirements of at least one of the following fields:**



The joint proposals aim to support teams in deploying and commercializing laboratory-validated prototypes that demonstrate innovation and societal impact.

Essential Considerations-The mandate of USISTEF is **"Commercializing Technologies for Societal Impact.**" In line with this, preference will be given to:

- Technologies demonstrating advanced levels of innovation.
- Technologies having higher commercialization potential or technology readiness levels (TRL).
- Breakthrough technologies that address critical societal challenges.



Eligibility

- Proposals must have at least one Indian and one U. S. partner for the complete duration of the proposed project. Primary partners from both sides must have significant and synergistic roles in the development and commercialization of technologies for the specific application described in the proposal.
- At least one of the partners must be an entrepreneurial entity (preferably a small or medium-scale enterprise) and the team may include any combination of the following:
 - Incorporated companies including start-ups; or
 - Non-incorporated entities; or
 - Academic, governmental and non-governmental research institutions or their consortia
- Subsidiaries/spin-offs of one partner in the other country are not eligible to apply.
- If one of the partners is an academic institution/government entity/research institution, a no-objection certificate approving the participation of the Principal Investigator in the project must be submitted at the time of the application.
- The relationship between the U.S. and Indian partners must be clearly defined, including ownership of intellectual property rights for the technology proposed to be developed and commercialized. A formal, signed "Partnership Agreement" must be submitted once the team is shortlisted for further review.
- The partners would need to agree to and sign the "Terms & Conditions" of the USISTEF Award and submit it once the team is shortlisted for further review.

Contact us

Indo-U.S. Science and Technology Forum

Fulbright House, 12 Hailey Road, New Delhi-110001, India | +91-11-42691700 , +91-11-23321552

🌐 www.iusstf.org

🖂 endowment@iusstf.org



Indo-U.S. Science and Technology Forum

Who we are?

The Indo-U.S. Science and Technology Forum (IUSSTF) established under an agreement between the Governments of India and the United States of America in March 2000 and funded jointly by both the Governments, is an autonomous bilateral organization that promotes Science, Technology, Engineering, and Innovation through substantive interaction among government, academia, and industry. The Department of Science and Technology, Government of India and the U.S. Department of State are the respective nodal departments.

What we do?

Foster excellence by capitalizing on the scientific and technological synergy Disseminate information and create awareness through scientific exchanges Build linkages by networking between academia and industry Explore new frontiers by nurturing contact between young and mid-career scientists Pave way to sustainable interactions and establish long-term relationships Encourage public-private partnership to inculcate elements of innovation and entrepreneurship

What we support?

Exciting and innovative Indo-U.S. collaborative programs cutting across disciplines and institutions

Programs on Innovation and Entrepreneurship

Public-Private Networked R&D Joint Centers Knowledge R&D Networked Joint Centers Flagship Events and Special Initiatives for Strategic Partnerships Academia-Industry Connect Programs Bilateral Workshops and Symposia Advance Schools and Training Programs Research Fellowships for Faculty Student Internships & Visiting Professorships

How to contact us?

Indo-U.S. Science and Technology Forum Fulbright House 12 Hailey Road, New Delhi - 110 001

For program details visit: www.iusstf.org

Catalyzing Indo-U.S. Science, Technology, and Innovation Collaboration for 25 Years!