Indo-U.S. Science and Technology Forum

Connect

Newsletter

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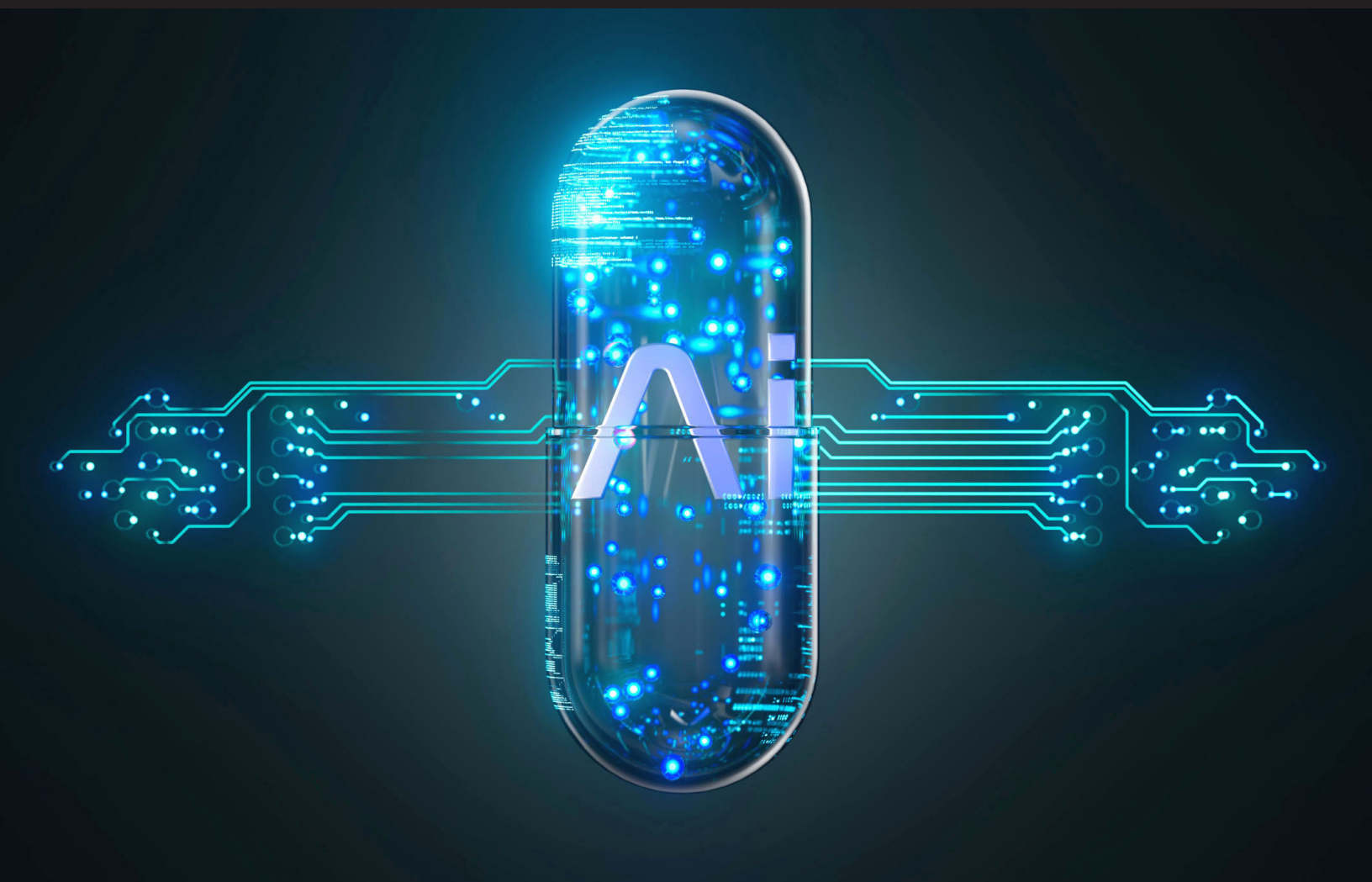

IUSSTF
Indo-US Science and Technology Forum

ARTIFICIAL INTELLIGENCE IN HEALTHCARE

Transforming Care through Indo-US Collaboration

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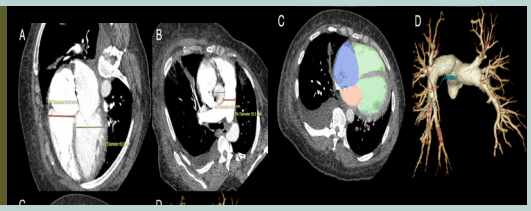

Event diary

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FROM THE EDITOR'S DESK

Since its inception, the Indo-U.S. Science and Technology Forum (IUSSTF) has served as a vital bridge between the scientific communities of India and the United States, fostering meaningful exchange in science, technology, and innovation. Over the past 25 years, it has catalysed collaborative research, enabled the cross-pollination of ideas, and built partnerships that extend beyond individual advancement to collectively address pressing global challenges. In doing so, the Forum has also nurtured generations of emerging researchers, many of whom continue to make significant contributions across disciplines. Even as priorities and research landscapes have evolved, IUSSTF has remained adaptive and Science- forward, strengthening its position as a trusted platform for impactful bilateral collaboration.

As we celebrate this milestone (25th year), IUSSTF's initiatives are increasingly aligned with the Indo-U.S. TRUST framework, reflecting a shared commitment to advancing responsible, secure, and transformative technologies. In this spirit, this edition of Connect focuses on the growing role of Artificial Intelligence (AI) in healthcare. The ***Cover Story*** highlights the shift from algorithms to real-world applications, underscoring the need for solutions that are not only innovative but also equitable and scalable. Our Flagship Initiatives further illustrate this momentum through ***USISTEF***-supported projects, including AI-enabled technologies for oral cancer screening and integrated solutions for lung health and last-mile care. These efforts demonstrate how cutting-edge research is being translated into practical interventions, contributing to improved healthcare delivery while advancing pathways toward joint innovation and commercialization.

The ***Perspective*** section brings a human dimension to this journey, featuring a mentor–mentee collaboration under the Khorana Program. By integrating clinical insight with computational tools, their work on AI-driven diagnostics for pulmonary embolism reflects the power of interdisciplinary learning and the importance of building a strong research talent pipeline.

Beyond healthcare, investing in future generations remains central to our mission. ***The Space Experiential Learning Center (SELC)*** exemplifies this commitment by engaging high school students through immersive, hands-on STEM education. With participation from leading researchers and astronauts, including Ms. Sunita Williams, the program offered young learners an inspiring glimpse into the possibilities of space science and innovation.This edition also marks an important milestone with five years of ***Solar Decathlon*** India, an initiative that has embedded sustainability, design thinking, and data-driven approaches into education, advancing shared priorities in climate action and clean energy. The ***Event Diary*** captures the breadth of IUSSTF's engagements during the phase, reflecting a dynamic landscape of programs, partnerships, and dialogues that continue to deepen Indo-U.S. cooperation.

Looking ahead, we are excited about our new initiative, the ***Young Innovators STEM Lab***, which aims to empower the next generation through immersive learning using emerging technologies such as AR and VR.

Together, these stories reflect our shared vision, leveraging science and technology not merely for advancement, but for meaningful, inclusive, and lasting impact. We hope you enjoy this edition of ***Connect***.

Dr. Chaitali Bhattacharya
Executive Director (Interim), IUSSTF

ARTIFICIAL INTELLIGENCE IN HEALTHCARE: FROM ALGORITHMS TO ACTION

AI REVOLUTION IN HEALTHCARE: USISTEF-SUPPORTED INNOVATIONS

At a time when diseases such as cancer and respiratory illnesses continue to impose a heavy burden—particularly among populations with limited access to specialists and diagnostic infrastructure—these projects demonstrate how AI can become an enabler of equity in healthcare. By designing portable, affordable, and digitally connected solutions, they seek to move advanced diagnostics out of tertiary hospitals and into primary care settings, outreach camps, and underserved communities.

Artificial Intelligence (AI) is rapidly reshaping healthcare systems across the world—transforming how diseases are detected, how care is delivered, and how health services reach populations that have long remained underserved. From image-based diagnostics to digitally enabled care pathways, AI is helping bridge critical gaps between medical expertise and real-world healthcare delivery.

Recognizing the transformative potential of these technologies, the **United States–India Science & Technology Endowment Fund (USISTEF)** launched a special call under its **Critical and Emerging Technologies (CET)** program focused on **Artificial Intelligence and Quantum Technologies for Transforming Lives**. The objective was to support joint Indo–U.S. projects that demonstrate how frontier technologies can move beyond research and into practical, scalable solutions with meaningful societal impact.

In this edition of *IUSSTF CONNECT*, the spotlight is on **Artificial Intelligence in Healthcare**, with a special focus on two pioneering Indo–U.S. collaborative projects supported under the USISTEF CET call. Both initiatives reflect a shared vision: to harness AI not merely as a technological innovation, but as a tool to strengthen early detection, improve clinical decision-making, and extend quality healthcare to the last mile.

While their clinical focus areas differ—one addressing oral cancer and the other lung health—the two projects are united by a common approach. Each integrates AI into end-to-end care models that combine screening, diagnosis, referral, and follow-up, ensuring that technology translates into timely medical action rather than remaining confined to algorithms and dashboards.

These initiatives also underscore the power of Indo–U.S. collaboration in advancing healthcare innovation. U.S. partners contribute expertise in AI, imaging technologies, and clinical validation, while Indian partners bring deep understanding of local health challenges, implementation realities, and pathways for scale within public and community health systems. Together, they co-create solutions that are scientifically robust and socially relevant.

At a time when diseases such as cancer and respiratory illnesses continue to impose a heavy burden—particularly among populations with limited access to specialists and diagnostic infrastructure—these projects demonstrate how AI can become an enabler of equity in healthcare. By designing portable, affordable, and digitally connected solutions, they seek to move advanced diagnostics out of tertiary hospitals and into primary care settings, outreach camps, and underserved communities.

The following pages present two USISTEF-supported projects that exemplify this shift from innovation to impact: **an AI-enabled technology platform for oral cancer screening and treatment**, and **an AI-enabled integrated model for lung health screening and last-mile care delivery**. Together, they illustrate how Artificial Intelligence, when guided by strong partnerships and real-world needs, can evolve from experimental tools into transformative healthcare solutions.

A Blueprint for Global Collaboration: These initiatives are more than just technical triumphs; they are a testament to the power of co-creation. U.S. expertise in advanced AI modeling and optical engineering has been seamlessly integrated with Indian clinical insights and the ability to innovate at scale. As you read the following project features, you will see how AI is helping to close health equity gaps rather than widen them. These stories demonstrate that when we move from the lab to the field, AI does not replace the human touch in medicine—it extends it to those who have long been beyond its reach.

AI-ENABLED ORAL CANCER CONTROL IN RESOURCE-LIMITED SETTINGS: AN INDO–U.S. COLLABORATIVE HEALTHCARE INNOVATION

U.S.-INDIA SCIENCE AND TECHNOLOGY ENDOWMENT FUND (USISTEF)

PAWAN GUPTA (INNOVATIVE CANCER CARE AND REHABILITATION PRIVATE LIMITED, FARIDABAD) AND JONATHAN CELLI (PHOTODYNAMIC SOLUTIONS INC., BOSTON)

Dr Pawan Gupta
Founder Director - ICanCaRe (Innovative Cancer Care and Rehabilitation Pvt Ltd.), Faridabad

Dr Pravesh
Professor Kiet Group of Institutions, Delhi NCR Ghaziabad

Rongguang Liang
College of Optical Sciences Professor at University of Arizona Tucson, Arizona, United States

Jonathan Celli, PhD
Professor at University of Massachusetts Boston, Massachusetts, United States

Oral cancer represents one of India's most serious yet preventable public health challenges. India bears the highest global burden of oral cancers, largely driven by widespread tobacco use and delayed diagnosis. Despite the fact that oral cancers are often preceded by identifiable oral potentially malignant disorders (OPMDs) and are highly amenable to early detection and intervention, a majority of patients still present at advanced stages. This gap is most pronounced among populations of lower socio-economic status, particularly in rural and semi-urban regions where access to specialist care, biopsy services, and advanced treatment facilities remains limited.

The USISTEF-supported Indo–U.S. collaborative project addresses this unmet need through the development and implementation of an **AI-enabled, portable, and integrated model for oral cancer screening, early diagnosis, tobacco cessation, and non-surgical treatment**, specifically designed for deployment in resource-limited settings.

BACKGROUND AND PROBLEM STATEMENT

A defining clinical reality of oral cancer is that **nearly all cases originate from pre-existing potentially malignant lesions** such as leukoplakia and erythroplakia. If these lesions are detected early and managed appropriately, progression to invasive cancer can often be prevented. However, at present no treatment is done for patients with OPMD. Conventional diagnostic and treatment are not appropriate neither follow up of these patients is done nor readily available in primary care or rural settings.

There is therefore a critical need for **biopsy-less, point-of-care diagnostic and treatment solutions** that can be delivered closer to the community.

RATIONALE AND OBJECTIVES: ARTIFICIAL INTELLIGENCE AS AN ENABLER

The project leverages **artificial intelligence (AI)** to

LED treatment in progress

overcome limitations for diagnostic for oral lesion, AI-assisted image analysis enables real-time categorization of oral lesions using autofluorescence imaging (AFI) and white-light imaging (WLI), allowing frontline providers to identify high-risk lesions with specialist-level support.

Bandweaver Laser Factory

The core objectives of the project are to:

- Develop a **portable AI-enabled optical diagnostic platform** for real-time categorization of oral lesions. Integrate **digital tobacco cessation protocols** to address the primary etiological factor driving disease progression.
- Provide **on-site, non-invasive treatment** for OPMDs using photobiomodulation (PBM) and photodynamic therapy (PDT).
- Establish structured digital follow-up pathways for monitoring disease progression and retreatment.
- Deliver a **single, integrated care model** suitable for primary health centers, dental clinics, and outreach camps.

PROJECT LEADERSHIP AND INSTITUTIONAL COLLABORATION

The project is led by a multidisciplinary Indo–U.S. team combining clinical oncology, optical imaging, photomedicine, and AI-driven diagnostics.

The Indian partner, **Prof. Dr. Pawan Gupta**, is Senior Director (Surgical Oncology) at **Max Institute of Cancer Care**, Delhi NCR, and Founder of **ICanCaRe**. Prof. Gupta provides clinical leadership and implementation strategy, grounding the project in India's high disease burden and real-world healthcare delivery challenges.

The U.S. collaboration is led by **Dr. Jonathan Celli**, Professor at the **University of Massachusetts Boston**, an internationally recognized expert in photodynamic therapy. Dr. Celli leads the development and clinical adaptation of low-cost, portable PDT systems optimized for early oral cancer and OPMDs.

A key technological pillar of the project is contributed by **Dr. Rongguang Liang**, Professor at the **University of Arizona**, whose laboratory has developed compact, dual-modality intraoral imaging devices that integrate with cloud-based AI-assisted lesion classification for biopsy-less screening.

The collaboration is supported by the **Indo-U.S. Science and Technology Forum**, which plays a catalytic role in enabling joint innovation and translational impact.

KEY INNOVATIONS AND OUTCOMES

A defining innovation of this initiative is the **integration of diagnosis, prevention, and treatment into a single care continuum**. Instead of treating screening, tobacco cessation, and lesion management as isolated activities, the project unifies them into a structured, technology-enabled workflow.

Major outcomes include:

- AI-assisted, biopsy-less categorization of oral lesions at the point of care.
- Development of **low-cost, battery-operated PDT**

hardware suitable for rural deployment.

- Standardized **digital tobacco cessation protocols** with individualized interventions and longitudinal follow-up.
- Demonstration of excellent clinical outcomes in early lesions treated with PDT, including complete response, minimal morbidity, and excellent mucosal healing.
- Creation of a scalable model that can be operated by trained primary-care and dental professionals.

ESTABLISHING INDIA'S FIRST DEPARTMENT OF PHOTOMEDICINE

A landmark translational outcome of the USISTEF program is the establishment of **India's first Department of Photomedicine** at **Max Super Speciality Hospital Vaishali**, spearheaded by ICanCaRe under Prof. Gupta's leadership.

This department operationalizes the project's vision by offering a **new treatment paradigm for high-risk oral cancer patients**, integrating AI-enabled diagnosis, digital tobacco cessation, and light-based therapies such as PBM and PDT. It serves as a referral hub for managing OPMDs, enabling early intervention, structured follow-up, and retreatment where required—often avoiding surgery.

Beyond patient care, the department functions as a training, research, and demonstration center, showcasing how advanced photomedicine technologies can be safely and effectively implemented in Indian clinical settings.

CLINICAL, TECHNOLOGICAL, AND SOCIETAL IMPACT

Clinically, the project shifts oral cancer care from late-stage intervention to **early detection and prevention**, significantly improving patient outcomes. Technologically, it demonstrates how AI-enabled imaging and phototherapy can be adapted into affordable, portable solutions for low- and middle-income countries.

From a societal perspective, the model directly addresses healthcare inequities by delivering advanced care to underserved populations. By embedding tobacco cessation into the diagnostic pathway, it also contributes to broader reductions in tobacco-related morbidity beyond cancer alone.

STRENGTHENING THE INDO–U.S. STRATEGIC PARTNERSHIP

The project exemplifies the strength of Indo–U.S. collaboration in addressing global health challenges. U.S. partners contribute advanced expertise in AI, optical imaging, and photomedicine, while Indian partners ensure contextual relevance, scalability, and real-world implementation.

This synergy enables rapid translation from laboratory innovation to clinical impact, reinforcing the shared

Application of LASER LED for PBM

Indo–U.S. commitment to advancing science for societal benefit.

FUTURE PROSPECTS

Looking ahead, the project envisions large-scale deployment across multiple Indian states, integration with national screening and tobacco control programs, expansion of AI algorithms through larger datasets, and technology transfer for local manufacturing. Together, these pathways aim to establish a **nationally scalable, AI-enabled oral cancer control ecosystem**.

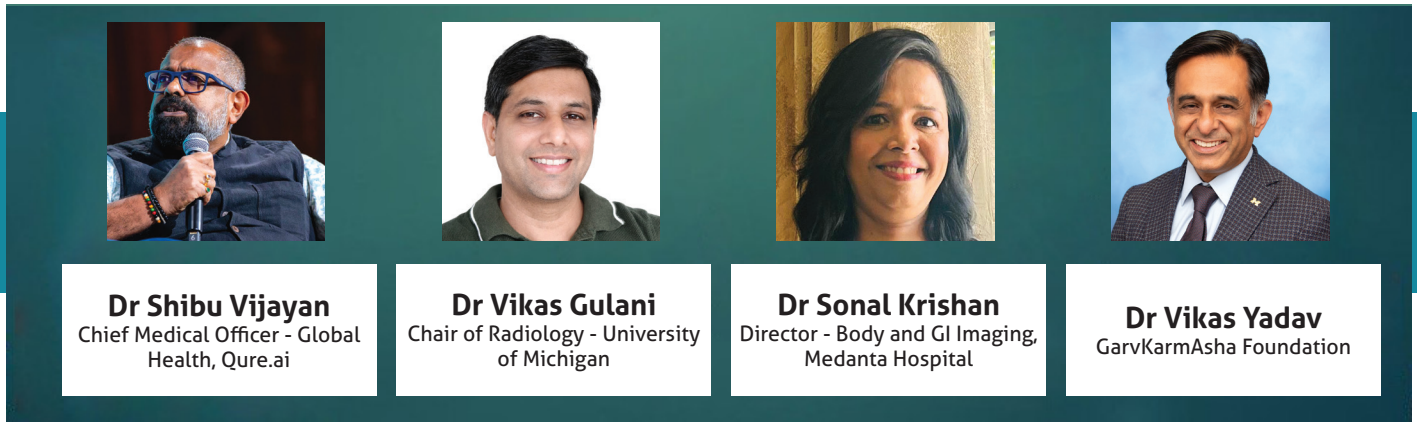
In conclusion, this USISTEF-supported initiative demonstrates how artificial intelligence, when combined with appropriate technology and strong international collaboration, can transform preventive oncology. By uniting early detection, behavior change, and precision photomedicine into a single model, the project offers a replicable blueprint for AI-driven healthcare innovation with lasting public health impact.

Application of LASER LED for PBM

AI AT THE LAST MILE: HOW AN INDO-U.S. COLLABORATION IS REIMAGINING LUNG HEALTH SCREENING IN RURAL INDIA

U.S.-INDIA SCIENCE AND TECHNOLOGY ENDOWMENT FUND (USISTEF)

SHIBU VIJAYAN (QURE.AI TECHNOLOGIES PRIVATE LIMITED, MUMBAI) AND VIKAS GULANI (UNIVERSITY OF MICHIGAN, MICHIGAN)



Dr Shibu Vijayan
Chief Medical Officer - Global Health, Qure.ai

Dr Vikas Gulani
Chair of Radiology - University of Michigan

Dr Sonal Krishan
Director - Body and GI Imaging, Medanta Hospital

Dr Vikas Yadav
GarvKarmAsha Foundation

In many parts of the world, lung disease is diagnosed too late. Not because it is untreatable, but because it is caught late, or never at all. Tuberculosis, lung cancer, and other chronic lung conditions often progress quietly, especially in rural and underserved communities where access to clinicians, or healthcare practitioners and follow-up care is limited. In Nuh district in Haryana, India one of the country's high-burden regions for tuberculosis, this challenge is compounded by social stigma, intermittent infrastructure, and fragile care pathways that struggle to keep patients engaged once they enter the system.

It is within this reality that AI-enabled Integrated Screening for Lung Health: Ensuring Last Mile Care Delivery was designed. The project brings together Indian public health partners, frontline health workers, and U.S.-based clinical expertise to answer a deceptively simple question: can artificial intelligence help make early lung disease detection routine, reliable, and actionable at the last mile of care?

At the heart of the initiative is qXR, an AI-based chest X-ray interpretation tool developed by Qure.ai. Trained to identify and localize over 30 lung-related findings, including nodules, opacities, consolidation, fibrosis, and pneumothorax, qXR acts as a clinical decision support system for health workers operating in settings where specialist radiology support is scarce or absent. But the project's ambition extends beyond detection. Screening is only meaningful if it leads to timely diagnosis, treatment initiation, and completion. To bridge this gap, the project integrates qXR with qTrack, a digital care coordination platform that supports referrals, follow-ups, and treatment adherence.

This combination of AI-enabled screening and digitally supported care coordination forms the backbone of an integrated lung health pathway designed specifically for resource-constrained environments.

FROM ALGORITHM TO ACTION ON THE GROUND

The project's first milestone focused on building the foundations required to deploy AI responsibly and

A chest x-ray being captured on a portable x-ray machine

effectively in a real-world public health setting. 15 villages with a high burden of tuberculosis and lung disease were identified in Nuh district, following a detailed site assessment and consultation with local health authorities. An ultraportable X-ray machine was installed at the District TB Centre and integrated with the qXR software, with particular attention paid to offline functionality to account for unreliable internet connectivity.

Technology alone, however, does not deliver healthcare. Local radiographers and care coordinators underwent hands-on training to operate the portable X-ray system, interpret AI outputs, and manage patients using the qTrack platform. Community engagement was equally central. Outreach efforts, delivered in local languages and supported by community leaders, helped address initial hesitancy and stigma associated with the disease screening.

Within this framework, a pilot screening phase was launched through ten outreach camps conducted in collaboration with National Health Mission Mobile Medical Units. About 500 high-risk individuals were screened under various criteria. Nearly half showed clinically relevant abnormalities on chest X-ray, highlighting both the high-risk profile of the population and the value of targeted lung health screening. These findings were triaged into tuberculosis, lung nodule, and alternate lung condition pathways, triggering confirmatory testing and referrals.

The AI-enabled workflow identified 82 individuals as TB-presumptive, enabling early triage into confirmatory testing pathways. 51 individuals underwent TB testing, resulting in 11 confirmed TB cases, all of whom were linked to care through the programme's digital coordination system.

Beyond tuberculosis, the screening also revealed early lung cancer risk, with 100 individuals flagged with pulmonary nodules. Most were classified as low risk, while a smaller subset was flagged as high risk, prompting recommendations for further clinical evaluation and confirmatory CT imaging.

ENSURING QUALITY AND TIMELY INTERVENTION THROUGH COLLABORATIVE OVERSIGHT

A critical dimension of the initiative's success lies in its rigorous, multi-layered review process. Every AI-flagged case underwent thorough verification and clinical proofreading by co-Principal Investigator **Dr. Sonal**, ensuring that algorithmic outputs were translated into accurate, patient-centric clinical decisions. This step was vital in moving beyond mere detection to responsible, actionable healthcare.

On the ground, this clinical oversight was seamlessly integrated with last-mile delivery by the project's implementation partner. Under the leadership of **Dr. Vikas Yadav** of the **Garva Karmasha Foundation**, the field team ensured that each referred individual—whether flagged for tuberculosis, lung nodules, or other conditions—received timely follow-up and coordinated care. This partnership was instrumental in navigating local healthcare ecosystems, facilitating appointments, and ensuring patient adherence to referral pathways.

The system proved its value across a spectrum of lung health issues. Beyond the expected TB and nodule detections, qXR identified critical, non-routine findings such as **cardiomegaly** (enlarged heart) and **hydropneumothorax** (air and fluid in the pleural cavity)—conditions that require urgent intervention. Through the integrated qTrack platform, these cases were immediately escalated. Dr. Sonal's review and Dr. Vikas Yadav's team enabled swift referrals to tertiary care, demonstrating how AI-assisted screening can avert emergencies by catching severe comorbidities early. Additionally, numerous cases of acute **pulmonary infections** were identified and managed promptly, preventing complications and hospitalizations.

This project functions not only as a screening program but as a **pilot for an integrated, one-point solution** for patients in resource-limited settings. Historically, individuals with abnormal screening results face a fragmented journey—traveling to multiple facilities for diagnostics, consultation, and treatment initiation, often leading to dropouts. This model consolidates that pathway. From AI-enabled X-ray screening and immediate review to digital referral tracking and supported navigation through the healthcare system, the patient's journey is streamlined and supported. They no longer have to "run from pillar to post"; instead, they experience a coordinated care

Consultation - Registration, history taking, sputum collection (xxxxxxx1658)

continuum designed around their needs.

In essence, the synergy between AI technology, clinical expertise, and grassroots execution has created a replicable framework. It ensures that screening translates into tangible health outcomes—whether for chronic diseases, acute infections, or urgent structural abnormalities—paving the way for a more equitable, efficient, and patient-empowered public health model.

Another key outcome was a 22% reduction in lost-to-follow-up rates among patients managed through qTrack, underlining the value of digital care coordination in strengthening health system outcomes.

What distinguishes this initiative from conventional screening programs is not just the use of AI, but how it is embedded into the existing clinical workflows. Rather than replacing human judgement, the AI system serves as an early warning layer, flagging abnormalities that might otherwise be missed and allowing limited clinical expertise to be used where it is needed most.

THE INDO-U.S. COLLABORATION ADVANTAGE

A defining strength of the project is its Indo-U.S. collaborative design. Clinical oversight and technical validation were supported by Dr. Vikas Gulani from the University of Michigan, whose role went beyond remote advisory. Dr. Gulani worked closely with the Indian team to ground-truth AI inferences against radiologist interpretations, refine algorithm settings for high-artifact field environments, and guide the development of structured referral and escalation pathways.

This collaboration ensured that AI performance was not assessed in isolation, but within the messy realities of field deployment. Early validation exercises showed a 78% concordance rate between qXR outputs and radiologist interpretations, with several critical cases, including hydropneumothorax and cardiomegaly, identified for urgent escalation.

LEARNING, ADAPTING, AND INNOVATING

Like any real-world health intervention, the project encountered challenges. Continuous outdoor use led to a temporary breakdown of the portable X-ray system, requiring a shift to facility-based screening to maintain momentum. Power outages and poor connectivity tested the robustness of digital workflows. Social stigma initially limited participation.

Sub-center where the camp was set up

These constraints, however, became sources of learning rather than failure. Battery backups, offline AI processing, and flexible screening models ensured continuity. Community sensitization sessions, conducted with Panchayat leaders and faith-based organizations, significantly improved participation over time. Importantly, facility-based screening was observed to yield higher positivity rates, prompting a reassessment of optimal deployment strategies.

OUTPUTS, IMPACT, AND STRATEGIC VALUE

Beyond immediate screening outcomes, the project has generated scalable operational models for AI deployment in public health systems. GDPR- and HIPAA-compliant data workflows were established, triage protocols were formalized, and digital integration with India's national TB platform ensured continuity of care.

While publications and broader dissemination are planned in subsequent milestones, the project already demonstrates how AI can function as health infrastructure rather than a standalone innovation. It offers a replicable blueprint for integrated lung health screening that can be adapted across geographies and disease areas.

From a strategic perspective, the initiative contributes meaningfully to the Indo-U.S. science and technology partnership. It reflects a shift from transactional collaboration to co-creation, where solutions are jointly designed, tested, and refined in settings that demand both technical excellence and contextual sensitivity.

LOOKING AHEAD

Future milestones will expand screening to 3,000 individuals, support treatment monitoring for active TB patients, and deepen lung cancer pathways through confirmatory testing and follow-up imaging. Dissemination of findings across academic and policy platforms will further strengthen global learning.

Most importantly, the project points to a future where AI helps close, rather than widen, health equity gaps. By anchoring innovation in last-mile realities and cross-border collaboration, it demonstrates that the promise of artificial intelligence in healthcare is not found in replacing clinicians, but in extending care to those who have long been beyond its reach.

Medicines being prescribed by the doctor (xxxxxxx1659)

PERSPECTIVE...

Transforming Clinical Diagnostics with AI

The Khorana Program for Scholars, a prestigious partnership between the Indo-U.S. Science and Technology Forum (IUSSTF), the Department of Biotechnology (Govt. of India), and the Winstep Forward, fosters cutting-edge research collaboration and capacity building in biotechnology and allied areas. This article highlights the program's impact through the experience of Sukhmanjit S. Brar (AIIMS Bhopal) and his mentor, Dr. Jae Ho Sohn (University of California, San Francisco). During his Khorana internship at UCSF's Center for Intelligent Imaging (ci²), Sukhmanjit developed an AI pipeline that transforms standard CT scans into real-time triage tools for pulmonary embolism, research that bridges the gap between complex data and urgent bedside clinical decisions. Their perspectives showcase the program's contribution to professional growth, the power of cross-cultural scientific exchange, and the co-design of AI tools for real-world medical challenges.

Jae Ho Sohn, MD, MS (Mentor, Sohn Lab, Center for Intelligent Imaging (ci²) , The University of California, San Francisco (UCSF) Radiology)

Jae Ho Sohn
MD, MS

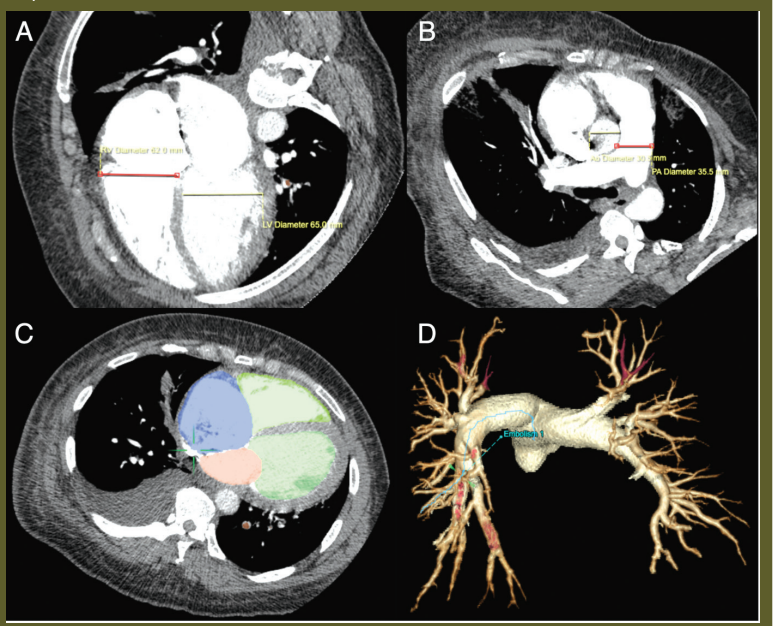
"Artificial intelligence in healthcare is moving from research prototypes to clinically deployed systems. The clearest benefits today are faster triage in time-sensitive conditions such as stroke, intracranial hemorrhage, pneumothorax, and pulmonary embolism; population screening that maintains detection while reducing workload; and documentation aids that draft reports with clinicians in the loop. At UCSF's Center for Intelligent Imaging (ci²) and the Sohn Lab, we build within that scope: focused problems, interpretable models, and deployment paths that fit real workflows. The CTPA right-heart strain work that Sukhman led exemplifies this approach: automated cardiac volumetrics combined with routine biomarkers to generate a simple points score that maps to actions: defer echocardiography when risk is low, escalate early when risk is high, then prospectively track performance once implemented.

Indo-U.S. collaboration is essential to maximize real-world impact. A significant proportion of the world's patients live in India, and clinical needs, resource constraints, and care pathways differ from those in the United States; understanding these constraints is crucial for unlocking AI tools for this population. India's innovation base is also strong yet under-leveraged, with companies advancing radiology AI for head CT triage and low-cost breast cancer screening that is already being deployed in public programs. Programs like the Khorana Scholarship and IUSSTF reduce the friction of mentorship, governance, and logistics, allowing teams to focus on science and translation. Together, these rails enable us to co-design tools for real-world problems and deliver value to patients who need it most." ●

Sukhmanjit S Brar (Mentee, All India Institute of Medical Sciences (AIIMS) Bhopal, Khorana Scholar 24')

Sukhmanjit S Brar

We developed and tested an AI pipeline that extracts quantitative cardiac volumes directly from CTPA. Using a retrospective bi-institutional cohort, the algorithm automatically segmented the heart to compute three-dimensional RV and LV volumes, which we combined with two routine biomarkers-troponin I and BNP-and sex in a transparent multivariable model. The result was a simple, interpretable points-based score that clinicians could use at the bedside within seconds of image acquisition.



Traditional CT assessment relies on single-slice diameters or an RV/LV ratio, which fail to capture the global chamber geometry. Volumetric analysis captures the entire ventricle and provides a more accurate reflection of physiologic stress. In 244 patients, our model accurately identified echocardiography-confirmed RV dysfunction and outperformed conventional CT metrics. The points-based version maintained similar accuracy in an external 52-patient validation set. In practice, the AI system generated results in seconds per case, producing a single score that could guide the selective use of echocardiography; low scores supported safe deferral, while high scores flagged patients for early escalation. Imaging, combined with biomarkers, consistently outperformed either modality alone.

The Khorana Program made this work possible by connecting young and motivated researchers in India with leading mentors and cutting-edge infrastructure in the United States. Working alongside experts in radiology, cardiology, and machine learning at UCSF revealed to me that the biggest challenge in clinical AI today is not algorithmic performance, but instead translation. Building robust models is only the first step; deploying them safely and sustainably requires clear clinical thresholds, rigorous validation, and continuous monitoring. Equally important are the operational components, including sustained funding, vendor integration into PACS/workflow, and clinician training, which determine whether a tool advances beyond its pilot phase.

In a country like India, where the patient population is large and diverse and healthcare resources are strained and unevenly distributed, integrating AI tools into clinical practice could transform care delivery by optimizing resource allocation, minimizing unnecessary tests, and improving outcomes. However, as artificial intelligence continues to evolve rapidly and new healthcare models emerge, significant strides are needed to overcome regulatory, financial, and infrastructural barriers to fully realize the potential of AI in healthcare.

SPACE EXPERIENTIAL LEARNING CENTER : ECHOES OF THE YEAR LONG SELC PROGRAM JOURNEY

TEAM GENEX SPACE

Based at the American Center, New Delhi, the **Space Experiential Learning Center (SELC)** *is a flagship initiative designed to transform traditional "chalkboard" science into an immersive journey for young innovators. A strategic collaboration between the* **Indo-U.S. Science and Technology Forum (IUSSTF)** *and* **Genex Space**, *and funded by the* **U.S. Department of State**, *SELC bridges the gap between theoretical concepts and real-world applications. During the 2025–26 cycle, the program engaged over 180 students nationwide through high-intensity skill-building activities, including workshops, celestial observations, and interactive sessions with space experts across New Delhi and other U.S. Consulate regions. This article showcases the activities of the SELC program throughout its year-long journey, emphasizing the significant impact of Indo-U.S. collaboration in fostering the curiosity and technical skills necessary to explore the final frontier.*

The exploration of space has always begun with fundamental questions—about motion, light, gravity, and time. Yet for many students, these ideas remain abstract, encountered only through equations or diagrams.

The **Space Experiential Learning Center (SELC)** was established to bridge this gap: to transform space science from something students *learn about* into something they can *experience, question, and understand from its core*.

The **Space Experiential Learning Center (SELC)** is an innovative, physical learning hub established at the **American Center, New Delhi**. The initiative is led by the **Indo-U.S. Science and Technology Forum (IUSSTF)** and **Genex Space**, and funded by the **U.S. Department of State**.

Conceived as a flagship initiative in experiential STEM education, SELC represents a shared vision of India–U.S. collaboration in nurturing the next generation of scientific thinkers. From its inception to completion of its first program cycle, SELC has evolved into a dynamic learning ecosystem—one that integrates theory, hands-on experimentation, systems thinking, and real-world space applications.

Designed as an immersive learning environment, SELC combined **interactive exhibits, hands-on experiments, simulators, and curated infographics** to make complex space concepts accessible to high school students and the general public. The center housed satellite and rocket models, telescopes, an ISS docking simulator, an astronaut glove box, and a dedicated exhibition wall highlighting the history of Indo–U.S. space collaboration.

Beyond infrastructure, SELC represents a pedagogical shift—from passive learning to experiential engagement—encouraging inquiry, experimentation, and critical thinking.

THE VISION BEHIND SELC

SELC was founded on a simple but powerful educational premise: true scientific understanding emerges when learners engage with first principles before encountering complex systems. In space science, this means understanding why objects orbit before designing satellites, grasping the behavior of light before studying telescopes, and internalizing the concepts of forces and energy before exploring planetary missions.

At a time when students are exposed to spectacular space imagery and rapid technological advances, SELC addressed a critical need—helping learners understand *how* space science works, not just *what* it achieves. The Center was designed as an immersive environment where curiosity is encouraged, questions are welcomed, and concepts are explored through a deliberate progression from theory to practice.

Launch of SELC program in April 2025 in the presence of Dr. Kiran Kumar, Former Chairman - Indian Space Research Organization (ISRO) and Mr. David Moyer, Counsellor for Educational and Cultural Affairs, Public Diplomacy, U.S. Embassy in New Delhi, at American Center, New Delhi

DESIGNING THE LEARNING FROM FIRST PRINCIPLES

Every SELC activity followed a carefully structured pedagogical arc:

- **Conceptual foundations** grounded in physics, mathematics, and scientific reasoning
- **Theoretical modeling**, translating ideas into relationships and equations
- **Hands-on engagement** through kits, simulations, and experiments
- **Systems-level application**, connecting principles to real space missions

This approach ensures continuity in learning. For example, orbital mechanics was introduced not as a memorized formula, but as a natural outcome of gravitational interaction and velocity. Students observed how changing altitude alters orbital period, or how energy governs transfers between orbits, enabling them to reason through spaceflight dynamics rather than recall outcomes.

By consistently returning to foundational ideas, SELC ensured that advanced topics remain accessible and logically connected.

EXPERIENTIAL LEARNING: WHERE THEORY MEETS REALITY

At the heart of SELC is experiential learning. Students engaged directly with physical models, experimental setups, and professional-grade software tools that mirror real scientific workflows. Whether assembling telescopes, simulating satellite trajectories, or integrating sensors into CubeSat models, learners experienced science as an active process of investigation.

In astronomy modules, light is introduced not merely as brightness, but as a carrier of information. Students explored how different wavelengths reveal temperature, composition, and motion—laying the groundwork for understanding spectroscopy, space telescopes, and exoplanet detection. Similarly, experiments in optics allowed students to see how image formation depends on geometry and material properties, reinforcing ray optics concepts through direct observation.

Importantly, SELC environments encouraged iteration. When outcomes differ from expectations, students analyse assumptions, revise models, and test again—mirroring authentic scientific practice. Failure is treated not as an endpoint, but as a diagnostic tool.

ASKING THE RIGHT QUESTIONS

SELC's curriculum was anchored around thought-provoking scientific questions that stimulate inquiry while reinforcing core concepts

- Why do satellites remain in orbit instead of falling to Earth?
- How can telescopes observe objects billions of kilometers away?
- What limits human space exploration—technology, biology, or physics?
- How do satellites keep time accurately when relativity comes into play?

These questions guide learning journeys across disciplines, helping students connect abstract principles to tangible outcomes. Wonder, at SELC, is always paired with reasoning which was thoughtfully curated.

A defining strength of SELC was its continuous connection to real-world space programs and applications. Students explored how satellite data supports Earth observation, climate monitoring, disaster management, and navigation

systems. Mission case studies illustrate how theoretical decisions—such as orbit selection or payload design—shape mission outcomes.

By understanding the lifecycle of a space mission, from conceptualization to operations, students gained insight into large-scale scientific collaboration. This system's perspective highlights the interdisciplinary nature of space science, integrating physics, engineering, data analysis, and policy considerations.

BUILDING SCIENTIFIC CAPABILITY THROUGH HANDS-ON WORKSHOPS

SELC's skill development workshops form a cornerstone of its learning model. These three-day workshops immersed students in focused domains such as Space Robotics, Telescope engineering, Space Mission design, and Satellite systems. Each workshop trained a cohort of 15 students and was structured to balance conceptual instruction and practical learning through interactive Kit all customised for SELC program.

Students began by understanding *why* a system is needed, followed by *how* it is designed, built, tested, and refined. Whether assembling a telescope or integrating a CubeSat subsystem, learners engaged with constraints such as mass, power, accuracy, and reliability—developing systems thinking essential for real-world engineering and research.

These experiences strengthened problem-solving abilities, teamwork, hands-on experience, technical skills and technical communication, while reinforcing the scientific method at every stage. At the end of every workshop, students were asked to present their extended project ideas, which provided students an opportunity to apply their learning skills directly into independent project development.

SELC CLUBS: SUSTAINING CURIOSITY BEYOND WORKSHOPS

Beyond structured workshops, SELC Clubs ensured continuity of learning through regular online and offline sessions held at the American Center throughout the program duration. These sessions deepened conceptual understanding and exposed students to diverse perspectives in space science. Guest lectures by scientists, engineers, and industry leaders provided valuable insights into emerging research areas and potential career pathways.

Club activities emphasized discussion, reflection, and exploration, enabling students to revisit concepts over time and apply them in new contexts. This sustained engagement helped transform short-term exposure into long-term scientific thinking.

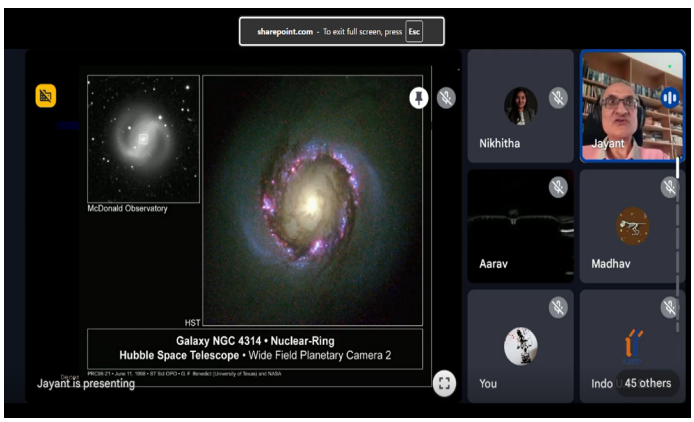
Students engaged in immersive field experiences, including hands-on learning visits to Jantar Mantar and sky-gazing and astrophotography sessions at Indian Institute of Technology Delhi. Learning was further enriched through focused engagements around key space milestones, including National Space Day, World Space Week, a lunar eclipse, the space re-entry of Sunita Williams, and the launch of Shubhanshu Shukla. These real-time observations and discussions connected classroom learning with live events in space exploration, sustaining curiosity and deepening student engagement throughout the program.

FROM VISION TO THE COSMOS: VOICES THAT INSPIRED THE JOURNEY

From its launch to the valedictory, SELC was enriched by inspiring voices from across India and the United States, shaping a truly global learning journey. The program was inaugurated by Dr. A. S. Kiran Kumar, former Chairman of ISRO, setting a powerful vision for the cohort. Academic depth was further strengthened through sessions by Ranjana Kaul on Space Law and Dr. Jayant Murthy from the Indian Institute of Astrophysics, who introduced students to astronomy from space-based perspectives.

Students gained rare, real-world exposure through interactions with Nimisha, a NASA engineer, transforming aspirations into tangible possibilities by offering insights into space missions and careers. Engagements with leading ISRO scientists such as Himanshu Shukla from the Space Applications Centre ISRO on rocket science, and Tushar from the Indian Institute of Science on addressing the critical challenge of space debris, further deepened technical understanding.

Throughout the program, the program implementers spent significant time designing the concepts, activity kits, and mentoring students on space missions, innovation, entrepreneurship, and career pathways—ensuring the SELC journey remained both inspiring and future-focused.



INDO–U.S. COLLABORATION IN ACTION

SELC stands as a tangible outcome of Indo–U.S. cooperation in science education. By combining institutional expertise, shared resources, and educational best practices, the initiative reflects a commitment to fostering global scientific literacy.

As part of the Indo–U.S. science education collaboration, the Space Experiential Learning Center (SELC) conducted a series of Consulate-supported workshops in Ahmedabad, Bengaluru, Hyderabad, and Kolkata, extending experiential space education to students across all the U.S. Consulate regions.

As part of the Beyond Earth: Indo–U.S. outreach and awareness initiative, a series of thematic workshops were conducted across multiple cities in collaboration with different U.S. Consulates, each tailored to regional strengths and global priorities. In Bengaluru, under the Chennai Consulate, the *Beyond Earth: Indo–U.S. Human Space Exploration Workshop* was hosted at Raman Research Institute, focusing on the Artemis Mission, Gaganyaan Mission, and opportunities for Indo–U.S. collaboration in human spaceflight. In Ahmedabad, supported by the Mumbai Consulate, the *Beyond Earth: Indo–U.S. Space Applications Workshop* was organized at Space Applications Centre ISRO, with a special emphasis on the NISAR Mission and the role of space-based applications in addressing global challenges.

The initiative further expanded to Hyderabad, where the *Beyond Earth: Indo–U.S. Rocket Science Workshop* was conducted at Hyderabad Public School, highlighting launch vehicle development in India and the United States, including contributions from emerging private space players. In Kolkata, the *Beyond Earth: Indo–U.S. Cosmos Exploration Workshop* was held at M.P. Birla Planetarium, showcasing key space missions and exploration milestones from both countries.

Across all locations, students actively interacted with domain experts and guest speakers and participated in hands-on, theme-aligned activities using curated kits, reinforcing experiential learning. Each program concluded with guided sky-gazing sessions, enabling students to connect classroom learning with real-time observation. Collectively, the initiative impacted over 120 high school students, fostering curiosity, global awareness, and sustained interest in space science and exploration, strengthening the objectives of Indo–U.S. cooperation in science and technology education.

For students, this collaboration demonstrates that space exploration is inherently international. Scientific challenges transcend national boundaries, and progress depends on cooperation, shared knowledge, and mutual respect. Exposure to this collaborative framework broadens student aspirations and situates their learning within a global context.

MEASURING IMPACT BEYOND NUMBERS

The response to the program was overwhelming when announced, with over 400 applications received from Delhi NCR, leading to the selection of 64 students for the inaugural SELC cohort. In addition, through Indo–U.S. Consulate–supported outreach workshops, the initiative reached 120+ high school students across Ahmedabad, Bengaluru, Hyderabad, and Kolkata. Over the year, the program brought together 25+ speakers and trainers, delivered 160+ hours of direct student engagement, hosted 200 public interactions, and enabled 12+ collaborations.

Beyond participation numbers, SELC's impact was evident in the growth of students' confidence, curiosity, and scientific thinking. Learners progressed from observing science to actively engaging with it—questioning ideas, working hands-on with systems, analyzing data, and interacting directly with scientists and space professionals. This experiential approach strengthened their ability to reason from fundamentals and improved clarity around future pathways in Space and STEM fields

SELC demonstrated that success is measured not only by the number of students reached, but by how deeply young minds are inspired to explore, question, and envision their future in science and space.

LOOKING AHEAD

The journey of the Space Experiential Learning Center reminds us that science is not a collection of answers, but a method of asking better questions. When students are invited into this process—when they are trusted with complexity and supported through exploration—they rise to the challenge.

SELC's story is ultimately one of belief: belief in young minds, belief in collaboration, and belief that understanding the universe begins with understanding its simplest laws. From inception to execution, from classroom to cosmos, SELC continues to affirm a timeless truth—The future of space science is shaped not only by technological advances, but by **how early and how well students are equipped with the right skills, exposure, and perspective**.

SELC is not merely a center—it is a catalyst for curiosity, collaboration, and the shaping of the next generation of global space leaders. Concluding the first cohort in the presence of Astronaut Sunita Williams, and being inspired by her words, marked a truly memorable milestone for the program. As we look ahead, SELC remains committed to carrying this inspiration forward, empowering and motivating many more cohorts in the years to come.

WHEN WONDER FOUND DIRECTION: STUDENTS REFLECTION

Anshuman Sahoo, Grade 12

"As this space program comes to a close, I can confidently say it has been a transformative experience in my academic and personal journey. What began as curiosity and awe toward space gradually evolved into clarity, understanding, and a sense of direction. The program helped bridge the gap between fascination and purposeful learning.

The discussion-based sessions, with their strong focus on real-world application, played a crucial role in shaping my perspective. They provided structure to my ideas, sharpened my goals, and strengthened my confidence to pursue a future in space sciences in a meaningful way.

One of the most impactful components was the skill development workshop on space mission design. The process of designing, assembling, and troubleshooting a complete system was both challenging and rewarding. It offered deep insight into the complexity of space missions while fostering essential skills such as teamwork, patience, and accountability—lessons no textbook could have imparted.

As this chapter concludes, I carry forward not only knowledge, but also clarity, confidence, and lasting motivation. I am deeply grateful to the mentors, organizers, and everyone involved in making this enriching and inspiring experience possible."

Svasti Bansal, Grade 10

"As this program comes to an end, I still can't believe I had the opportunity to be part of the Space Experiential Learning Club. What I once assumed might be boring turned into one of the most unforgettable experiences of my life. From learning about space, aerodynamics, propulsion, and space law to visiting IIT and Jantar Mantar, every session opened new ways of thinking.

The skill development workshop on telescopes was a true turning point—understanding them in depth and building one myself transformed curiosity into genuine enthusiasm for space science. The constant guidance and motivation throughout the program helped me discover direction, build confidence, and envision new paths for my future. The exhibitions, interactive sessions, friendships, and mentorship made this journey incredibly meaningful. This program has shaped me in ways I never expected and will always remain special to me. Thank you, Team SELC!"

IUSSTF
Indo-US Science and Technology Forum

USC Viterbi
School of Engineering

IUSSTF-VITERBI PROGRAM

(Summer Research Placements 2026)

The Indo–US Science and Technology Forum (IUSSTF) and the Viterbi School of Engineering, University of Southern California (USC) have partnered to support the IUSSTF–Viterbi Program. This program provides opportunities to Indian students to undertake research at the Viterbi School of Engineering in the summer of 2026 for a period of 8 weeks

The IUSSTF-Viterbi Program is envisaged to:

- Provide an opportunity to the best and brightest Indian students to gain exposure and access to world class research facilities in the Viterbi School.
- Promote research and capacity building in front line areas of engineering and technology.
- Encourage outstanding students to take up research as career.
- Pave the way for the next generation engineers from India to interact with American peers, thus help building long-term R&D linkages and collaborations.

Eligibility:

- Indian students currently pursuing a Bachelors or Masters degree at recognized institutions of higher education in India.
- Open to students of Electrical Engineering, Electronics & Communication Engineering, Computer Sciences and Computational Sciences.

Scholarship includes:

- Airfare
- Stipend (to cover contingencies including network access, equipments, computing facilities etc)
- Accommodation

For applications and guidelines please visit: **www.iusstf.org**

For program information contact:

Indo-US Science and Technology Forum (IUSSTF)
12, Hailey Road, Fulbright House
New Delhi-110001
E-mail: viterbi-india@iusstf.org

USC Viterbi School of Engineering
University of Southern California
Los Angeles, CA 90089
E-mail: raghu@usc.edu

APPLICATION DEADLINE EXTENDED: 31 DECEMBER 2025

SOLAR DECATHLON INDIA (SDI)

Solar Decathlon India (SDI) was initiated as a student competition under an India-US collaboration towards innovation for sustainability in the building sector. Over five years (2020-2025), SDI grew to be the world's largest net-zero building challenge, demonstrating how a structured programme on academia-industry collaboration can shift an entire sector's trajectory toward a climate-resilient, net zero future.

ROLE OF IUSSTF

SDI was set up through an MoU between IUSSTF and the U.S. Department of Energy. The challenge was conducted by the Indian Institute for Human Settlements (IIHS) and the Alliance for an Energy Efficient Economy (AEEE) under the aegis of IUSSTF, which provided the high-level bilateral collaboration framework for the programme.

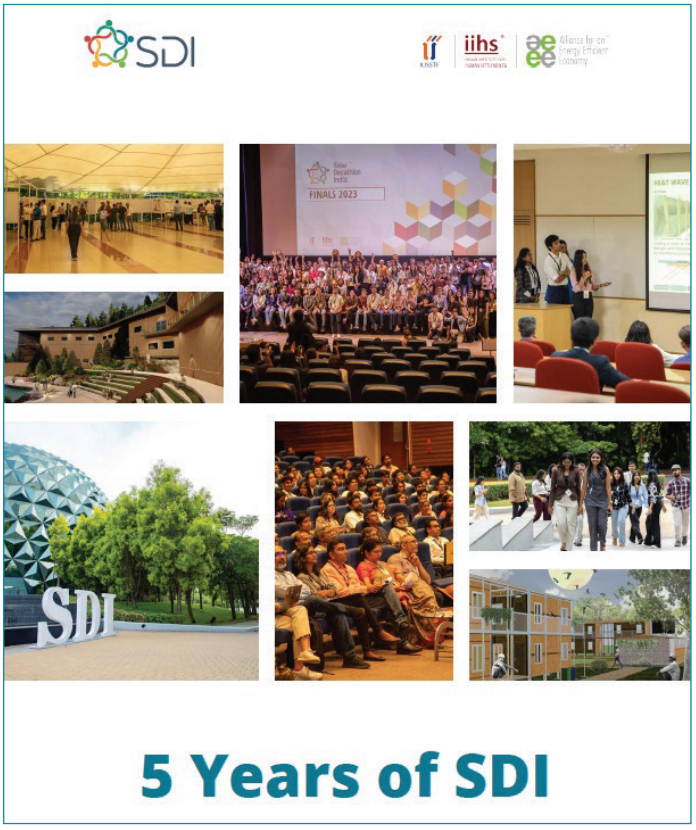
IUSSTF enabled SDI to become a nationally scaled climate-education and innovation platform, through its sustained financial and programme support.

IUSSTF funding enabled the development and deployment of SDI's dedicated Learning Management System (LMS), which anchors the programme's pedagogy. Each year, the LMS supports thousands of students and faculty across India through structured self-learning modules, reviews and feedback on their work, access to learning resources, and competition milestones, ensuring equal access irrespective of their geographical location or remoteness.

IUSSTF enabled SDI to compensate industry and academic experts who form the Technical Resource Group and Jury. IUSSTF ensured that students across hundreds of institutions gained sustained access to leading professionals from industry. Additionally, representatives from IUSSTF served as jury members for multiple editions of CSI, bringing critical perspectives to the evaluation of climate-tech startups.

Through targeted innovation grants, IUSSTF supported the design, fabrication, and testing of student prototypes. This support helped bridge the critical gap between conceptual design and real-world application, allowing finalist teams to develop working prototypes of their ideas.

IUSSTF's support was also pivotal in SDI's public visibility. It funded the second-year SDI Awards event in New Delhi and played a key role in securing the participation of Dr. Jitendra Singh, Hon'ble Minister of State (IC), Science and Technology & Earth Sciences as a chief guest. This milestone and the presence of the Hon'ble Minister significantly elevated the programme's national profile and media traction. In addition, IUSSTF has consistently supported SDI's outreach by contributing to the dissemination of press releases, enabling widespread



coverage across national and regional media.

Together, these interventions illustrate how IUSSTF's programme support has driven learning infrastructure, innovation pathways, expert engagement, and public visibility for SDI, thereby enabling its scale, credibility, and national impact.

KEY OUTCOMES

Scale and capacity building

From its launch in 2020 through the 2024-25 cycle, SDI engaged 8,225 students and 1,101 faculty across 680 teams from 303 academic institutions spanning over 24 states and 70+ cities, working with 472 industry and real estate partners. By 2022-23, SDI had become the world's largest netzero building challenge and, by 2023-24, larger than the other 6 Solar Decathlons combined.

Collectively, teams designed about 125 million sq ft of net-zero or near-net-zero buildings, showing potential lifetime abatement of around 54 million tonnes of CO_2. SDI's pedagogy blends self-learning modules, webinars, simulation training, and a gamified competition anchored in real industry projects. Over five years, students gained

The metrics below quantity the total scale and reach of Solar Decathlon India over the five-year peroid:

	Year 1 (2020-21)	Year 2 (2021-22)	Year 3 (2022-23)	Year 4 (2023-24)	Year 5 (2024-25)	Total
Student Teams	75	99	156	175	175	680
Students	948	1, 264	1, 780	2, 111	2, 122	8, 225
Faculty Mentors	165	195	179	272	290	1, 101
Academic Institutions	103	109	126	188	154	303
Cities	51	42	50	70	65	70
Industry and Real Estate Partners	113	137	162	229	290	472
Student Innovations	24	35	36	37	40	172
Start-ups participated in SDI Finals	N.A.	N.A.	24	44	65	133
Net-Zero buildings designed (million Sq. ft.)	12.9	18.3	29.1	18.2	46.7	125.2
Projected carbon abatement (tCO2e)	6	9	14	7	18	54

hands-on exposure across office, education, multi-family and single-family housing, construction worker housing, and community resilience shelters, while 1,101 faculty mentors were trained and engaged.

Innovation, industry engagement, and start-up ecosystem

SDI has created a low-risk, structured environment for industry-academia collaboration, with over 150 experts serving as jurors, reviewers, and mentors, and up to 188 institutions and 229 organisations collaborating each year on real projects.

Across five years, SDI generated 172 student innovations, with 73 finalist teams building working prototypes. Outcomes include patent-oriented concepts such as VAYU (refrigerant-free cooling) and COOALA (high-efficiency residential cooling), alongside building-scale innovations like floodresilient net-zero water shelters, net-zero schools, low-carbon multi-family housing, and net-zero offices.

The Climate Smart Innovation (CSI) track further strengthened the innovation ecosystem, engaging over 120 startups, with up to 64 applicants annually and about 10 finalists pitching to a jury each year. Awardees such as Lambert Technovation, Hexpressions Megatech, and VayuJal Technologies received visibility, pilots, and investor linkages through SDI Finals.

Public awareness and green jobs

By 2024-25, SDI's public presence had grown to about 3.6K Instagram, 7.2K LinkedIn, and 11.5K YouTube subscribers, with over 270 media agencies carrying SDI stories and features including a 30-minute NDTV 24×7 programme.

More than 100 organisations have participated in SDI Career Fairs, including Mahindra Lifespaces, Saint-Gobain Research India, Architect Hafeez Contractor, Buro Happold, and Transsolar. A LinkedIn alumni group of over 1,000 members now sustains climate-career pathways.

Policy linkages and overall outcomes

SDI contributes directly to India's NDCs and the Panchamrit net-zero-by-2070 goals by demonstrating scalable solutions across 60+ cities. In March 2024, the Council of Architecture revised the national curriculum to strengthen climate-responsive and net-zero competencies and recommended academic credit for SDI participation.

Overall, between 2020-2025, SDI has created a national cadre of over 8,000 young professionals, enabled 125+ million sq ft of high-performance building design, built a network of 300+ institutions, 470+ industry partners and 120+ startups, and established itself as the world's largest net-zero building challenge and a flagship example of India–US cooperation in climate, innovation, and education.

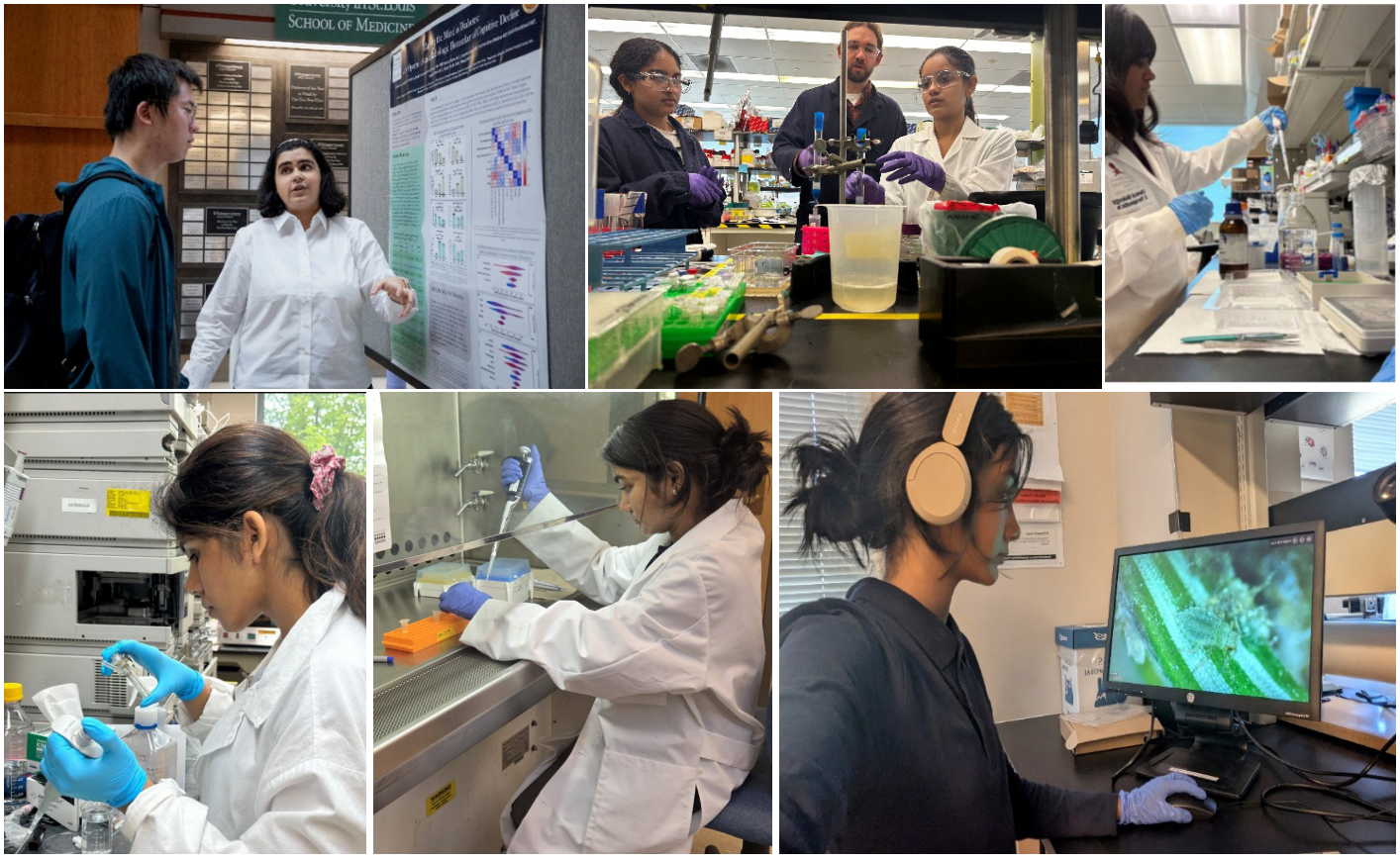
KHORANA PROGRAM FOR SCHOLARS: (BATCH 2025)

To address the need for human resource development and capacity building in biotechnology, the Department of Biotechnology (DBT), WINStep Forward (WSF), and the Indo-U.S. Science and Technology Forum (IUSSTF) support the Khorana Program for Scholars. Established in 2008 in honour of Nobel Laureate Dr. Har Gobind Khorana, the program enables sustainable and vibrant linkages between India and the United States. It provides prestigious 10–12 week research internships to Indian students (undergraduate and postgraduate) in Biotechnology, Life Sciences and allied areas at premier U.S. universities, fostering long-term Indo-American science and technology relationships.

The program is currently in its 16th year of implementation and has successfully supported over 560 talented Indian students since its inception.

Key Highlights for Batch 2025 (January–December 2025)

- **Record Participation**: The 16th Khorana Call (2025) received an overwhelming response of over **1100+ applications** from prestigious Pan-India institutes, including IITs, IISERs, NITs, and central/state universities.
- **Rigorous Selection**: Following a rigorous three-tiered screening process involving 50 domain experts, **75 meritorious scholars** were selected for the 2025 batch.
- **Successful Placements**: A total of **71 scholars** successfully availed the internship. These students were placed at world-class U.S. institutions, including **Harvard Medical School, MIT, Stanford University, Yale School of Medicine, Purdue University, and St. Jude Children's Research Hospital, among others**.
- **Diversity & Inclusion**: The program saw a diverse applicant pool. Of the 71 scholars who availed of the internship, the cohort showed strong representation with **43 female (60.5%) and 28 male (39.5%) scholars**. Research areas spanned from Biotechnology and Medical Sciences to cutting-edge fields like Data Science and Neurosciences.



Images showcasing the research activities of some Khorana Scholars (Batch 2025) during their internships at various U.S. laboratories.

INSTITUTIONAL & EXTERNAL ENGAGEMENTS

INNOVATION IN MEDICAL DEVICES WORKSHOP

The *Innovation in Medical Devices* workshop was jointly organized by IHFC–IIT Delhi and AIIMS at the Convergence Block, SET Facility, AIIMS, New Delhi. Awardees of the U.S.-India Science and Technology Endowment Fund (USISTEF) participated in the workshop, presenting and showcasing their promising healthcare technologies and innovations. The event brought together policymakers, scientists, clinicians, entrepreneurs, and innovators to spotlight cutting-edge medical technology solutions and foster dialogue on advancing healthcare innovations. The workshop also featured a panel discussion titled "*From Concept to Commercialization: Building a Thriving MedTech Startup Ecosystem*", with participation from key stakeholders across industry, academia, and government.

USISTEF CALL HIGHLIGHTS

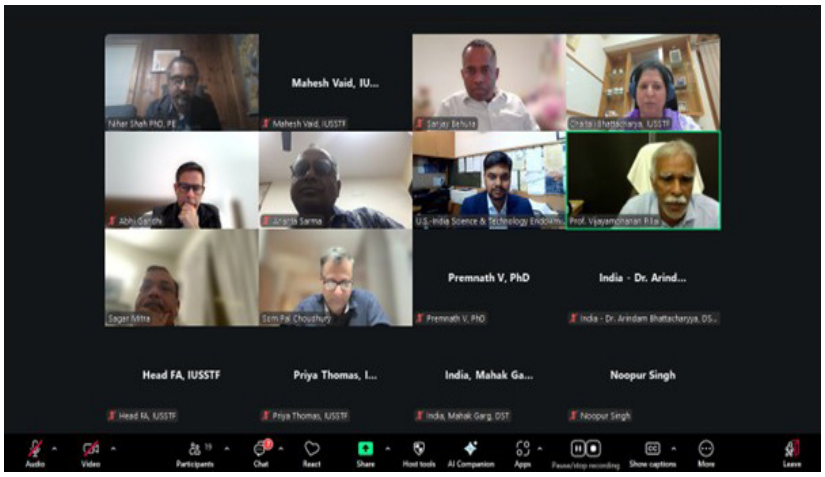
New Call for Proposals: Transforming Technology Solutions through Advanced Materials and Critical Minerals

The new call funding opportunity on "Transforming Technology Solutions through Advanced Materials and Critical Minerals" under the U.S.-India Science and Technology Endowment Fund (USISTEF) was announced on October 10, 2024. This thematic focus aligns with the U.S.-India priority initiative TRUST (Transforming Relationship Utilizing Strategic Technologies) and aims to foster joint development and commercialization of advanced materials and critical minerals. The funding will support projects addressing at least one of the following fields: quantum computing and communication, cybersecurity/ secured communications, semiconductor fabrication/ design/ assembly/ testing, AI systems (GPSs), biomanufacturing (biomaterials), and new energy security solutions.

The Call for Proposals was announced on 27 January 2025, with an application submission deadline of 27 March 2025, later extended to April 25, 2025, and aims to invite promising U.S.-India technology innovation and entrepreneurial initiatives that are commercially viable and socially relevant. The online portal closed on 25th April 2025.

- **Preliminary Screening | April–May 2025**

Secretariat conducted a preliminary screening of all applications to assess compliance with eligibility criteria. Each application underwent an internal screening process to verify applicant eligibility for the award, confirm submission of all required information as outlined in the program announcement, ensure that all mandatory requirements were met, and evaluate the alignment of the proposed projects with the objectives of the funding



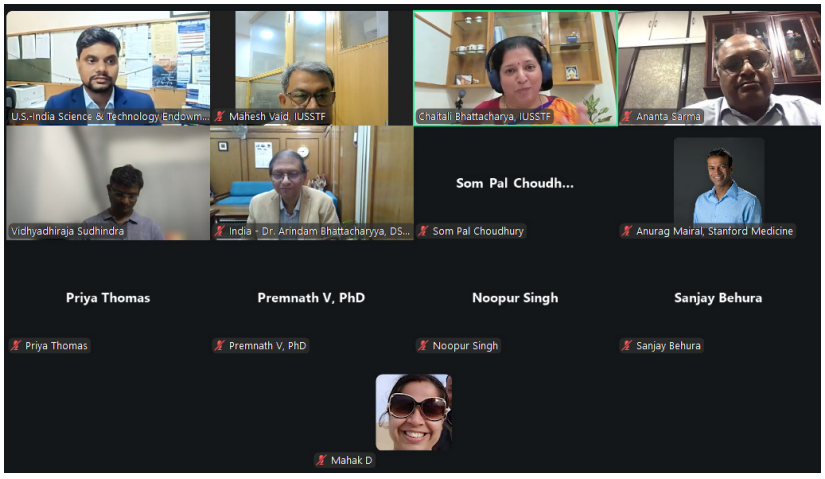
opportunity announcement. The preliminary screening process was completed by mid-May 2025.

Proposal Review by Binational Review Panel | August–October 2025

Following the preliminary screening, the Secretariat coordinated the binational evaluation process in consultation with the Co-Chairs. Each eligible proposal underwent a rigorous bi-national review by Indian and U.S. reviewers, who assessed the technical proposals and business plans to evaluate their scientific merit, innovation potential, and commercialisation readiness.

Joint Expert Panel (JEP) Meetings | November 10, 12, 13, and 14, 2025

Shortlisted project teams were invited to make virtual presentations during a series of Joint Expert Panel (JEP) meetings held over four days—**November 10, 12, 13, and 14, 2025**. The presentations spanned areas Artificial Intelligence and Quantum Technologies, biomanufacturing, semiconductors, and new energy security solution.



Financial Due Diligence | 18 December 2025

The Financial Due Diligence Committee assessed the shortlisted applicant entities for financial stability across business, legal, operational, and financial parameters. The Committee reviewed the shortlisted proposals during a meeting held on **18 December 2025**. Based on the assessment, the Committee recommended that all proposals proceed for consideration by the USISTEF Board.

New Initiatives

U.S. Mission India

IUSSTF
Indo-U.S. Science and Technology Forum

STEAM VARSITY

Young Innovators STEM Lab (YISL)

Empowering Future Partners to the USA

The Young Innovators STEM Lab (YISL) is a premier technology-enabled mobile initiative designed to equip Indian students with the tools of tomorrow. Supported by the **U.S. Department of State's Public Diplomacy Section in New Delhi and** implemented by the **Indo-U.S. Science and Technology Forum (IUSSTF)** in partnership with **STEAM Varsity**, YISL transforms classrooms into high-energy "Startup Studios."

This effort directly supports deliverables under the **U.S.-India TRUST (Transforming the Relationship Utilizing Strategic Technology) initiative**, strengthening bilateral cooperation in science and technology.

Through the American Spaces network, we are Empowering the next generation of tech leaders via a pan-India initiative across five consular jurisdictions—New Delhi, Mumbai, Chennai, Hyderabad, and Kolkata—with specialized expertise in the transformative fields of **Augmented Reality (AR) and Virtual Reality (VR).**

Total Students Empowered **6,000**

Immersive Workshops **30 Sessions** (200 participants each)

Target Age Group **13–21 Years**

Pan India covering **5 Consulate Zones**

Innovation Lab: 8-Hour Immersive Curriculum

Focus: Critical and Emerging Technologies (CETs) & AR/VR Development

1. **Foundations of Immersive Tech**
   - **Evolution of VR:** Tracing the journey from sci-fi concepts to Silicon Valley milestones.
   - **Core Principles:** Understanding the transformative potential of AR/VR across global industries.
2. **Development & Coding**
   - **WebXR for the Open Web:** Building scalable AR/VR applications for web browsers.
   - **Hands-on Coding:** Practical sessions using A-Frame to deploy immersive experiences.
3. **Stanford Design Thinking**
   - **Empathize & Define:** Identifying real-world problems and crafting focused solutions.
   - **Prototype & Test:** Building and refining functional AR/VR mockups in a team environment.
4. **Future Pathways**
   - **Global Trends:** Exploring career growth in the immersive tech ecosystem.
   - **Community:** Connecting students to hackathons and professional tech networks.

Contact Information

Indo-U.S. Science and Technology Forum (IUSSTF)

Fulbright House, 12 Hailey Road, New Delhi, Delhi 110001 India

Phone: 011 4269 1700 **Email:** yisl@iusstf.org

Visit https://iusstf.org/ for more information on the program and upcoming schedules

IUSSTF
Indo-US Science and Technology Forum

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?

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New Delhi - 110 001

For program details visit:
www.iusstf.org

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