NEWSLETTER JUNE 2022







About Us

The TIH at IIT Jodhpur, named iHub Drishti, focuses on building cyber-physical systems for computer vision, AR and VR. It is a Section-8, Not-for-profit Organization promoted by and at the Indian Institute of Technology Jodhpur under an NM-ICPS of the Government of India. The hub, steered by the Hub Governing body and the Board of Directors of TIH, will host teams of faculty members, research scholars, developers and scientists who will work towards developing the technologies. The TIH envisions creating an ecosystem in and around the thematic areas and building collaborations with other TIHs to foster CPS technologies' overall growth and development. The facility would include a mix of office and laboratory spaces with state-of-the-art infrastructure facilities that will cater to the collaborating institutions. The TIH will also build a network of researchers and developers, both externally hired and from the student body.



⁶⁶ I am delighted to announce the first edition of iHub Drishti, IIT-Jodhpur newsletter. I hope that this initiative of Technology Innovation Hub (TIH) will yield many favorable outcomes for the scientific and technological co-

mmunity at large and will build revolutionary products for humankind. I wish the principal investigators of the various projects, the staff, and everyone associated with iHub Drishti all the best for the exciting journey ahead. ⁹⁹ - Prof. Mayank Vatsa

Project Director



⁶⁶ I am happy to see the growth of iHub Drishti. This first edition of newsletter is the testimonial of remarkable achievements of the Hub. The Hub orchestrated and delive-

red indigenous products and solutions in response to the pandemic in the quickest possible time as part of the RAKSHAK (Remedial Action, Knowledge Skimming, and Holistic Analysis) initiative of DST. The hub is confident to accomplish all the objectives of the National Mission on Interdisciplinary Cyber Physical System in terms of technology development, entrepreneurship development, Skilling and Training, and International Collaboration. ??

> - Prof. Santanu Chaudhury Chairman

VISION

"To become the most coveted self-sustaining technology destination in CV, AR and VR in the country, with a nationwide footprint, nurturing and supporting cutting edge research and innovative technology deliveries through Startups, MSMEs and direct execution of projects."

MISION

iHub Drishti will:

- focus on advancing the research outcomes in core problems related to CV and ARVR,
- augment imaging with additional (multimodal) sources of input such as haptics, language, and loT to advance the state-of-the-art in the domain areas,
- create technology solutions for socially relevant and industry-facing problems,
- support and nurture start-up ecosystems,
- stimulate skilling and reskilling educational programs, and
- advise governments on appropriate policyrelated matters in the domain of CV, and AR & VR.

Our Key Products



CAMPUS RAKSHAK

A product bouquet comprising of technically astute components to cater:

- A badging that system the enables real-time implementation of interventions.
- The App that builds an anonymous contact graph, which can aid contact tracing.
- novel • A smart pooling quantitatively scheme to screening and can provide considerable savings in screening costs.
- Simulator that tracks the spatial movement of agents which enables rich visualization of activity on campuses.



SMART HEALTH SOLUTION FOR RAPID MASS SCREENING **USING INTEGRATED TELEMEDICINE FOR** HOMECARE

Monitoring SpO2, heartrate, temperature of human body. Web and Android Application for conference video and chat support. The telemedicine solution supports in Hindi, Bangla, English. Deployed at: IIT Jodhpur PHC, A village in sundarban area, WB, Unnat Bharat Abhiyan

AI-BASED PLATFORM TO MONITOR AND IDENTIFY SMELL, TASTE AND KEY **COVID-19 THERAPEUTIC** HOTSPOTS

The invented smart device is used for the detection of loss of olfactory function. Different scents are used to determine the loss of smell which can be used to pre-screen various viral diseases like Covid.

LAKSHMAN REKHA

Al-Biometric-Driven Smartphone App for Strict Post-COVID Home Ouarantine Management. Lakshman Rekha is a prototype app for post- COVID quarantine management consisting of two modules- the front-end apps and the proposed HQM backend. There are two front-end apps: one for administration to perform user registration and other for the patient guarantine management. The proposed HQM system utilizes a biometric pipeline for implementing the quarantine.

SOCIAL DISTANCE ALERT

A wrist band for covid- based on RFID and bluetooth technology

Databank

4 datasets have been created under RAKSHAK Program:

- Chest CT scans data of Indian COVID 19 patients Radiology Data for SARS nCov-2

 - Speech and Coughing Breathing Sound Data 5 Lung Diseases Chest X-Ray Dataset

Competitions and Conferences

- Co-hosted IEEE International Conference on Automatic Face and Gesture Recognition 2021
- Co-hosted ICVGIP2021
- Meta-Learning for Computer Vision Workshop at AAAI2021 •
- Fair, Data-efficient, and Trusted Computer Vision Workshop at CVPR2022 •
- Co-organized SRS 2022. It was a two-day event organized with the collaboration • of ACM student chapter IIT Jodhpur.
- In collaboration with Prithvi.ai (Industry Partner) organized a Hackathon for undergrad students.

Manpower Development

School of AI and Data Science, IIT lodhpur, in collaboration with TIH iHub Drishti Foundation, has launched M.Tech. in Augmented Reality and Virtual Reality (AR & VR) for the Working Professionals for the Semester commencing in the session 2022-23, which is probably the first-ever M.Tech. course in AR & VR. Accomplishing the upskilling target, we are also supporting M.Tech. Executive AI program.



Academic Partners



Projects Initiated through Open Call

- 1. Game Development with ASI
- 2. India Anatomy Project Umbrella
- 3. Improving doctor-patient communication using VR
- 4. Haptics based medical simulators for palpation and tele-diagnosis
- 5. Content creation solution for AR VR
- 6. Digital museam development with Rajasthan Government

High Performance Computing

iHub Drishti has installed the World's First AI System Built on NVIDIA A100, NVIDIA DGX[™] A100 which is the universal system for all AI workloads and offers unprecedented compute density, performance, and flexibility in the world's first 5 petaFLOPS AI system. It features NVIDIA A100 Tensor Core GPU and thus will enable TIH to consolidate training, inference, and analytics into a unified, easy-to-deploy AI infrastructure.



DRDO CAIR

MoU has been signed with DRDO CAIR. The scope of MoU includes: Phase 1 – Collaborative Research and Development in the identified areas; Phase 2 – The assessment mechanism at the end of Phase 1, and exploitation mechanism for each project.

- The five approved projects are:
 - 1.Real-Time 3D Scene Reconstruction and Localization of Autonomous Ground Vehicles in Unknown Environments
 - 2. Seeing-through Partial Occlusions
 - 3. Visual Intelligence Generation from Wide Area Sensing
 - 4. TrustMe: Explainable Adversarial Attack Detection and Mitigation for Object Recognition Algorithm
- 5. Human-in-loop Control for Semi-Autonomous system under presence of multimodal sensing and actuation delays

<u>TISC</u>

iHub Drishti has signed MoU with IITJ TISC to avail TBI facility of TISC in exploring the commercialization of innovative technologies/ research results owned/ inlicensed and/or collaborated by Hub through Hub selected and/or funded startups.

Indo-US

iHub Drishti is looking for close collaboration with US institutions:

iHub Drishti

- Design & development of bias invariant computer vision models,
- Design of robust and explainable vision models,
- Design of streaming, continual learning approaches to segment and label long videos in a streaming fashion
- Generalised robot perception based on spatial and semantic reasoning

DIAL_Startup Accelerator Program

Startup accelerator program in collaboration with ARTPARK and IITJ, TISC. MoU is under progress for floating a global call for pursuing new research/ technology development in areas of AI in Healthcare and AI in AR, VR, and Gaming. IITJ, TISC and ARTPARK shall provide the infrastructure facilities for the selected start-ups at Bangalore and Jodhpur respectively.



Startups

Novealthy Innovations Pvt. Ltd is incubated in the area of Software Solutions for Smart Healthcare.

Upcoming Programs: PRAYAS, ENTREPRENEURS IN RESIDENCE (EIR), CPS SEED SUPPORT GRANT

Outreach Activity

TIH showcased its products & solutions and technology capability to a massive Open House event "Padharo" conducted by IIT-Jodhpur, where it opened its entire campus to the common public where people can know and feel the

IIT-Jodhpur ambiance and ecosystem closely. Over 7000+ people and 40+ buses reached the campus and IITJ Junta was happy to welcome all of them.



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<u>iHub Drishti in News</u>









SIRO

iHub Drishti recognised as Scientific Industrial 2 **Research Organization (SIRO)** the Department by of **Scientific** and Industrial **Research, Ministry of Science** and Technology, Government of India

Process Excellence

Established a governance framework through Vertical Coordination Committees comprising of eminent members from different Institutes and Industries across the country. Designed a Project management policy related to protocol and procedure for Research/ Program funding.Set up process for Honorary and Industry Membership over 40 members in iHub Drishti Foundation.

iHub Drishti with other 5 hubs recognized

Readout of President Biden's Meeting with Prime Minister Modi of India MAY 24, 2022 STATEMENTS AND RELEASES | The White House Release



The U.S. plans to join six of India's Technology Innovation Hubs to support at least 25 joint research projects in 2022 in areas such as artificial intelligence and data science to advance progress in applications such as agriculture, health and climate. The U.S. National Science Foundation and Department of Science and Technology of India will deepen this cooperation through the new U.S.-India Initiative on Critical and Emerging Technology.

Robust Company Policies-Rey Enablers

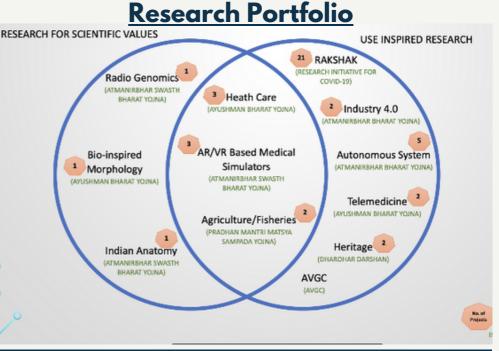
- **HR Manual**
- **Project Management Policy**
- **IP** Policy

Revenue/External Funding

Formulated revenue generation model: co-development, translation and revenue sharing model for externally funded projects and product commercialization - generated INR 1.4 Crs

Values

- Stay Calm Plan and Optimize actions to achieve targets Execute actions meticulously and ethically Promote collaboration within and outside the organization





GAs the world aims to improve its physical reality through virtual means, TIH at IIT Jodhpur strives to create an ecosystem that will put India at the forefront of research and innovation in Mixed Reality. Let us all innovatefor Science, for India, for the planet, and for humanity. - Manas Bairagi

CEO

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