



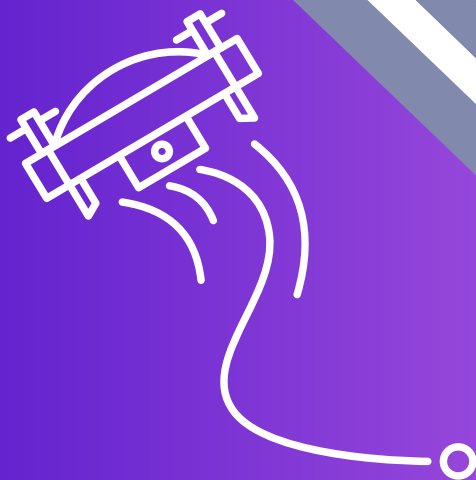
विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY



NATIONAL MISSION ON
INTERDISCIPLINARY CYBER-PHYSICAL
SYSTEMS (NM-ICPS)

NATIONAL MISSION ON INTERDISCIPLINARY CYBER-PHYSICAL SYSTEMS

QUARTERLY
BULLETIN
APRIL 2025



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IIT Jodhpur



TIH
iHub Drishti

iHub Drishti Foundation

Hub Overview

The TIH on Computer Vision and Augmented and Virtual Reality (CV and ARVR), named as iHub Drishti Foundation focuses on the core research areas of Seeing and Sensing, Dependability, Real-time Computer Vision Systems, and Data Collection, Curation, and Annotation. iHub Drishti has identified the following application areas for developing technologies: Computer Vision for Autonomous Systems; Computer Vision for Better Living: Healthcare and Biosphere; Imaging for Document Analysis; CV and VR for Industry 4.0; Dependable AR-VR for X (including games).

Project & Startup Updates:

Computer Vision-Based Monitoring of Fishes in Marine Cage Farming: This project develops a computer vision-based underwater monitoring system to track fish growth, health, and behavior in marine cages. It uses techniques like domain adversarial learning for image enhancement and a U-net segmentation model for fish detection. Key features include a synthetic underwater dataset and an unsupervised spatially curated perceptual loss model. The project enhances operational efficiency and safety in cage farming, contributing to cost-effective fish production.

Computer Vision for Plant Phenomics and Smart Agriculture: This project applies computer vision to identify and quantify traits in rice and wheat plants under stress conditions using various imaging sensors. It aims to detect plant architecture, biomass, and stress responses through high-resolution, near-infrared, and hyperspectral cameras.

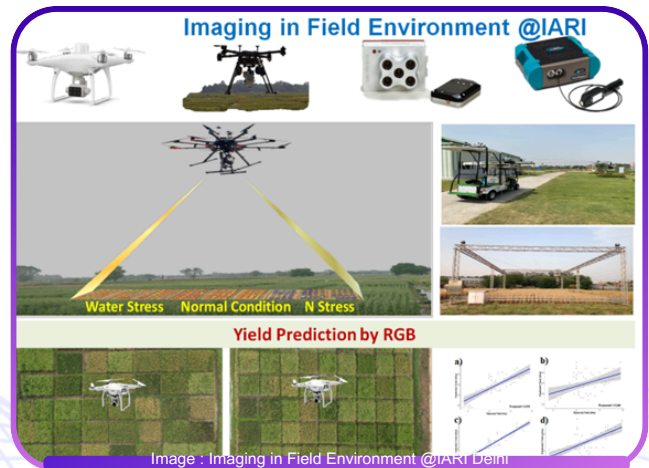


Image : Imaging in Field Environment @IARI Delhi

Activities	Status
1 Standardization of image acquisition (land based systems)	Completed
2 Field image collection from Mariculture installations	Data is being generated on a monthly basis
3 Image acquisition from mariculture cage installations	Data is being generated on a monthly basis
4 Video clean-up, enhancements, de-hazing	Standardized
5 Acquisition of conventional/ analogue data on the count, individual size (length and weight) and biomass of the stock.	Data is being generated on a monthly basis
6 Development of algorithms, and programs for size, count and biomass estimation	Related algorithms for count and size estimation are in place.

View of the indoor imaging setup

Offshore cage with fish

Image : Indoor and Offshore Marine Cage Farming Setup

The project is at TRL 3 and focuses on developing multi-modal imaging models for plant phenotyping, supporting sustainable food production for a growing population.

Women's Contribution in Research & Innovation:

At TIH, women have made significant contributions across various roles in research and innovation. A total of 9 projects are supported by women Principal Investigators from premier institutions across India. These accomplished professionals include faculty members and researchers from leading IITs, a technological university, and a national medical institute. Their expertise spans a wide range of fields such as artificial intelligence, cybersecurity, medical informatics, cardiology, and robotics. In addition to leading cutting-edge research, some of these women are actively involved in startup ecosystems, playing a pivotal role in bridging academic research with real-world innovation.



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Department of Science and Technology
Ministry of Science and Technology
Government of India

