



विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

सत्यमेव जयते



National Mission on
Interdisciplinary Cyber-Physical
Systems (NM-ICPS)

NATIONAL MISSION ON INTERDISCIPLINARY CYBER-PHYSICAL SYSTEMS

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TIH
iHub Drishti

IHUB Drishti Foundation,
IIT Jodhpur

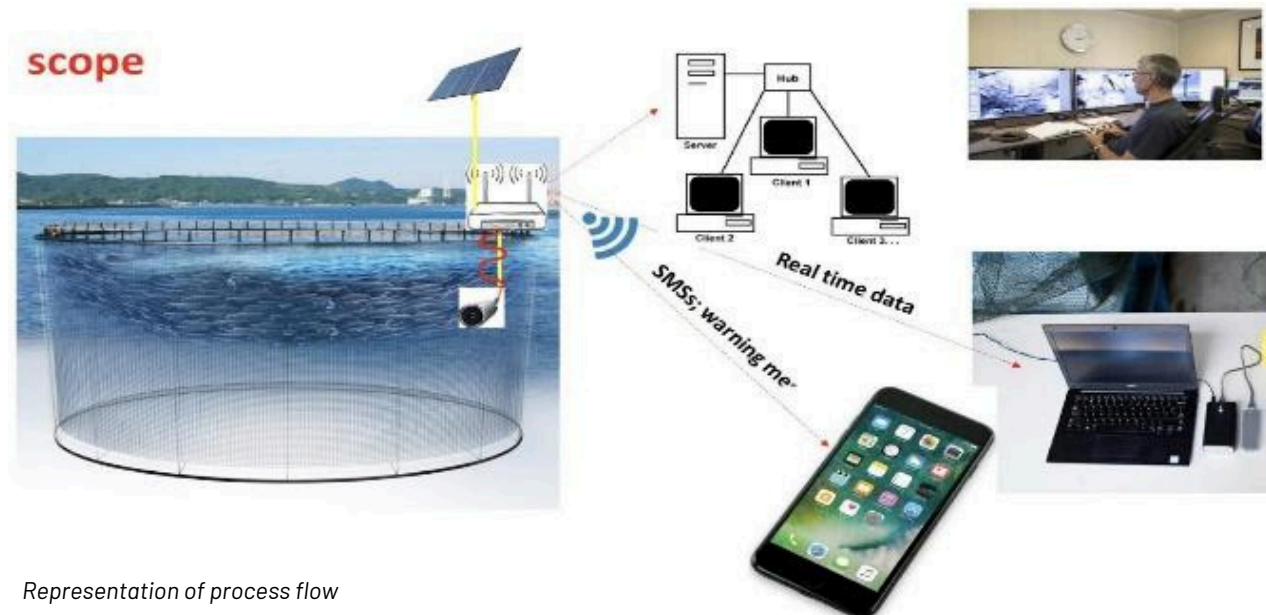
HUB OVERVIEW

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 UPDATES

Computer Vision-Based Monitoring of Fishes in Marine Cage Farming (TRL-6)

The TIH is developing computer vision-based technology for automated underwater monitoring systems that could inform managers about the growth increment and health status of fish stocked in marine cages, enhance human safety, and cost-effectiveness of operations. A domain adversarial learning technique towards underwater image enhancement, resulting in improved visual enhancement across various levels of degradation, attenuation, and depth in images has been achieved. The TIH has created a new synthetic underwater dataset derived from the Underwater Image Enhancement Benchmark (UIEB) dataset, consisting of 890 underwater reference images.



Representation of process flow

Olfactory Enabled Media & Food Engineering:

An innovative system integrating eye-tracking and olfactory stimuli for enhancing immersive experiences in mixed reality (MR) environments is being developed.

The key features of the technology are:

- **Eye-Tracking Integration:** The system recognizes users' gaze patterns in real time to release various fragrances when MR objects are fixed on for a set duration.
- **Synchronized Olfactory Outputs:** MR visual signals and contextually relevant smells are flawlessly synced, boosting immersion.
- **Aroma Dispenser Unit (ADU):** The ADU provides individual aromas without cross-contamination for a clean, immersive smell.

The technology has broad applications in education, healthcare, entertainment, and cultural heritage.



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