IIT Mandi iHub and HCI Foundation*

Technology in Harmony with Human Needs

Human-Computer Interaction (HCI)

***The Technology Innovation Hub under the aegis of
National Mission on Inter-disciplinary Cyber-Physical Systems (NM-ICPS)**

Technology in Harmony with Human Needs

IIT Mandi iHub & HCI Foundation

- Technology Innovation Hub (TIH)
- With IIT Mandi as the Host Institute

- Incorporated on 24th Sept 2020

- Focused on Human-Computer Interaction (HCI).

- Plans to make India a leader in HCI, with the Center of Excellence based in the IIT Mandi campus

INDEX

6 Blind Men and the Elephant

Bringing the
Elephant to the room
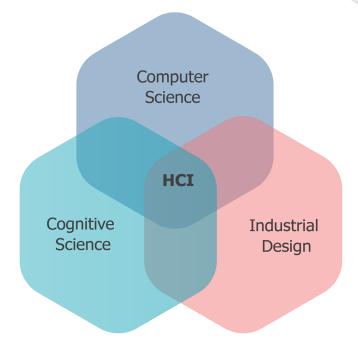
THE ELEPHANT IN THE ROOM IS HCI!

Computer Science

Ergonomics

Psychology

Branding

Graphic Art

Communication — connected with — Software design

Mobile Computing

Cognitive Science/ Engineering — example of — HCI — subarea of — Ubiquitos Computing

Research & Practice — area of — emerged — 1980

subareas

Geo-Spatial IS — Sensor Networks

presented — leads to

People

concepts

skills

vision

Good design for — easy to learn easy to use

Usability is an — User Experience — Interaction among

Computer

Human

Mobile Devices

Need

Efficiency

Simplicity

Open ended concept

Device in vehicles & coffee shops

DEFINING
HUMAN-COMPUTER INTERACTION

Computer Science

Cognitive Science

HCI

Industrial Design

HCI is situated in the confluence of
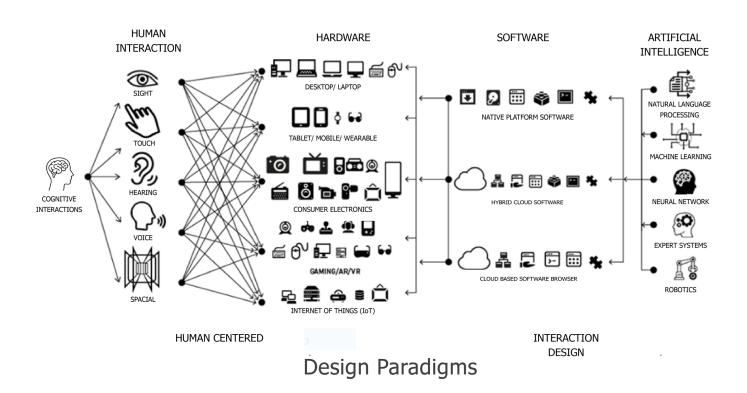Computer Science, Cognitive Science, and Industrial Design

Human-Computer Interaction (HCI)

A method that allows interaction between the human being and the computer

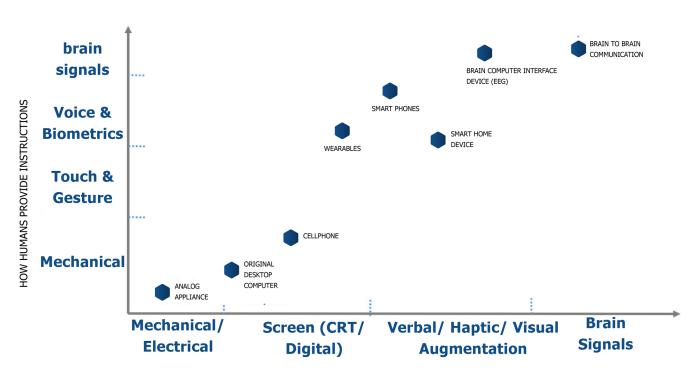# Designing
Human-Computer Interaction

HUMAN INTERACTION

COGNITIVE INTERACTIONS

SIGHT

TOUCH

HEARING

VOICE

SPACIAL

HARDWARE

DESKTOP/ LAPTOP

TABLET/ MOBILE/ WEARABLE

CONSUMER ELECTRONICS

GAMING/AR/VR

INTERNET OF THINGS (IoT)

SOFTWARE

NATIVE PLATFORM SOFTWARE

HYBRID CLOUD SOFTWARE

CLOUD BASED SOFTWARE BROWSER

ARTIFICIAL INTELLIGENCE

NATURAL LANGUAGE PROCESSING

MACHINE LEARNING

NEURAL NETWORK

EXPERT SYSTEMS

ROBOTICS

HUMAN CENTERED

INTERACTION DESIGN

Design Paradigms

Interdisciplinary   **Interaction**   **Intelligence**

Interaction of People and Application in their Environment

Evolution of Human-Computer Interaction

HOW HUMANS PROVIDE INSTRUCTIONS

- brain signals
- Voice & Biometrics
- Touch & Gesture
- Mechanical

HOW HUMANS RECEIVE RESPONSES

- Mechanical/ Electrical
- Screen (CRT/ Digital)
- Verbal/ Haptic/ Visual Augmentation
- Brain Signals

Plotted points:
- ANALOG APPLIANCE
- ORIGINAL DESKTOP COMPUTER
- CELLPHONE
- WEARABLES
- SMART PHONES
- SMART HOME DEVICE
- BRAIN COMPUTER INTERFACE DEVICE (EEG)
- BRAIN TO BRAIN COMMUNICATION

Technology path for input-output interactions over the years

VISION OF
IIT MANDI iHUB & HCI FOUNDATION

To be an internationally recognized hub that nurtures HCI research, enables technology translation for industry, and scales skill development.
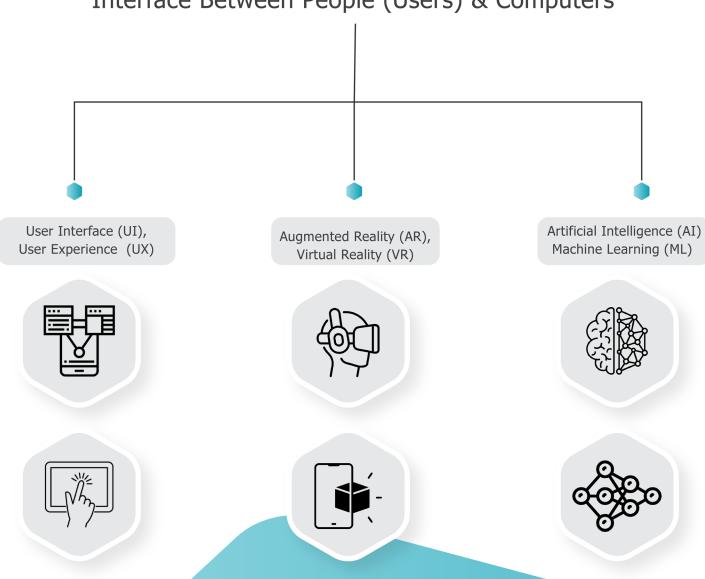
COMPONENTS
OF HUMAN-COMPUTER INTERACTION

Human-Computer Interaction (HCI)
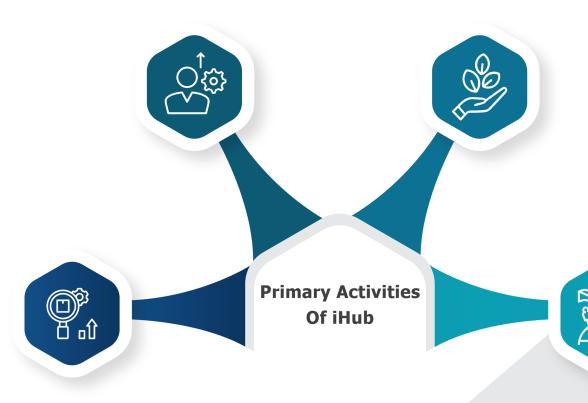Interface Between People (Users) & Computers

| User Interface (UI), User Experience (UX) | Augmented Reality (AR), Virtual Reality (VR) | Artificial Intelligence (AI) Machine Learning (ML) |

THE VERTICALS

COMPETENCE
Skill Development

CATALYST
Incubation & Acceleration

Primary Activities Of iHub

QUEST
Research & Technology Development

CONCERT
Collaboration

R&D LED
HCI BASED PROJECTS*

Assistive Technologies

- Brain to text through EEG and ML

- Generation of Hindi-English Code mixed Computational Lexicon and Chatbot Counselling Application for Depression Disorder

- Interactive Virtual Surgery Training Agent

- Developing an AI-based cognitive function enhancement app by applying Artificial Intelligence and biomarker profiling

Experience Technologies

- Detecting textual entities with Representational mining on Big Temporal Knowledge Graphs of Ancient Literature and Social Media Data

- A transformational method for administering surveys.

- Development of AR based training module for industrial training

Devices-led Technologies

- Intelligent Spoof plasmon-based bio-sensors for real-time Food Quality

- Autonomous Bed System for Bedridden Patients

- Intelligent Fuel Savings and Target Emission Reduction system through AI and smart IoT devices

- Segregation of herbs from seaweed through computer vision, actuators, and conveyor belt system

*Call for Proposal covers the above areas (R&D)

SKILL DEVELOPMENT

"ANUBHAV" FELLOWSHIP (UG)

- 3 Months
- INR 5,000/Month
- Certificate
- Funding Opportunity
- Hybrid Mode
- On campus Accommodation

PG FELLOWSHIP

- 24 Months
- INR 15,000/Month
- Certificate
- Funding Opportunity

DOCTORAL FELLOWSHIP

- 36 Months
- INR 37,500/Month for the first two years and then INR 40,000/Month for the last year
- Certificate
- Funding Opportunity

POSTDOCTORAL FELLOWSHIP

- 18 Months
- INR 85,000/Month
- Certificate
- Funding Opportunity

FACULTY FELLOWSHIP

- 18 Months
- INR 1,00,000-1,500,00/Month
- Certificate
- Funding Opportunity

Indian Institute of Technology Mandi

IIT MANDI IHUB AND HCI FOUNDATION
Technology in Harmony with Human Needs

Scan here for more information

INCUBATION AND
ACCELERATION PROGRAM

CPS EIR, 2
3%

CPS Accelerator, 4
7%

CPS SSS, 13
23%

CPS PRAYAS, 38
67%

Schemes of incubation

Four Cyber-Physical Systems (CPS) incubation schemes currently have 57 startups onboarded

7 Assistive Technologies

PharmaPedia

GoPillz AI Solutions Pvt.

Brainhive Labs Pvt. Ltd.

Leyerse

Vocbot.AI Technologies Pvt. Ltd

Able Innovation

Pyxill Heallth Pvt. Ltd.

7 Experience Technologies

SyncSense Technologies Pvt. Ltd.

Vasana Technologies Pvt. Ltd.

Genny

Tensor Matics Pvt. Ltd.

Augtual Reality Labs Pvt. Ltd.

256 Bits Studio Pvt. Ltd.

Wundersight Pvt, Ltd.

3 Device Technologies

Clickzy Creative Technologies Pvt. Ltd.

Ekosight Technologies Pvt. Ltd.

Arficus Pvt. Ltd.

Startups supported in third year

INDUSTRIAL COLLABORATIONS

Unity 3D UAA

ITRA Japan

Naxon Labs

Aizen Algo

Rubiscape

Neuphony

Furhat Robotics

Neuroleap

iCuro

GLIMPSES

Reach Us At

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