

# COBONEWS

VOL. III, NO. 2, July 2023 ISSUE



DEFENCE



INDUSTRY 4.0



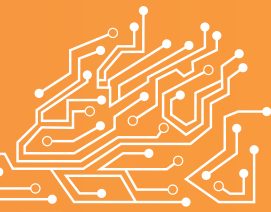
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AGRICULTURE



MEDICAL





## Message from Director, IIT Delhi

I am delighted to write this note for the IHFC Cobonews. Through IHFC, IIT Delhi hopes to make an impact in Cobotics. During the last three years we have supported several technology development and innovation projects in the areas of drones, medical cobotics, robotics and creating enabling facilities- simulators and test cum-benchmark facilities. We are already having multi-disciplinary research teams and collaborating with industry and government. IHFC has also been involved in international partnerships with the US and Japan.

We hope you will partner with us and provide suggestions for us to create an enabling innovation ecosystem for Cobotics.

Jai Hind!



**Prof. Rangan Banerjee**

Director  
IIT Delhi

## Message from Mission Director of NM-ICPS, Department of Science and Technology, Govt. of India

It gives me immense pleasure to congratulate IHFC as they celebrate their 3rd anniversary. I would also like to acknowledge the evolution of IHFC and CoboNews over the years.

IHFC has created a strong ecosystem that fosters Technology Development, Human Resource Development, Entrepreneurship and Translational Research, in line with the objectives of NM-ICPS. IHFC's achievements and contributions have undoubtedly made a significant impact on the technology innovation landscape, and I look forward to witnessing their continued success in the coming years.

I extend my best wishes to IHFC team for all their future endeavors!



**Dr. Ekta Kapoor**

Mission Director of NM-ICPS,  
Department of Science and  
Technology (DST),  
Government of India

## Message from Project Director, IHFC

We are almost in the middle of 2023 and how quickly the last 6 months have gone by! Rightly so, because it is said that when you are having fun, time passes fast. We started the year with various events with the vision of creating, innovating, and educating all on how to build something for the betterment of mankind. This year, IHFC has trained young minds at school level for Delhi Robotics League, its future, and its application in our lives. We have spread our wings literally, and conducted our extremely successful Drone Training Program at Guwahati in collaboration with NECTAR. We have established strong academic and industry alliances in the field of Drones with Japan and visited Baltimore with our NSF-DST international projects. IHFC successfully supported DD-Robocon again as a Knowledge Partner this year, and even gave top 12 teams opportunity to get into IHFC's READY program. IHFC is now known to collaborate, create solutions, and showcase only the best. IHFC is delighted to say that our visionary flagship activity, i.e., Medical Cobotics Centre (MCC) is almost ready to launch. We are strongly carving our path to succeed strategically, and showing to the world that anything can be achieved with the IHFC way!



**Prof. Subir Kumar Saha**

Professor, Dept. of Mechanical Engineering, IIT Delhi

## Message from CEO, IHFC

As promised, IHFC started 2023 with many accomplishments in the early months; each month focused on being eventful, collaborative, and technology-centric. As we step into the 3rd anniversary year of our inception, with great pride, I would like to say that many milestones have been achieved, and benchmarks have been created, not to forget IHFC becoming now a recognised name to reckon with industry partners and stakeholders.

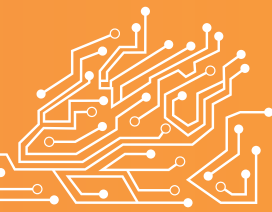
IHFC has already set its firm footing in the field of Innovation and Technology, and this year, the focus is firmly on building strong collaborations and partnerships and establishing itself not only in R&D but strongly focus on Skill and Training development, building a strong startup ecosystem, creating more entrepreneurs and Unicorns and forging further international alliances. Our collaboration with the NSF-DST project got further affirmation during our latest trip to all the international collaborative projects in the USA. Our latest Indo-Japanese collaboration had IHFC showcasing the Drone Ecosystem in Japan recently at the Drone Exhibition. The aim has been to nurture Gen X and Gen Z, equip them with knowledge, and make them future-job-ready. This has started with our Drone Technology Training 1-day workshop, which is now proudly an All-India monthly training course because of its demand and success. IHFC and our partners have been training the youth in North India and North East India in Drone Technology, Drone Flying, Drone Making and programming, developing the skills and making them market ready. Having our READY protege showcase their robot on behalf of GoI to our Honbl. Prime Minister Shri Narendra Modiji strengthens our faith in our capability and capacity to create more entrepreneurs for India. As Knowledge Partner for DD Robocon 2023, IHFC handed over a confirmation letter of entry into the READY program to the winning team members to hone and groom them and handhold them in their journey from creativity as a student to conceptualisation as an Entrepreneur.

Now, with our next biggest project launch of the MCC (Medical Cobotics Centre) establishes IHFC's strong footing and expertise in R&D in the Medical field. All this and much more, and we are only halfway through the year, so, as I say, miles to go before we sleep—lots to achieve to make India shine bright on the world map.



**Mr. Ashutosh Dutt Sharma**

Chief Executive Officer (CEO)  
IHFC, IIT Delhi



## Innovation Hub for Cobotics (IHFC)

**COBOTICS OR COLLABORATIVE ROBOTICS** is the future. Robots are increasingly becoming more powerful and adept at performing tasks that are - Dull, Dirty and Dangerous for humans. We are entering an era of manned + unmanned teaming where humans and robotic systems must work together towards common goals. Intelligent robotic teammates have the potential to expand human capabilities, reduce risk, increase safety, productivity and ultimately the quality of life for our people. Competency in human-robot collaboration is crucial for our country such that robotic systems enhance the capabilities of our workforce rather than trigger replacement. Therefore, the development of technology and products that enable the population to work alongside robots is the need of the hour. With this aim, I-Hub Foundation for Cobotics (IHFC) was established partnering with the Department of Science Technology (DST), Ministry of Science and Technology, Govt. of India. The guiding theme for this venture is Human-Robot Collaboration for Enhancing Human Capabilities, Reducing Risk and Improving Productivity. A total of 100+ faculty from IIT Delhi, other IITs, IIITs, NITs, and universities around the world have agreed to be a part of this venture in addition to industries like TCS, Samsung and Wipro. IHFC is tasked with the commercialization of the developed technology into products for application into various target sectors like: Medical Robotics, Agriculture/Disaster Management, Defence and Factories/MSMEs.

### Startups Incubated & Accelerated



CYRAN AI Solutions

The Innovation Story (TIS)

SeiAnmai Technologies

### 10 Grand Projects

1. Healthcare Robotics
2. Rehabilitation Robotics
3. Human-Robot Interaction
4. Industry 4.0 and Beyond
5. Intelligent Sensing and Secure Communications
6. Drone Applications
7. Autonomous Vehicles
8. Nano Robotics
9. Blockchains for Robotics
10. Medical Simulator

### Entrepreneurship Initiatives

- **READY:** Research Entrepreneurship And Development For You
- **I2U:** Innovation 2 Unicorn Startup & Incubation
- Robotics for Impact (Collaboration with Digital impact Square, TCS)
- **DD Robocon** winner team gets jumpstart entry in IHFC READY program to start their entrepreneurial journey with their ideas
- Knowledge partner for **Delhi Robotics League** to impart robotics training and knowledge to make school students ready for future jobs in robotics and engineering



### IHFC Major Highlights

#### Drone Technology Park



Drone technology learning and training center for courses and workshops



Dr. Ekta Kapoor, DST, NM-ICPS visiting our soon to- be inaugurated Medical Cobotics Centre (MCC). A collaborative effort of DST under NMICPS, IIIT-D, I-Hub Anubhuti and IHFC



## Activity Highlights of IHFC

### January

- IHFC, in partnership with Digital Impact Square, a TCS Foundation Initiative, launched '**Robotics for Impact**' – for researchers, innovators, and entrepreneurs to **address a social challenge or national priority**, like agriculture, defence, healthcare, and rehabilitation through robotics
- IHFC IIT Delhi's HGB member, **Dileep Mangsuli** (Executive Director of Siemens Healthineers), signed an MoU with MeitY-NASSCOM Centre of Excellence R&D Institute to develop iMRI technology
- IHFC became the **official knowledge partner** of **DD-Robocon 2023**, as well as of the **Delhi Robotics League 2023**
- IHFC **trains SoSe students** for Delhi Robotics League 2023

### MoU with MeitY-NASSCOM



### India-Japan Meet



### Convergence India Expo

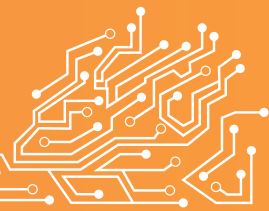


### February

- IHFC launched the **DTP-Training Program** with Jet Aerospace
- IHFC **co-hosted the NCR Startup Mixer** with We Founder Circle
- IHFC showcased READY program investor and inventor **Srikrishna Sowrirajan** and his creation **TOTO (Teleoperation and Teleobservance Robot)** on National Technology Week
- In collaboration with TRYST, IHFC launched **Drone Internship Programs** at IIT Delhi, Sonipat Campus, for students aged 15 and above
- IHFC's **Project Director Prof. Subir Kumar Saha** and **CEO Ashutosh Dutt Sharma** fostered **India-Japan ties** in robotics and research during their Japan visit
- IHFC **met with esteemed delegations** from Chiba University, Japan, and New Energy and Industrial Technology Development Organisation (NEDO) for drone collaboration

### March

- IHFC was the **Innovation Partner** for IIT Delhi TRYST
- IHFC became the **Title Sponsor** for Cosmo Clench, Aqua Robotics, and Robo Soccer and was a **Venture Capitalist** for their startup pitch and events
- IHFC, in collaboration with **TRYST** and **Jet Aerospace Aviation Research Center**, launched the **most successful 1-day Drone Tech workshop** at our IIT Delhi Sonipat Campus, that was attended by around 100 students aged 13 and above
- IHFC showcased their start-ups and achievements at **Smart Cities Expo** at the **Convergence India Expo**, under the **Department of Science and Technology (DST) pavilion**
- IHFC **CEO Ashutosh Dutt Sharma** led an interesting session on **technology, wellness, and spirituality** with eminent speakers such as Dr. Vani Sud Dhindsa from Vedantu, and Ashish Sahani, Vikram Shastri, and Priyanka from Sadhna Foundation, India
- IHFC **organized field visits** of the team to all GP Hubs to see their progress



## Activity Highlights of IHFC

April

- IHFC was a **part of the presenting group** showcasing their work at the meeting between **National Science Foundation (NSF), DST, and the US Embassy**, where they discussed future collaboration
- IHFC **coordinated and hosted the 2<sup>nd</sup> National Workshop TIPS 2.0**, showcasing some brilliant work done by hand-picked hubs across India
- IHFC and North East Centre for Technology Application and Reach (NECTAR) launched **drone technology course** for students and enthusiasts in Guwahati
- IHFC launched a **new GP on Nanorobotics** with Prof. Sautik Betal from IITD as the GPC

TIPS 2.0 Workshops



DD Robocon 2023



Team visit to UMBC, US



May

- IHFC hosted their **inaugural Professor Of Practice event**, bringing together experts in design, engineering, communication, and management to collaborate on future projects
- IHFC **showcased TOTO**, a project from their Ready program, at the **National Technology Week** at Pragati Maidan, **inaugurated by PM Narendra Modi**, at the DST pavilion
- IHFC conducted **hands-on Drone Training program** at Guwahati Center for Technology in collaboration with NECTAR, providing comprehensive training on drone making, technology, and flying
- IHFC, with Jet Aerospace, began the next batch of hands-on **Drone Technology Skill Development Program** for young students at R&I Park, IIT Delhi
- IHFC visited the **Automation exhibit in Detroit** featuring cutting-edge robotics technology

June

- IHFC collaborated with The Innovation Story to organize a **hands-on workshop on coding and robotics**
- IHFC handed over **offer letters to a Deep Tech Immersion Program** (to be held in Nov/Dec 2023) to the **Top 12 teams at DD-Robocon**
- **Dr. Manan Suri**, Principal Investigator at NVM and Neuromorphic Hardware Research Group, **represented IHFC at the Indo-US defense innovation summit**
- IHFC **CEO Ashutosh Dutt Sharma** invited as a **key speaker** at the Global Bharat Movement Business Innovation Roadshow, presented by SAP and TV9 - India Network
- IHFC, during their **US-visit for NSF-DST Grand Projects**, visited Projects for Advanced BCI enhanced real-time shared control of wearable exoskeletons for rehabilitation and human assistance applications, and Synergy-based Control of Hand Prosthetics and Exoskeletons
- IHFC launched a **Call for Proposals for startups in robotics and artificial intelligence** for Healthcare, Defence, Agriculture, and Industry 4.0
- IHFC **participated in the Japan Drone Show** held in Japan and showcased all of its startups and partners in the drone domain
- IHFC launched a **Call for Patents with commercial potential** in the domains of drones, artificial intelligence, machine learning, smart manufacturing, sensing, and communication
- IHFC team participated in **GP meeting in Baltimore along with Indian PIs and NSF PIs**
- IHFC conducted **GP coordination online meeting** on 20th June that was **attended by TCS, our partner**

**Visit to Automate Exhibit, Detroit**

**TOTO Showcase at DST Pavilion for Hon'ble PM Shri Narendra Modi**

**IHFC at Japan Drone Show**

**Visit to Rutgers University, US**

**DD-Robocon 2023 Winning Team**

**IHFC visits NYC University with Prof. Sunil Jha**


## CoboTalks: A Monthly Academic Seminar Series

**26**
**25th Jan, 2023**

**Mr. Jagannath Samantaray**

 Senior Engineer,  
MathWorks

**Title:** Control of Unicycle Robots Using Model-Based Design

**27**
**8th Feb, 2023**

**Dr. Biswarup Mukherjee**

 Assistant Professor,  
Center for Biomedical Engineering, IIT Delhi.

**Title:** Restoring Human Movement Through with Ultrasound

**28**
**9th Mar, 2023**

**Dr. P. Rajalakshmi**

Professor, Department of Mechanical Engineering, Project Director of TiHAN at IITH

**Title:** Autonomous Navigation Research at IITH

**29**
**10th May, 2023**

**Mr. Rishabh Agarwal**

CEO, Peer Robotics

**Title:** Role of Human-Robot Interaction to Enable Automation in SME

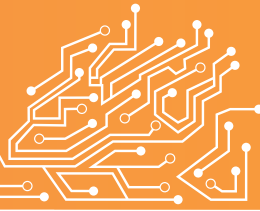
**30**
**14th June, 2023**

**Dr. Ramesh Shankar & Mr. Anand Pujari**

Team Autodesk

**Title:** Digital Transformation in Design and Manufacturing





## IHFC Research and Development (Grand Projects)

### IHFC Team Visits Various Institutes



IHFC team visit to Dr. Spandan Roy and team on March 20, 2023, **IIIT Hyderabad**, (Drone Application Grand Project)



IHFC team visit to Prof. Sitikantha Roy and team on March 23, 2023, **IIT Delhi**, Rehabilitation (Grand Project)



IHFC team visit to Prof. P M Pathak and team on March 25, 2023, **IIT Roorkee**, Drone Application (Grand Project)



IHFC team visit to Dr. Felix Orlando, **IIT Roorkee** on March 25, 2023, (Rehabilitation Grand Project)



IHFC team visit to Dr. Shubhendu Bhasin and team on March 23, 2023, **IIT Delhi**, (Drone Application Grand Project)

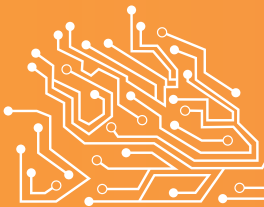


IHFC team visit to Prof. Nayan M Kakoty on March 23, 2023, **Tezpur University**, (Rehabilitation Grand Project)

#### Other institute visits by IHFC team:

- Prof. Ashish Dutta, **IIT Kanpur** on March 14, 2023, Rehabilitation Grand Project
- Prof. G C Nandi, **IIIT Allahabad** on March 15, 2023, Human-Robot Interaction Grand Project
- Dr. Vineet Vashista, **IIT Gandhinagar** on April 19, 2023, Rehabilitation Grand Project
- Dr. Kaushal Kishore, **CEERI Pilani** on March 29, 2023, Drone Application Grand Project





## NSF/TIH PI Meeting and Workshop for Indo-US Research Collaboration on May 22-23, 2023, Baltimore, Maryland, USA

The workshop highlighted the mutual benefits that come from tapping into the expertise, resources and diverse perspectives of both countries and emphasized the need for sustained efforts in building partnerships, nurturing research networks, and promoting joint initiatives to address complex scientific and technological problems. Primary focus of the workshop was on reviewing and showcasing the progress of the 35 joint projects that were awarded in August 2022. The participants engaged in lightning talks, where each project had the opportunity to deliver a concise overview of its achievements. IHFC PIs along with their NSF PIs and students presented the successful progress of their joint work.



IHFC Team



IHFC team with NSF PIs



IHFC Leaders' presentation



Prof. Pathak and Prof. GC Nandi with team during US Visit



Prof. Amit Shukla and his team



Prof. Amit Bhardwaj and his team



Prof. Nayan and his team



IHFC Leaders with NSF leaders



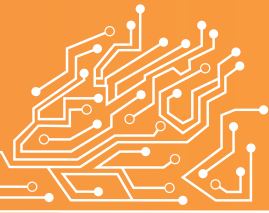
Prof. Ashish Dutta and his NSF team



Dr. Soumen Sen with team



Visit to Automate Exhibit with Prof. Satyendra



## Other Technology Innovation Hubs in India

TIH of **IIT Mandi** on Human-Computer Interaction inaugurated new office with Hon'ble CM of HP Shri Jai Ram Thakur



TiHAN, TIH of **IIT Hyderabad**, inaugurated testbed for Autonomous Navigation



DRISHTI, TIH of **IIT Indore**, signed an MoU with ISCDL and CIIE IIM-A to promote entrepreneurship



**I-Hub Quantum Technology Foundation of IISER Pune** launched the National Quantum Mission, onboarded industry partners and startups for QT development, organized field visits, and started the Indo-Russian webinar series for quantum technology and potential collaborations

**IIT Palakkad** Technology IHub Foundation (IPTIF) has onboarded 23 institutions as spokes, organized numerous skill developments activities and curated opportunities for aspiring entrepreneurs



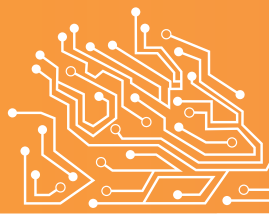
AWaDH, TIH of **IIT Ropar**, has been developing technology solutions to support sustainable agriculture, water management, and environment planning



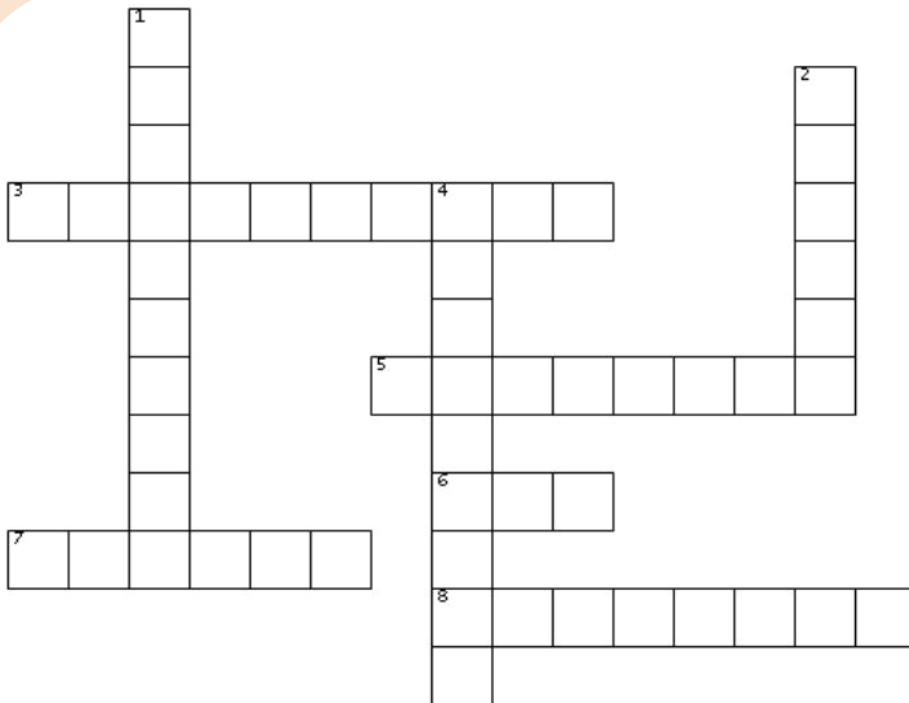
TIH Foundation for IoT and IoE, **IIT Bombay**, made a major contribution towards sustainable farming by deploying Soil Moisture sensors at 9 locations in the Kaledhon village of Satara district



Please email your articles to [piya@ihfc.co.in](mailto:piya@ihfc.co.in) for January 2024 edition by 20<sup>th</sup> November



## CoboNews Crossword #1



### Rules:

- Use the clues to fill in the words above.
- Words can go across or down.
- Letters are shared when the words intersect.

### ACROSS

3. Decentralized digital ledger system (10 letters)
5. Collaborative Robotics (8 letters)
6. Network of connected devices (3 letters)
7. Device that detects and responds to physical input (6 letters)
8. Robots designed to resemble or mimic human characteristics and behavior (8 letters)

### DOWN

1. Process of performing tasks with minimal human intervention (10 letters)
2. Unmanned aerial vehicles (6 letters)
4. A step-by-step procedure or set of instructions that a robot follows to perform a specific task (9 letters)

Mail your answers to [piya@ihfc.co.in](mailto:piya@ihfc.co.in) by 16<sup>th</sup> August. First 3 correct entries will win IHFC goodies!

*\*Terms and conditions apply*





Department of Science & Technology  
Govt. of India



IIT DELHI



# IHFC

Technology Innovation Hub of IIT Delhi



IHFC sponsors TRYST



IHFC Field Visit to Guwahati



IHFC start up Cyran AI with  
US Ambassador Eric Garcetti



▶ Team IHFC ◀



IHFC and WFC(WeFounderCircle)  
workshop for start Up Founders



IHFC offers induction into READY  
program to DD Robocon 2023 winners



IHFC/Iet Aerospace Drone  
Training Program



IHFC stall at DD Robocon

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