



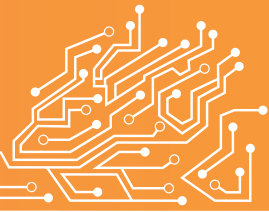
DEFENCE

INDUSTRY 4.0

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AGRICULTURE

MEDICAL



## Message from Director, IIT Delhi

Happy New Year to the readers of Cobonews. We hope that 2023 will see a growth in the applications of robotics and innovation for the benefit of society. Last year, we witnessed a collaboration with NSF with 12 projects for IHFC.

We hope to work with you to take your ideas, innovations and technologies into products that impact the market. We look forward to your involvement in the Medical Cobotics Centre and the Drone Technology Park. Together we can work towards the Prime Ministers' vision of making India Atmanirbhar.



**Prof. Rangan Banerjee**

Director  
IIT Delhi

## Message from Scientist, Department of Science and Technology, Govt. of India

At the outset, let me wish all a very Happy New Year 2023 from DST !

I also congratulate IHFC, the Technology Innovation Hub (TIH) of IIT Delhi, set up under National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS) on publishing its 1st edition of year 2023 Cobonews. It gives me immense pleasure to note that it has been a very fruitful and successful partnership between DST and IHFC ever since its inception in 2020. Further, It is very encouraging and heartening to see IHFC position itself as one of the most coveted Technology Innovation Hubs under NM-ICPS with a gamut of activities covering extremely prestigious projects and global recognition.

With their ongoing international collaborations, global associations and 12 successful Grand Projects, IHFC is not only achieving its targets in a time-bound manner, but also setting up an example for other such organizations in the country. DST looks at partnering with IHFC for many large events and collaborations in year 2023 and in the years to come. I truly understand that these kind of achievements are a result of a great team work. I wish the IHFC team all the very best for all future endeavors, which will surely put them on the map amongst their fraternity.



**Dr. Ekta Kapoor**

Scientist F, Department of  
Science and Technology (DST),  
Government of India

## Message from Project Director, IHFC

This is a pleasure for me to write for January 2023 issue of CoboNews. We had an eventful year with a lot of achievements and new initiatives. For example, our investment to Botlab Dynamics made them successfully demonstrate 1000 drones on January 29, 2022 at Rashtrapati Bhavan. It made India the 4th country in the World in drone swarming of similar numbers. Secondly, we won 12 out of 36 NSF, USA supported projects which started in August 2022. NSF has collaborated with six Technology Innovation Hubs for co-funding of one year. Besides, working with Delhi School Board, supporting DD- and ABU-Robocon in July and August, respectively are some of the hallmark activities of IHFC. Soon, we plan to launch our flagship Medical Cobotics Center (MCC) and Drone Technology Park (DTP) for the benefit of the PIs, and other stakeholders. I invite the faculty of IIT Delhi and others to take advantage of such national facilities, and take part in the other activities of IHFC!

Jai Hind!



**Prof. Subir Kumar Saha**

Professor, Dept. of Mechanical Engineering, IIT Delhi

## Message from CEO, IHFC

It brings me immense pleasure to welcome new year 2023 and wish everyone best for the new year via this 5th volume of our newsletter. Last year gave us an opportunity to bounce after a Covid marred 2021 and I would like to thank the vibrant team of IHFC, partners, collaborators, IIT Delhi and DST for supporting us wholeheartedly to make the most of it.

Whether it was that amazing show by Botlab Dynamics during Beating Retreat which started the year with a bang or our collaboration with National Science Foundation (NSF), USA which marked a new beginning for the Indo-US collaboration in the technology research domain, IHFC proved that India is starting to write a new chapter in the field of technology innovation. We are thankful to CISCE and DBSE for trusting us to carry our spirit to the school students through the courses we are helping them launch for their students. We have been looking forward to create an impactful ecosystem around Drone Technology and have been able to crack some critical partnerships in that direction including training enablement for Border Security Force, and a new research cum training centre at our Drone Technology Park (IITD Sonapat Campus). Our collaboration with NECTAR will help us carry this phenomenon to the north-east part of the country which may be the biggest beneficiary of this technology. We are thankful to Ministry of Labour (GoI) for allowing us to showcase the way this technology may be useful for some of Government initiatives. We look forward to reaching out to more ministries to demonstrate the capabilities in 2023. In the coming year, we feel that our R&D projects will start to see some green shoots. Our 3 new grand projects (Nanorobotics, Blockchain for Robotics and Autonomous Vehicles) will also come to life within the first quarter. We are working with some corporate initiatives like TCS DISQ to take journey of our start-up incubator to the next level. We would forge many more such partnerships in the coming year especially in the area of medical robotics. Our Medical Cobotics Centre (MCC) will be the breeding ground for many such initiatives.

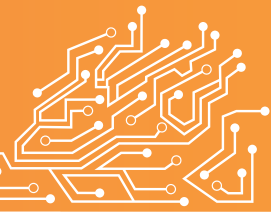
IHFC is proud to see itself on track to achieve several milestones during last year and we look forward to a more eventful, collaborative, and technology centric year 2023 for everyone.

Let's co-innovate together.



**Mr. Ashutosh Dutt Sharma**

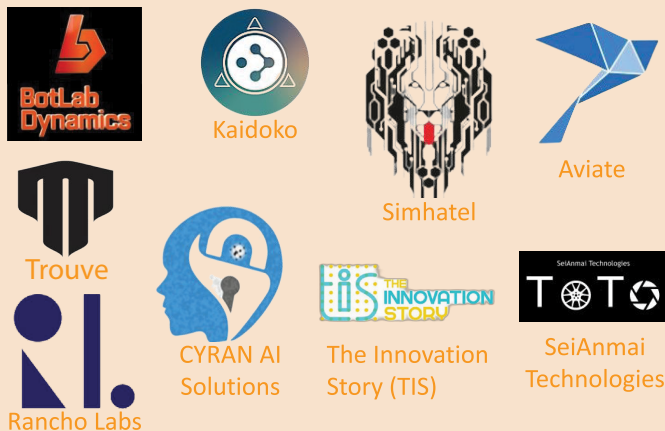
Chief Executive Officer (CEO)  
IHFC, IIT Delhi



## 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



### 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)



### IHFC Major Highlights

#### Drone Technology Park



Drone technology learning and training center for courses and workshops



#### Medical Cobotics Center

Human Patient Simulator (HPS) established at IIT Delhi to start simulation center and hands on medical courses



## Activity Highlights of IHFC

June

- IHFC and Rancho Labs (IHFC-incubated startup) launch **Coding and Robotics Summer Camp** for classes VI-VIII
- Launch of IHFC-incubated platform **Kaidoko**: an AI-powered learning, behaviour, and personality enhancement platform for children
- **Knowledge partner** of DD-Robocon 2022

### Coding and Robotics Camp



### DST - NSF Workshop



### DD Robocon 2022



### MoU with SeiAnmai Technologies



July

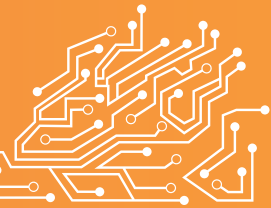
- **TOTO (Tele Operation and Tele Observance)**, an autonomous mobile robot capable of autonomous navigation, docking, and voice application developed by Srikrishna S in association with IHFC was in the highlights at DD-Robocon.
- IHFC plans to set up a new **Drone Tech Park on IIT Delhi Sonipat campus**

August

- IHFC hosts a 2-day kickoff workshop for a **DST-NSF Joint Research and Development Project**
- **Knowledge partner** for the International ABU Robocon 2022
- IHFC bags **12 prestigious projects out of 35** under the DST-NSF Joint Research and Development Program
- IHFC participates in the **ESIC conference** organised by the Ministry of Labour at Tirupati, alongwith accelerator partner Besta Prem Sai, VECROS.

September

- IHFC signs **MoU with RealSim** for medical simulators
- IHFC signs **MoU with Aviate (part of READY)** for jointly collaborating on RPTO (Remote Drone Pilot Training) facility at IIT Delhi, Sonipat campus
- IHFC signs **MoU with SeiAnmai Technologies Private Limited** for market invention and technology
- Call for entries for **Robotics for Impact** launched jointly by TCS DISQ and IHFC



## Activity Highlights of IHFC

October

- IHFC signs **MoU with NECTAR** for empowering regional entrepreneurs
- A team of high-school students from NGOs Salaam Bombay and Avsara foundation under IHFC-incubated startup The Innovation Story selected to represent India at the FIRST Global Challenge in Geneva, Switzerland.

MoU with RealSim



SAC NMICPS Meet



MoU with Aviate



RuTAG - IITD Collab






November

- IHFC accelerated startup **CYRAN AI Solutions** under Prof. Manan Suri was discussed at the **Defence Expo 2022**.
- In an **IHFC and RuTAG IIT Delhi** collaboration event, Prof. Subir Kumar Saha and RuTAG Team showcased current projects to jointly finding product solutions which can limit the exposure of workers to hazardous materials and conditions
- IHFC Grand Projects presentation to stakeholders and industry on Industry 4.0 and beyond and Intelligent Sensing and Secured communication

December

- IHFC Grand Project Coordinator **Prof. Dhiman Mallick's** work on Triboelectric Nanogenerator is accepted for **publication in Nano Energy**
- Research work on advanced Generative Adversarial Neural Network by Vandana Kushwaha, Dr. Priya Shukla, and Prof. GC Nandi **accepted by the Machine Vision and Application journal**
- IHFC hosts the first re-constituted SAC NMICPS meet held at IIT Delhi
- Completion of **25 successful episodes of Cobotalks** on December 14, 2022
- IHFC, as the **knowledge partner**, successfully launches **Delhi Robotic League: Nurturing Excellence in Robotics ROBO-KANCHHA**
- MOU signed with Jet Aerospace to set up Drone Training Innovation and excellence center at IIT Delhi Sonipat campus

## CoboTalks: A Monthly Academic Seminar Series

<b>23</b>	<b>22nd Sept, 2022</b>	<b>24</b>	<b>9th Nov, 2022</b>	<b>25</b>	<b>14th Dec, 2022</b>
	<b>Dr. Satyandra K. Gupta</b> Professor, Viterbi School of Engineering, University of South California  <b>Title:</b> Human-Robot-AI Teams For Improving Quality of Life		<b>Mr. Alok Mukherjee</b> Scientist 'G' (Retd.), DRDO, Pune  <b>Title:</b> Autonomous Systems Development at R & DE (ENGRS), DRDO, Pune		<b>Mr. Jyotirmoy Ray</b> Head, Smart Products, Wipro Automation  <b>Title:</b> Solutions by Wipro PARI and Challenges Faced in Automation

## Field Visits by IHFC

Visit to the grand project on **secure photonics communication system** under Prof. Amol Choudhary (IITD)



Visit to the grand project on **self-powered sensor system** under Prof. Dhiman Mallick (IITD) and Prof. Amol Choudhary (IITD)



Visit to **rehabilitation robotics** grand project on **development of wearable soft sensor** under Prof. Ashish Dutta (IITK) and Prof. Sitikantha Roy (IITD)



## 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 a MoU with ISCDL and CIIE IIM-A to promote entrepreneurship



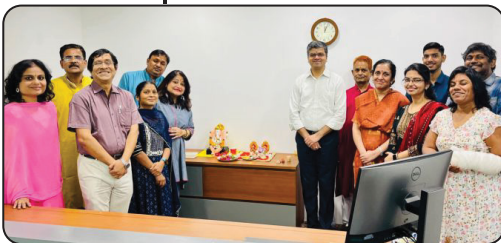
**IIT Palakkad** Technology IHub Foundation (IPTIF) has onboarded 23 institutions as spokes, organized numerous skill developments activities and have curated opportunities for aspiring entrepreneurs.

Please email your articles to [piya@ihfc.co.in](mailto:piya@ihfc.co.in) for July 2023 edition





► Team IHFC ◀



## Editorial Team

Deepak Raina  
Harshit Singh  
Nitika Verma  
Piya Basu  
Hritik Gupta

## I-Hub Foundation for Cobotics

**CORPORATE OFFICE:**  
IHFC, 2-A-1A, 2nd floor,  
R&I Park ( IIT Campus)  
Entry gate no. 3, Hauz Khas,  
New Delhi-110016, India

**OFFICE:**  
6th floor,  
Vishwakarma  
Bhawan,  
IIT Delhi,  
Hauz Khas

**REGISTERED OFFICE:**  
MZ-122, IIT Delhi,  
Hauz Khas,  
New Delhi-110016  
India

Phone: +91 7042654553  
Email: [contact@ihfc.co.in](mailto:contact@ihfc.co.in)  
Website: [www.ihfc.co.in](http://www.ihfc.co.in)