BCC&I
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उत्तिष्ठत जाग्रत प्राप्य वरान् निबोधत
INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR
भारतीय अभियांत्रिकी विज्ञान एवं प्रौद्योगिकी संस्थान, शिबपुर

Present

# Short-term Executive Development Programme on

# "Applications of AI and ML"

***Hybrid (online and classroom combined)***

***Starting Date: 1st November 2025***
***Total Duration: 67 hours spread over 5 Weeks (weekend classes – Saturdays and Sundays in hybrid mode)***

***Physical Class Venue: IIEST Shibpur Campus***

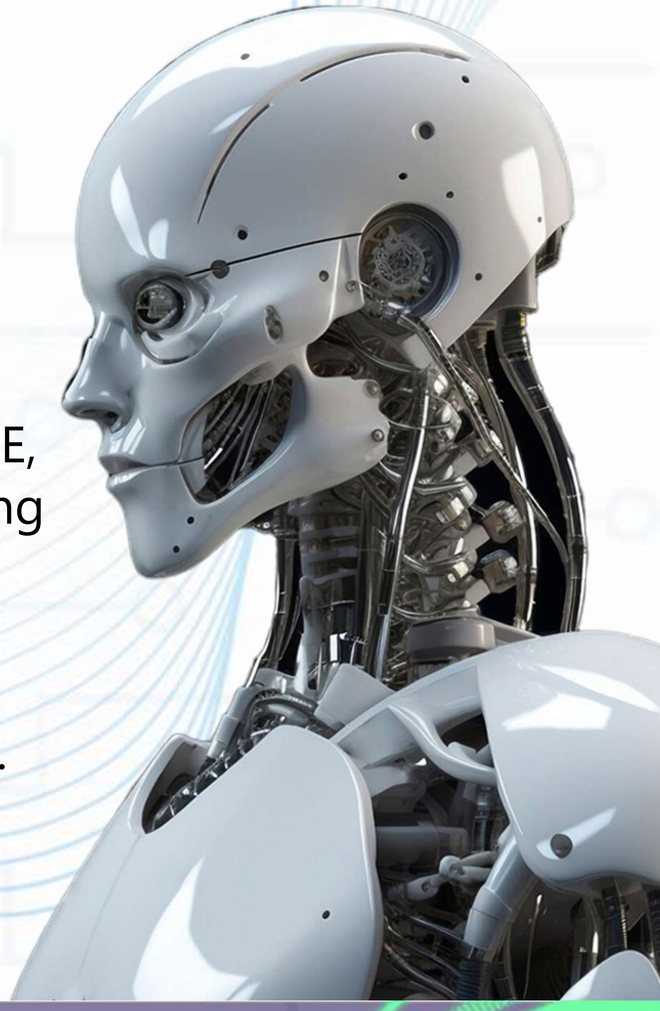
****Programme Organised Jointly by BCC&I and the Industry -Institute Partnership Cell, IIEST.***

# USP OF THE COURSE:

The course will offer a unique blend of rigorous academic foundation and cutting-edge practical applications. The USP lies in its comprehensive curriculum designed and delivered by industry experts from BCC&I and the top-tier faculty members of the IIEST Shibpur with strong research backgrounds. The participants will benefit from the state-of-the-art infrastructure, including advanced computing labs equipped with the latest hardware and software relevant to AI and deep learning. The course also emphasizes hands-on learning experience through working on real-world projects. Furthermore, the curriculum incorporates emerging trends like Generative AI and Agentic AI, preparing participants for the future trends in the field. Ethical considerations in AI development and deployment are also integrated into the coursework, ensuring responsible innovation. This holistic approach equips the participants with the theoretical knowledge and practical skills to excel as leaders and innovators in the rapidly evolving AI/ML landscape.

# WHO WILL BENEFIT:

- IT Professionals with experience in IT Infrastructure, Banking, Finance, MSME, FMCG, e-Commerce, Healthcare, Manufacturing and Education sector aiming for Applications of AI/ML in key sectors.
- Professionals from Sales, Marketing, HR, Supply Chain, IT, R&D and Risk Management verticals through Industry Use Cases for AI and Generative AI.



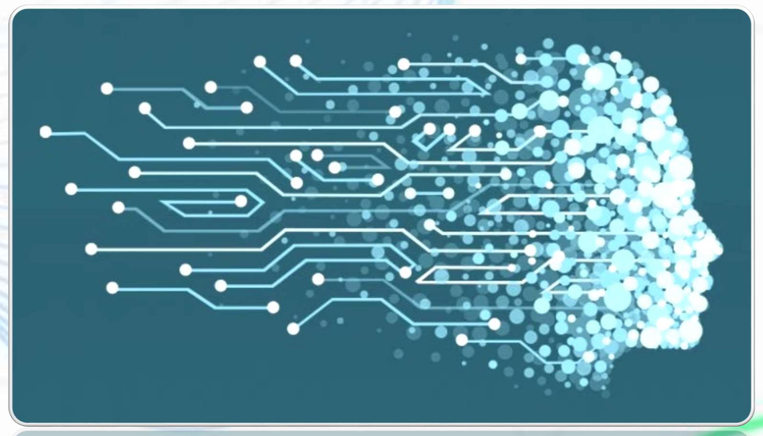
# The Focus Areas of the Course: Applications of AI and ML

## A. Common Topics for All Participants

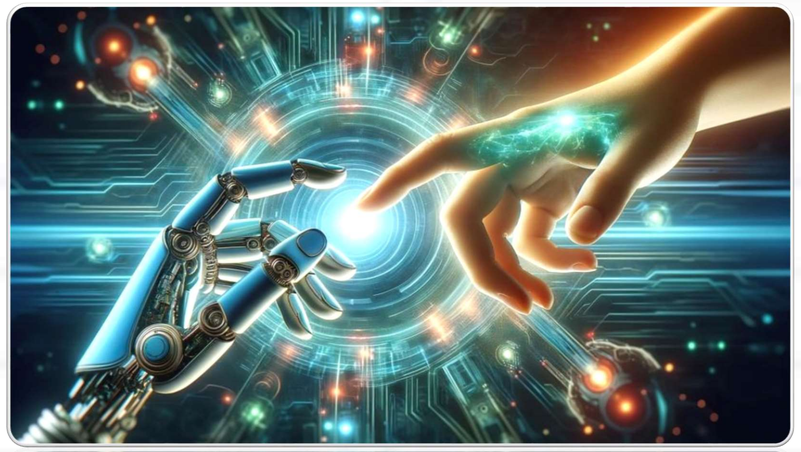
- ❖ Introduction to AI and Machine Learning (Supervised, Unsupervised, Reinforcement Learning)
- ❖ Advanced AI/ML Concepts (Deep Learning, NLP, Computer Vision, Generative AI)
- ❖ Applications of AI/ML in Key Sectors (Banking, Healthcare, Manufacturing, Environment)
- ❖ AI/ML Productivity Tools
- ❖ Linear Algebra and Probability Statistics
- ❖ Python Programming (Hands-on)
- ❖ Data Science and AI/ML for Industry Transformation

## B. Topics Specific to General Participants

- ❖ Generative AI and Large Language Models (Architectures, Applications, Risks)
- ❖ Adoption of Generative AI in Enterprises
- ❖ Industry Use Cases for AI and Generative AI (Sales, Marketing, HR, Supply Chain, IT, R&D, Risk Management)
- ❖ Hands-on Case Study: AI-Assisted Process Simulation
- ❖ Risks and Responsible AI Usage
- ❖ Explainable AI and Trends in Agentic AI
- ❖ Final Assessment (Theory, Practical, Presentation)



## C. Topics Specific to Technical Participants



- ❖ Supervised Machine Learning (Regression, Decision Trees, Random Forest, Classification, Bayes Classifier, KNN, SVM)
- ❖ Hands-on Supervised Machine Learning (Scikit-Learn)
- ❖ Unsupervised Machine Learning (Clustering, K-Means, Hierarchical, PCA, ANN-based)
- ❖ Hands-on Unsupervised Machine Learning (Scikit-Learn)
- ❖ Neural Networks and Deep Learning Foundations (ANN, CNN, RNN)
- ❖ Hands-on Deep Learning Models (PyTorch/TensorFlow: Inference and Training)
- ❖ Industry Use Cases for AI/ML
- ❖ Final Exam (Theory and Practical)

## LEARNING OUTCOMES:

Live and leading Industry Use Cases based on key functions (AI & Gen AI: Sales, Marketing, HR, Supply Chain, IT, R&D, Risk Management) will be presented by Leading Industry Experts and also from the top-tier Faculty Members of IIEST Shibpur.

## Course Outline:

### A. Common Topics for all Participants

**Week 1: Total 13 hrs | 31st October 2025 - 2nd November 2025**

**I. Friday: Inauguration 3 pm Course starts at 3. 45pm: Duration :2+1hours**

- ✓ Introduction to AI/ML – Artificial Intelligence, Machine Learning (Supervised, Unsupervised, Reinforcement Learning) – 2 hrs
- ✓ Setting up of working environment on participants' PCs for subsequent hands-on sessions – 1 h

**II. Saturday: : Duration 4 hrs**

- ✓ Advanced Topics in AI/ML – Deep Learning, Use cases in NLP and Computer Vision, Generative AI – 2 hrs
- ✓ Application of AI & ML in various key sectors and benefits expected – 1. Banking and Financial Services; 2. Healthcare; 3. Manufacturing; 4 Environment– 2 hrs

**II. Sunday: : Duration 7 hrs**

- ✓ Tools in AI/ML for increasing productivity – 2 hrs
- ✓ Introduction to Linear Algebra and Probability Statistics – 2 hrs
- ✓ Hands-on session on Python – 2 hrs
- ✓ Expert Session on Data Science/AI/ML: Understanding how efficient processes powered by AI/ML is transforming industries, supporting better decision-making, and enabling innovative solutions to complex problems – 1 hr

## B. Topics Specific to General Participants


**Week 2: Total 13 hrs | 8th-9th November 2025**

**I. Saturday: : Duration 7 hrs**

- ✓ Gen AI and LLMs - Generative models – foundational architectures, few popular LLMs, Applications of Gen AI, Risks and Challenges of using Gen AI – 4 hrs
- ✓ Adoption of Gen AI in any Enterprise – 3 hrs

**II. Sunday: : Duration 6 hrs**

- ✓ Leading Industry Use Cases based on key functions (AI & Gen AI: Sales, Marketing, HR, Supply Chain, IT, R&D, Risk Management – 3 hrs
- ✓ Hands on case study of simulating/conceptualizing an AI assisted process in specific functions – 3 hrs

**Week 3: Total 7 hrs | 15th-16th November 2025**

**I. Saturday: 7 hrs**

- ✓ Other important concepts: Risks of AI usage, how to use AI responsibly – 3 hrs
- ✓ Explainable AI, Trends in Agentic AI – 4 hrs

**Week 4 : Total 6 hrs | 22nd-23rd November 2025 (in offline mode)**

**I. Sunday: Final Assessment – 6 hrs**

- ✓ Theory – 1 hr
- ✓ Practical – 2 hrs
- ✓ Presentation for Practical assessment – 3 hrs

## C. Topics Specific to Technical Participants

**Week 2: Total 8 hrs | 8th-9th November 2025**

**I. Saturday: 4 hrs**

- ✓ Supervised Machine Learning (Regression – Linear and Logistic, Decision Tree, Random Forest) – 2 hrs
- ✓ Hands-on Supervised Machine Learning (Decision Tree, Random Forest) & Regression (Linear and Logistic Regression) (Scikit Learn) – 2 hrs

**II. Sunday: : Duration 4 hrs**

- ✓ Supervised Machine Learning (Classification, Bayes classifier, KNN, SVM) – 2 hrs
- ✓ Hands-on session on Classification (Bayes classifier, KNN, SVM) (Scikit Learn) – 2 hrs

**Week 3: Total 8 hrs | 15th-16th November 2025**

**I. Saturday: : Duration 4 hrs**

- ✓ Unsupervised Machine Learning (Theory) (Clustering, K- Means, Hierarchical, PCA, ANN-based unsupervised learning – Kohonon maps, SOFM) – 2 hrs | Practical – 2 hrs
- ✓ Hands-on Unsupervised Machine Learning (Scikit Learn) – 2 hrs

**II. Sunday: : Duration 4 hrs**

- ✓ Foundations on Neural Networks and Deep Learning (ANN, CNN, RNN) - I – 2 hrs
- ✓ Hands-on session on DL Models - Inference with pre- trained models (Pytorch), Training Models from scratch – I – 2 hrs

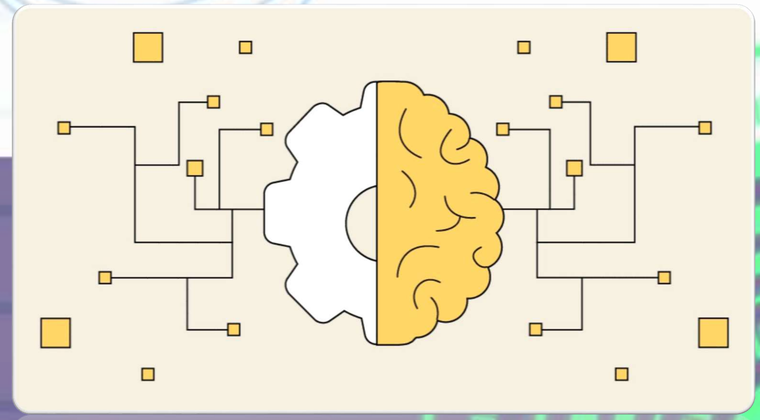
**Week 4: Total 8 hrs | 22nd-23rd November 2025**

**I. Saturday: : Duration 4 hrs**

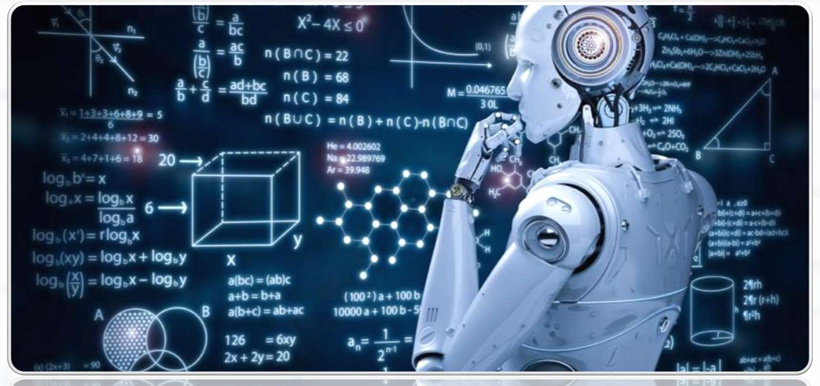
- ✓ Foundations on Neural Networks and Deep Learning (ANN, CNN, RNN) – II – 2 hrs
- ✓ Hands-on session on DL Models - Inference with pre- trained models (Pytorch), Training Models from scratch – II – 2 hrs

**II. Sunday: : Duration 4 hrs**

- ✓ Industry Use Case – I – 2 hrs
- ✓ Industry Use Case – II – 2 hrs



## Week 5: Total 4 hrs | 29th-30th November 2025 (in offline mode)

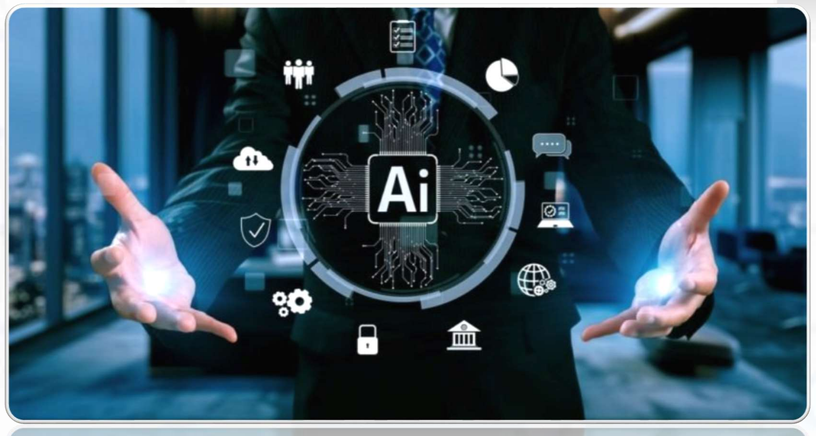


**I. Saturday: : Duration 2 hrs**

✓ Final Exam (Practical) – 2 hrs

**II. Sunday: : Duration 2 hrs**

✓ Final Exam (Theory) – 2 hrs



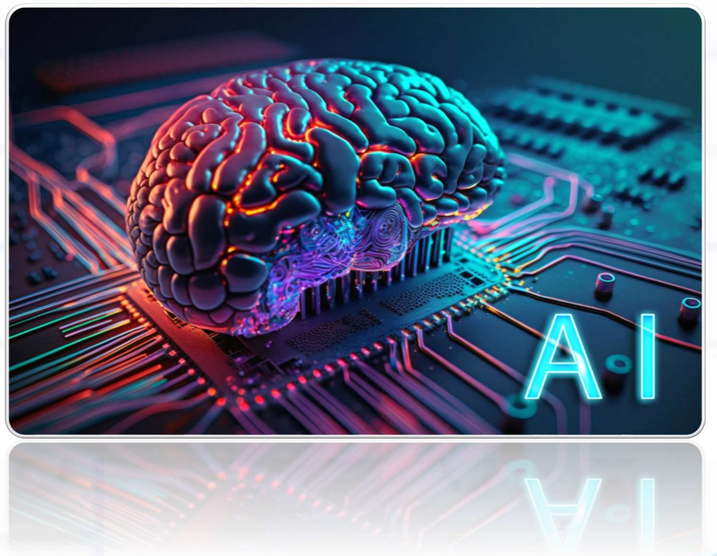

### Instructions for Candidates

- Inauguration of the course: **31st October 2025**
- Classes will be held in Hybrid Mode.
- **Candidates should bring their own laptops.**

### Institute Email

- **E-mail: iipc.iiests@gmail.com;**

## Course Fee:




- **Rs 25000 + GST for Students/Scholars/Academics**
- **Rs 32000 + GST for Corporates**
- **5 Candidates or more: 5% Discount on the Course Fee for Corporates**
- **10 Candidates or more: 10% Discount on the Course Fee for Corporates**
- **15 Candidates or more: 15% Discount on the Course Fee for Corporates**

## How to Enroll for the Course:

- **To enroll, the applicants can initiate Bank-to-bank transfer directly to the Bank Account by NEFT/RTGS and/or QR**

**Account Name: CONTINUING EDUCATION CENTRE BESUS**
**Account No.: 1532010011963**
**Type of Account: SAVING ACCOUNT**
**IFSC Code: PUNB0153220 (Fifth Character is Zero)**
**MICR Code: 700024396**
**Branch Code: 153220**

- **After completing the payment, please fill out the following Google form with all the payment details: https://forms.gle/biDNjQuuA7aa5jSu5**

**Chief Patron: Prof. V M S R Murthy;**
**Director: IIEST Shibpur**

**Alumni Mentor: Mr. Gautam Ray,**
**Ex-President, BCCI**

## Program Co-ordinators

**Prof. Konika Das (Bhattacharya)**
**Professor, Electrical Engineering**
**Chairperson, industry-Institute Partnership Cell**
**IIEST Shibpur**

**Dr. Nirnay Ghosh**
**Assistant Professor, Computer Science & Technology**
**IIEST Shibpur**

## Co-Cordinators

**Dr. Shyamalendu Kandar**
**Assistant Professor, Information Technology**
**IIEST Shibpur**

**Dr. Samit Biswas**
**Assistant Professor, Computer Science and Technology**
**IIEST Shibpur**

**Dr. Roshni Maiti**
**Assistant Professor, Electrical Engineering**
**IIEST Shibpur**

**Dr. Niladri Das**
**Assistant Professor, Electronics and Telecommunication Engineering**
**IIEST Shibpur**

## Industry Faculty

**Mr. Partha Sengupta**
**Co-Chairperson, IT Committee, BCC&I &**
**Senior Vice President (I3L) &**
**Head of IT Shared Services ITC Limited**

**Mr. Abhijit Pal**
**Executive Director & Board Member,**
**Alphaxine Solutions Pvt Ltd**

## Facilitators:

**Ms. Angana Guha Roy Chowdhury**
**Assistant Director General**
**The Bengal Chamber of Commerce and Industry**

**Mr. Avishek Mukherjee**
**Chief Manager**
**The Bengal Chamber of Commerce and Industry**

**Ms. Ananya Mondal**
**Executive**
**The Bengal Chamber of Commerce and Industry**

*Other Industry Faculty to be added

# Programme Co-ordinators Bio

Prof. Konika Das (Bhattacharya) earned her PhD in 1998 from B.E. College (DU),in the Dept. of Electrical Engineering, where she also completed her undergraduate studies. Her early research centered on hardware-based development of numerical protection systems. Over the years, her academic and professional trajectory has evolved toward addressing systemic challenges in rural power distribution. Her current work focuses on the exploration and deployment of technologies that promote equity, sustainability, and economic viability in energy access for underserved communities. A key area of emphasis is the design and implementation of control and monitoring algorithms for clusters of microgrids, leveraging stakeholder participation to advance a JUST and inclusive power distribution framework. She is the Chairperson of the Industry-Institute Partnership Cell of the Institute.

Dr. Nirnay Ghosh is currently an Assistant Professor in the Department of Computer Science and Technology (CST), IIEST Shibpur. Prior to this, he was a research fellow in the iTrust Research Center for Cyber Security, SUTD, Singapore. He is working in the areas of authentication and access control in IoT networks, blockchain and its applications, federated learning and decentralized Web 3.0. He has received his master's and PhD degrees from the Department of Computer Science and Engineering, IIT Kharagpur, in the years 2010 and 2016, respectively. Till now, he has published 20 papers in reputed journals and transactions, two book chapters, and 25 papers in the proceedings of international conferences and workshops. He was also a recipient of TCS Research fellowship and was awarded the best paper award in IEEE ADCOM 2012.

# Programme Co-coordinators Bio

Dr. Shyamalendu Kandar is currently an Assistant Professor in the Department of Information Technology, Indian Institute of Engineering Science and Technology (An Institute of National Importance), Shibpur, India. He has obtained his M.Tech. in Information Technology from Jadavpur University and Ph.D. from the same university. He has contributed a number of research papers in several peer-reviewed international journals and conferences. He is the author of two books on the Automata theory.

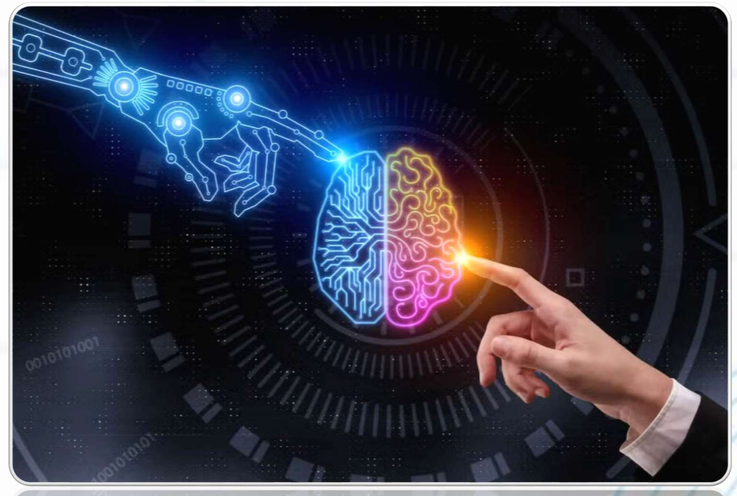
Dr. Samit Biswas is currently working as an Assistant Professor in the Department of Computer Science and Technology at Indian Institute of Engineering Science And Technology, Shibpur, India. His research interests include Machine Learning, Document Image processing, Computer Vision, Natural language Processing, Machine based Translation. He has authored or co-authored several papers in reputable journals, such as the PATTERN RECOGNITION, IJDAR, IET Image Processing as well as the conference papers in ICDAR, DAS, ICPR, PReMI, ICVGIP, TENCON.

Dr. Roshni Maiti is an Assistant Professor in the Dept. of Electrical Engineering, IIEST, Shibpur, Howrah, India. Her research area includes fuzzy and optimization based adaptive controller design for robotic systems, Intelligent and Reinforcement learning based controller design for real-time systems, Autonomous Guidance and control of Unmanned Ground Vehicle and Unmanned Aerial Vehicle etc.

Dr. Niladri Das has been working as an assistant professor in the Electronics and Telecommunication Engineering Department, IIEST, Shibpur, since September 2023. He has completed his Ph.D. degree in the area of Information Theory and Coding from the Department of Electronics and Electrical Engineering, IIT Guwahati, Guwahati. His research interests include coding theory, blockchain, wireless communication, network coding, caching, and signal processing.

## Certification:

**To be jointly provided by The Bengal Chamber of Commerce & Industry and IIEST, Shibpur.**



## About BCC&I

The Bengal Chamber of Commerce and Industry (BCC&I), India's oldest institutions of its kind, dates back its origins to 1833. BCC&I, over the years has organised various research, summits, trade fairs ranging from Manufacturing to Fiscal Affairs, IT to Agriculture, Logistics to Finance, Education to Skills & Jobs, Energy to Sustainability & Resilience, Entrepreneurship to Incubation and also areas like Carbon offsetting, Livelihoods, Local Economic Development – areas which we believe we can and should try to make a change in apart from undertaking regular activities as a Chamber of Commerce. Our commitment is in creating lasting platforms for catalysing businesses and generating livelihoods, promoting innovations and expanding B2B, B2G and B2C connects. The signature programmes of BCC&I span across the Country including Delhi, Mumbai, Bengaluru; Hyderabad, Pune, Andaman, Bhubaneswar among others and abroad including Bangkok, London and Chittagong. We also have our permanent office in Delhi.

## About IIEST, Shibpur

The Indian Institute of Engineering Science and Technology (IIEST) Shibpur, formerly known as Bengal Engineering College (BEC), was established in 1856 and is recognized as one of India's oldest and most esteemed engineering institutions. Though began in 1856 with a single Civil Engineering course, it has since expanded to offer a diverse range of undergraduate, postgraduate, and Ph.D. programs in ten disciplines. The institute has been a pioneer in introducing several of these programs, at both undergraduate and postgraduate levels, for the first time in India, including the establishment of its Ph.D. program, the first among engineering institutions in the country. IIEST Shibpur emphasizes academic and industrial research, as evidenced by its substantial number of peer-reviewed publications in reputed journals, an increasing number of Ph.D. awards, and an active portfolio of sponsored research projects. The institute takes pride in its longstanding legacy of collaboration with numerous universities and research institutions, both domestically and internationally, a tradition that dates back to 1954-55 with a pivotal partnership with the University of Wisconsin, USA, aimed at facilitating faculty exchange and enhancing research capabilities. The institute has a very prominent global alumni network that continuously enhances its reputation and reach. Distinguished alumni have held prominent positions in corporate and academic leadership, contributed to the design and construction of historical monuments and iconic structures worldwide, and demonstrated their expertise in various scientific and technological advancements, including the Chandrayaan-3 space mission and developments at NASA's Jet Propulsion Laboratory.

## Contact:

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