

Report on Faculty Development Program

Cyber Security & Sustainability in Cloud Computing and IoT

30th June – 5th July 2025



**AICTE Training and Learning Academy (ATAL) Sponsored
Six Day Faculty Development Program**

On

Cyber Security & Sustainability in Cloud Computing and IoT



TECNIA INSTITUTE OF ADVANCED STUDIES

NAAC GRADE "A" INSTITUTE (CYCLE-1)

Approved by AICTE, Ministry of Education Govt. of India,
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INSTITUTIONAL AREA, MADHUBAN CHOWK, ROHINI, DELHI-110085



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Department of Information, Communication & Technology

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EVENT DETAILS

Date: 30th June, 2025 – 05th July, 2025

Time: 9:30 AM to 5:00 PM

Mode of delivery: Offline

Coordinator: Dr. Sushma Bahuguna, Professor, TIAS

Co-Coordinator: Dr. Ratandeep Kaur, Associate Professor, TIAS

Resource Persons Details:

The speakers for the 6-day FDP on Cyber Security & Sustainability in Cloud Computing and IoT were:



Dr. Anurag Jain, an academician in Guru Gobind Singh Indraprastha University, Delhi and working as Professor in University School of Information Communication & Technology. He did his M. tech from I.I.T. Kharagpur and Ph.D. from GGSIP University. As a researcher, he has done remarkable work in the field of cyber security, cybercrime investigation and Speech Processing and NLP. He was the deputy coordinator of the team, who had given Cyber Crime and Forensic training to 200 Delhi Police officers in 2007-08 and currently he is providing his services at Police Training Colleges (PTC) now known as Delhi Police Academy to train the police officials to solve Speech and AI based Cybercrime cases. He has also given invited talks in various reputed conferences, training programs, colleges and Schools in India and as well as in abroad. He has also presented his paper in Australia and invited by Australian Police of Criminology. He is also guiding research scholars, who are doing research in the field of Cyber Security, NLP, Speech Processing & IoT and reviewer of many International Reputed Journals of Speech Processing like Journal of Speech Technology (Springer), Journal of Speech Communication etc.

He is also handling the Research Projects in Financial Fraud, Deception Detection (Text and Speech) and to assess the Vulnerability issues in Various Higher Educational Institutions of India. He has also been awarded best research Paper Award in nearly 9 International Conferences. He also has nearly 1074 citations of his Research Papers with i10-index of 31 & h index is 17.



Dr. Rahul Johari is an accomplished academician and researcher currently serving as an Associate Professor at the University School of Automation and Robotics (USAR), Guru Gobind Singh Indraprastha University, East Delhi Campus. With over 24 years of professional experience in academia and the software industry, he has made significant contributions in the fields of cybersecurity, the Internet of Things (IoT), blockchain technology, and cyber-physical systems. He earned his Ph.D. in Computer Science from the University of Delhi and completed his postdoctoral research at Jawaharlal Nehru University. He has authored more than 114 SCOPUS-indexed publications, including over 25 book chapters in reputed international journals and conferences published by IEEE, Springer, Elsevier, and ACM, with an H-index of 16. Dr. Johari has been honored with multiple awards, including the Outstanding Researcher Award (2023–24), Best Teacher/Researcher Awards for consecutive years, and certificates of appreciation from the university.

Beyond academics, Dr. Johari holds several key administrative responsibilities, including Associate Director of Student Welfare, PhD Program Coordinator, and Chief Warden at GGSIPU East Delhi Campus. He is also actively involved with professional bodies such as IEEE, ACM, IAENG, and DSCI, and has delivered more than 174 keynote and invited talks at reputed institutions worldwide, including Cambridge University (UK), NTU Singapore, and Shenzhen (China). Dr. Rahul Johari's multifaceted contributions continue to drive innovation and excellence in the domains of education, research, and technology.



Dr. Monika Sharma is working as an Associate Professor at Amity Institute of Information Technology, Amity University. She has done Ph.D. in Information Security & Privacy from Mewar University Chittorgarh. She has more than 20+ years' experience. Her current research interests also include AI, Cloud Computing, and IoE. She has more than 40 publications international conferences and journals and written book and Chapters. She has also filed more than 20+ patents under domain of Information Technology as an Inventor, which has been published in International Journal of Patents by Patent Department, Govt. of India. She is also guiding Ph.D. research scholars. She has chaired many technical sessions, reviewer committee member of various conferences, organized various guest lectures, FDP, workshops, and social events. She has also delivered talk as a key speaker in Workshop on How to make India Vishwa Guru using CSE and IT? organized online by International Development Centre Foundation (IDC Foundation) In association with Computer Society of India (CSI). She is reviewer of various reputed conference and Journals.



Dr. Raghu Rama Krishna is a seasoned technology leader at Tata Consultancy Services (TCS), where he serves as Chief Technology Officer (or Chief Architect & Technology Head) for the Government/Public Services Unit in India. With a strong foundation in computer science and engineering (graduated from Guru Gobind Singh Indraprastha University), he has built a distinguished career across public sector programs, civic digital solutions, and enterprise-grade platforms. He brings deep expertise in designing and delivering large-scale, mission-critical technology architectures, spanning cloud-native systems, enterprise integration, cybersecurity, and data-driven platforms. His role focuses on steering innovation in government IT services—overseeing technology strategy, solution frameworks, and client-oriented digital transformations tailored for public service delivery.

In this capacity, he leads cross-functional teams of architects, developers, and engineers, prioritizing scalable designs, compliance, and performance in high-stakes government engagements. He is recognized for his ability to translate complex requirements into seamless technical solutions that align with regulatory standards and operational efficiency.

Committed to thought leadership, he actively contributes to industry dialogues on digital governance, urban technology, smart cities, and citizen-centric platforms. He routinely represents TCS in client forums, government collaborations, and policy-focused tech conferences. Internally, he fosters innovation, promotes knowledge-sharing across technical teams, and mentors emerging architects and technologists within the Public Services business unit.



Mr. Tushar Kanti Patnaik is a seasoned Scientist-F and Associate Director at the Centre for Development of Advanced Computing (C-DAC), Noida, where he has served since July 1998. With over 27 years of experience in advanced computing and digital technologies, he has emerged as a driving force in pattern recognition, image processing, computer vision, and machine learning. He has led pioneering R&D efforts, notably an improved approach for automatic denoising and binarization of degraded document images, underscoring his deep technical prowess.

In his role as Associate Director, he also acts as a key bridge between academia and industry, regularly delivering expert talks and workshops. He spoke on AI and deep learning to students at various institutions and led an expert session on document image processing and NLP at K.R. Mangalam University in October 2022. These engagements reflect his commitment to mentorship and knowledge dissemination. In addition to his research contributions at C-DAC, he has held responsibilities in skill development and academic outreach, represented in institutional collaborations and expert panels. His long-standing dedication to high-impact R&D and technical leadership marks him as a vital contributor to India's advanced computing landscape.



Mr. Basant Kumar Chaturvedi is a strategic technology visionary with a distinguished career in leveraging cutting-edge technologies to drive organizational transformation and customer-centric innovation. A graduate in Computer Technology Management from the prestigious Indian Institute of Management Lucknow (IIML), he has further strengthened his leadership credentials with a specialized certification in Cybersecurity Strategy from the Data Security Council of India (DCSI).

In his current role as Regional Director of IT at Perfetti Van Melle, he oversees operations across a vast and diverse geography including Brazil, Africa, the Middle East, and South & Central Asia. His leadership has been instrumental in implementing robust digital strategies that harness the power of cloud computing, artificial intelligence, robotics, and the Internet of Things (IoT) to streamline processes and enhance enterprise agility.

His contributions to the technology sector have been widely acknowledged through numerous accolades. He has been inducted into the prestigious Hall of Fame CIO by Foundry, recognized among the Top 100 Most Respected CIOs in Asia, and currently serves as President of the CIO Association, Delhi NCR Chapter. His numerous domestic and international awards for technology leadership are a testament to his deep domain expertise, visionary approach, and impact-driven innovation. With a keen eye for emerging trends and a passion for creating value through digital transformation, he continues to be a prominent and influential leader in the global technology landscape.



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SCHEDULE OF FDP

Time/Day	09:30 AM to 12:00 PM	12:00 PM to 01:00 PM Article Discussion	02:00 PM to 04:30 PM	04:30 PM to 05:30 PM Hands on training /Labs
30-06-2025 Monday	Session 1 Inauguration at 9:30 am. Cyber security Issues in IoT and Smart Cities- Dr. Anurag Jain	Green IoT for Eco-Friendly and Sustainable Smart Cities: Future Directions and Opportunities	Session 2 Common Attack Vectors in Smart City IoT Infrastructure- Dr. Anurag Jain	Deploying an IoT Device to a Cloud Platform
01-07-2025 Tuesday	Session 3 Enhancing Web Security by deploying BLAST Blockchain Algorithm for Secure Transaction- Dr. Rahul Johari	Secured Data Communication in Green Cloud Computing Through Blockchain and IoT Integration	Session 4 Cyber Security: Wired and Wireless Networks and IoT-- Dr. Rahul Johari	Securing a Cloud Database and Configuring IAM on AWS/Azure
02-07-2025 Wednesday	Session 5 Sustainable IoT: Opportunities and Key Challenges- Dr. Monika Sharma	Internet of Things (IoT): Opportunities, issues and challenges towards a smart and sustainable future	Session 6 Sustainable Design of IoT Systems for Low-resource Environments- Dr. Monika Sharma	Securing IoT Networks: Threat Modeling, Device Hardening, and Data Flow Control
03-07-2025 Thursday	Session 7 Data protection in Cloud: Encryption & Key Management- Dr. Raghu Rama Krishna	Securing Cloud-Based Internet of Things: Challenges and Mitigations	Session 8 Emerging Trends: AI in Cloud security, Confidential Computing- Dr. Raghu Rama Krishna	Building Energy-Aware IoT Systems with Edge Computing
04-07-2025 Friday	09:00 AM to 01:00 PM Industrial Visit C-DAC Noida		02:00 PM to 04:30 PM Session 9 Cyber Security in AI- Dr. Tushar Patnaik	Building Energy-Aware IoT Systems with Edge Computing
05-07-2025 Saturday	Session 10 Cyber and Information Security- Mr. Basant K Chaturvedi		MCQ & Reflection Journal	Valedictory Session

SESSION WISE DETAILS

Inaugural Session

The Faculty Development Program on Cyber Security & Sustainability in Cloud Computing and IoT organized by the Department of Information, Communication & Technology, Tecnia Institute of Advanced Studies, in association with AICTE Training and Learning Academy (ATAL), New Delhi was inaugurated on 30th June 2025 by **Dr. Ajay Kumar Rathore**, Director, **Dr. M. N. Jha**, Dean Academics & **Prof. H.N. Bahuguna**, Director-CDL at Tecnia Institute of Advanced Studies.

The coordinator of the event, **Dr. Sushma Bahuguna**, Hod & Associate Dean, DICT, TIAS briefed about the entire Faculty Development program schedule including the resource persons, their details, expertise etc. The coordinator also briefed about the importance of IoT and security concepts in cyber world and its applications. **Dr. Anurag Jain**, Chief Guest of the session, delivered the keynote address. His talk highlighted various applications and research areas in IoT and Cybersecurity. She then handed over the dais to the host Dr. Ratandeep Kaur, Associate Professor, Co-Coordinator.



Inaugural of AICTE-ATAL FDP at Tecnia Institute of Advanced Studies

Day-1

Date: 30th June 2025, Monday

Session 1-Cyber security Issues in IoT and Smart Cities

Session 2- Common Attack Vectors in Smart City IoT Infrastructure

Resource Persons: Dr Anurag Jain, Professor, GGSIPU, Delhi

Session Details:

Sessions 1 and 2 were addressed by Dr. Anurag Jain. The first session explained that smart cities depend heavily on technologies like ICT, IoT, AI, cloud computing, and 5G to improve urban infrastructure, ensure transparency in governance, and increase citizen engagement. However, as these cities become more interconnected, they are increasingly exposed to cyber threats. Common risks include network attacks, ransomware, data breaches, and the exploitation of IoT systems, all of which can severely disrupt essential services and erode public trust. Vulnerabilities in AI-based systems and data management make smart cities prime targets for cybercriminals. To address this, robust cybersecurity risk assessments and frameworks are vital. Recommended best practices include adopting zero-trust architecture, enabling multi-factor authentication, securing device design, and timely system patching. In India, initiatives by MoHUA, DSCI, and CERT-In have laid down specific cybersecurity guidelines to safeguard smart city infrastructure.

In the second session Dr. Anurag Jain highlighted various cyber-attack vectors targeting IoT infrastructures in smart cities, including jamming, node tampering, RF attacks, DoS/DDoS, and ICMP flood attacks. He emphasized threats like RFID cloning, man-in-the-middle attacks, and side-channel attacks, which compromise data and system integrity. Cryptanalysis, malicious scripts, and account enumeration also pose significant risks. These attacks exploit vulnerabilities in IoT devices, networks, and software, stressing the need for robust security measures.

Key Highlights of Day 1 Sessions:

- **COMPREHENSIVE CYBERSECURITY FRAMEWORK**
 - Detailed exploration of cyber security issues in IoT and Smart Cities
 - In-depth analysis of the 17 Sustainable Development Goals and their intersection with cybersecurity
 - Critical examination of vulnerabilities plaguing modern smart city infrastructure
- **SMART CITIES SECURITY PARADIGM**
 - Identification of multifaceted challenges facing smart city implementations
 - Comprehensive discussion on threat vectors and their real-world implications
 - Analysis of probable cyber attacks with concrete examples and statistical data

- **ATTACK VECTOR CLASSIFICATION**
 - Detailed breakdown of common attack vectors in IoT infrastructure
 - Classification of IoT systems with security considerations
 - Introduction to cryptological frameworks for IoT security
- **RISK ASSESSMENT FRAMEWORKS**
 - Importance of structured cyber security risk assessment methodologies
 - Best practices for smart cities cybersecurity implementation
 - Collaborative efforts between stakeholders for enhanced security
- **GOVERNMENT INITIATIVES**
 - Overview of governmental initiatives promoting cybersecurity awareness
 - Policy frameworks supporting secure digital infrastructure development
 - Public-private partnership models for cybersecurity enhancement

INTERACTIVE LEARNING EXPERIENCE

The day concluded with:

- Reflective Journal Writing Session: Participants engaged in article discussions to enhance critical thinking
- Hands-on Training: Practical deployment of IoT devices to cloud platforms
- Technical Workshop: Real-world application of theoretical concepts

Impact & Significance of Session1& 2:

This FDP represents a significant milestone in academic-industry collaboration, offering free participation to faculty members nationwide. The program addresses the urgent need for cybersecurity expertise in India's rapidly digitalizing economy.

Dr. Sushma Bahuguna, FDP Coordinator and Professor, Department of ICT, emphasized the program's role in building a robust cybersecurity ecosystem through education and awareness.



Session 1-Cyber security Issues in IoT and Smart Cities by Dr Anurag Jain



Session 2- Hands on Training-Deploying an IoT Device to a Cloud Platform

Day-2

Date: 1st July 2025, Tuesday

Session 3- Enhancing Web Security by deploying BLAST Blockchain Algorithm for Secure Transaction

Session 4- Cyber Security: Wired and Wireless Networks and IoT

Resource Persons: Dr. Rahul Johari, Associate Professor, GGSIPU, Delhi

Session Details:

The second day of the ATAL Faculty Development Program (FDP) commenced with sessions addressed by Dr. Rahul Johari. The first session addressed the use of the BLAST Blockchain Algorithm to improve web security, especially in the context of secure digital transactions. The BLAST algorithm leverages the decentralized and tamper-resistant nature of blockchain technology to ensure data integrity, transparency, and authentication in online systems. By integrating BLAST into web infrastructure, it becomes possible to prevent data breaches, unauthorized access, and fraudulent activities. This approach enhances the reliability of online financial transactions and sensitive data exchanges, making the digital environment more secure and trustworthy.

The second session focuses on Cyber security in wired and wireless networks, along with the Internet of Things (IoT), is critical due to the rising interconnectivity and data exchange between devices. Wired networks, while generally more secure, can still be vulnerable to internal threats. Wireless networks and IoT devices face greater risks such as eavesdropping, spoofing, and unauthorized access due to open channels and limited device security. Ensuring security requires robust encryption, authentication protocols, firewalls, and real-time threat monitoring. A holistic approach is essential to protect sensitive information and ensure reliable system performance.

Key Highlights of Day 2 Sessions:

The session focused on Guru Gobind Singh Indraprastha University's dedication to fostering technological innovation in line with national development goals.

- **Blockchain in Academia:** Emphasized the use of blockchain technology for enhancing transparency, security, and innovation in academic records, research data, and institutional processes.

- **Industry 5.0 Insights:** Discussed the next wave of industrial development — Industry 5.0, which combines human creativity with AI and automation to create smart, people-centric solutions.
- **Government Initiatives:** Covered key national programs like Digital India and Blockchain Council (B-Council) pilots that promote blockchain adoption across sectors including education.
- **Sensor Technology in Smart Systems:** Introduced various types of sensors (e.g., temperature, motion, environmental) and their role in smart classrooms, labs, and city planning.
- **Hands-on Blockchain Training:** Shared practical knowledge on how to implement blockchain in lab settings, enabling educators to create real-world learning experiences.

Impact & Significance of Session 3 & 4:

The sessions equipped faculty with advanced knowledge of blockchain-based web security through the BLAST algorithm, enhancing their understanding of secure digital transactions. Practical insights into cybersecurity challenges in wired, wireless, and IoT networks emphasized the need for layered security protocols. These learnings empower educators to integrate cutting-edge cybersecurity concepts into academic curricula and promote secure digital practices. Exposure to real-world applications also encourages interdisciplinary teaching and research innovation.



Felicitation of Dr. Rahul Johri by Prof. H. N. Bahuguna & Dr. Sushma Bahuguna



Session 3 by Dr. Rahul Johri, Associate Professor, GGSIPU, Delhi



Dr. Sushma Bahuguna,
Coordinator, AICTE-ATAL
FDP



Participants attending session on Day-2

Day-3

Date: 2nd July 2025, Wednesday

Session 5: Sustainable IoT: Opportunities and Key Challenges

Session 6: Sustainable Design of IoT Systems for Low-resource Environments

Resource Persons: Dr. Monika Sharma, Associate Professor, Amity University

Session Details:

Dr. Monika Sharma started the session by discussing the Crux of Cybersecurity. She focuses on designing sustainable IoT systems for low-resource environments. It highlights major challenges like security risks, high energy consumption, short device lifespans, and increasing e-waste. Sustainable IoT design must emphasize energy-efficient hardware, ethical data practices, and recyclable materials. Managing e-waste through AI-enabled sorting, material recovery, and blockchain tracking can reduce environmental harm. AI also aids in predictive maintenance and smart disassembly of devices like smart meters and wearables. Reducing cloud dependency through edge computing and federated learning improves both efficiency and privacy. The concept of **Green IoT** promotes eco-friendly protocols, lifecycle thinking, and minimal resource usage. Real-world case studies from smart cities, agriculture, health, and education show practical applications of sustainable IoT. Finally, circular economy models and take-back programs are vital for reducing the IoT carbon footprint and fostering long-term sustainability.

Key Highlights of Day 3 Sessions:

Dr. Sharma's expert discourse illuminated critical aspects of IoT, focusing on both the theoretical foundations and practical applications:

- **Challenges in IoT Usage:** Dr. Sharma meticulously outlined the inherent complexities and operational hurdles associated with the deployment and management of IoT devices, offering strategic approaches to navigate these challenges effectively.
- **Top 10 IoT Strategies and Trends:** Participants gained invaluable foresight into the cutting-edge strategies and emerging trends that are currently shaping the global IoT landscape, equipping them to remain at the forefront of technological advancements.
- **IoT Sensors and Applications:** The session provided a detailed exposition on the diverse array of IoT sensors and their wide-ranging applications across various industries, emphasizing their pivotal role in data collection and intelligent system functioning.
- **Sensor Innovations:** Dr. Sharma highlighted the latest breakthroughs and innovations in sensor technology, showcasing how these advancements are pushing the boundaries of what's possible in connected environments.

- **Why IoT? Understanding the Core Benefits:** The fundamental drivers behind IoT's pervasive adoption were thoroughly explored, underscoring its unparalleled advantages in enhancing efficiency, enabling automation, and facilitating data-driven decision-making.
- **Benefits of IoT:** Dr. Sharma elaborated on the extensive benefits offered by IoT, including optimized resource utilization, significant cost reductions, improved operational effectiveness, and enhanced quality across various domains.
- **IoT-Enabled Precision Farming:** A particularly impactful segment focused on the transformative impact of IoT in agriculture. Dr. Sharma discussed how IoT is revolutionizing farming practices through smart irrigation, real-time crop and soil monitoring, livestock management, and data analytics that lead to increased yields and sustainable agricultural methods.

The interactive nature of the sessions, facilitated by Dr. Sharma's expertise, encouraged robust discussions and hands-on understanding, further enriching the learning experience for all faculty members.

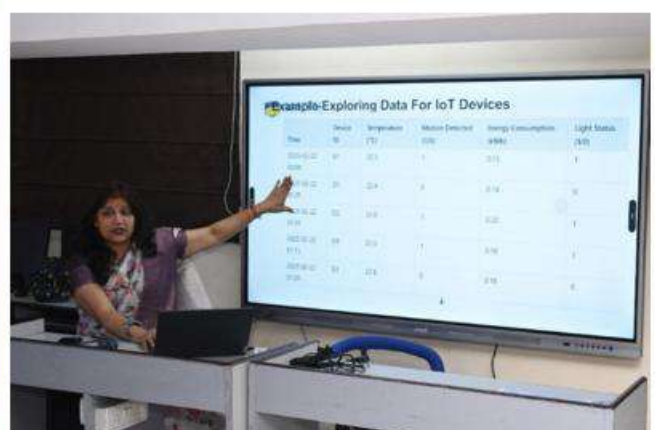
Impact & Significance of Session 5 & 6:

This AICTE-ATAL FDP continues to stand as a beacon of academic-industry collaboration, offering unparalleled, free-of-cost training to faculty members nationwide. The program is crucial in addressing India's urgent need for expertise in emerging technologies, particularly in IoT, which is a cornerstone of the nation's ambitious digital transformation agenda.

The specialized focus on IoT's applications in precision farming, guided by Dr. Monika Sharma's insights, underscores the FDP's commitment to fostering sustainable technological solutions that are vital for national development and food security.



Session 5 by Dr. Monika Sharma, Associate Professor, Amity University



Session 6 for Block Chain Training

Day-4

Date: 3rd July 2025, Thursday

Session 7: Data Protection in Cloud: Encryption & Key Management

Session 8: Emerging Trends: AI in Cloud security, Confidential Computing

Resource Persons: Dr. Raghu Rama Krishna, Chief Technology Officer, India Public Services Unit, Tata Consultancy Services

Session Details:

Dr. Raghu Rama Krishna's first session emphasizes the importance of robust data protection mechanisms in cloud computing, focusing on encryption and key management. As organizations shift to the cloud, securing sensitive data during storage and transmission becomes crucial. Encryption acts as the first line of defence, converting data into unreadable formats accessible only through authorized keys. Effective key management—including key generation, distribution, storage, rotation, and revocation—is critical to maintaining confidentiality and integrity. The theme explores symmetric vs. asymmetric encryption, cloud-native security tools, and compliance with global standards like GDPR. It highlights the need for zero-trust architecture, multi-layered defences, and automation in key lifecycle management. Dr. Ramakrishnan also stresses the balance between security, performance, and usability in cloud systems to ensure scalable and secure cloud adoption.

The second session focuses on how Artificial Intelligence (AI) is revolutionizing cloud security by enabling real-time threat detection, behaviour analysis, and automated incident response. AI models can identify anomalies, detect malware, and block cyberattacks faster than traditional methods. Confidential computing is an emerging trend that protects data in use by running computations in secure, hardware-based enclaves, preventing exposure even to cloud providers. This enhances data privacy in sensitive sectors like healthcare, finance, and government. Together, AI and confidential computing strengthen zero-trust security models, ensure end-to-end encryption, and support compliance with strict data protection regulations. These trends mark a shift toward proactive, intelligent, and privacy-preserving cloud infrastructures that balance performance and trust.

Key Highlights of Day 4 Sessions:

- **Types and Classes of Security Threats:** Including real-world examples of ransomware attacks, internal and external threats.
- **Security Goals:** Such as confidentiality, integrity, availability, accountability, and non-repudiation.
- **Security Attacks and Services:** Dr. Raghu provided comprehensive coverage of both passive and active attacks, and how different security services are used to counter them.

- **Security Lifecycle:** From threat identification to mitigation, recovery, and continuous monitoring – the full cycle of network and data protection was covered.
- **Trust and Assumptions:** The importance of building trust in systems and evaluating assumptions made during system design and deployment.
- **Security Policies and Mechanisms:** How policies are framed and enforced through appropriate security mechanisms at various organizational levels.
- **Security Analytics:** Dr. Raghu emphasized the role of data analytics in threat detection, predictive security, and anomaly identification.

Additional Highlights:

- **SSL (Secure Sockets Layer):** Explained as a core protocol ensuring secure communication over the web.
- **E-passport Technology:** Use of cryptographic techniques and embedded chips for identity protection.
- **SOC (Security Operations Center):** Real-world functioning of SOC, emphasizing threat monitoring, incident response, and forensics.

Throughout the session, Dr. Raghu maintained a balance between theoretical frameworks and practical, ground-level insights. He provided valuable examples from real-world security environments, giving students and participants a clear picture of how cybersecurity is managed in professional domains.

The session concluded with an engaging Q&A where participants discussed current challenges in cybersecurity, implementation hurdles, and the future scope of intelligent threat detection.



Dr. Raghu Rama Krishna, Chief
Technology Officer, Tata
Consultancy Services



Session by Dr. Raghu Rama Krishna

Day-5

Date: 4th July 2025, Friday

Topic: Industrial Visit to CDAC Noida

About the Industry:

The Centre for Development of Advanced Computing (C-DAC), Noida is a premier R&D and training institute under India's Ministry of Electronics and IT (MeitY), established in 1988 and formally part of C-DAC since 1994. Located in Sector 62, Noida, operates dedicated R&D and academic campuses about 100 meters apart. The R&D wing specializes in areas like high-performance computing, strategic electronics, cybersecurity, health informatics, e-governance, and multilingual computing, while the academic wing offers AICTE-approved programs (M.Tech, MCA, MBA) affiliated to Guru Gobind Singh Indraprastha University, along with PG diplomas in cutting-edge fields such as AI, Big Data, Embedded Systems, and IoT.

Spread over roughly 5 acres, the center includes modern facilities like hostels, labs, a data center (Tier-III certifiable), auditorium, and a high-speed network backbone. With a workforce of around 400 (70% technical), CDAC Noida is funded by central/state governments and other agencies to deliver mission-mode technology solutions and develop industry-ready talent.

It has multi-locational electronic assembly and mechanical manufacturing facilities, countrywide marketing and in-house R&D for absorption of technology. It produces Information and Communication Technology (ICT) equipment such as network management systems, encryption and networking for internet connectivity, and secure communications networks and equipment for the defense.



Group 1



Group 2

Industrial Visit from Tecnia Institute of Advanced Studies to CDAC Noida



Session at CDAC Noida

Experience at the Industrial visit: The visit has provided the participants with an enriching experience, offering valuable insights into India's premier research and development center in advanced computing. The state-of-the-art facilities, including high-performance computing labs, cybersecurity infrastructure, embedded systems labs, and data centers, reflected CDAC's pivotal role in driving technological innovation. They were particularly impressed by the Tier-III certifiable data center and the AI and IoT research labs equipped with cutting-edge tools. The guided tour by the technical staff provided a clear understanding of the applications of supercomputing, health informatics, and language technologies. The visit also highlighted CDAC's contribution to national mission projects and its commitment to training professionals in emerging tech domains. Overall, the exposure to a real-world R&D environment was both inspiring and educational for all participants.

Session 9: Cyber Security in AI

Resource Person: Dr. Tushar Patnaik, Associate Director, CDAC, Noida

The session by **Dr. Tushar Patnaik** explores the evolution of OCR (Optical Character Recognition), challenges in document image processing, and the integration of AI and LLMs (like GPT and BERT) for smarter text recognition and analysis. It highlights the emerging role of Retrieval-Augmented Generation (RAG) and Multi-Agent Control Planes (MCP) in securing AI systems. The session also examines how cybercriminals are misusing AI for phishing, deepfakes, and ransomware, stressing the urgent need for AI-driven cybersecurity frameworks. Tools for deepfake detection, secure AI orchestration, and real-time threat mitigation are presented as key solutions.



Session 9: Dr. Tushar Patnaik, Associate Director, CDAC, Noida



Dr. Sushma Bahuguna felicitates Dr. Tushar Patnaik with Certificate of appreciation

Day-6

Date: 5th July 2025, Friday

Session 10: Cyber and Information Security

Resource Persons: Mr. Basant K Chaturvedi, Regional Director, Perfetti Van Melle

Session Details:

Dr. Basant K. Chaturvedi's session focused on the rising importance of cyber and information security in today's digital and industrial landscape. He emphasized the need for strong data protection policies, employee awareness, and multi-layered security frameworks to defend against cyber threats. Real-world examples illustrated vulnerabilities in corporate systems, highlighting risks such as phishing, insider threats, and data leaks. The session stressed the importance of proactive security audits, encryption, and compliance with international standards to ensure business continuity and resilience.

Key Highlights of Day 6 Sessions:

- **Goals of Cyber Security:** The session began with an introduction to the primary objectives of cybersecurity—Confidentiality, Integrity, and Availability (CIA). Mr. Chaturvedi emphasized the importance of these goals in safeguarding sensitive information and critical systems.
- **Components of Information Security:**
A detailed discussion was held on the key components, including:
 - Physical Security
 - Network Security
 - Application Security
 - End-user Education
 - Incident Response
- **Operational Security Planning:** Participants were introduced to the concept of an Operational Security (OPSEC) plan, which involves identifying critical information, assessing threats, and implementing countermeasures. He highlighted the need for proactive strategies to mitigate internal and external cyber risks.
- **Cyber Attacks & Threat Landscape:** Mr. Chaturvedi elaborated on various forms of cyber attacks such as phishing, malware, ransomware, and social engineering. He also discussed how threat actors evolve and the need for dynamic defense mechanisms.
- **Understanding Data Breaches:** The session concluded with a critical look at data breaches—their causes, impacts on organizations, and preventive strategies. Real-life breach case studies

were cited to give participants a better understanding of the importance of data security and response mechanisms.

Participant Engagement & Feedback

The session witnessed active participation and interaction. Faculty members and attendees expressed appreciation for the depth of knowledge shared, the clarity of concepts explained, and the relevance of the topics to both academic and industrial applications. The session helped bridge the knowledge gap between theoretical learning and real-world cybersecurity practices.

The expert session by Mr. Basant Kumar Chaturvedi added immense value to the Day 6 proceedings of the FDP. It equipped the participants with a robust understanding of cybersecurity fundamentals and current challenges, aligning well with the broader goal of building secure, resilient, and sustainable digital systems.



Session-10 by Mr. Basant K Chaturvedi, Regional Director, Perfetti Van Melle



Valedictory session (Day 6)

The valedictory session of the AICTE-ATAL sponsored one-week Faculty Development Programme (FDP) on Cyber Security & Sustainability in Cloud Computing and IoT marked a fitting conclusion to an enriching academic journey that spanned six intellectually stimulating days, from June 30 to July 5, 2025. The session was attended by distinguished guests, resource persons, participants from various institutions, and organizing committee members.

The day began with Session 10 led by Mr. Basant K. Chaturvedi, Regional Director, Perfetti Van Melle, who delivered an insightful session on Cyber and Information Security. He highlighted the pressing need for awareness about information security in today's digital age, particularly in government communication, media, and academic networks. Mr. Chaturvedi stressed the importance of digital hygiene, data integrity, and media literacy in preventing misinformation and cyber manipulation.

This was followed by an engaging MCQ session and reflection journal activity, which gave participants the opportunity to revisit key learnings from the week. The MCQs assessed conceptual understanding, while the reflection journal encouraged participants to document personal insights, applications in teaching, and strategies to incorporate cybersecurity and IoT innovations in their professional work.

The valedictory ceremony commenced at 4:30 PM, starting with a warm welcome address by the Programme Coordinator. The session featured reflections from participants who shared their experiences, highlighting the technical depth, relevance of topics, and the hands-on training provided during the FDP. They appreciated sessions on topics such as Blockchain Security, Cloud Data Protection, AI and IoT Security, and Green Cloud Computing, which were delivered by experts like Dr. Anurag Jain, Dr. Rahul Johari, Dr. Monika Sharma, Dr. Raghu Rama Krishna, and Dr. Tushar Patnaik.

The presence of C-DAC Noida as the venue for the industrial visit added immense value, providing participants with real-world exposure to emerging technologies and industrial applications of cybersecurity frameworks.

During the session, certificates were distributed to all participants, acknowledging their successful completion of the FDP. Special recognition was also given to participants who actively contributed to discussions, labs, and collaborative activities throughout the program.

In the closing remarks, the Director of Tecnia Institute of Advanced Studies, Dr. Ajay Kumar Rathore, extended heartfelt gratitude to AICTE-ATAL Academy for supporting the FDP and commended the entire organizing team for conducting a seamless and impactful program. He emphasized the institute's ongoing commitment to excellence in research, innovation, and capacity building in cutting-edge technologies.

The session concluded with a vote of thanks delivered by the FDP Coordinator, Dr. Sushma Bahuguna, appreciating the efforts of resource persons, technical staff, coordinators, and participants. A group photograph marked the end of the program.

The valedictory session celebrated not only the successful conclusion of the FDP but also the collaborative spirit and the shared vision of building a secure and sustainable digital future through education and innovation.



Glimpse of Valedictory Session

Vote of Thanks

I extend my heartfelt gratitude to AICTE-ATAL Academy for entrusting us with this prestigious FDP. I appreciate the commitment of all resource persons and participants who made this week intellectually rewarding. My sincere thanks to the organizing team for their tireless efforts in executing the program smoothly. Let us continue to foster excellence in cybersecurity and emerging technologies through collaborative learning.

Dr. Ajay Kumar Rathore
Director, TIAS
Head of Institution

I sincerely thank our esteemed Director for his continuous support and vision. I am grateful to all the speakers for sharing their valuable insights and to the participants for their active involvement. Special thanks to AICTE-ATAL for this opportunity and to the technical and support teams for ensuring seamless conduct of sessions throughout the week.

Dr. Sushma Bahuguna
Associate Dean, DICT, TIAS
ATAL FDP - Coordinator

I take this opportunity to thank our Director and Coordinator for their inspiring leadership. I also thank all resource persons for their expert contributions and participants for their enthusiastic engagement. A special mention to the organizing committee and volunteers whose behind-the-scenes work ensured the FDP's success.

Dr. Ratandeep Kaur
Associate Professor, DICT, TIAS
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Dr. Rahul Johri, Associate Professor, GGSIPU



Dr. Monika Sharma, Asso. Professor, Amity University



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Dr. Tushar Patnaik, Associate Director, CDAC Noida



Mr. Basant Kumar Chaturvedi, Regional Director, Perfetti Van Melle

Felicitations and Certificate of appreciation to Resource Persons

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AICTE-ATAL FDP OUTCOMES

The AICTE-ATAL sponsored one-week Faculty Development Programme (FDP) on “*Cyber Security & Sustainability in Cloud Computing and IoT*” successfully concluded with impactful learning outcomes and active participation of faculty members from across the country. The event was designed to address the growing demand for advanced knowledge and practical training in cybersecurity, cloud infrastructure, and Internet of Things (IoT), particularly in the context of sustainable and secure digital ecosystems.

Throughout the six-day FDP, participants were exposed to a wide array of critical topics that helped broaden their academic and practical perspectives. Eminent resource persons from academia, industry, and government agencies conducted in-depth sessions and hands-on training that facilitated the overall development of participating educators and researchers.

Key Outcomes of the FDP:

- **Enhanced Conceptual Understanding:** Participants gained in-depth knowledge of cybersecurity fundamentals, threats in wired and wireless networks, encryption techniques, identity and access management (IAM), and the role of Blockchain in web security and data integrity. Sessions by experts like Dr. Anurag Jain and Dr. Rahul Johari provided a solid theoretical foundation, particularly in emerging areas like BLAST blockchain algorithm, AI in cybersecurity, and green IoT.
- **Industry-Relevant Skills Development:** Practical sessions and hands-on training enabled faculty members to configure IoT devices, secure cloud databases using AWS/Azure, and build energy-aware systems with edge computing. These activities helped bridge the gap between theory and real-world application, empowering educators to transfer relevant skills to students and incorporate advanced labs in their curricula.
- **Exposure to Emerging Technologies:** The FDP introduced participants to cutting-edge concepts such as Industry 5.0, sustainable IoT, confidential computing, threat modeling, device hardening, and Blockchain integration in smart city infrastructures. Such exposure is crucial for updating academic syllabi and enhancing the future-readiness of technical institutions.
- **Government Policies and Initiatives Awareness:** Discussions on Digital India, the Blockchain Council’s pilot projects, and data protection policies helped participants understand the national vision and regulatory framework. This enabled them to align their research and teaching with government goals and societal needs.
- **Collaborative Learning and Networking:** The FDP created a vibrant academic platform for interdisciplinary exchange and collaboration. Faculty members from different regions

and disciplines shared their perspectives, challenges, and solutions. The industrial visit to C-DAC Noida provided valuable insights into large-scale implementation of cyber technologies and government-led innovations.

- **Pedagogical Enrichment:** Through reflective journal writing and interactive assessments, participants developed strategies to incorporate cybersecurity, IoT, and cloud computing topics into their courses. They were encouraged to adopt a problem-based and project-based learning approach to engage students in practical applications of emerging technologies.
- **Motivation for Research and Innovation:** Exposure to current challenges and future opportunities in smart, sustainable systems inspired participants to pursue research, propose innovative solutions, and publish in peer-reviewed journals and conferences.

