Report on Faculty Development Program "Quantum Computing for Enhanced Cybersecurity in Healthcare and Electronic Systems"

21st – 25th July 2025

Department of Biomedical Engineering, Computer Science and Engineering (Cyber Security) & Electronics and Communication Engineering

Jointly organised

5 Days Faculty Development Programme

On

"Quantum Computing for Enhanced Cybersecurity in Healthcare and Electronic Systems"

EVENT DETAILS:

Date: 21/07/2025 – 25/07/2025

Time: 9:00 AM to 4:00 PM

Mode of delivery: Hybrid

Convenor:

Dr. P. Bhuvaneswari, Professor & HoD, Biomedical Engineering, ACSCE

Dr. M. Karuppasamy, Professor & HoD , CSE-CYS, ACSCE

Dr. S. M. Vijaya, Professor & HoD ECE,ACSCE

Coordinator:

Mrs. Nagashree Pavan, Asst. Professor, BME

Ms. Sanjana R, Asst. Professor, CSE-CYS

Dr. Durga Indira, Associate Professor, ECE

Program Objective

To provide participants with a comprehensive understanding of how quantum computing can be leveraged to enhance cybersecurity in the domains of healthcare and electronic systems, by exploring quantum principles, cryptographic threats, and future-proof solutions that ensure data integrity, patient privacy, and system security.

Program Outcomes

1. Understand the basics of quantum computing and how it differs from classical computing.
2. Analyse the cybersecurity challenges in healthcare and electronic systems in the context of quantum threats.

3. Explain quantum cryptography concepts like Quantum Key Distribution (QKD) and their applicability to sensitive medical and embedded systems data.
4. Identify vulnerabilities in current encryption standards (e.g., RSA, ECC) due to quantum computing advances.
5. Explore post-quantum cryptographic techniques suitable for securing patient data, medical devices, and electronic systems.
6. Assess real-world use cases where quantum computing enhances trust, privacy, and reliability in healthcare IT infrastructure.
7. Evaluate the integration potential of quantum-resilient protocols into embedded and IoT systems used in healthcare monitoring and diagnostics.

Event Poster

Session wise Details

Inaugural Session

The Faculty Development Program on Quantum Computing for Enhanced Cybersecurity in Healthcare and Electronic Systems organized by Department of Biomedical Engineering, Computer Science and Engineering (Cyber Security) & Electronics and Communication Engineering, A.C.S College of Engineering, Bengaluru, in association with IEEE Student Branch & EMBS Bangalore Section was inaugurated on 21st July 2025 by Sri C. N. Seetharam, IAS (Rtd) CEO, RRGI Dr. A.K. Mariappan, Rector. RRGI Dr. Anandthirtha.B.Gudi, Principal, ACSCE Dr. Usha S, Vice Principal, ACSCE, Dr. P. Bhuvaneswari, Professor & HoD, Biomedical Engineering, ACSCE Dr. M. Karuppasamy, Professor & HoD , CSE-CYS,ACSCE Dr. S. M. Vijaya, Professor & HoD ECE,ACSCE , Mr. Veerendra Shetty

Dr. Anandthirtha.B.Gudi welcomed the audience and Dr. Durga Indira, program Coordinator briefed about the entire Faculty Development program schedule including the resource persons, their details, expertise etc. The program Coordinator also briefed about the importance of Quantum Computing for Enhanced Cybersecurity in Healthcare and Electronic Systems concepts in health care and electronic systems and its applications. Mr. Veerendra Shetty, Chief Guest of the session delivered the keynote address. His talk highlighted on various applications and research areas in Quantum computing and Cybersecurity. Some of the snap shots of the inauguration:


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Mr.VEERENDRA SHETTY

Founder, MD & CEO VISUKHI Innotech Private Limited, Bangalore

Mr.Veerendra Shetty, in short Veeren, is presently Founder, Managing Director and Chief Executive Officer of VISUKHI – a company he founded in September 2024 to harness the power of Vision & AI & Emerging Technology for the VISHWA SUKHI – Healthy World !

Formerly he has been a senior leader, directing the Medical Technology Research and Development department in SAMSUNG Research, Bangalore. In this leadership role he is responsible for driving Innovative Technology Development, Solution Concepts and Software Product Architecture & Design in the area of Healthcare Diagnostic Imaging & Medical Imaging System Architecture and Enterprise Architecture for Digital Health. He has also lead Multi Media Technology for Post processing & tech for smart phone & smart devices for Global Products. From Research, Technology & Engineering point of view his area of interest lies in Computer Vision, Visual Technology, Applied AI & Generative AI Technology,

Alumnus of IIT Bombay, prior to his present role on Samsung, for nearly 15 years at SIEMENS Healthcare, he has held various global R&D leadership positions in Germany, USA and India. He was a member and observer of International DICOM Working group and IHE Standardisation Committees, responsible for driving health interoperability standards in Imaging & Information exchange.

His R&D Leadership resulted in global 6 Mega Health Platform Products, 100+ Advanced Technology Solutions, 20+ AI Solutions in Medical Device Imaging, Health Imaging IT, Smart Phone Multi Media & Digital Technology.

Under his Innovation Leadership, his R&D teams created 45+ Patents and 55+ Technology Research Papers in international forums.

Through his People Leadership capability, he coached & mentored 75+ top Domain Leaders/Experts & 600+ Engineers

Beyond corporate responsibility, he is actively engaged in collaboration with Clinical Experts for Clinical Research, Tech Startup Mentorship and Academic Engagement with students and professors to proliferate learning, application & development of advanced technology.

Being a Senior Member of IEEE (Institute of Electrical & Electronic Engineers), he is currently the Chair of IEEE-Engineering in Medicine & Biology Society Bangalore Chapter. He serves as advisor & member of board of studies of several engineering institutions & universities.

He recently founded a company to engage in Applied Research of Vision & AI Technology for Healthcare and other verticals requiring advanced imaging technologies & solutions for local & international market.

He strongly believes in Technology & Tradition should co-exist. And as a witness to this, he lead a renovation of 500+ year old temple at his native place as an Executive President of Punar Prathishtapana Committee. To restore the glory of his erstwhile family traditions in costal Karnatak, he has been entrusted with role of President of Family Trust.

Date: 21st July 2025, Monday

Day 1- Session 1

Topics:

- **Health care challenges**
- **Need of Cyber security in health care**
- **Need of AI regulations in Healthcare**
- **Introduction to Quantum computing**

Resource Persons: Mr.VEERENDRA SHETTY,

Founder, MD & CEO VISUKHI Innotech Private Limited, Bangalore

Day 1 sessions 1 was addressed by the chief guest Mr Veerendra Shetty he spoke about how the healthcare sector is facing numerous challenges in the modern era, ranging from data management and patient privacy to technological integration and ethical concerns. With the rapid digitization of medical records and increased use of connected devices, the **need for robust cybersecurity in healthcare** has become critical to protect sensitive patient information from breaches, ransomware, and other cyber threats. Simultaneously, the adoption of **Artificial Intelligence (AI)** in diagnosis, treatment planning, and predictive analytics brings immense benefits, but also raises concerns around data bias, accountability, and patient safety — highlighting the **urgent need for clear AI regulations** to ensure responsible and ethical deployment. Adding to this technological evolution is the emerging field of **quantum computing**, which has the potential to revolutionize healthcare through faster drug discovery, complex simulations, and improved diagnostics, while also posing a long-term risk to current encryption methods, thereby underlining the importance of proactive planning in both healthcare innovation and security.


Healthcare Challenges :
Cybersecurity, AI Ethics,
Regulatory
Glimpse into Quantum Computing

Dr N V Raju

Professor & HoD Department of Physics
Global Academy of Technology, Bangalore

Dr. N.V. Raju is a distinguished academician and researcher with over 23 years of teaching and research experience in physics, currently serving as Professor and Head of the Department of Physics at Global Academy of Technology, Bengaluru. He holds a Ph.D. from the University of Mysore and has worked as an ISRO Geosphere Biosphere Program Research Fellow. His research focuses on atmospheric aerosols, renewable energy, fibre composites, and the application of artificial neural networks in material science. Dr. Raju has contributed to numerous national and international publications and conferences and has guided multiple Ph.D. scholars. He has also actively participated in interdisciplinary studies involving quantum computing, environmental science, AI, and sustainability. Through his involvement in faculty development programs, certification courses, and workshops—including several on quantum technologies and data science—Dr. Raju has demonstrated a strong commitment to academic excellence and knowledge dissemination. He is a life member of ISTE, IASTA, and IPA, and regularly serves as a session chair, BOS/BOE member, and academic coordinator at various esteemed institutions.

Date: 21st July 2025, Monday

Day 1- Session 2

Topics:

- **Fundamentals of Quantum Mechanics**
- **Quantum register**
- **Qubits vs classical bits**
- **Quantum Key Distribution (QKD) – BB84 protocol**

Resource Persons: Dr N V Raju

Professor & HoD Department of Physics

Global Academy of Technology, Bangalore

Day 1 session 2 was addressed by Dr N V Raju ,He addressed The fundamentals of quantum mechanics form the theoretical backbone of quantum computing, introduced key principles such as superposition, entanglement, and quantum measurement, which enable quantum systems to behave in ways not possible with classical systems. At the core of this paradigm shift are qubits, which, unlike classical bits that exist in a state of either 0 or 1, can exist in multiple states simultaneously—offering exponential computational potential.

Described how A quantum register is a collection of qubits that together represent complex quantum states and are used to perform quantum computations. In the realm of cybersecurity, Quantum Key Distribution (QKD), particularly the BB84 protocol, harnesses the principles of quantum mechanics to enable unbreakable encryption, ensuring secure communication by detecting any eavesdropping during key exchange.

Mr Abhilash P H

Vector India Bangalore

Mr Abhilash is a highly experienced instructor at an embedded training institute, boasting over six years of expertise in the field. He plays a crucial role in the institute, primarily focusing on hardware-related training and providing supportive classes to students. His extensive background allows him to effectively guide learners through complex embedded systems concepts, particularly those involving hands-on hardware components. He's known for his practical approach and ability to bridge the gap between theoretical knowledge and real-world application.

Date: 21st July 2025, Monday

Day 1- Session 3

Topics:

- **Introduction to IoT and Embedded Systems**
- **Quantum Security Requirements for IoT**
- **Security Challenges in IoT and Embedded Systems**
- **Impact of Quantum Computing on IoT Security**

Resource Persons: Mr Abhilash P H

Vector India Bangalore

Day 1 sessions 3 was addressed by Mr Abhilash P H And team .In the session participants were introduced to the foundational architecture of IoT and embedded systems, highlighting their growing role in critical applications such as smart cities, healthcare, and industrial automation. The session addressed the inherent security challenges faced by these systems, especially due to their limited computational resources and susceptibility to cyber threats. A major focus was placed on the emerging quantum threats, where powerful quantum computers could potentially break widely used cryptographic algorithms like RSA and ECC, posing a significant risk to IoT networks. To counter this, the session emphasized the importance of adopting post-quantum cryptographic algorithms, lightweight quantum-resistant protocols, and hybrid encryption models tailored for constrained embedded environments. The discussion also covered future trends, including quantum-secure firmware updates, quantum random number generators, and the integration of quantum-safe standards into IoT hardware and communication protocols. The session concluded by stressing the urgency of transitioning to quantum-resilient architectures to ensure long-term data security in IoT ecosystems.

Dr. K.G.SRINIVASAGAN

Professor & Head, Dean TCP

Dept. of Information Technology

National Engineering College Reliance Jio Platforms Ltd

Dr. K.G. Srinivasagan, currently the Professor, Head, and Dean at the Department of Information Technology, National Engineering College, Kovilpatti, is a seasoned academician and researcher with over three decades of teaching and research experience. His core expertise lies in computer vision, pattern recognition, image processing, and data mining. He holds a Ph.D. in Computer Science and Engineering and has been actively involved in guiding doctoral research, with four Ph.D. scholars already graduated under his supervision and four more currently pursuing.

He has made substantial research contributions, having authored over 28 international journal papers, several national journal articles, and more than 20 international conference publications in areas such as phishing detection, person re-identification, medical image processing, and Tamil handwritten character recognition. His work also spans areas like cybersecurity, neural networks, cloud computing, and natural language processing. He has an h-index of 9, with 344 citations to his name, reflecting the academic impact of his work.

Dr. Srinivasagan has also contributed extensively to knowledge dissemination through numerous invited expert lectures at prestigious conferences and FDPs, especially in the areas of AI, computer vision, digital image analysis, and pattern recognition. He has actively participated in and organized national and international workshops, conferences, and seminars, and has served as a conference chair and journal reviewer. His deep commitment to both academic excellence and technological advancement positions him as a respected figure in the field of engineering education and research.

Date: 22nd July 2025, Tuesday

Day 2- Session 1&2

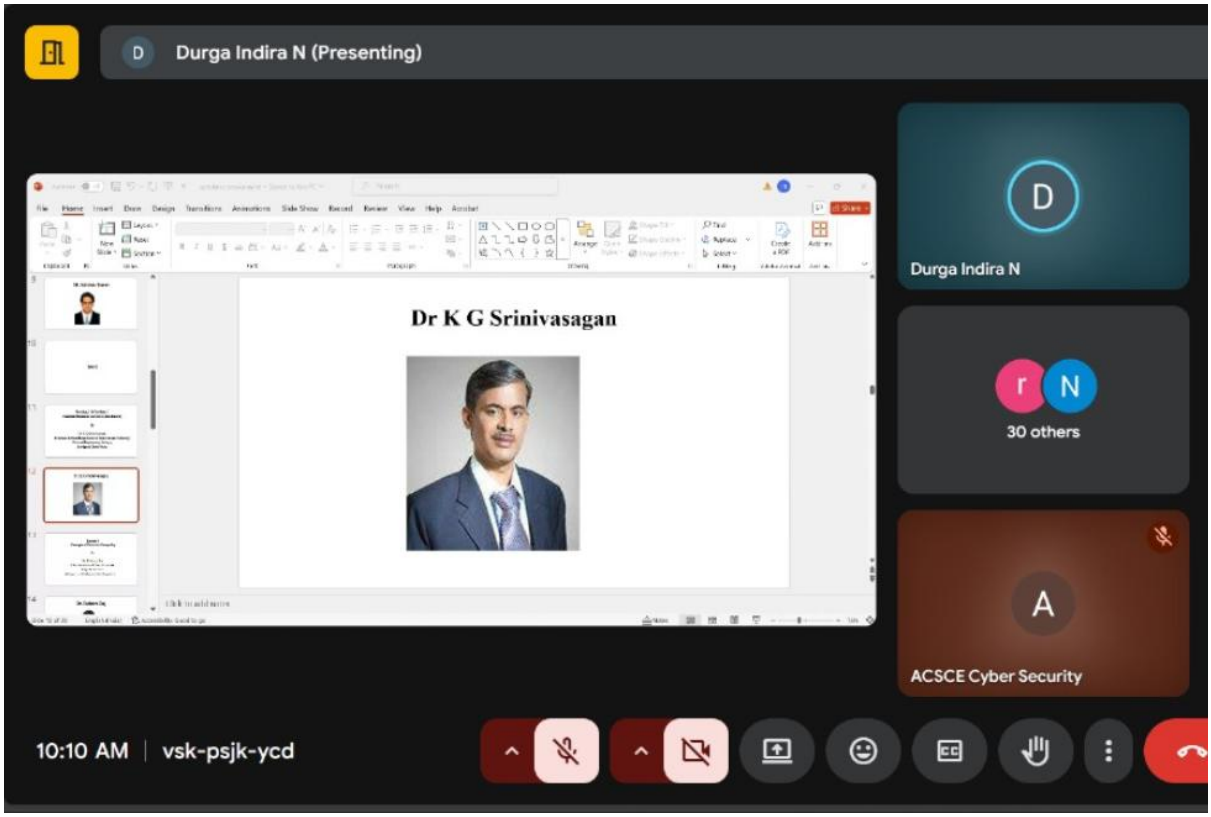
Topics:

- **Difference between classical and quantum computing**
- **Quantum interference**
- **Qubits vs classical bits**
- **Grover's search algorithm**
- **Shor's algorithm for integer factorization**

Resource Persons: Dr K G Srinivasagan,

Professor & Head Department of Information Technology National Engineering College, Kovilpatti, Tamil Nadu

Day 2 sessions 1&2 was addressed by Dr K G Srinivasagan He spoke about Quantum computing presenting a serious threat to current cybersecurity systems, particularly those based on classical public-key cryptography such as RSA and ECC. Quantum algorithms like Shor's and Grover's could potentially break the mathematical foundations of these systems, making encrypted data vulnerable to decryption and digital signatures prone to forgery. He spoke about the major implications for data privacy, secure communications, and the integrity of digital systems. He also covered how to counter these threats, and how the cybersecurity community is actively researching and standardizing post-quantum cryptographic algorithms, as well as exploring technologies like Quantum Key Distribution (QKD). He showed how Preparing for a quantum-secure future requires proactive transition planning, algorithm migration, and awareness across industries.


Durga Indira N (Presenting)
Dr K G Srinivasagan
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Dr Pethuru Raj

Chief Architect & Vice President Edge AI Division
Reliance Jio Platforms Ltd, Bangalore

Dr. Pethuru Raj Ph.D., SMIEEE, is a distinguished technology leader currently serving as the Vice President and Chief Architect at the AI Platforms Division of Reliance Jio Platforms Ltd., Bangalore. With over 25 years of industry experience and 9 years of research expertise, he has worked with top organizations including IBM, Wipro, and Robert Bosch. He holds a CSIR-sponsored Ph.D. from Anna University and completed postdoctoral research at IISc Bangalore, followed by prestigious international fellowships in Japan. Dr. Raj has authored and edited over 55 technology books, published more than 60 research papers, and contributed to 45+ book chapters. His work spans cutting-edge domains such as Edge AI, Generative AI, Quantum Computing, 5G/6G, Blockchain, and Digital Twins. He is a certified TOGAF and ITIL professional, a prolific keynote speaker at global forums, and a mentor committed to knowledge dissemination through numerous technical sessions and white papers.

Date: 22nd July 2025, Tuesday

Day 2- Session 3

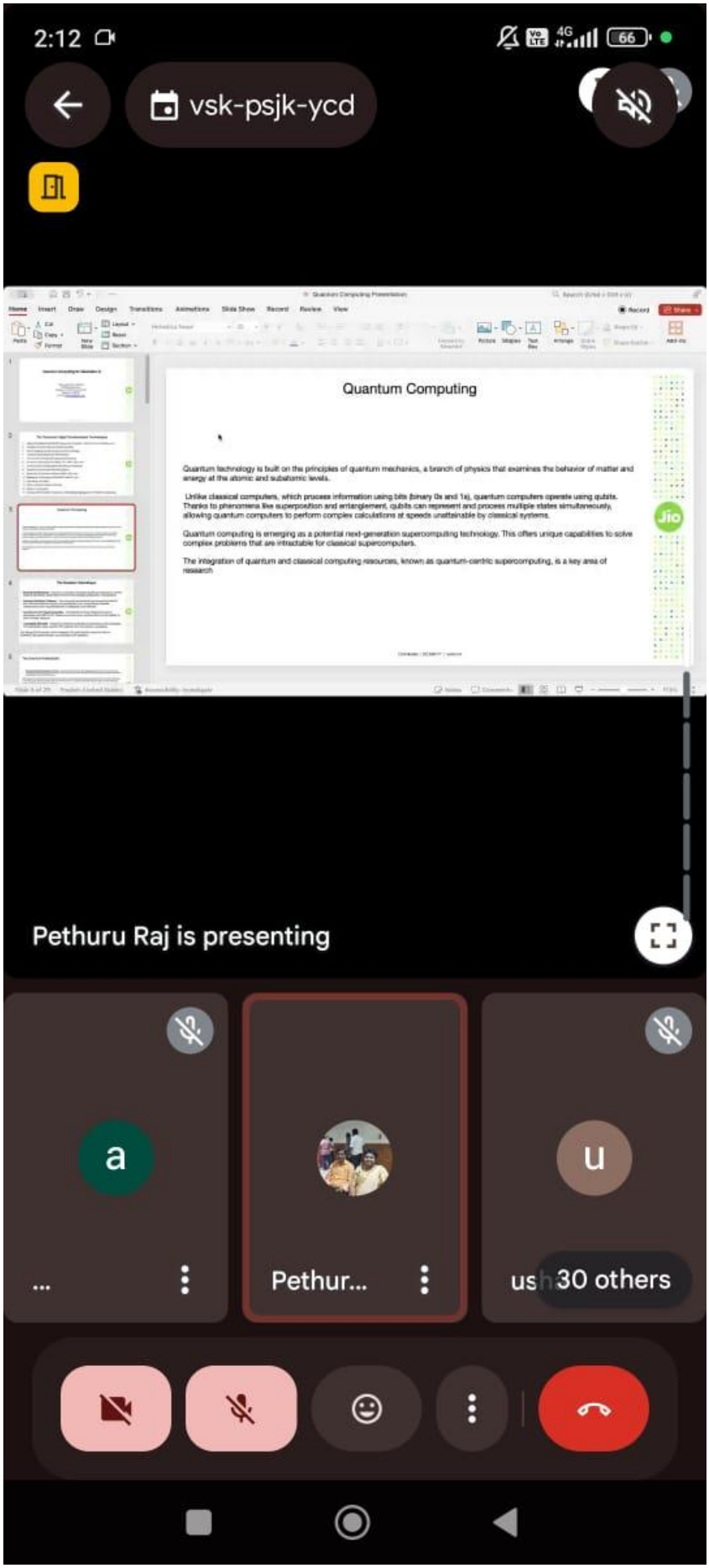
Topics:

- **Quantum Error Correction**
- **Security implications for classical cryptosystems**
- **Quantum machine learning**
- **Fault-tolerant computation**
- **Quantum circuit design**

Resource Persons: Dr Pethuru Raj

Chief Architect & Vice President Edge AI Division Reliance Jio Platforms Ltd, Bangalore.

Day 2 session 3 was addressed by Dr Pethuru Raj ,He had a insightful overview of fundamental concepts in quantum computing, highlighting how it differs from classical computing in terms of data representation and processing. It introduced the concept of qubits, which unlike classical bits, can exist in superposition, enabling quantum computers to process multiple states simultaneously. The phenomenon of quantum interference was explained as a key principle that allows quantum algorithms to amplify correct solutions while cancelling out incorrect ones. The session also covered important quantum algorithms such as Grover's Search Algorithm, which offers a quadratic speed-up for searching unsorted data, and Shor's Algorithm, which factors large integers exponentially faster than classical methods, posing a challenge to current cryptographic systems. Overall, the session emphasized the transformative potential of quantum computing in solving complex computational problems more efficiently than traditional approaches.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Quantum Computing
Quantum technology is built on the principles of quantum mechanics, a branch of physics that examines the behavior of matter and energy at the atomic and subatomic levels.
Unlike classical computers, which process information using bits (binary 0s and 1s), quantum computers operate using qubits. Thanks to phenomena like superposition and entanglement, qubits can represent and process multiple states simultaneously, allowing quantum computers to perform complex calculations at speeds unattainable by classical systems.
Quantum computing is emerging as a potential next-generation supercomputing technology. This offers unique capabilities to solve complex problems that are intractable for classical supercomputers.
The integration of quantum and classical computing resources, known as quantum-centric supercomputing, is a key area of research
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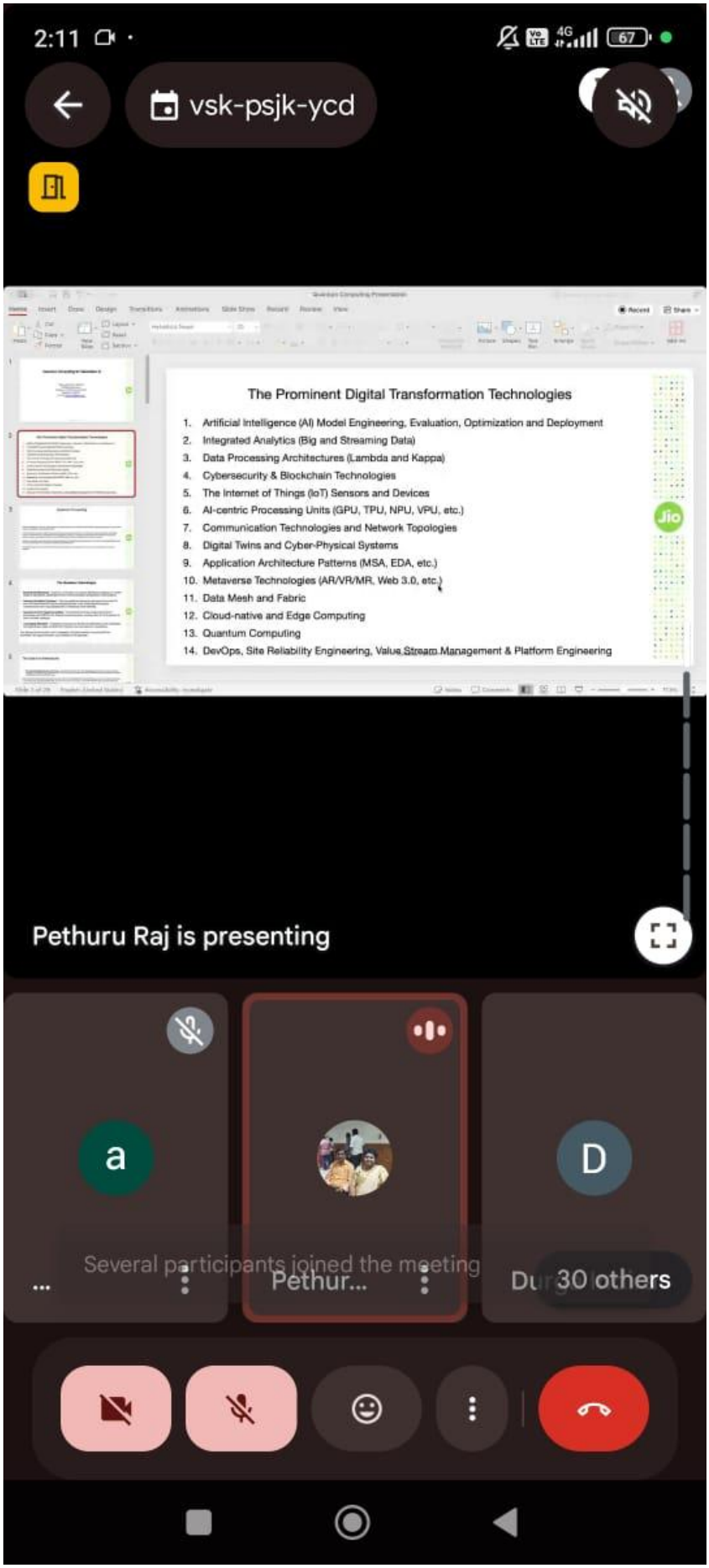
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The Prominent Digital Transformation Technologies
1. Artificial Intelligence (AI) Model Engineering, Evaluation, Optimization and Deployment
2. Integrated Analytics (Big and Streaming Data)
3. Data Processing Architectures (Lambda and Kappa)
4. Cybersecurity & Blockchain Technologies
5. The Internet of Things (IoT) Sensors and Devices
6. AI-centric Processing Units (GPU, TPU, NPU, VPU, etc.)
7. Communication Technologies and Network Topologies
8. Digital Twins and Cyber-Physical Systems
9. Application Architecture Patterns (MSA, EDA, etc.)
10. Metaverse Technologies (AR/VR/MR, Web 3.0, etc.)
11. Data Mesh and Fabric
12. Cloud-native and Edge Computing
13. Quantum Computing
14. DevOps, Site Reliability Engineering, Value Stream Management & Platform Engineering
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Dr Shrirang Ambaji Kulkarni

Assistant Director Examinations & Associate Professor
Manipal Institute of Technology, Bangalore

Dr. Shrirang Ambaji Kulkarni is a dedicated academician and an educational administrator with over 23 years of teaching and academic leadership experience. He currently serves as the Assistant Director of Examinations at Manipal Institute of Technology, Bengaluru, where he coordinates examinations and digital assessment processes.

He holds a Ph.D. in Computer and Information Science and completed his postdoctoral research at the University of Central Florida, USA, where his work focused on developing innovative deep learning algorithms for applications in the healthcare domain.

Dr. Kulkarni has authored three textbooks, published over 14 research papers in SCOPUS and SCIE-indexed journals, and holds two patents—one published in the United States and one granted in India.

His research interests include Wireless Ad-Hoc Networks, Machine Learning, and Deep Learning, with active exploration in intelligent systems, network routing optimization, and healthcare applications. A Senior Member of IEEE and ACM, Dr. Kulkarni is frequently invited to speak at workshops and conferences and is deeply involved in mentoring interns for interdisciplinary research projects.

Date: 23th July 2025, Wednesday

Day 3- Session 1& 2

Topics:

- **Public-key cryptography (like RSA and ECC)**
- **Post-Quantum Cryptography**
- **Cyber Attacks**
- **Bit coins**
- **Blockchain Technology**

Resource Persons: **Dr. Shrirang Ambaji Kulkarni,**

Assistant Director Examinations & Associate Professor

Manipal Institute of Technology, Bangalore.

Day 3 session 1& 2 was addressed by **Dr. Shrirang Ambaji Kulkarni**. The sessions addressed the **Security Block Chains in the era of post Quantum Cryptography**. He discussed Current blockchains use public-key cryptography (like RSA and ECC) for digital signatures, making transactions secure and verifying ownership. However, a quantum algorithm called Shor's algorithm could easily break these, allowing attackers to forge signatures and steal assets. While hash functions are somewhat safer, another quantum algorithm, Grover's algorithm, could weaken their security. The "store now, decrypt later" threat is also real: intercepted encrypted data could be decrypted years from now by a quantum computer.

The Post-Quantum Solution: The answer lies in Post-Quantum Cryptography (PQC) – new algorithms designed to resist both classical and quantum attacks. The National Institute of Standards and Technology (NIST) is leading the charge in standardizing these, with promising candidates including lattice-based, hash-based, code-based, and multivariate polynomial cryptography.


Securing Block Chains in the Era of Post-Quantum Cryptography
The state of cybersecurity
Today, defending against cyber threats is a priority for every organization.
We use the term cybersecurity to define the protection of data, systems, and networks.
Today, cloud computing, mobile devices, and data present the most popular targets for cyberattack.
Popular methods used by cybercriminals include
malware, software aimed at disruption and unauthorized access of systems;
ransomware, software that blocks system usage until a ransom is paid;
and phishing, a malicious method of eliciting information from individuals
passwords.

Dr Roshan Joy Martis

Associate Professor, Department of Electronics & Communications, Manipal Institute of Technology, Bangalore.

Dr. Roshan Joy Martis defended his doctoral dissertation in Biomedical Signal Processing in March 2012 from School of Medical Science and Technology of Indian Institute of Technology, Kharagpur. He was a Research and Development Engineer at Ngee Ann Polytechnic, Singapore in a Ministry of Education funded project during 2012 to September 2014. Currently he is serving as Associate Professor of Electronics and Communication Engineering at Manipal Institute of Technology, Bengaluru.

He is known for his research in physiological signal processing. He has published more than 80 research articles in the peer reviewed, international journals having high impact factors. He served as guest editor in many special issues of reputed international journals. He received more than 7,000 citations to his published research papers so far and has H-index of 37. He is serving as a reviewer in many Journals with scope in Biomedical Signal Processing. He is a Senior Member of the Institute of Electrical and Electronics Engineers (IEEE), USA and Life Member of Indian Society for Technical Education (ISTE).

He is currently serving as Associate Editor in Frontiers in Digital Health, Frontiers Publishers and Co-Editor-in Chief in Current Machine Learning, Bentham Science Publisher. He has appeared as one of the top 2% of researchers in the world as per the survey conducted by the researchers of Stanford University for consecutive five years for the years 2020, 2021, 2022, 2023 and 2024.

Date: 23th July 2025, Wednesday

Day 3- Session 3

Topics:

- **Digital Health**
- **Government of Indira Initiative in Digital Health**
- **Technologies used**
- **Integration of AI in healthcare**
- **Characteristics of AI based decision support systems**
- **Challenges in AI-Driven Healthcare**
- **Possible solutions**

Resource Persons: **Dr. Roshan Joy Martis,**
Associate Professor
Department of Electronics & Communications
Manipal Institute of Technology Bangalore

Day 3 session 3 was addressed by **Dr. Roshan Joy Martis**. The sessions addressed the **Challenges in Digital Health Care: An Ethical Perspective**. He discussed about Digital health care faces several significant challenges despite its potential to transform the medical field. One major concern is data privacy and security, as sensitive patient information is vulnerable to breaches and cyberattacks. Interoperability between different digital systems remains limited, causing fragmented health data and inefficiencies in care. Additionally, the digital divide—caused by disparities in access to technology and digital literacy—risks excluding certain populations, such as the elderly or those in rural areas. Regulatory and legal frameworks often lag behind technological advancements, making compliance complex, especially across different regions. Integrating digital tools into clinical workflows is another hurdle, as poorly designed systems can increase administrative burdens and contribute to clinician burnout. The reliability of artificial intelligence and machine learning tools is also a concern, particularly when algorithms are unvalidated or biased, potentially leading to misdiagnosis. High implementation costs and the need for ongoing investment pose barriers, especially for smaller or underfunded health institutions. Patient engagement and trust are also critical, as scepticism about digital tools can limit their effectiveness. Furthermore, resistance to change among healthcare staff can impede adoption, particularly when there are fears of job disruption. Finally, ethical concerns such as consent, fairness, and accountability in AI use must be carefully addressed to ensure responsible and equitable digital health care.


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Challenges in Digital Healthcare – An Ethical Perspective

Mr. Harsha Neelakantha

Senior Manager, Education at Silicon Microsystems
Bangalore

Mr. Harsha Neelakanta is a distinguished Electronics Engineer with over 15 years of experience in Embedded Systems, VLSI Design, Communication, and Robotics. A graduate of Shirdi Sai Engineering College, he has held diverse professional roles, including Field Application Engineer, Technical Sales Manager, and Senior Business Development Manager. He has significantly contributed to the education and technology sectors by establishing Research Labs and Centers of Excellence in cutting-edge domains such as Software Defined Radios, 4G & 5G LTE Mobile Communications, EMI/EMC Testing, Antenna Design, Advanced Embedded Systems, and Semiconductor Chip Design. His work with prominent organizations like Quantum Innovations, Ximax Solutions, IBM Innovation Centre for Education, and Micro Focus Software University Program highlights his dedication to advancing technical education through faculty development programs and industry-relevant training.

Currently, Mr. Harsha holds a strategic leadership position at Silicon Microsystems, where he drives education-focused business operations. His responsibilities include providing **design services in VLSI, Embedded Systems, and PCB solutions**, delivering specialized training programs, and facilitating talent acquisition for leading semiconductor companies. He also spearheads the establishment of **Centres of Excellence** in Advanced Embedded Systems, AI IoT, 5G/6G Communication Technologies, and Low-power VLSI Designs/FPGAs across engineering institutions in India. Furthermore, Mr. Harsha has been instrumental in securing **significant funding (worth several crores)** for research and Centres of Excellence, enabling the development of state-of-the-art infrastructure in areas like Embedded Systems, VLSI, and 5G Communications, thereby benefiting students, faculty, and researchers nationwide. He has also delivered numerous **impactful sessions** to thousands of students and faculty, bridging the gap between academic learning and industry trends. Beyond his professional endeavors, he actively volunteers with **Rotary International** and serves as a **Mentor of Change** under the Atal Innovation Mission, NITI Aayog, demonstrating his commitment to community service and fostering innovation for societal benefit.

Date: 24th July 2025, Thursday

Day 4

Topics:

- **RISC-V**
- **LITEX frame work**
- **Edge Computing**
- **Edge AI**
- **Quntum Mechanics & Quantum Physics**

Resource Persons: **Mr. Harsha Neelakantha**
Senior Manager,
Educational at Silicon Microsystems,
Bangalore.

Day 4 session 1,2 & 3 was addressed by Mr. Harsha Neelakantha. The sessions addressed the

RISC-V and Edge Computing, and Quantum Paradigms and Quantum Computing. The speaker discussed RISC-V is an open-source instruction set architecture that offers flexibility and customization, making it ideal for edge computing environments where efficiency, low power consumption, and cost-effectiveness are critical. Edge computing processes data closer to the source—such as sensors or IoT devices—reducing latency and enhancing real-time decision-making. The modular nature of RISC-V allows for optimized processor designs tailored to specific edge applications, supporting improved performance and security.

On the other hand, quantum computing represents a new computational paradigm based on the principles of quantum mechanics, utilizing qubits that can exist in multiple states simultaneously. This allows quantum computers to perform certain complex calculations much faster than classical computers. Quantum paradigms include specialized algorithms and models that have the potential to revolutionize fields like cryptography, material science, and optimization. However, quantum computing is still in its developmental stage, facing challenges such as qubit stability, error correction, and hardware scalability.


SIMS
LITEX FrameWork
LiteX
Educate -> Excellence!!

Dr.T.Srinivas

Professor

Electronics & Communication Engineering
Indian Institute of Science,
Bangalore

Dr. Srinivas Talabattula is Professor in ECE Dept, Indian Institute of Science, Bangalore. He obtained B.Sc (Hons) in Physics from New Science College, Hyderabad, and ME (integrated) and Ph.D from IISc. He was a Post-Doctoral research fellow at Toyohashi University of Technology, Japan during 1992-1996. His area of research interest is Optical Communications, in particular, Photonic Integrated Circuits. He published about 150 papers and guided 42 Ph D students. He is a member of the National Board of Accreditation, NBA. He was the chairman GATE (IISc zone) during 2010-13. He is an active volunteer of IEEE Bangalore Section and was the Chair in 2024. Earlier he was the chair of IEEE Photonics Society and IEEE Communication society Bangalore Chapter.

Date: 25th July 2025, Friday

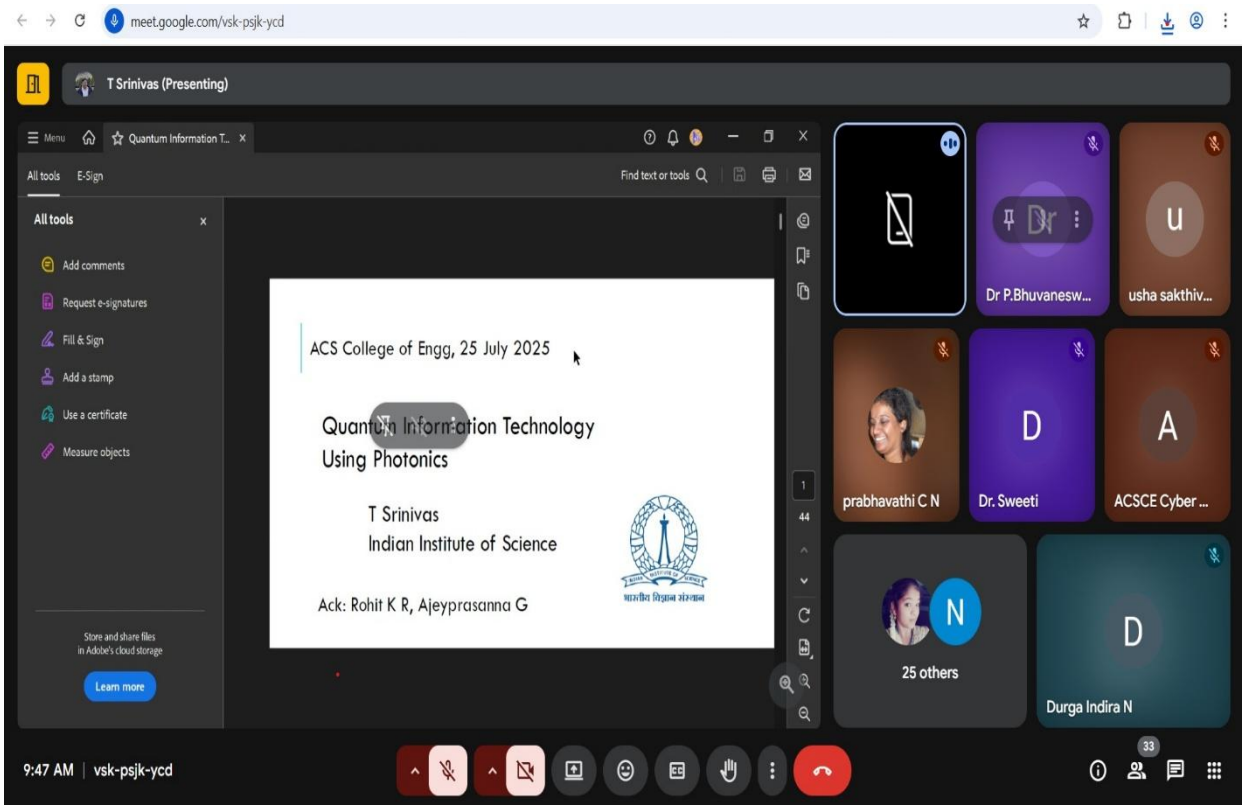
Day 5 – Session 1 & 2

Topics:

- **QUANTUM INFORMATION TECHNOLOGY**
- **QUBIT**
- **QUANTUM GATES**
- **QUANTUM COMMUNICATION**
- **Quantum Computers**
- **Future of Quantum Technology**

Resource Person: **Dr. Srinivas**
Professor,
Electronics & Communication Engineering,
Indian Institute of Science,
Bangalore.

Day 5 session 1 & 2 was addressed by **Dr. Srinivas**. The sessions addressed the **Quantum Information Technology Using Photonics**. The speaker addressed Quantum Information Technology Using Photonics is an emerging field that harnesses the principles of quantum mechanics and the unique properties of photons (light particles) to process, transmit, and store information in fundamentally new ways. Photonics offers several advantages for quantum information systems—most notably, photons travel at the speed of light, interact weakly with their environment (reducing noise and decoherence), and can be manipulated precisely using optical components. These qualities make photonic systems ideal for applications such as quantum communication, including quantum key distribution (QKD) for ultra-secure data transmission, and quantum computing, where photonic qubits (often encoded using properties like polarization or phase) perform computations in scalable, energy-efficient platforms. Integrated photonic chips are also being developed to miniaturize and stabilize quantum systems, potentially enabling practical, compact quantum devices. While photonic quantum technologies show great promise, challenges remain in areas such as generating high-quality single photons, achieving deterministic photon-photon interactions, and scaling up photonic quantum circuits. Nonetheless, photonics is a key enabler in advancing the field of quantum information science.


meet.google.com/vsk-psjk-ycd
T Srinivas (Presenting)
All tools
E-Sign
Find text or tools
Add comments
Request e-signatures
Fill & Sign
Add a stamp
Use a certificate
Measure objects
Store and share files in Adobe's cloud storage
Learn more
ACS College of Engg, 25 July 2025
Quantum Information Technology Using Photonics
T Srinivas
Indian Institute of Science
Ack: Rohit K R, Ajeyprasanna G
Dr P.Bhuvanesw...
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Durga Indira N
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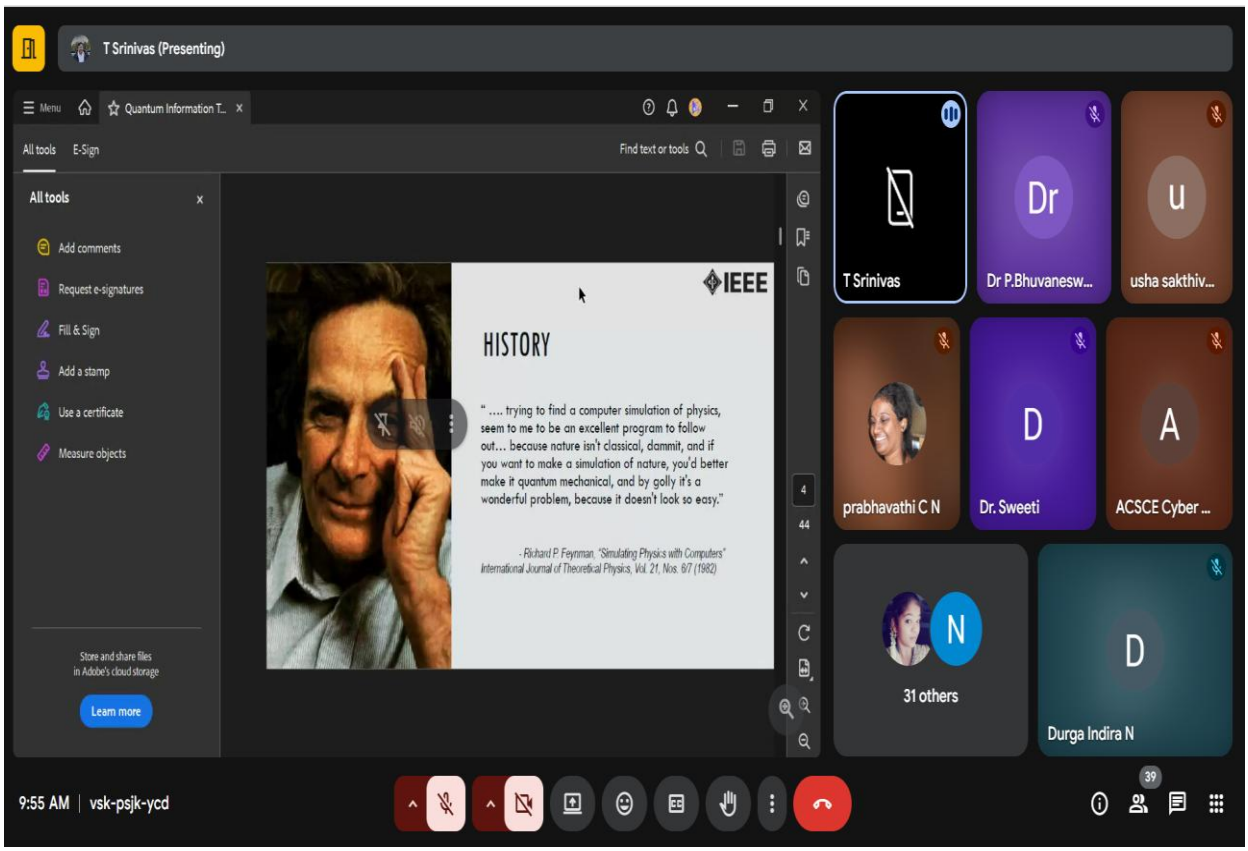
T Srinivas (Presenting)
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HISTORY
" .... trying to find a computer simulation of physics, seem to me to be an excellent program to follow out... because nature isn't classical, dammit, and if you want to make a simulation of nature, you'd better make it quantum mechanical, and by golly it's a wonderful problem, because it doesn't look so easy."
- Richard P. Feynman, "Simulating Physics with Computers" International Journal of Theoretical Physics, Vol. 21, Nos. 6/7 (1982)
T Srinivas
Dr P.Bhuvanesw...
usha sakthiv...
prabhavathi C N
Dr. Sweeti
ACSCE Cyber ...
31 others
Durga Indira N
9:55 AM | vsk-psjk-ycd

Dr S N Deepa

Associate Professor,
Department of Electrical Engineering,
National Institute of Technology Calicut, NIT Campus
P.O., Kozhikode, Kerala

S.N.Deepa is currently Associate Professor of Electrical Engineering at National Institute of Technology Calicut, Kozhikode, Kerala. She possesses 19 years of teaching and research experience and has published 11 books with National/International Publishers, 106 International Journal Papers, 12 National Journal Papers and 53 Papers in National/International Conferences. She has 3 Indian patents granted to her credit. She was the author of book “Control Systems”, an initiative of AICTE book writing, which is uploaded in AICTE e-kumbh portal and this book is translated in 12 Bharathiya Languages. Her Research areas include Machine Learning, Deep Learning and AI for Image Processing Applications including medical images, Smart Agriculture, Renewable Energy Applications, Predictive Maintenance of EVs and Drones, linear and non-linear control system design and analysis, adaptive and robust control system analysis. She is recognized in the Top 2% of the world’s scientist list ranked by the Stanford University, USA for the consecutive 4 years from 2021 onwards. With respect to her research attributes, she currently possesses 11891 citations, Google Scholar h-index of 27 and i10-index of 79, her Scopus h-index is 19 and Web of Science h-index is 14 as on date. Her research gateway score is 28.43.

Date: 25th July 2025, Friday

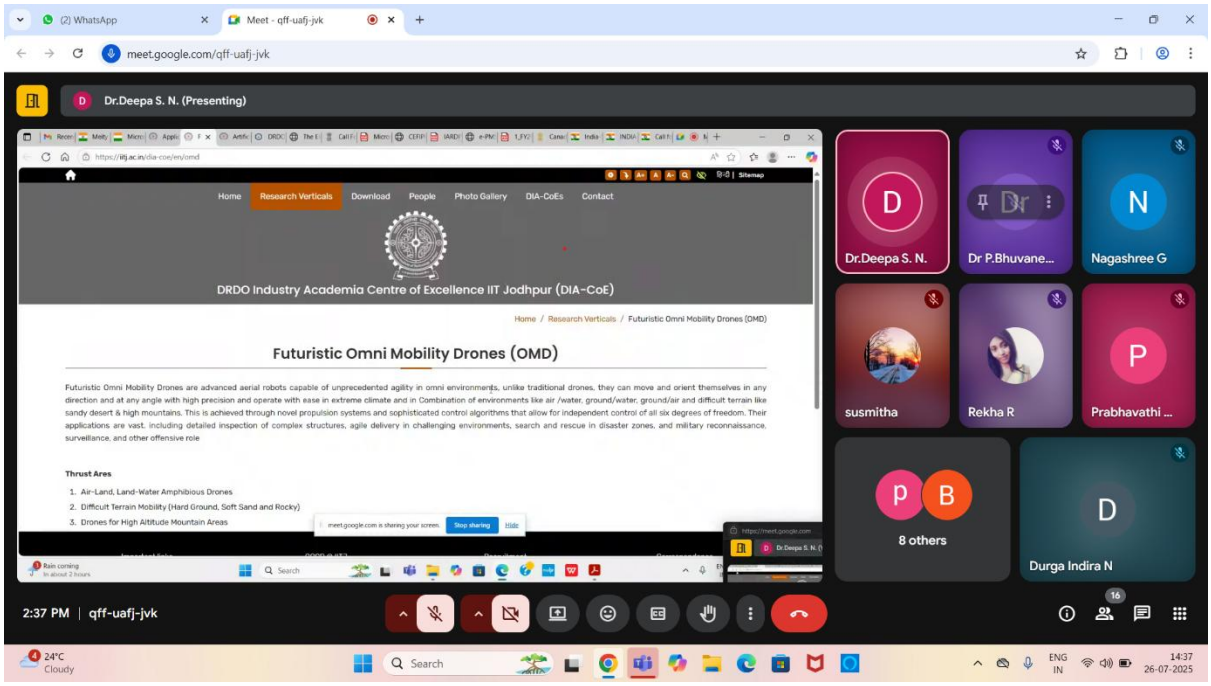
Day 5 – Session 3

Topics:

- **Writing Proposals**
- **Applying for funding projects**
- **Research the grant application process**
- **Preparing Budget**

Resource Person: **Dr. S N Deepa**
Associate Professor,
Department of Electrical Engineering,
National Institute of Technology, Calicutt,
Kerala

Day 5 session 3 was addressed by **Dr. S N Deepa**. The sessions addressed the **Writing Proposals and Research Fund**. The speaker addressed Writing research proposals is essential for securing funding to support scientific or academic projects. A good proposal clearly defines the research problem, objectives, methodology, and expected outcomes, while aligning with the goals of the funding agency. Research funding is typically provided by governments, universities, or private organizations, and supports innovation and scientific advancement. Success depends on clear communication, strategic planning, and a strong understanding of both the research topic and the funder's priorities.


meet.google.com/qff-uafj-jvk
Dr.Deepa S. N. (Presenting)
DRDO Industry Academia Centre of Excellence IIT Jodhpur (DIA-CoE)
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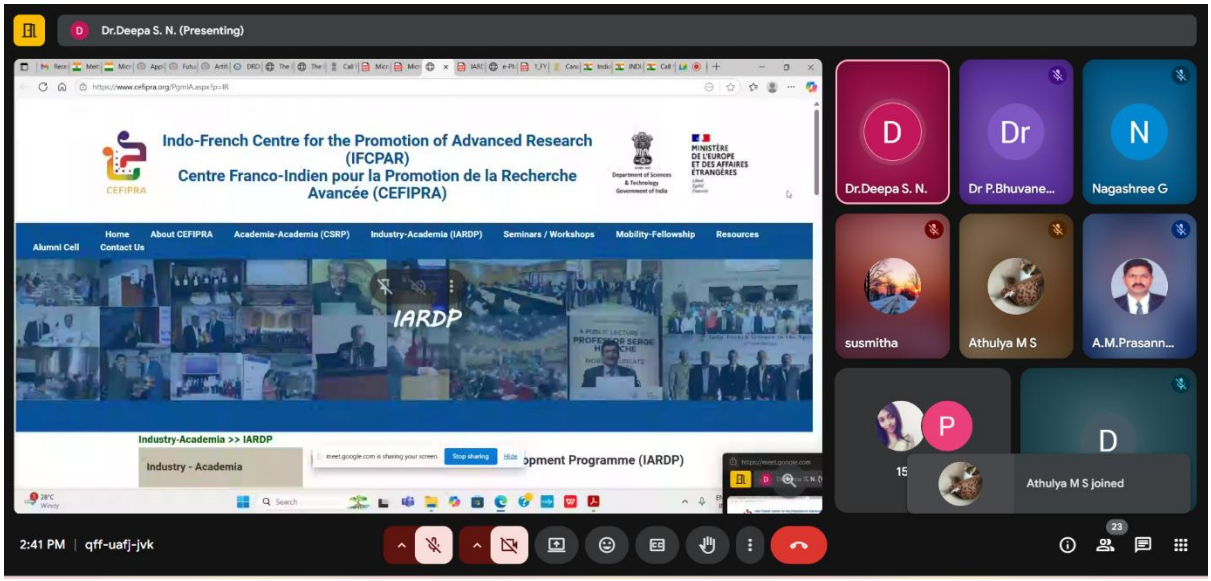
Futuristic Omni Mobility Drones (OMD)
Futuristic Omni Mobility Drones are advanced aerial robots capable of unprecedented agility in omni environments, unlike traditional drones, they can move and orient themselves in any direction and at any angle with high precision and operate with ease in extreme climate and in Combination of environments like air /water, ground/water, ground/air and difficult terrain like sandy desert & high mountains. This is achieved through novel propulsion systems and sophisticated control algorithms that allow for independent control of all six degrees of freedom. Their applications are vast, including detailed inspection of complex structures, agile delivery in challenging environments, search and rescue in disaster zones, and military reconnaissance, surveillance, and other offensive role
Thrust Ares
1. Air-Land, Land-Water Amphibious Drones
2. Difficult Terrain Mobility (Hard Ground, Soft Sand and Rocky)
3. Drones for High Altitude Mountain Areas
Dr.Deepa S. N.
Dr P.Bhuvane...
Nagashree G
susmitha
Rekha R
Prabhavathi ...
8 others
Durga Indira N
2:37 PM | qff-uafj-jvk


Dr.Deepa S. N. (Presenting)
Indo-French Centre for the Promotion of Advanced Research (IFCPAR)
Centre Franco-Indien pour la Promotion de la Recherche Avancée (CEFIPRA)
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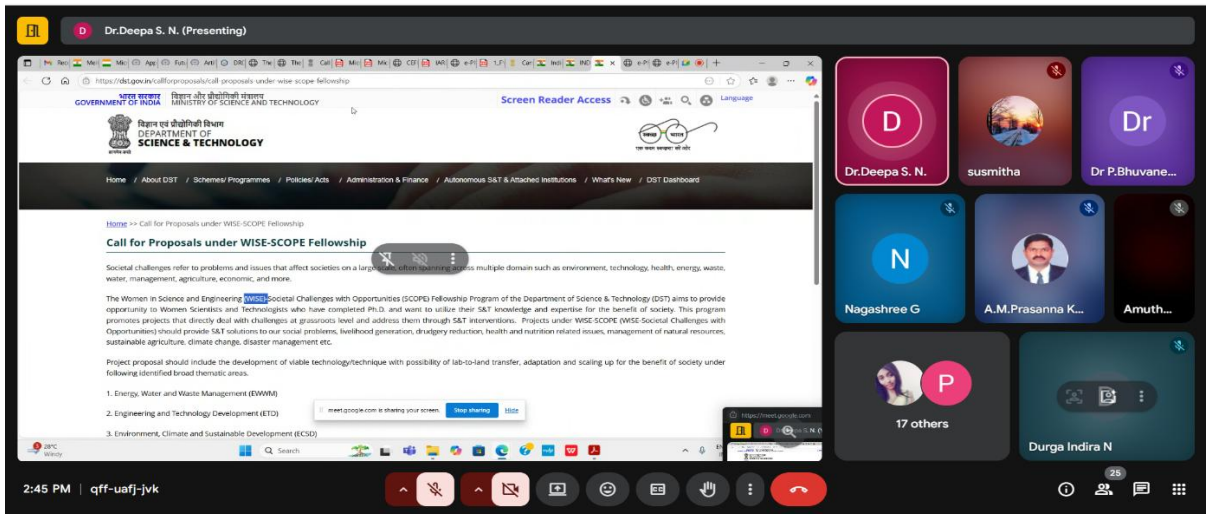
Dr.Deepa S. N.
Dr P.Bhuvane...
Nagashree G
susmitha
Athulya M S
A.M.Prasann...
Athulya M S joined
2:41 PM | qff-uafj-jvk


Dr.Deepa S. N. (Presenting)
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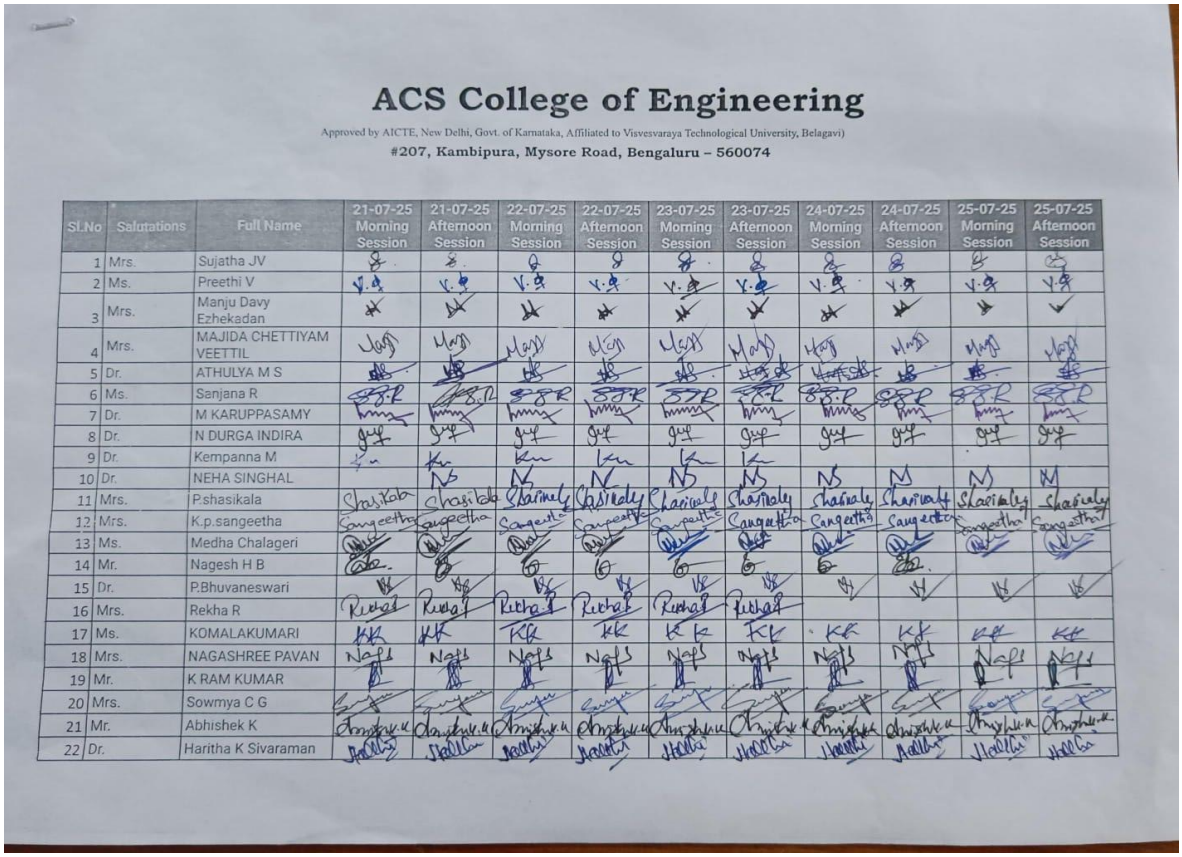
Call for Proposals under WISE-SCOPE Fellowship
Societal challenges refer to problems and issues that affect societies on a large scale often spanning across multiple domain such as environment, technology, health, energy, waste, water, management, agriculture, economic, and more.
The Women in Science and Engineering (WISE)-Societal Challenges with Opportunities (SCOPE) Fellowship Program of the Department of Science & Technology (DST) aims to provide opportunity to Women Scientists and Technologists who have completed Ph.D. and want to utilize their S&T knowledge and expertise for the benefit of society. This program promotes projects that directly deal with challenges at grassroots level and address them through S&T interventions. Projects under WISE-SCOPE (WISE-Societal Challenges with Opportunities) should provide S&T solutions to our social problems, livelihood generation, drudgery reduction, health and nutrition related issues, management of natural resources, sustainable agriculture, climate change, disaster management etc.
Project proposal should include the development of viable technology/technique with possibility of lab-to-land transfer, adaptation and scaling up for the benefit of society under following identified broad thematic areas.
1. Energy, Water and Waste Management (EWWM)
2. Engineering and Technology Development (ETD)
3. Environment, Climate and Sustainable Development (ECSD)
Dr.Deepa S. N.
susmitha
Dr P.Bhuvane...
Nagashree G
A.M.Prasanna K...
Amuth...
17 others
Durga Indira N
2:45 PM | qff-uafj-jvk

Attendance



ACS College of Engineering

Approved by AICTE, New Delhi, Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi)

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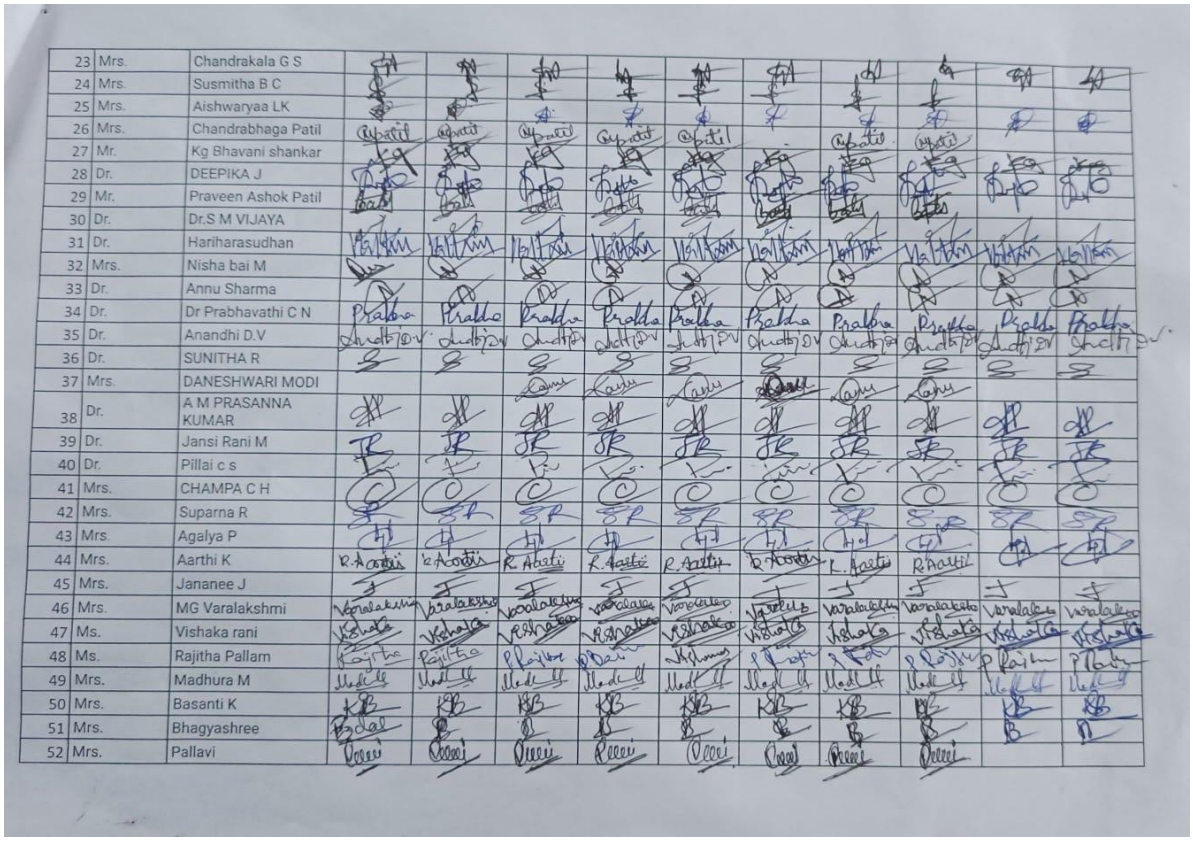
Sl.No	Salutations	Full Name	21-07-25 Morning Session	21-07-25 Afternoon Session	22-07-25 Morning Session	22-07-25 Afternoon Session	23-07-25 Morning Session	23-07-25 Afternoon Session	24-07-25 Morning Session	24-07-25 Afternoon Session	25-07-25 Morning Session	25-07-25 Afternoon Session
1	Mrs.	Sujatha JV										
2	Ms.	Preethi V										
3	Mrs.	Manju Davy Ezhekadan										
4	Mrs.	MAJIDA CHETTIYAM VEETTIL										
5	Dr.	ATHULYA M S										
6	Ms.	Sanjana R										
7	Dr.	M KARUPPASAMY										
8	Dr.	N DURGA INDIRA										
9	Dr.	Kempanna M										
10	Dr.	NEHA SINGHAL										
11	Mrs.	P.shasikala										
12	Mrs.	K.p.sangeetha										
13	Ms.	Medha Chalageri										
14	Mr.	Nagesh H B										
15	Dr.	P.Bhuvaneswari										
16	Mrs.	Rekha R										
17	Ms.	KOMALAKUMARI										
18	Mrs.	NAGASHREE PAVAN										
19	Mr.	K RAM KUMAR										
20	Mrs.	Sowmya C G										
21	Mr.	Abhishek K										
22	Dr.	Haritha K Sivaraman										



23	Mrs.	Chandrakala G S										
24	Mrs.	Susmitha B C										
25	Mrs.	Aishwaryaa LK										
26	Mrs.	Chandrabhaga Patil										
27	Mr.	Kg Bhavani shankar										
28	Dr.	DEEPIKA J										
29	Mr.	Praveen Ashok Patil										
30	Dr.	Dr.S M VIJAYA										
31	Dr.	Hariharasudhan										
32	Mrs.	Nisha bai M										
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34	Dr.	Dr Prabhavathi C N										
35	Dr.	Anandhi D.V										
36	Dr.	SUNITHA R										
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38	Dr.	A M PRASANNA KUMAR										
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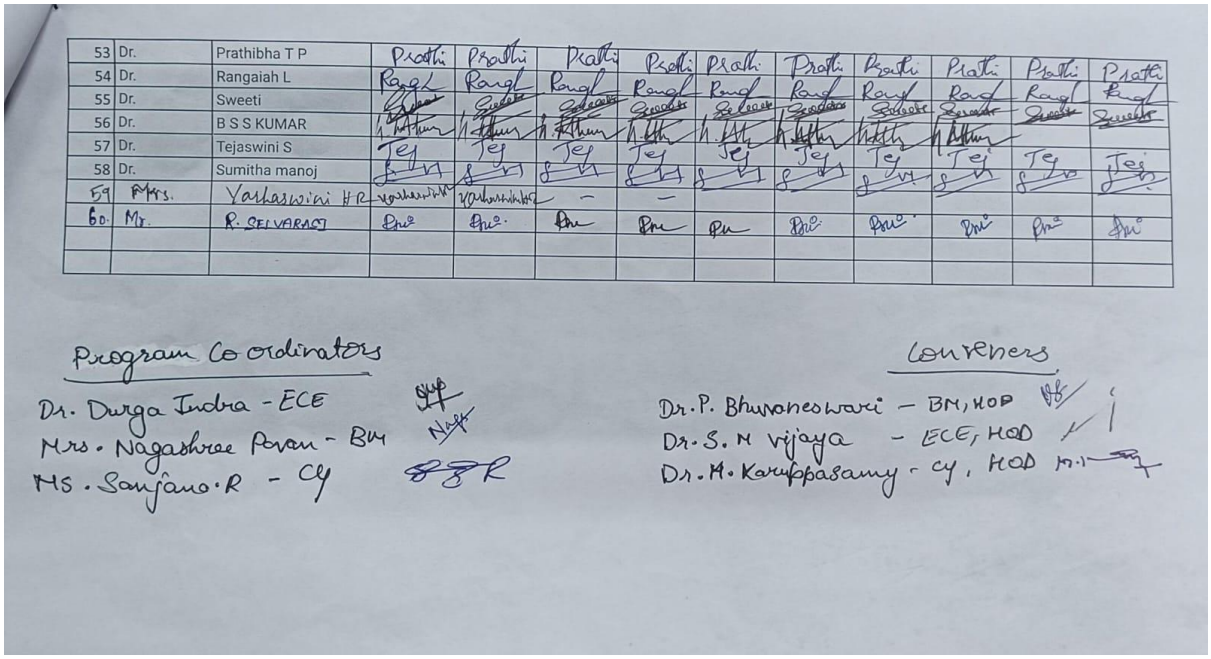
50	Mrs.	Basanti K										
51	Mrs.	Bhagyashree										
52	Mrs.	Pallavi										



53	Dr.	Prathibha T P	Prathi	Prathi	Prathi	Prathi	Prathi	Prathi	Prathi	Prathi	Prathi	Prathi	Prathi
54	Dr.	Rangaiah L	Rangl	Rangl	Rangl	Rangl	Rangl	Rangl	Rangl	Rangl	Rangl	Rangl	Rangl
55	Dr.	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti	Sweeti
56	Dr.	B S S KUMAR											
57	Dr.	Tejaswini S	Tej	Tej	Tej	Tej	Tej	Tej	Tej	Tej	Tej	Tej	Tej
58	Dr.	Sumitha manoj											
59	Mrs.	Yashaswini HR			–	–							
60	Mr.	R. SELVARAJ											

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Mrs. Nagashree Pavan - BM

Ms. Sanjana. R - CY

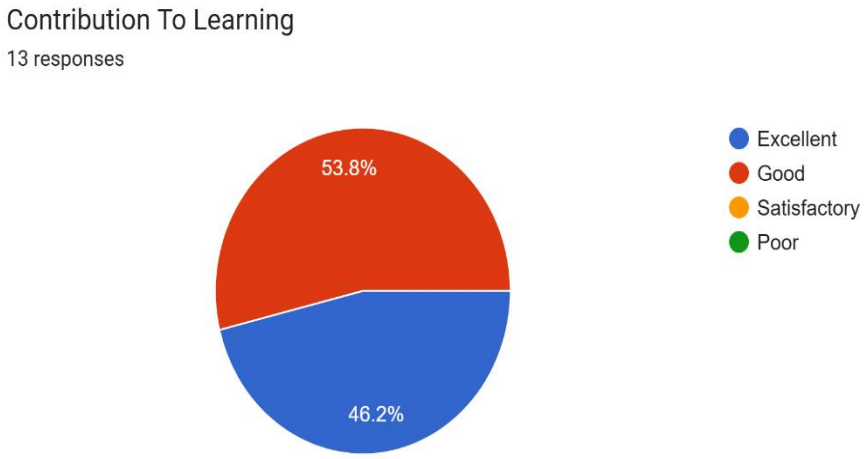
Conveners

Dr. P. Bhuvaneswari – BM, HOD

Dr. S. N Vijaya - ECE, HOD

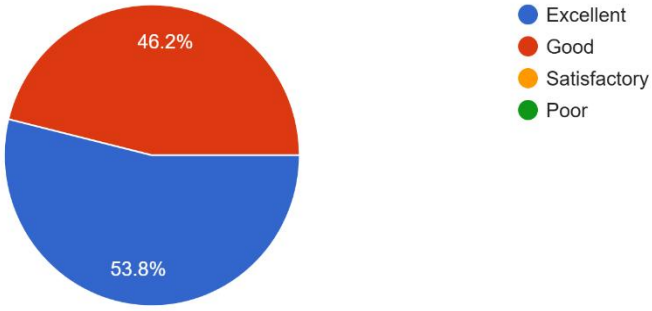
Dr. M. Karuppasamy - CY, HOD

Session feedback



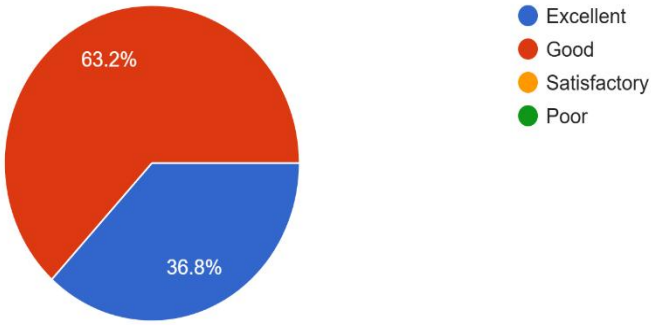
Presentation By Resource Person

13 responses



Lecture Content

19 responses



What aspects of these lectures were most useful or valuable

30 responses

Most useful
Quantum computing
Useful
Health
Concept of learning
Algorithm
Useful
Nil
the principles of quantum computing to solve complex problems much faster than classical computers

Event Co-ordinators

HoD

Principal

PRINCIPAL
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