Sri SAIRAM COLLEGE OF ENGINEERING
Anekal, Bengaluru

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EVENT REPORT
EXPERT LECTURE SERIES ON EMERGING TECHNOLOGIES IN COMPUTING, COMMUNICATION AND INTELLIGENT SYSTEMS

Organized by
Department of Electronics and Communication Engineering
Sri Sairam College of Engineering, Anekal, Bengaluru

In Association With

IEEE Sri Sairam Engineering College Student Branch
IEEE Circuits and Systems (CAS) Society
IEEE Photonics Society

About the Lecture Series

The Department of Electronics and Communication Engineering, Sri Sairam College of Engineering, organized an **Expert Lecture Series on "Emerging Technologies in Computing, Communication and Intelligent Systems" during July–August 2026.**

The lecture series was conceived as an academic and technical platform to expose students to rapidly evolving technologies that are shaping the future of engineering, research, and industry. The series brought together expert sessions covering emerging areas including **Cyber Security, Machine Learning, Data Science, Data Analytics, Quantum Computing, and related intelligent technologies.**The programme was conducted with the support of the **IEEE Sri Sairam Engineering College Student Branch, IEEE Circuits and Systems (CAS) Society, and IEEE Photonics Society**, providing students with opportunities to understand current technological developments from both academic and professional perspectives.

As part of this lecture series, an expert session on "**Quantum Computing: Principles, Technologies and Future Prospects"** was organized to introduce students to the fundamentals, technologies, applications, and future research opportunities associated with quantum computing.

Acknowledgement

The Department of Electronics and Communication Engineering places on record its sincere gratitude to the **Management of Sri Sairam College of Engineering** for providing continuous encouragement, academic support, and the necessary facilities for organizing the Expert Lecture Series. The Department expresses its heartfelt thanks to the **Respected Principal , Dr. B. Shadaksharappa, Sri Sairam College of Engineering**, for his valuable guidance, encouragement, and support in promoting technical and professional learning opportunities for students.

The Department also conveys its sincere appreciation to the **Head of the Department, Dr A Poonguzhali Electronics and Communication Engineering**, for her constant guidance, coordination, and encouragement in successfully organizing the lecture series and facilitating the Quantum Computing session. The Department gratefully acknowledges the support of the **IEEE Sri Sairam Engineering College Student Branch, IEEE Circuits and Systems**

(CAS) Society, and IEEE Photonics Society for their valuable association in promoting awareness and learning in emerging areas of engineering and technology.

Organized by	Department of Electronics and Communication Engineering, Sri Sairam College of Engineering
Event Title	Expert Talk on Quantum Computing: Principles, Technologies and Future Prospects
Resource Person	Dr. Ahila A, Associate Professor, Dept. of ECE, Sri Sairam College of Engineering
Date	24th August 2026 (Monday)
Time	2:00 PM – 4:00 PM
Venue	Room No: 306, Sri Sairam College of Engineering
Target Audience	Students

About the Session

The Department of Electronics and Communication Engineering, Sri Sairam College of Engineering, organized an Expert Talk on "Quantum Computing: Principles, Technologies and Future Prospects" as an insightful session for students and faculty. The session was delivered by Dr. Ahila A, Associate Professor, Department of ECE, and aimed to introduce participants to the fundamentals of quantum computing, the technologies driving the field, and its emerging real-world applications.

The talk began with a comparison between classical and quantum computing, tracing the evolution of computing from mechanical calculators and vacuum tubes to modern quantum processors. The resource person explained why classical computing is reaching its limits for certain classes of problems — such as large-scale optimization, cryptography, molecular simulation, and AI/ML workloads — and how quantum computing offers a fundamentally different approach based on the principles of quantum mechanics.

Key Topics Covered

- Basic structure of a classical computer and its hardware-level architecture
- What is quantum computing, and key quantum phenomena at the atomic and sub-atomic scale
- Evolution and history of quantum computing, from Heisenberg and Schrödinger to Shor's and Grover's algorithms
- Qubits and quantum state representation using Dirac (ket) notation, including $|0\rangle$, $|1\rangle$ and superposition states
- Key characteristics of quantum computing: superposition, entanglement, interference, measurement, reversibility and probabilistic nature

- The Bloch sphere as a geometric visualization of single-qubit states
- Quantum gates — single-qubit gates (X, Y, Z, H, S, T) and multi-qubit gates (CNOT, CZ, SWAP) — and their properties
- Quantum circuits and how quantum gates, operations and measurements are represented and combined
- Quantum computer hardware from an ECE perspective, including cryogenics, control electronics and the qubit chip
- Quantum algorithms, with a focus on Grover's algorithm (unstructured search) and Shor's algorithm (integer factorization)
- Real-world applications of quantum computing in cryptography, drug discovery, chemistry and materials science, finance, optimization, AI/ML, and communication
- Current status of quantum computing (the NISQ era) and future opportunities and challenges, including error correction and fault tolerance

Learning Outcomes

- Understand the core principles and computational paradigm of quantum computing
- Explore current quantum technologies and their practical implementations
- Analyze the impact of quantum computing on the future of technology across domains
- Develop an interest in pursuing further research in quantum algorithms and quantum systems

Resource Person Profile

Dr. Ahila A
Associate Professor, Department of ECE
Sri Sairam College of Engineering, Anekal, Bengaluru



Dr. Ahila A delivered a well-structured and comprehensive session covering the theoretical foundations and emerging applications of quantum computing, tailored to be accessible to both beginners and students with prior exposure to the subject.

Conclusion

The Expert Talk provided students with a solid conceptual foundation in quantum computing from qubits, superposition and entanglement to quantum gates, circuits and algorithms — while also highlighting the technologies and real-world domains where quantum computing is expected to have significant impact. The session encouraged participants to explore research opportunities in this rapidly evolving field and concluded with an interactive question-and-answer segment. The Department places on record its sincere appreciation to Dr. Ahila A for delivering an engaging and informative session.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

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EXPERT TALK ON
QUANTUM COMPUTING:
PRINCIPLES, TECHNOLOGIES AND FUTURE PROSPECTS

AN INSIGHTFUL SESSION

FOR STUDENTS & FACULTY



RESOURCE PERSON

Dr. Ahila A

Associate Professor, ECE

Sri Sairam College of Engineering

Anekal, Bengaluru - 562 106

DATE

24st August 2026 (Friday)

TIME

2:00 PM - 4:00 PM

VENUE

Seminar Hall, Sri Sairam College of Engineering

SESSION HIGHLIGHTS

- Introduction to Quantum Computing Fundamentals
- Quantum Bits (Qubits) and Superposition
- Quantum Gates and Circuits
- Quantum Algorithms and Computational Advantages
- Emerging Quantum Technologies and Real-world Applications
- Future Prospects and Challenges

LEARNING OUTCOMES

- Understand the core principles and paradigm of quantum computing
- Explore quantum technologies and current implementations
- Analyze the impact of quantum computing on future technologies
- Encourage research interests in quantum algorithms and systems

TARGET AUDIENCE

Students (All Years)

Faculty Members

Dr. A. Poonguzhali
HOD, ECE

Dr. B. Sadaksharappa
Principal

Dr. Sai Prakash LeoMuthu
Chairman & CEO
Sairam Institutions

IEEE ComSoc | IEEE | CAS | IEEE | IEEE Photonics Society | IEEE Signal Processing

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Dr. AHILA A

29/08/2026.

28/8/26
HOD