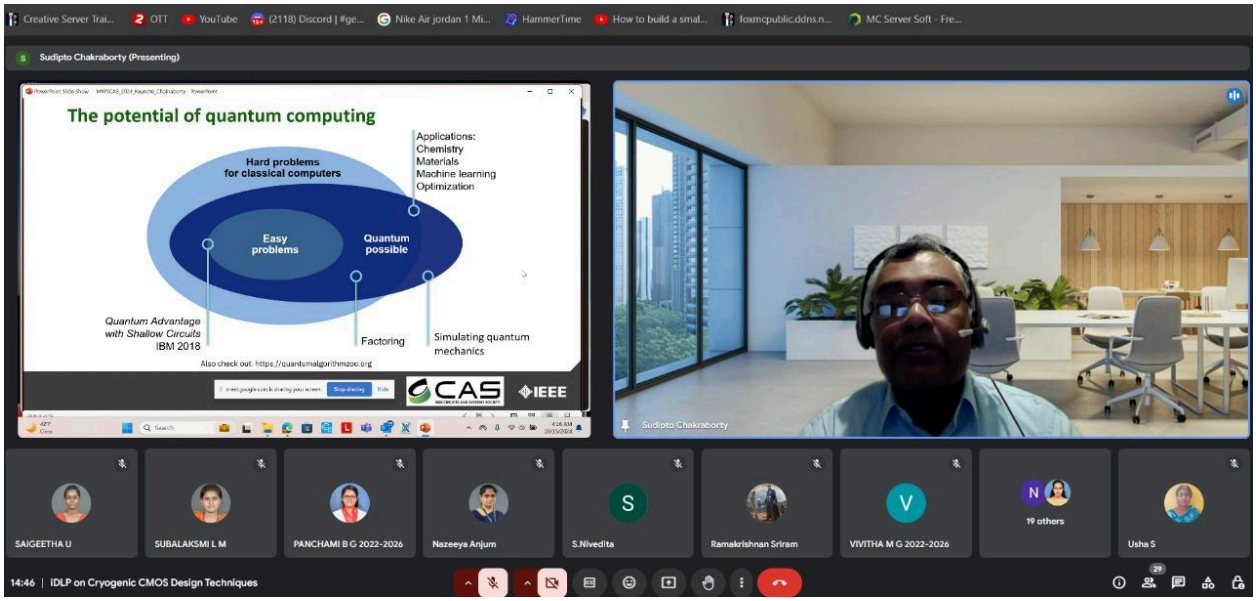
Industrial Distinguished Lecturer Program
by IEEE CAS Society (CASS) SBC60981AG

Date: 15.10.2024
Time : 02.30 PM to 04.00PM (UTC+05.30 Chennai)
Gmeet Link: https://meet.google.com/kbj-kzxk-jpo
Industrial Distinguished Lecturer: Prof. **Sudipto Chakraborty**

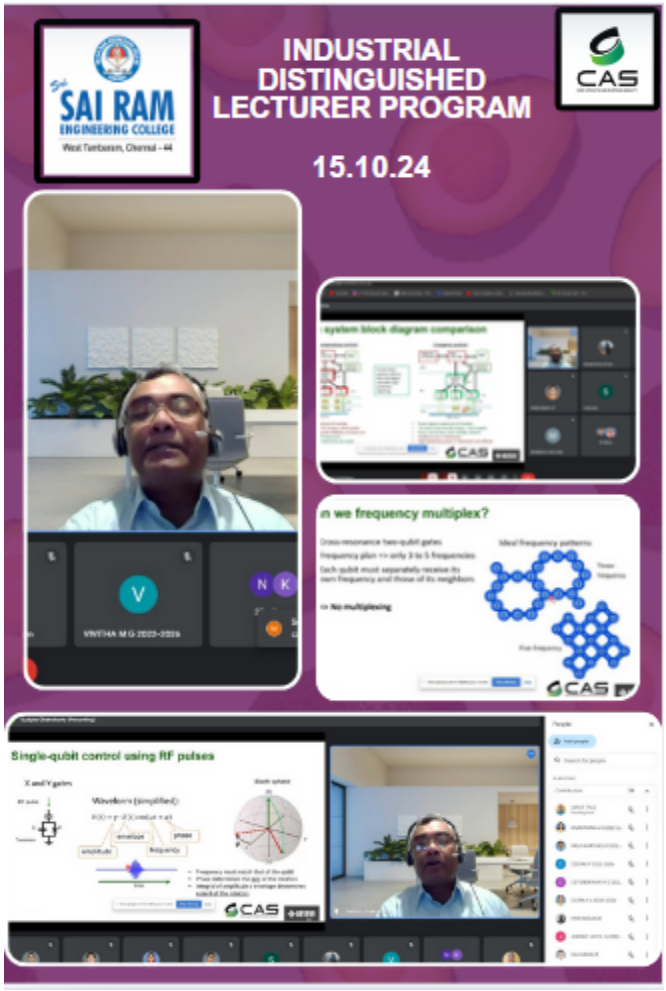
Title: **Cryogenic CMOS design techniques for scaled quantum computing systems**

On 15th October, we organized the Industrial Distinguished Lecturer Program through online mode. It started with the Welcome Address and Introduction of the Resource Person by **the student Members Ms.Vivitha and Mr.Ramakrishnan, IEEE Circuits and Systems Society, Sri Sairam Engineering College.** Next, the session was taken over by Prof. **Sudipto**. 40 participants attended this iDLP.

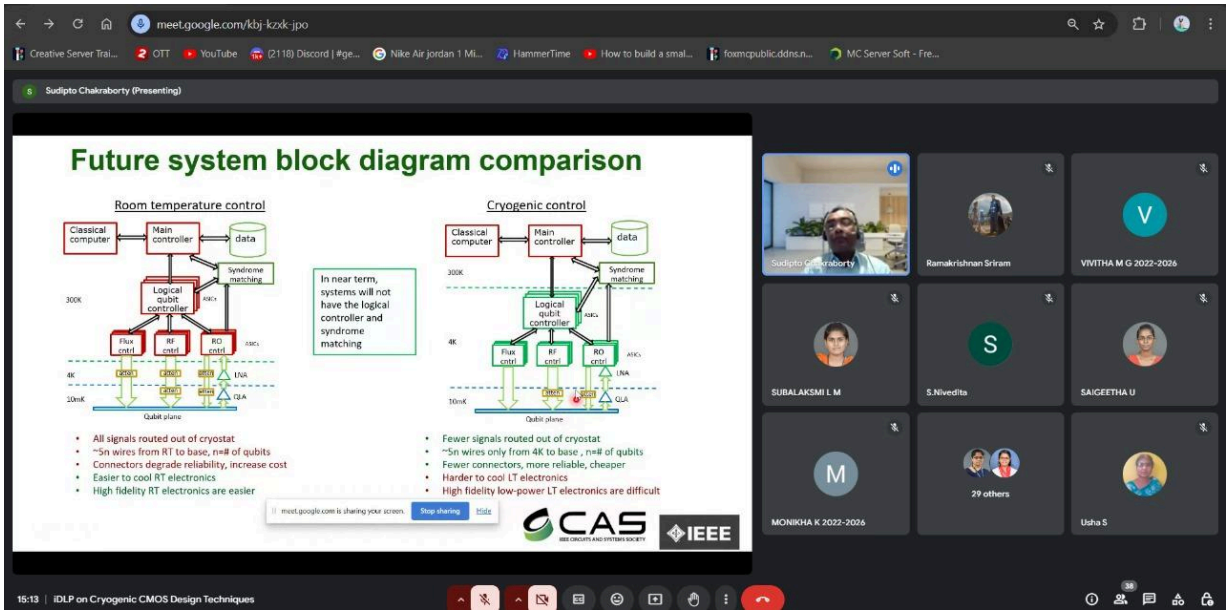


Professor explained that the Cryogenic CMOS (Complementary Metal-Oxide-Semiconductor) design techniques are critical for developing scalable quantum computing systems. These designs operate at cryogenic temperatures (close to absolute zero) to ensure compatibility with quantum devices like qubits, which require low thermal noise environments for stable operation. Cryogenic CMOS technology helps minimise power consumption and improve device performance at low temperatures. Key challenges include addressing the performance degradation of MOSFETs at cryogenic conditions and developing low-power circuits for qubit

control and readout. Optimizing interconnects and packaging techniques is essential to ensure seamless integration of quantum processors with classical control systems. Emerging techniques, such as leveraging subthreshold operation and novel transistor designs, aim to overcome these challenges and enable large-scale quantum computing systems.



He also answered the queries asked by our students. The vote of thanks was proposed by Ms. Saigeetha is a student member of Sri Sai Ram Engineering College.
We take this opportunity to thank our **CEO, Principal, and HOD-ECE for their support and guidance in successfully completing** this Industrial Distinguished Lecturer Program.



Number of Participants: IEEE Members:25

Non-IEEE Member:15

CASS Members:15