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CECS Seminar



"The Brave New (Quantum) World"

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Thursday, July 23rd
10:00-11:00 a.m.
Location: ISEB 1310

Abstract:

Major advances across all the design stack of Quantum computing – algorithm, software, and hardware – has brought us to a realm where, it is impossible to ignore the effect of Quantum computing in the world around us. We will discuss two aspects of Quantum computing in this talk. First, efficient circuit design and automation challenges – and how we can borrow some knowledge from classical computing for that. We will conclude this part with case studies on experimental Quantum computers. Second, the most important practical threat from a large-scale Quantum computer is on public-key cryptography. This is countered by developing and standardizing Post-Quantum Cryptography (PQC) primitives. We will talk about various PQC candidates and the perils of migration to a Quantum-safe environment.

Biography:

Anupam Chattopadhyay is currently an Associate Professor (with tenure) in College of Computing & Data Science, Nanyang Technological University (NTU). He received his B.E. degree from Jadavpur University, India, MSc. from ALaRI, Switzerland and PhD from RWTH Aachen in 2000, 2002 and 2008, respectively. His research in the broad domains of Electronic Design Automation, Cyber Security, Internet-of-Things (IoT) and Application-Specific Instruction-Set Processors (ASIPs) has been published in 200+ IEEE/ACM conferences and journals and has led to multiple spinoffs and technology transfers. Anupam has served in the TPCs of major EDA/VLSI conferences and edited a Springer Major Reference Work on Computer Architectures. Anupam's research has garnered several best paper awards, most recently in VLSI-SoC 2024 for Quantum adders, and in CHES 2025 for side-channel attack on PQC standard Kyber. He was awarded fellowship of Japanese Society for Promotion of Science (JSPS), fellowship of Intercontinental Academia and was awarded NTU Innovation and Entrepreneurship award in 2025.

Hosted By: Prof. Mohammad Al Faruque