

## SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING  
COLLEGE OF DESIGN AND ENGINEERING

Website: <https://cde.nus.edu.sg/ece>

**Area: Communications and Networks (CN)**

**Host: Prof Biplab Sikdar**

TOPIC	:	Mitigating IoT Threats: A Novel Approach to SWARM Attestation
SPEAKER	:	Ms Umara Hanif Graduate Student, ECE Dept, NUS
DATE	:	Friday, 21 March 2025
TIME	:	11:00AM-12:00PM
VENUE	:	Join Zoom Meeting <a href="https://nus-sg.zoom.us/j/8092137897?pwd=eXFwV0s2SW14VFBzYW5GVXJtdUtvQT09">https://nus-sg.zoom.us/j/8092137897?pwd=eXFwV0s2SW14VFBzYW5GVXJtdUtvQT09</a> Meeting ID: 809 213 7897 Passcode: 405792

### ABSTRACT

The increasing deployment of IoT devices necessitates scalable and efficient security mechanisms. This seminar introduces ENVOT, a novel attestation approach leveraging Variational Autoencoders (VAEs) and ensemble learning to detect anomalies with high accuracy while optimizing resource usage. By analyzing a small RAM footprint and combining statistical and frequency features, ENVOT enhances detection efficiency and resilience against security threats like firmware tampering and side-channel attacks. Our findings demonstrate significant reductions in verification latency and energy consumption, making ENVOT a promising advancement in IoT security.

### BIOGRAPHY

Umara Hanif is currently a PhD Year3 student in the Department of Electrical and Computer Engineering (ECE) in National University of Singapore (NUS). Umara received her B.Sc degree in Computer Science from UET Lahore, Pakistan in 2020. Her research interests include Hardware security, Network security and FPGA attestation.

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