
Defence Seminar

Seminar Title	: Dynamic Authentication for Internet of Things using Blockchain
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Venue	: Convention Hall, Department of CS Meeting Link : https://meet.google.com/rgh-cnqi-cko
Date and Time	: 25 Jul 2025 (4pm)
Abstract	: The rapid expansion of the Internet of Things (IoT) has created significant security challenges, particularly in ensuring secure communication and authentication across diverse applications, from smart cities to healthcare. This thesis proposes a comprehensive framework for authentication within IoT environments, leveraging fog computing and blockchain technology to address these challenges. The research introduces multiple authentication schemes across various IoT domains, such as the Internet of Vehicles (IoV) and the Internet of Medical Things (IoMT), using approaches that integrate cryptographic protocols and blockchain-enabled fog nodes to achieve secure, lightweight, and scalable solutions. This thesis reviews IoT authentication mechanisms, emphasizing blockchain's role in enhancing security. It proposes a fog-based model for mutual authentication and data integrity, with an ECC-based scheme tailored for IoV. Formal analyses using ProVerif and informal assessments confirm resilience against key attacks. A multifactor authentication protocol for IoMT is introduced, ensuring privacy and efficiency in medical applications. The study also addresses secure, efficient communication in IoD environments. Overall, this thesis contributes to developing secure, efficient, and resilient authentication schemes for IoT systems. The findings highlight the potential of blockchain and fog computing in enhancing IoT security and underscore the importance of adaptable solutions for various IoT applications. Future research directions include optimizing protocol scalability, integrating artificial intelligence for real-time threat detection, and advancing cryptographic methods tailored to IoT's unique constraints.

Keywords: *Authentication AVISPA Tool BAN Logic Biometric ECC RoR Model Smart card.*

All are Cordially Welcome