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Registration Seminar

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Seminar Title	: Enhancing Connectivity and Security in Wireless Networks using AI
Speaker	: Kalyanchakravarthi P ( Rollno : 919ee5115)
Supervisor	: Prof. Susmita Das
Venue	: New Seminar Room (EE 401)
Date and Time	: 18 Feb 2025 (5:00 PM)
Abstract	: <b>Abstract:</b> In wireless networks, data path selection refers to determining the optimal route for data packets to travel from a source to a destination through the network infrastructure. The need for data path selection in wireless networks arises from several factors and challenges, such as dynamic and variable network topology, signal interference and quality of service (QoS), load balancing, energy efficiency, security and privacy, and traffic engineering. Various routing algorithms and protocols have been developed for wireless networks to address these challenges and needs. However, these algorithms consider link quality, traffic load, and available paths to make informed decisions about each packet's most appropriate data path. The ultimate goal is to ensure efficient, reliable, and timely data delivery in wireless communication environments. Capturing, storing and processing data taken from different devices, which are valuable sources of information, has become more challenging. Introducing AI into data path selection for ad-hoc networks can help overcome several challenges including Dynamic Topology Changes, Routing Overhead, Energy Efficiency, Congestion and Load Balancing, Security Threats, Scalability and QoS. On the other hand, AI techniques provide powerful tools for enhancing data path selection in Wireless Sensor Networks by optimizing decisions in complex and dynamic environments. Towards this, these techniques enable wireless networks to make more intelligent, context-aware, and adaptive choices for data transmission paths, improving network performance and efficiency. The experimental results indicate the application of machine learning (ML) algorithms to improve the efficiency and reliability of path finding in ad hoc networks. Based on the results obtained and the analysis carried out further to investigate better methods to select the secure and reliable data path for communication.