National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Advanced IoT-Based Pollution Monitoring: Harnessing Zephyr RTOS and AWS For Real-Time Data Management.
Speaker	: Boddula Kalyan Kumar
Supervisor	: Prof K K Mahapatra
Venue	: VLSI Lab
Date and Time	: 03 Jan 2025 (12.00 Noon)
Abstract	: The Internet of Things (IoT) technology has experienced significant growth, with IoT devices expected to impact every aspect of human life. Industrial growth and urbanization increased air pollution, posing health risks to the public. The public must take preventive steps to monitor characteristics like AQI (Air Quality Index), temperature, and humidity levels produced or discharged into the atmosphere. This paper presents the IoT-based pollution monitoring system with multiple sensors and wireless communication based on the benefits of IoT and Zephyr RTOS. The usage of RTOS for programming handles various processes in parallel. Amazon Web Services(AWS) cloud IoT core is the Cloud platform that analyses and visualizes data from multiple sensors, including GPS coordinates. This paper includes air pollution monitoring for the external and internal areas. It adds the feature of sending the monitored data to the cloud and loading it on the processor in typical aspects the pollutant parameters are displayed on (Thin Filmed Transistor) TFT Display. It offers a robust real-time pollution monitoring system with features that use RTOS and IoT communication for monitoring and taking preventive measures for health and well-being.