Design and Implementation of a Wireless IoT Accelerometer Using Arduino

This hands-on workshop will introduce participants to the design and implementation of a wireless IoT accelerometer using the Arduino Devkit (Uno R4 WiFi). The session will begin with an overview of the Arduino platform, covering its development environment, programming workflow, and code uploading process. Participants will then learn how to integrate essential hardware modules, including an accelerometer for motion sensing, a real-time clock (RTC) module synchronized via NTP for accurate timestamping, and an SD card module for local data storage. The built-in WiFi module will be used to establish internet connectivity and enable wireless data transmission. A key focus of the workshop will be on implementing a FIFO (First-In-First-Out) architecture to manage continuous data buffering and ensure orderly processing. By the end of the session, participants will have constructed a fully functional wireless sensing node and developed practical skills in embedded programming, hardware integration, and IoT system design for applications such as structural health monitoring and environmental sensing.

* **Accelerometer**
* **~~RF module~~**
* **Onboard Wifi**
* **RTC**
* **SD card**
* **FIFO**
* **~~FreeRTOS~~**