MALLA REDDY UNIVERSITY
(Telangana State Private Universities Act No. 13 of 2020 &
G.O.Ms. No. 14, Higher Education (UE) Department)
Maisammaguda, Kompally,
Medchal - Malkajgiri District
Hyderabad - 500100, Telangana State.
mruh@mallareddyuniversity.ac.in
www.mallareddyuniversity.ac.in

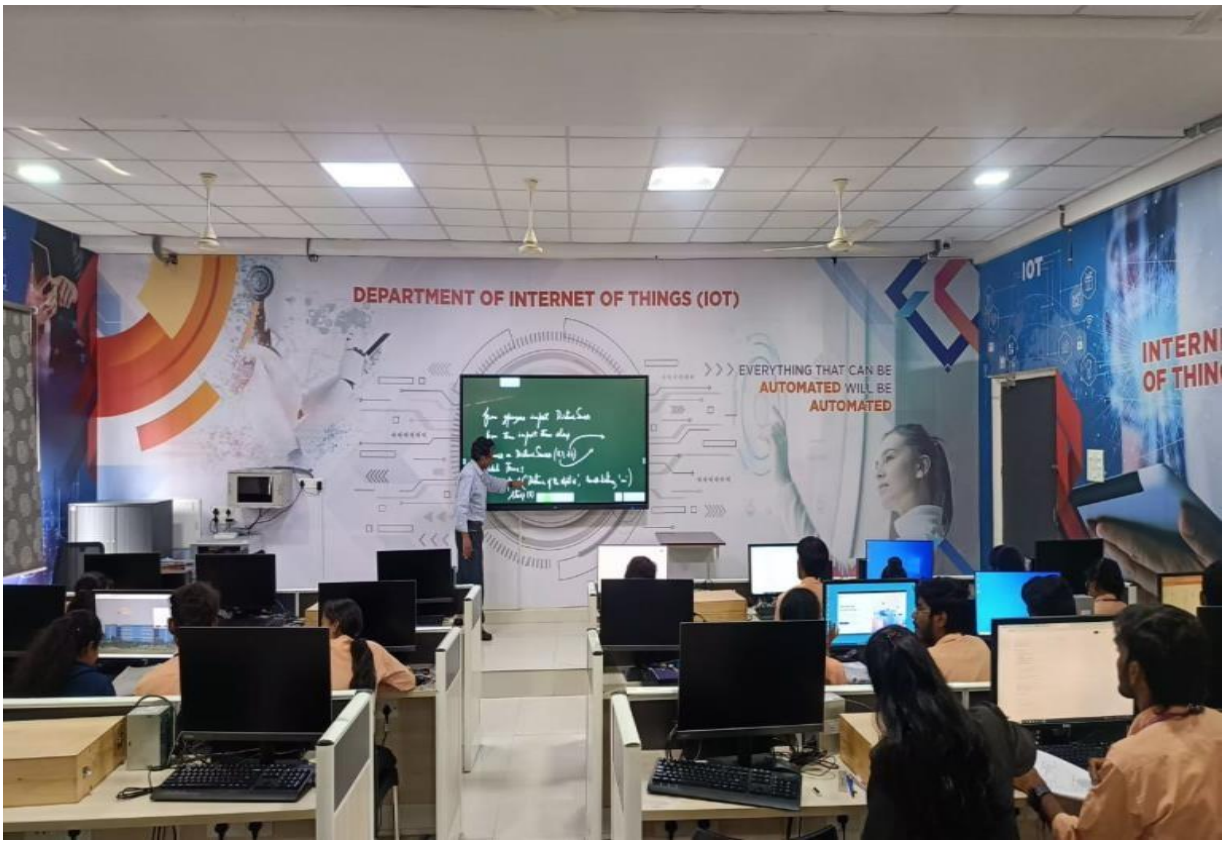
DEPARTMENT OF INTERNET OF THINGS

IOT SENSORS AND DEVICES LAB

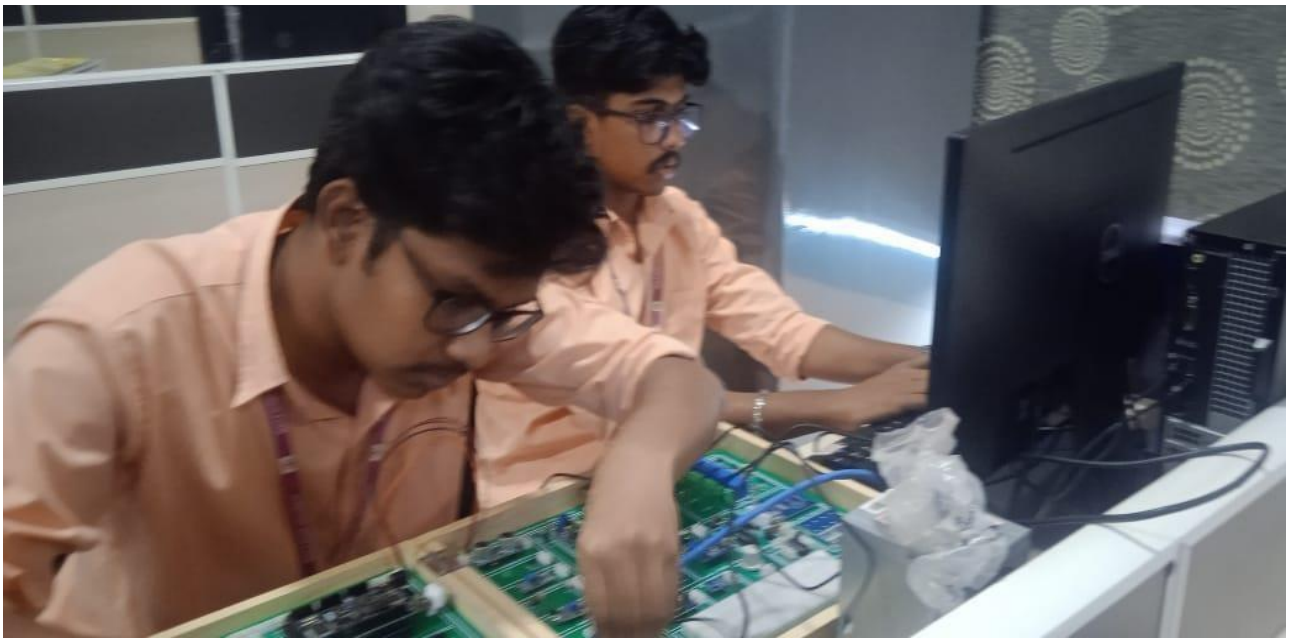
OBJECTIVE: The **IoT Sensors and Devices Lab** is designed to provide students with hands-on experience in understanding, interfacing, and programming IoT sensors and devices. The primary objectives are:

1. Familiarizing students with different types of sensors and actuators.
2. Learning techniques for acquiring, processing, and transmitting sensor data.
3. Building IoT-enabled systems by integrating hardware and software components.
4. Exploring real-world applications of IoT in smart homes, healthcare, agriculture, and industrial automation.

PHOTOS:







LAB OUTCOMES:

1. **Sensor Interfacing:**
   - Learn to interface sensors like temperature, humidity, motion, and light sensors with microcontrollers.
2. **Data Acquisition and Processing:**
   - Understand how to capture, process, and transmit data from sensors to cloud platforms.
3. **IoT Communication Protocols:**
   - Explore protocols like MQTT, HTTP, and CoAP for seamless communication between devices.

4. **Microcontroller Programming:**
    - Program microcontrollers like Arduino, Raspberry Pi, and ESP8266 for IoT applications.
5. **IoT System Design:**
    - Build end-to-end IoT solutions for real-world problems, integrating sensors, actuators, and cloud platforms.

Lab Infrastructure

Room Capacity: Adequate for handling practical sessions for IoT applications.
Purpose: Provides a comprehensive environment for hands-on learning and experimentation with IoT devices, sensors, and cloud platforms.

Equipment Details

S.No	Equipment Name	Count	Description
1	Computers	48	Processor:Intel i5 12th gen 12400 2.50Ghz Installed RAM: 16gb DDR4 3200MHZ SSD :- 256 GB x-64 based PC System 64-bit operating system Operating Systems: Windows 10
2	Smart Digital Board	1	Smart Board with Internet Connection Audio System with cordless mic
3	Universal IOT Trainer Kits	24	Universal IOT Trainer kit has • Arduino Mega, • ESP8266 & Raspberry Pi Various on-board Sensors • DHT11 • PIR • Ultrasonic sensor, • Hall effect • LDR • sound sensor • IR sensor • Switches • Gas Sensors etc Various onboard Actuators • LEDs • Servo Motor • Relay modules • LCD etc On Board Peripherals

Software/Cloud Platforms

S.No	Name	Description
1	Arduino IDE	Used to develop IoT applications for Arduino-compatible boards.
2	Python IDLE	Programming platform for developing IoT applications using Raspberry Pi.
3	Arduino IoT Cloud, ThingSpeak, Blink Cloud, Node-RED	Open-source cloud platforms for data storage, analysis, and action.
4	Local Area Network (LAN)	Ethernet and Wi-Fi routers for seamless device communication and internet access.

This infrastructure is equipped to support a wide range of IoT experiments, fostering a practical understanding of hardware, software, and cloud integration for real-world IoT applications.

COORDINATORS:

The lab is coordinated by a dedicated team of faculty members who ensure the smooth conduct of lab sessions:

- **Dr. M.V.N.Srujan Manohar**
- **Mrs. B. Swetha**