



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

L.B. REDDY NAGAR, MYLAVARAM
N.T.R DISTRICT, ANDHRA PRADESH – 521230



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Organized by



LBRCE ACM
STUDENT CHAPTER

Group ID : 193274



ROBOTIC PROCESS
AUTOMATION CLUB
LBRCE



INSTITUTION'S
INNOVATION
COUNCIL

(Ministry of HRD Initiative)

5-Day

HANDS-ON WORKSHOP ON

INTERNET OF THINGS (IoT)

USING

RASPBERRY PI PICO W,

MICROPYTHON,

FIREBASE,

MOBILE & WEB APPLICATIONS



18/08/2026
TO
22/08/2026



VENUE
1F02



HACKATHON
ON 22/08/2026

SHOWCASE YOUR IDEAS
AND WIN
EXCITING PRIZES!

LEARN • BUILD • CONNECT • DEPLOY



IoT Concepts
& Devices



Web Technologies
& Frameworks



Real-time Data
& Dashboards



Firebase Cloud
Integration



Mobile App
Development



Data Visualization
(Blynk & ThingSpeak)



Hands-on Projects
& Hackathon

5-DAY WORKSHOP SCHEDULE – KEY HIGHLIGHTS

DAY 1

18/08/2026



Raspberry Pi Pico W
& Sensor Interfacing
with MicroPython

DAY 2

19/08/2026



Wi-Fi Connectivity
& Firebase Cloud
Integration

DAY 3

20/08/2026



Mobile App Control
with MIT App
Inventor

DAY 4

21/08/2026



Web-based IoT
Monitoring & Control
using Firebase

DAY 5

22/08/2026



Mini Project Development
& Hackathon
(Demo & Prizes)

CONVENOR



Dr. S. NAGARJUNA REDDY
PROFESSOR & HEAD

FACULTY COORDINATORS



• Dr. B. SIVA RAMA KRISHNA, PROFESSOR
• Dr. R. ASHOK, ASSOCIATE PROFESSOR
• Mrs. K. ESWAREE DEVI, ASST. PROFESSOR
• Mrs. B. LAVANYA, ASST. PROFESSOR

Learn. Innovate. Integrate. Inspire.
BE PART OF THE FUTURE!



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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An ISO 21001:2018, 14001:2015, 50001:2018 Certified Institution
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

5-DAY HANDS-ON WORKSHOP ON INTERNET OF THINGS (IoT)

Using Raspberry Pi Pico W, MicroPython, Firebase, Mobile & Web Applications

Event Type	5-Day Hands-on Workshop
Date	18th August – 22nd August 2026
Venue	1F02
Organized By	LBRCE ACM Student Chapter; Robotic Process Automation Club (LBRCE); Institution's Innovation Council
Convener	Dr. S. Nagarjuna Reddy, Professor & Head, Department of CSE
Faculty Coordinators	Dr. B. Siva Rama Krishna, Professor; Dr. R. Ashok, Associate Professor; Mrs. K. Eswaree Devi, Asst. Professor; Mrs. B. Lavanya, Asst. Professor

1. OBJECTIVE OF THE EVENT

The primary objective of the “5-Day Hands-on Workshop on Internet of Things (IoT)” was to provide participants with practical exposure to IoT concepts, connected devices, real-time data acquisition, cloud integration, mobile and web-based monitoring, and application development. The workshop was designed around Raspberry Pi Pico W and MicroPython, with Firebase and application technologies used to connect, visualize, and control IoT systems.

The programme also emphasized learning by doing through sensor interfacing, Wi-Fi connectivity, cloud integration, mobile control, web-based monitoring, mini-project development, and a final hackathon. The stated theme of the workshop was “Learn - Build -Connect -Deploy.”

2. Learning Objectives of the Event

- Understand fundamental IoT concepts, devices, communication, and real-world applications.
- Interface sensors and IoT components with Raspberry Pi Pico W using MicroPython.
- Establish Wi-Fi connectivity and work with real-time IoT data.
- Integrate IoT systems with Firebase Cloud for data storage, synchronization, monitoring, and control.
- Develop mobile application interfaces for IoT control using MIT App Inventor.
- Develop web-based IoT monitoring and control applications using Firebase.
- Understand real-time dashboards and data visualization, including Blynk and ThingSpeak-based approaches.
- Apply the acquired skills in mini-project development and demonstrate an IoT solution through a hackathon.

3. Workshop Scope and Major Topics

IoT Concepts & Devices: Foundations of connected devices and IoT applications

Raspberry Pi Pico W: Sensor interfacing and embedded IoT development

MicroPython: Programming and control of IoT hardware

Wi-Fi Connectivity: Connecting Pico W-based devices to network services

Firebase Cloud: Cloud integration, real-time data and device/application interaction

Mobile App Development: IoT control using MIT App Inventor

Web Technologies: Web-based IoT monitoring and control

Data Visualization: Real-time dashboards and platforms such as Blynk and ThingSpeak

Mini Projects & Hackathon: Application-oriented development, demonstrations and prizes

4. Description of the Event

The five-day programme was structured progressively, beginning with hardware and sensor interfacing and moving toward cloud connectivity, mobile applications, web monitoring, and project/hackathon demonstration.

Day	Date	Key Highlight
Day 1	18-08-2026	Raspberry Pi Pico W & Sensor Interfacing with MicroPython
Day 2	19-08-2026	Wi-Fi Connectivity & Firebase Cloud Integration
Day 3	20-08-2026	Mobile App Control with MIT App Inventor
Day 4	21-08-2026	Web-based IoT Monitoring & Control using Firebase
Day 5	22-08-2026	Mini Project Development & Hackathon (Demo & Prizes)

Day 1: 18-08-2026

- Introduction to IoT concepts, connected devices and the workshop workflow.
- Hands-on work with Raspberry Pi Pico W and sensor interfacing.
- Programming activities using MicroPython to acquire and process sensor data.

Day 2: 19-08-2026

- Establish Wi-Fi connectivity for IoT devices.
- Connect the IoT device environment with Firebase Cloud.
- Work with real-time data and cloud-based IoT communication.

Day 3: 20-08-2026

- Develop a mobile interface for IoT control using MIT App Inventor.
- Understand the interaction between a mobile application, cloud services and IoT devices.
- Apply application development concepts to an IoT control use case.

Day 4: 21-08-2026

- Develop web-based IoT monitoring and control using Firebase.
- Work with real-time data presentation and dashboard-oriented monitoring.
- Relate IoT data to web technologies and visualization approaches.

Day 5: 22-08-2026

- Develop and refine mini-projects based on the workshop learning.
- Demonstrate IoT solutions during the hackathon.
- Showcase ideas and participate in the project demonstration and prize-oriented activities.

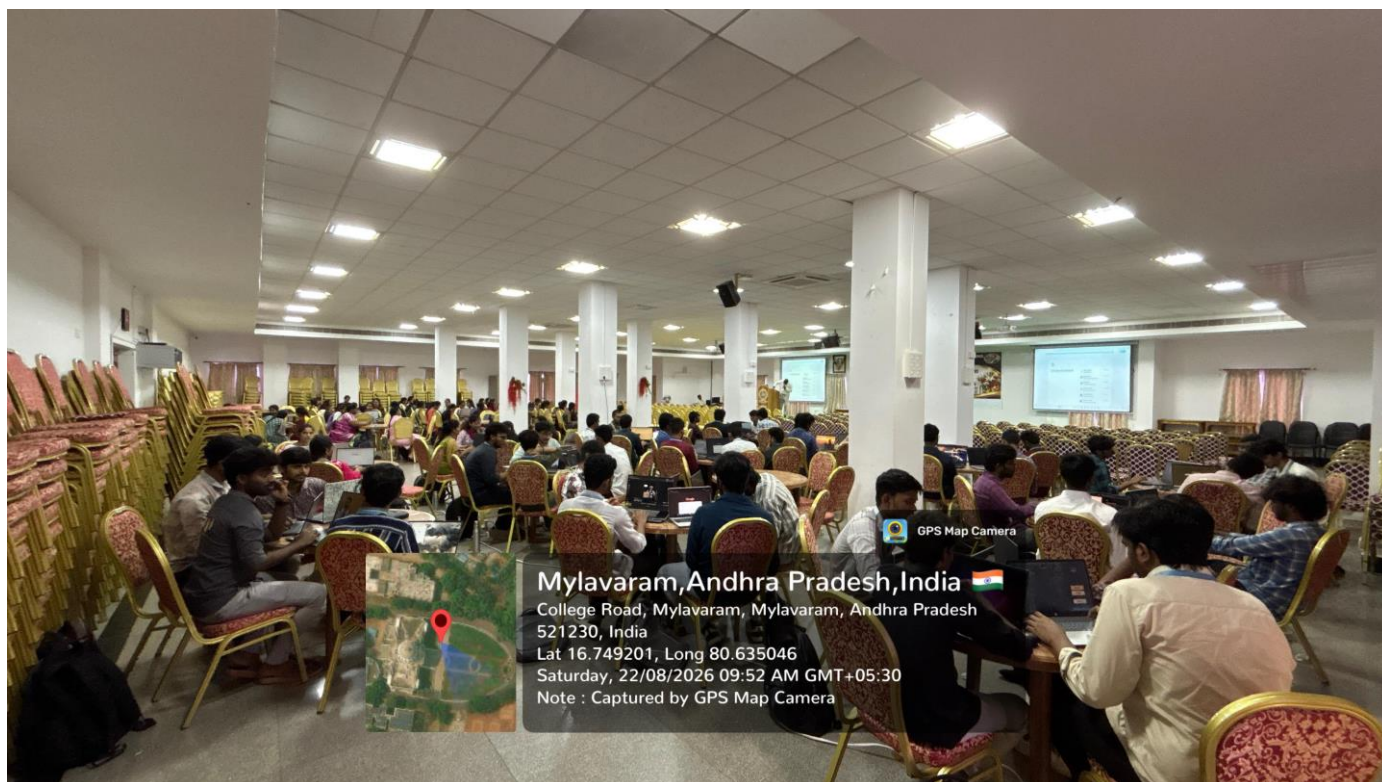
5. PHOTO DOCUMENTATION

The following photographs document participant engagement, recognition/certificate moments, and hands-on IoT hardware activities during the programme.



6. IMPACT ANALYSIS

- Enhanced participants' practical understanding of IoT concepts beyond classroom-level theory.
- Provided hands-on exposure to Raspberry Pi Pico W, sensor interfacing and MicroPython-based development.
- Improved understanding of Wi-Fi connectivity and cloud integration using Firebase.
- Introduced mobile and web application approaches for monitoring and controlling IoT devices.
- Strengthened understanding of real-time data, dashboards and IoT visualization.
- Encouraged application-oriented learning through mini-project development and a final hackathon.
- Promoted problem-solving, experimentation, teamwork and demonstration of working IoT ideas.
- Connected embedded hardware, cloud services and user-facing applications within an integrated IoT workflow.



7. FEEDBACK & SUGGESTIONS

- Continue conducting practical and hands-on IoT workshops to strengthen application-oriented learning.
- Provide additional lab time for sensor interfacing, debugging and device-to-cloud communication.
- Include more examples of real-time dashboards and IoT application deployment.
- Expand mobile and web application exercises with additional IoT use cases.
- Encourage participants to develop more mini-projects and prototype solutions for real-world problems.
- Continue hackathon-oriented activities to motivate innovation, teamwork and project demonstration.



8. SUGGESTIONS FOR FUTURE PROGRAMMES

- Conduct advanced sessions on IoT protocols, device security, edge computing and scalable cloud integration.
- Introduce more sensor and actuator combinations for multidisciplinary IoT prototypes.
- Provide structured project mentoring from idea selection through deployment.
- Include additional platforms and tools for IoT analytics, visualization and application integration.
- Organize periodic IoT project showcases, hackathons and innovation challenges.
- Invite industry practitioners for application-oriented demonstrations and career guidance in IoT.

కంప్యూటర్ సైన్స్ & ఇంజనీరింగ్ విభాగంలో ఇంటర్నెట్ ఆఫ్ థింగ్స్ పై ఐదు రోజుల హ్యాండ్స్-ఆన్ వర్క్‌షాప్ ప్రారంభం



మైలవరం వాస్తవ సయనమ్ ప్రతినిధి లక్ష్మిరెడ్డి బాలి రెడ్డి కాలేజ్ ఆఫ్ ఇంజనీరింగ్, మైలవరం, కంప్యూటర్ సైన్స్ & ఇంజనీరింగ్ విభాగం ఆధ్వర్యంలో, ఎల్ఐఆర్సీఈ ఏసీఎం స్టూడెంట్స్ ఛాప్టర్, రోబోటిక్స్ ప్రాసెస్ ఆటోమేషన్ క్లబ్ మరియు ఇన్స్టిట్యూషన్స్ ఇన్స్టిట్యూషన్స్ కౌన్సిల్ సహకారంతో “ఇంటర్నెట్ ఆఫ్ థింగ్స్ “పై ఐదు రోజుల (ఆగస్టు 18 నుంచి 22వ తేదీ వరకు) హ్యాండ్స్-ఆన్ వర్క్‌షాప్” ను నిర్వహించుచున్నారు ఈ వర్క్‌షాప్ కు శ్రీ ఎస్. ప్రదీప్ కుమార్, ట్రైనర్ & డైరెక్టర్, స్మార్ట్ హోమ్ & ఇండస్ట్రియల్ సొల్యూషన్స్, విజయవాడ వారు రిసోర్స్ పర్సన్ గా వ్యవహరించారు. ఈ సందర్భంగా ఆయన మాట్లాడుతూ, ఐటీ ద్వారా వాస్తవ ప్రపంచ సమస్యలకు వినూత్న పరిష్కారాలను రూపొందించవచ్చని వివరించారు. రాస్పబెర్రీ పై పికో డబ్ల్యూ, మైక్రోపైథాన్, ఫైర్బేస్ వంటి సాంకేతికతలపై విద్యార్థులకు హ్యాండ్స్-ఆన్ శిక్షణ అందించనున్నట్లు తెలిపారు. కంప్యూటర్ సైన్స్ &

ఇంజనీరింగ్ విభాగాధిపతి డా. ఎస్. నాగార్జున రెడ్డి మాట్లాడుతూ, ప్రస్తుత సాంకేతిక యుగంలో ఇంటర్నెట్ ఆఫ్ థింగ్స్ కీలక పాత్ర పోషిస్తోందని తెలిపారు. విద్యార్థులు ఐటీ పరికరాలు, ప్రోగ్రామింగ్, క్లౌడ్ ఇంటిగ్రేషన్ వంటి అంశాలను ప్రాక్టికల్ గా నేర్చుకోవడం ద్వారా పరిశ్రమ అవసరాలకు అనుగుణమైన నైపుణ్యాలను పెంపొందించుకోవాలని సూచించారు. డీన్ అకడమిక్స్ డా. ఎం. శ్రీనివాస రావు మాట్లాడుతూ, స్మార్ట్ హోమ్స్, ఇండస్ట్రియల్ ఆటోమేషన్, స్మార్ట్ సిటీస్ వంటి రంగాల్లో ఐటీ వినియోగం వేగంగా పెరుగుతోందని పేర్కొన్నారు. ప్రాజెక్ట్ ఆధారిత శిక్షణ ద్వారా విద్యార్థుల్లో సాంకేతిక పరిజ్ఞానం, సృజనాత్మకత మరియు ప్రాజెక్ట్ సాల్వింగ్ స్కిల్స్ అభివృద్ధి చెందుతాయని తెలిపారు. ఈ కార్యక్రమంలో కంప్యూటర్ సైన్స్ & ఇంజనీరింగ్ విభాగాధిపతి డా. ఎస్. నాగార్జున రెడ్డి, డీన్ అకడమిక్స్ డా. ఎం. శ్రీనివాస రావుతో పాటు సీఎస్ఈ విభాగానికి చెందిన అధ్యాపకులు మరియు విద్యార్థులు విద్యార్థులు పాల్గొన్నారు.

9. OUTCOME OF THE EVENT

- Participants gained practical exposure to IoT concepts, devices, sensor interfacing and Raspberry Pi Pico W.
- Participants developed familiarity with MicroPython for IoT hardware programming.
- Participants learned to establish Wi-Fi connectivity and integrate IoT systems with Firebase Cloud.
- Participants gained exposure to mobile application control using MIT App Inventor.
- Participants learned the workflow for web-based IoT monitoring and control using Firebase.
- Participants were introduced to real-time data visualization and dashboard-oriented IoT applications.
- The mini-project and hackathon activities provided an opportunity to apply workshop learning in practical prototypes.
- Overall, the workshop supported the development of practical IoT skills and encouraged participants to build, connect and deploy IoT-based solutions.

10. CONCLUSION

The 5-Day Hands-on Workshop on Internet of Things (IoT), conducted from 18th to 22nd August 2026 at LBRCE, provided a structured progression from IoT hardware and sensor interfacing to cloud integration, mobile and web applications, and project demonstration. The programme emphasized practical learning through Raspberry Pi Pico W, MicroPython and Firebase, culminating in mini-project development and a hackathon. The event therefore served as a useful platform for strengthening practical IoT knowledge and encouraging innovation-oriented project development.

Convener