

A Report on One Day Workshop
"Edge Computing in Practice: Hosting from Your Own Hardware"
Organized by
Department of Computer Science and Engineering -Artificial Intelligence & Machine Learning
in association with the Indian Society for Technical Education (ISTE)
on 28.10.2025



Report Submitted by: Mrs. N. Geethanjali, Assistant Professor, Department of CSE-Artificial Intelligence & Machine Learning.

Resource Person: Dr. Anantha Raman L, Assistant Professor, Dept of Mechanical Engineering, MITS.

Participants: ISTE Student Members from 3rd year CSE (AI and ML), and 3rd year CSE (Networks) (Count: 100)

Venue: Seminar Hall C

Date & Time: 28/10/2025, 2:00 PM

Mode of conduct: Offline

Report Received on 30.10.2025.

Mrs. N. Geethanjali gave a welcome address and then invited Dr. S. Padma, madam, to share a few words on Edge Computing in Practice: Hosting from Your Own Hardware. Dr. S. Padma, Associate Professor, Head of the department, CSE (AI and ML). She shared a few words on Edge Computing in Practice: Hosting from Your Own Hardware like This workshop is designed to provide our students and faculty with both **conceptual understanding and practical exposure** to how edge-based applications can be hosted using our own hardware resources. Then, she said that all students must actively participate in the activities during the session.

Then, Mrs. N. Geethanjali requested Dr. P. Ramanathan sir to share few words on Edge Computing in Practice: Hosting from Your Own Hardware.

Dr. P. Ramanathan, Principal, MITS, (Madanapalle) started by sharing insightful thoughts on the concept of Edge computing is an emerging technology that brings data processing closer to the source, enabling faster response, better efficiency, and improved security. It plays a vital role in today's world of IoT, artificial intelligence, and real-time applications.



Then, Mrs. N. Geethanjali requested resource person Dr. Anantha Raman L sir to share a few words on Edge Computing in Practice: Hosting from Your Own Hardware.

Dr. Anantha Raman L (Assistant Professor, Dept of Mechanical Engineering, MITS, Madanapalle) started the session by discussing Edge Computing in Practice: Hosting from Your Own Hardware. The main objective of the workshop was to provide participants with practical knowledge of **Edge Computing** concepts and demonstrate how to host and deploy applications using **personal or institutional hardware**. The session aimed to bridge theoretical concepts with real-world implementation, emphasizing **low-latency computing, data privacy, and efficient resource utilization**.

The workshop began with an introduction to the concept and evolution of Edge Computing, highlighting its significance in modern computing environments. The resource person explained how Edge Computing enables data processing closer to the data source, thereby improving performance and reducing dependency on centralized cloud servers.



The workshop titled “Edge Computing in Practice: Hosting from Your Own Hardware” was organized to provide participants with practical exposure to the rapidly emerging field of Edge Computing. With the exponential growth of data generated by IoT devices, sensors, and mobile applications, the need for faster, more efficient data processing closer to the source has become vital. This workshop aimed to demonstrate how computing workloads can be deployed and managed directly on personal or institutional hardware, reducing dependency on centralized cloud servers.

Example:

• Without Edge Computing

- Imagine Angallu with no shops.
- All people living in Angallu should go to Madanapalle frequently for all basic requirements
- This increases the road traffic and congestion exponentially.



• With Edge Computing

- Imagine Angallu has many shops with basic amenities.
- Most people will buy their requirements locally.
- Few people will travel for advanced requirements to Madanapalle.
- Less traffic and congestion.



Key topics covered during the session included:

- Fundamentals and architecture of Edge Computing
- Comparison of Cloud and Edge Computing models
- Setting up edge servers using local hardware or Raspberry Pi
- Containerization and virtualization techniques (Docker, Kubernetes)
- Hosting and monitoring applications on self-owned devices
- Security, scalability, and performance considerations in edge environments

Key Benefits:

Local Hosting & Control – Build and Run your own web servers, apps, or data centers on local hardware (e.g., Raspberry Pi, mini PCs, or on-prem servers).

Reduced Downtime – Services continue to operate even if cloud connectivity is lost.

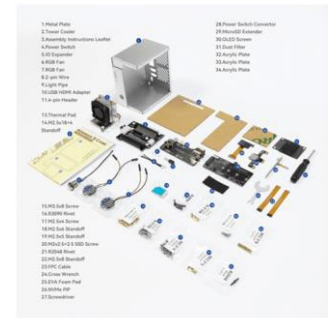
Faster Response – Edge nodes process data near users → lower latency and better real-time performance.

Improved Privacy & Security – Sensitive data stays on your hardware instead of public cloud storage.

Lower Costs – Avoid high cloud egress and storage fees by handling routine tasks locally.

Hardware Components

8. Pironman 5 case



The participants were engaged in hands-on demonstrations, where they learned to deploy and manage applications using lightweight edge servers. The session helped participants understand how real-time processing and localized hosting can enhance system efficiency.

Vote of thanks:

Mrs. N. Geethanjali thanked the resource person and presented a summary of the complete session. Then, on behalf of the department, she thanked our college management, Vice Chancellor Dr. C. Yuvaraj garu, Principal Dr. P Ramanathan garu, Vice Principal (Administration) C. Kamal Basha garu, and Head of the Department Dr. S. Padma garu for providing resources. Further, she thanked supporting faculty members, students, and non-teaching staff. Once again, she thanked the resource person for the wonderful talk.

Outcomes of the Workshop:

- By the end of the workshop, participants were able to:
- Understand the principles and advantages of Edge Computing.
- Deploy and host applications using their own hardware resources.
- Explore the use of open-source tools for edge deployment.
- Gain awareness of the role of Edge Computing in IoT, AI, and real-time systems.
- Acquire practical experience in managing distributed edge systems.

Sustainable Development Goals (SDGs):

1. **SDG 4 – Quality Education**
 - The workshop promotes **technical education and skill development** in emerging technologies like Edge Computing.
 - It enhances participants' **practical and research-oriented learning**, preparing them for future technological challenges.
2. **SDG 7 – Affordable and Clean Energy**
 - Edge computing helps in **optimizing energy consumption** by reducing data transfer and centralized processing loads, supporting energy-efficient computing practices.
3. **SDG 9 – Industry, Innovation, and Infrastructure**
 - The workshop encourages **innovation in computing infrastructure** and introduces participants to new technologies that can strengthen **digital and industrial systems**.
 - It fosters **innovation and technological research** relevant to Industry 4.0.
4. **SDG 11 – Sustainable Cities and Communities**
 - Edge computing supports smart city solutions such as **traffic management, waste monitoring, and public safety** systems by enabling real-time processing at the local level.
 - The workshop builds awareness of technologies that make cities more **efficient and resilient**.
5. **SDG 12 – Responsible Consumption and Production**
 - Hosting from local or personal hardware promotes **resource optimization** and **reduced dependency on large data centers**, contributing to sustainable computing practices.
6. **SDG 13 – Climate Action**
 - By improving energy efficiency and reducing carbon footprints associated with cloud computing, **edge computing contributes to environmental sustainability**.