A Report on
"One Day Workshop on IoT Applications"
Organised by Department of CSE-Artificial Intelligence &Machine Learning
on 26.09.2024

Submitted by: Mr. V. Sivaraman, Assistant Professor, Department of CSE – AI & ML
Resource Persons Details: Mr. M. Vamsi Krishna, Asst. Professor, Dept. of ECE; Mr. G. Mohammed Rafi, Asst. Professor, Dept. of ECE.
Participants: II Year CSE – Networks – 70 Students
Venue: EB202 & EB214
Mode of Conduct: Offline
Report Received on 04.10.2024

The "One Day Workshop on IoT Applications" is organized for CSE-Networks students on September 26, 2024 (Thursday) by the Department of Computer Science & Engineering AI & ML.

Welcome Address:

Mr. V. Sivaraman, Assistant professor, CSE – AIML department, Madanapalle Institute of Technology & Science (MITS), Madanapalle, gave a welcome address to everyone. The main objective of the workshop is to develop self-reporting devices that are able to interact in real time with users and each other. The workshop stimulated the students with insights of how to accelerate career and polish their abilities in the field of IoT & Sensors. The program also highlights the latest emerging trends and career opportunities in IoT area.

Keynote Address:

Dr. S. Padma, Associate Professor & Head, Department of CSE – AI & ML, Madanapalle Institute of Technology & Science (MITS), Madanapalle welcomed the resource persons with her keynote address. She motivated students by narrating IoT applications such as smart home, health monitoring and environment monitoring systems.

Dr. S. Rajasekaran, Professor & Head, ECE, MITS, Madanapalle interacted students explaining how IoT applications can enhance efficiency, improve safety and create smarter systems across various sectors. Additionally, he covered the working principle of IoT with sensor devices, Data Processing, Data Analysis and Connectivity. He inspired students to consider how innovation can flourish as technology develops.

Students were inspired by the speech of Dr. P. Ramanathan, Professor and Vice Principal (Academics), MITS. He highlighted the use of IoT apps to transform the environment into physical objects that are accessible through the internet. His speech included areas such as motion sensors, smart thermostats, energy monitoring, energy sensor and smart wearable devices.
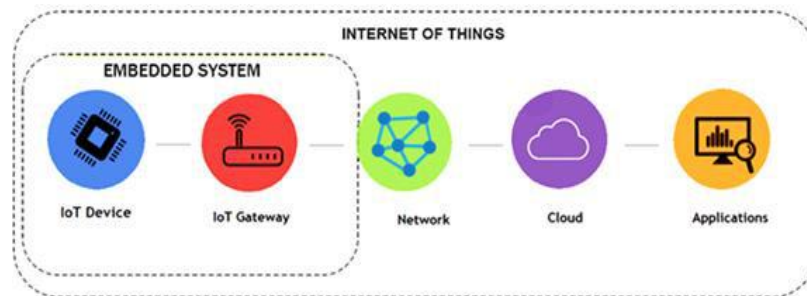
Resource Person Lecture:

Mr. M. Vamsi Krishna, Asst. Professor, Dept. of ECE, MITS, Madanapalle explained about the IoT components & its sensors.

The resource person shared the following points in the workshop

- The resource person highlighted the impact of IoT courses, components of IoT & IoT Sensors.
- IoT is the network of physical objects or "things" embedded with electronics, software, sensors and network connectivity, which enables these objects to collect and exchange data.
- In simple words, IoT is an ecosystem of connected physical objects that are accessible through the internet.

- It is also referred as Machine- to – Machine (M2M), Skynet IoT = Physical objects + Sensors Actuators & Controllers + Internet
- In IoT, "Things" can refer to a wide variety of devices such as
  o Automobile with built in sensors
  o Heart monitoring implants
  o Biochip transponders on farm animals etc.,

These devices collect useful data with the help of various existing technologies and then flow the data between other data devices.

- He then explained about components of IoT
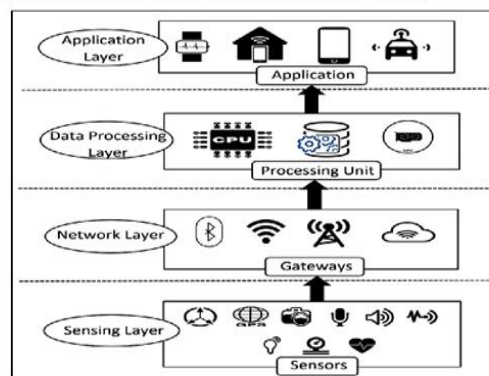
- In later session the resource person discussed about technologies of IoT.
  o RFID
  o WiFi IEEE 802.11
  o Barcode e QR Code
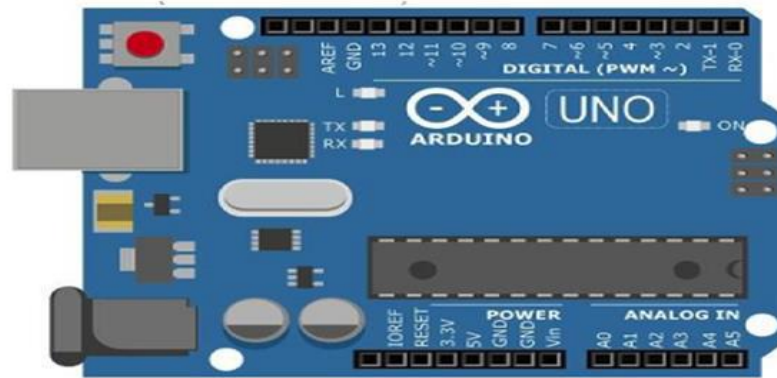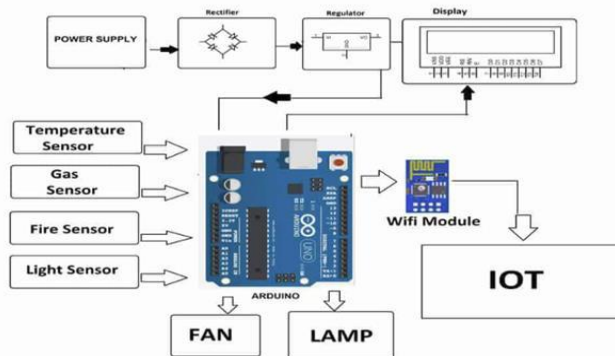 o ZigBee IEEE 802.15.4
  o Sensors & Smart phones

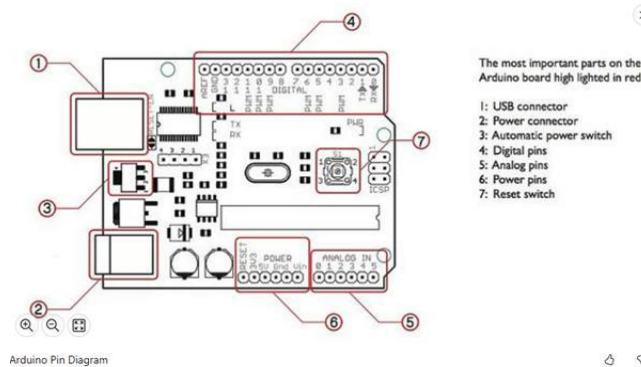## Making IoT with Arduino:

- The "Internet of Things" (IoT) is a huge network of connected electronic devices that collect data and share it without any help from a person.
- Arduino has a wide range of development boards, from 8-bit to 32-bit microcontrollers, including those that work with Bluetooth and WiFi.
  - Arduino is the perfect platform for starting the first Internet of Things project.
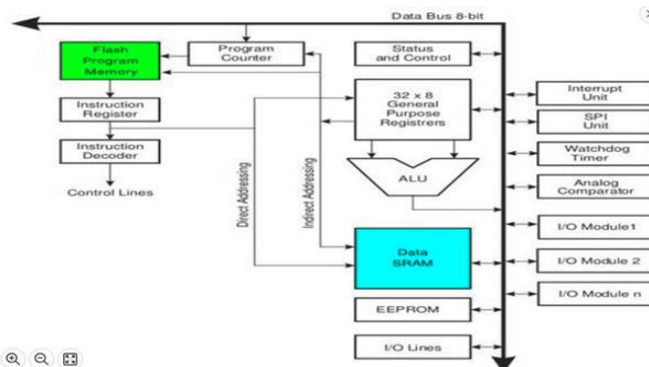
IoT based Control of Fan and light using Arduino:

Arduino Technology:

The most important parts on the Arduino board high lighted in red:

1: USB connector
2: Power connector
3: Automatic power switch
4: Digital pins
5: Analog pins
6: Power pins
7: Reset switch

Arduino Pin Diagram

Arduino Architecture:

- The resource person Mr. G. Mohammed Rafi explained about the Arduino architecture, pin diagram & different pins present in the board.
- CSE – Networks students visited the Lab which is present in EB – 202 for hands-on session.
- The resource person explained how the boards will work when a code is compiled through the personal computer.
- Students learned how to use boards, executed the code through the computer & analysed the working of sensors through Arduino.

Vote of Thanks:

The workshop formally concluded with a vote of thanks delivered by **Mr. V. Sivaraman, Assistant Professor**, **Department of CSE – AI & ML**. He expressed sincere gratitude to resource persons for the time to share his expertise. He extended his thanks   to the HoD, Principal, and the Management for their support to conduct the workshop.

Outcomes:

At the end of Workshop, students will be able to
- Understand the sensors that gather real-time data from the environment (e.g., temperature, humidity, motion), providing the foundational information for analysis.
- Understand the actuators that enable devices to perform actions (e.g., opening a valve, adjusting a thermostat) based on the data collected, facilitating automated responses.
- Understand the Arduino technology - the open-source electronics platform that combines hardware and software to facilitate the creation of interactive projects.
- Understand the user interfaces (apps, dashboards) provide an intuitive way for users to interact with IoT devices, monitor performance, and control settings remotely.
- Analyze Connectivity options (Wi-Fi, Bluetooth, cellular, etc.) allow devices to send and receive data, enabling real-time interaction.