



# **Sunbeam Institute of Information Technology**

## **Pune and Karad**

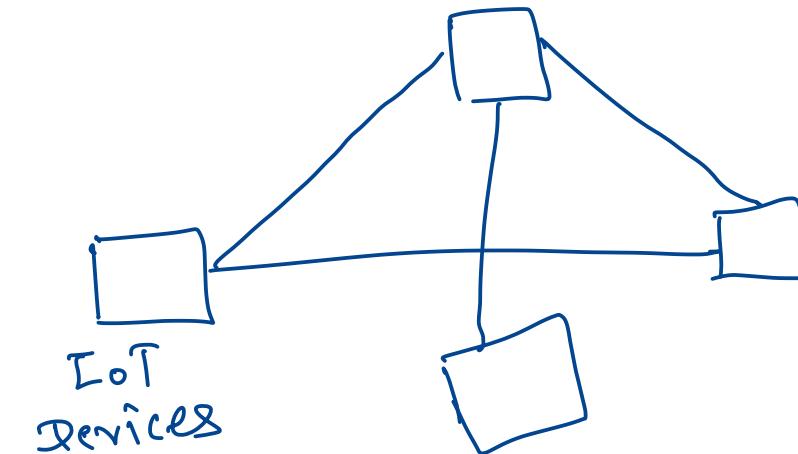
### **Module – Internet of Things (IoT)**

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# Internet of Things (IoT)

- **Internet of things (IoT)** describes devices with sensors, processing ability, software and other technologies that connect and exchange data with other devices and systems over the Internet or other communication networks.
- **Internet of Things (IoT)** refers to a network of physical devices, vehicles, appliances, and other physical objects that are embedded with sensors, software, and network connectivity, allowing them to collect and share data.





# Internet of Things (IoT) Technologies

Several technologies come together to make IoT possible.

- **Sensors and actuators**

- Sensors are devices that can detect changes in the environment, such as temperature, humidity, light, motion, or pressure.
- Actuators are devices that can cause physical changes in the environment, such as opening or closing a valve or turning on a motor.
- Automation is possible when sensors and actuators work to resolve issues without human intervention.

- **Connectivity technologies**

- To transmit IoT data from sensors and actuators to the cloud, IoT devices need to be connected to the internet.
- There are several connectivity technologies that are used in IoT, including wifi, Bluetooth, cellular, Zigbee, and LoRaWAN.

- **Cloud computing**

- platforms provide the infrastructure and tools that are needed to store and analyze this data, as well as to build and deploy IoT applications.





# Internet of Things (IoT) Technologies

Several technologies come together to make IoT possible.

- **Big data analytics**

- data generated by IoT devices need to use advanced analytics tools to extract insights and identify patterns.
- These tools can include machine learning algorithms, data visualization tools and predictive analytics models.

- **Security and privacy technologies**

- Technologies such as encryption, access controls and intrusion detection systems are used to protect IoT devices



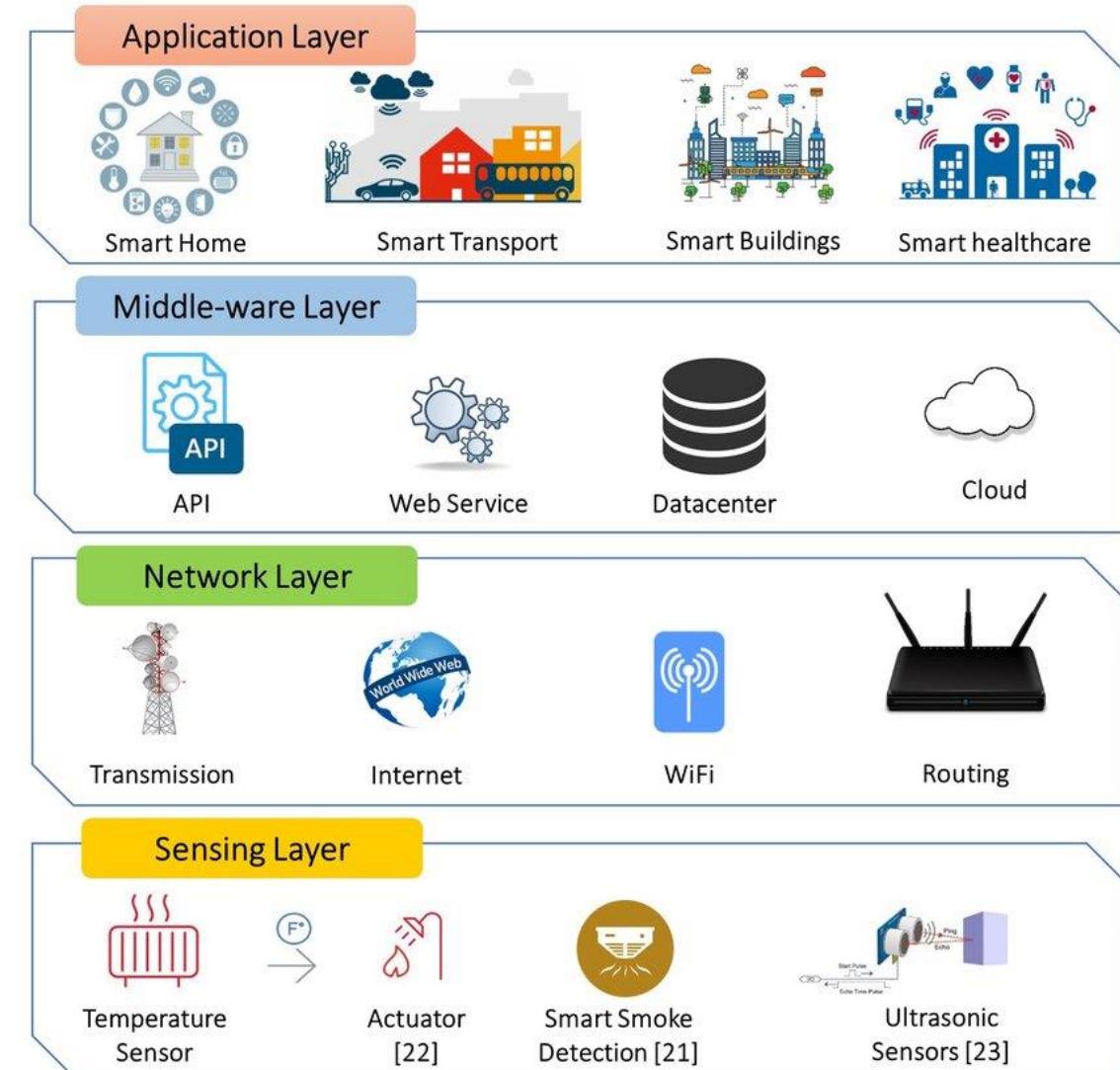
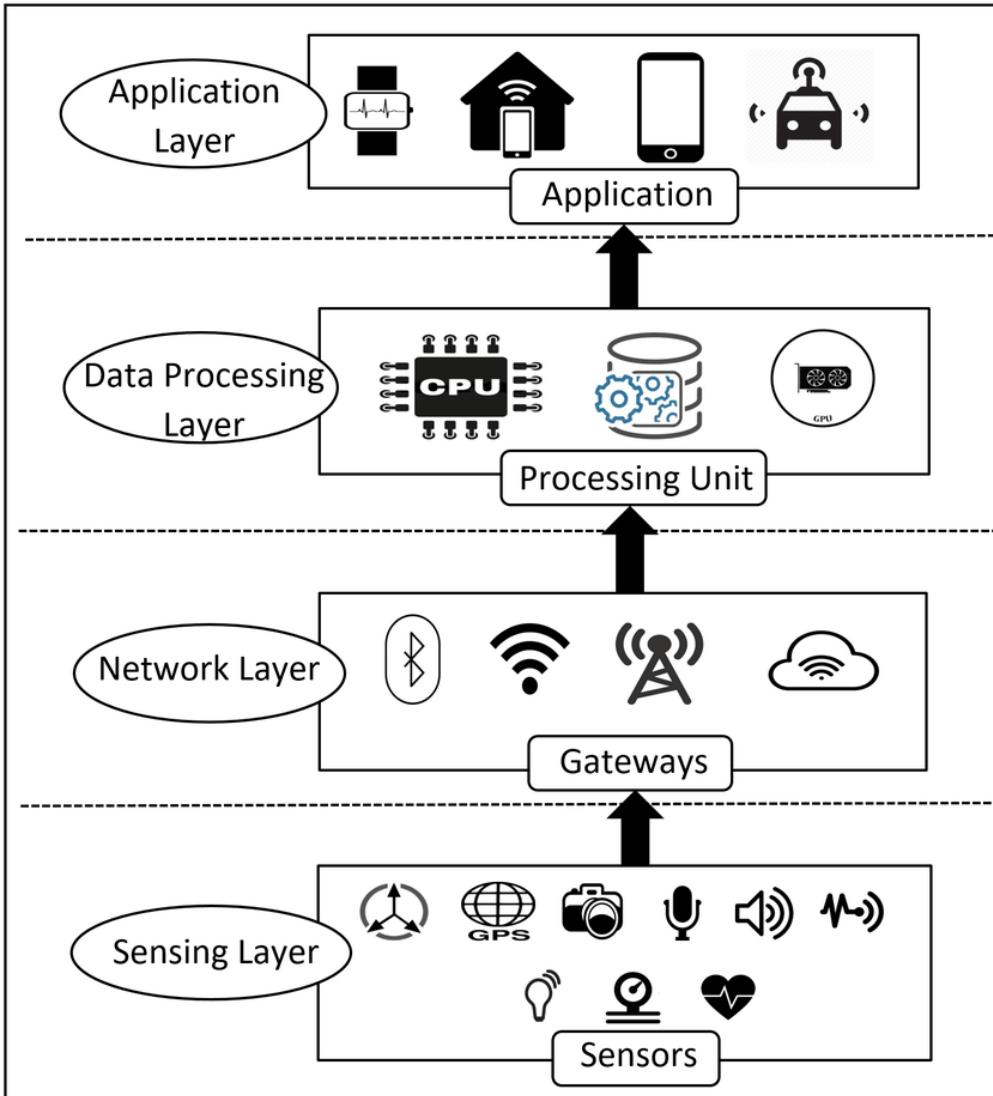


# Internet of Things (IoT) Architecture

- **Perception/Sensing Layer**
  - Perception refers to the physical layer, which includes sensors and actuators that are capable of collecting, accepting, and processing data over the network.
  - Sensors and actuators can be connected either wirelessly or via wired connections.
- **Network Layer**
  - This layer contains Data Acquiring Systems (DAS) and Internet/Network gateways.
  - It is necessary to transmit and process the data collected by the sensor devices.
  - This layer allows these devices to connect and communicate with other servers, smart devices, and network devices.
- **Processing Layer**
  - The processing layer is the brain of the IoT ecosystem.
  - Data is analyzed, pre-processed, and stored here before being sent to the data center
  - Data is accessed by software applications that both monitor and manage the data as well as prepare further actions.
- **Application Layer**
  - User interaction takes place at the application layer, which delivers application-specific services to the user.



# Internet of Things (IoT) Architecture





Thank you!!!

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