INTRODUCTION

The Internet of things describes physical objects that are embedded with sensors, processing ability, software, and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks.

An IoT ecosystem consists of web-enabled smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environments. IoT devices share the sensor data they collect by connecting to an IoT gateway or other edge device where data is either sent to the cloud to be analyzed or analyzed locally. Sometimes, these devices communicate with other related devices and act on the information they get from one another. The devices do most of the work without human intervention, although people can interact with the devices. The connectivity, networking and communication protocols used with these web-enabled devices largely depend on the specific IoT applications deployed. IoT can also make use of artificial intelligence (AI) and machine learning to aid in making data collecting processes easier and more dynamic.

COMPONENTS OF IOT

IoT has 4 components that describe the functioning of most of the IoT systems:

1. **SENSORS/DEVICES**

   These devices connect with the external physical environment. They collect the data from the outside changes and store this information. A sensor **senses** the changes in the surroundings and notes down these changes. This property makes sensors extremely useful in IoT applications.

   For example, there are sensors in your phone such as GPS which track your location and guide you to your destination. Cameras sense human movement to click pictures. Try finding out other sensors in your mobile devices

2. **CONNECTIVITY**

   Cloud servers process the data that sensors collect. But, in order to do so, they require platforms. **Connectivity** is the connection among all IoT devices in any given **Iot ecosystem** including sensors, routers, gateways, user applications and platforms.

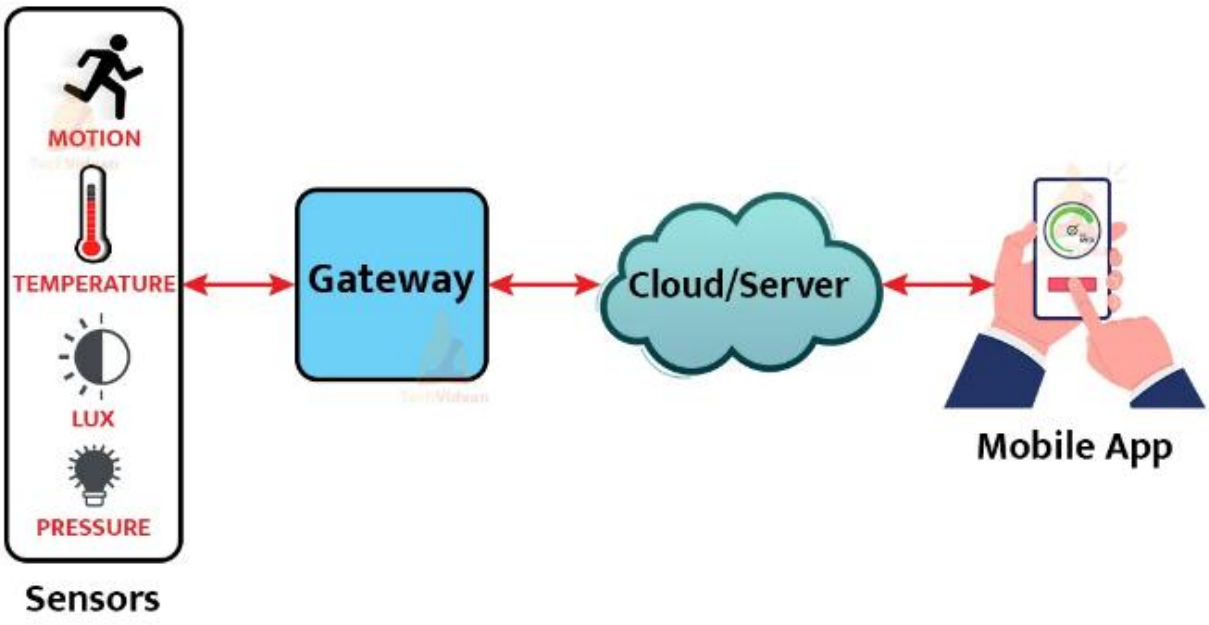
   Connectivity allows you to take **control** over the entire IoT system and hence it is crucial to select the right kind of connectivity path. Wifi, Bluetooth, Zigbee, cellular networks such as LTE or 5G all offer connectivity to transmit large amounts of data.

3. DATA PROCESSING

Once the entire data transmits to the platform, functions are performed on this data in order to process the data and send back necessary outputs. In other words, **data analysis** must take place. This step is the most important step in IoT technologies. The analysis must happen at a quick rate to provide better results.

4. USER INTERFACE

This is the final stage. This stage is in direct contact with the **user** and it gives the output that users see on their screen. Every IoT device has a different interface as each device has a different task or purpose to accomplish.



WORKING

IoT devices have **sensors embedded** into them. These sensors are capable of sensing their surroundings. The devices store the information in some form of data. These devices include appliances such as mobile phones, coffee machines, microwaves, geysers, fire alarms, Air conditioners, cars and so on. The sensors embedded in these devices constantly emit data about the surrounding and on the working information of these devices. IoT serves as a platform to dump all the data collected by these devices. IoT platform includes cloud servers and large databases. The IoT platform acts on the data. It integrates and processes the information. Further, the platform analyses the data thoroughly to gather important details. The platform then sends back instructions based on the data provided. Finally, the data aggregation is shared with other devices for better performance in the future. It is also done for improved user experience.