
Impact of IOT (Internet of Things) on our Lives

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Abstract:

The Internet of Things (IoT) plays an important role in our everyday lives, as it can minimize a person's physical activities. The Internet of Things connects every point on the planet, allowing it to gather and distribute data over a wireless network without the need for humans. In today's digital world, the Internet of Things is critical in reducing a person's reliance on machines. This method makes the world, as well as their time, a lot easier. Every second that we are relying on the Internet of Things in our everyday lives, the Internet of Things is seen as a basic human need in this century.

Keywords: Internet of Things; IoT applications; Properties; IoT problems; IoT challenges.

Introduction:

IoT is a network that allows us to connect everyday objects that are embedded with electronics software or sensors to the Internet, allowing us to connect and share data between them. The Internet of Things (IoT) refers to the Internet-based interconnection of computing devices embedded in everyday objects, allowing them to send and receive data. The Internet of Things is all about data. IoT allows devices to be sensed while still being controlled remotely,

allowing for further contact between the physical world and computers. This will evolve with minimal human intervention. Overall efficiency and precision from how we react to how we behave, the Internet of Things is influencing our way of life. You can control air conditioners with your Smartphone and Smart Cars, which will show you the shortest way, or your smart watch, which will monitor your daily activities. The Internet of Things (IoT) is a vast network of linked devices. It's most likely your laptop, electrical equipment, Pecos barcode sensor, traffic lights, or virtually everything else you come across in your daily life. Previously, we used to work from morning to night using just our hands, which took a long time. Currently, we're using new technology, materials, and a Smarter System to make painting easier. IoT plays a critical role in the education system, as well.

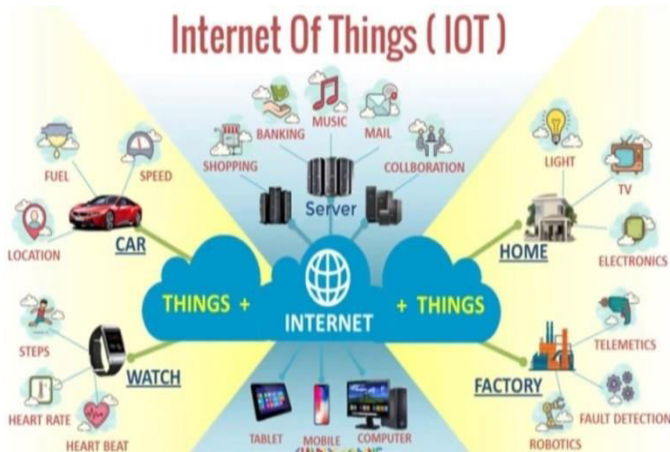


Fig 1: IoT in our daily Lives

Why do we need IoT?

For instance, there's a patient at home who's on continuous life-assist and whose condition is monitored by a fitness tracking device. Let's say there's a problem with his fitness, let's say there's an irregularity with his heartbeat or his blood sugar is low, or there's some fluid in their lap, or, as of now, since the device in the cloud is connected to a health facility, these statistics can be passed on to the health facility. With regard to the patient's current situation, we made them aware of what problem the patient is having, allowing them to dispatch an ambulance right away to return the patient to the health facility. Medications are one option after the patient has been picked up and returned to the health facility. It's possible that a beneficial medicine exists. There will also be a working theatre available in the event of an emergency. There may be doctors on standby who have all of the patient's records, as well as all of the information about the patient's current situation, which, in turn, brings a lot of transparency and saves a lot of time and effort. In today's situation, there may be someone tracking this patient's fitness. The hospital can call for an ambulance, and in the meantime, once the

ambulance arrives, they take the patient and return them to the hospital. There are several checkups that must be carried out because the doctors aren't fully aware, and there are numerous tests that must be carried out, which results in several visits to the hospital. If a machine can do it, so this is exactly where we will end up. The IOT is essentially increasing human interdependence by allowing us to interact, contribute, and collaborate with gadgets in our surroundings.

IoT Applications:

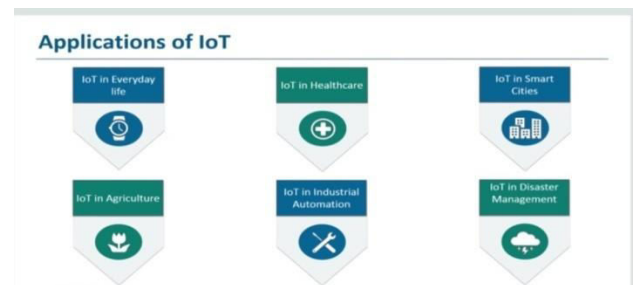


Fig 2: Applications of IoT

Despite the fact that the Internet of Things connects millions of domain names and hundreds of thousands of devices every day, there are some domain names that I find more exciting than others.

1) IoT in Everyday Life:

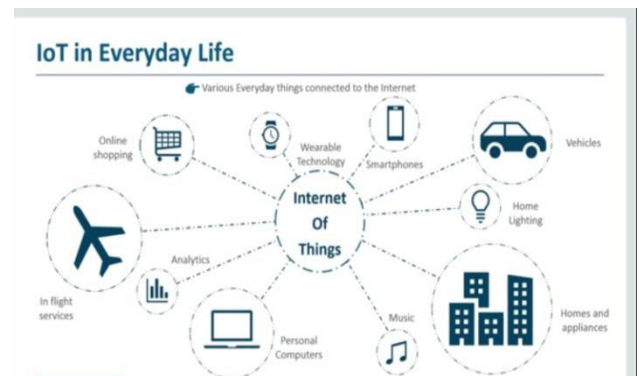


Fig 2.1: IoT in Everyday Life

Consider your home's domestic appliances, such as your air conditioner. Now you return home and

switch on your air conditioner, waiting for it to reach a comfortable temperature, say 25 degrees Celsius. What if your air conditioner received a message when your vehicle was five minutes away, and it became linked to a cloud with a dashboard containing all of the relevant information, such as the location of your vehicle, the outside temperature, and the temperature you preferred in your room? Your air conditioner could turn on earlier than you arrive and create an environment that you want.

2) IoT in Healthcare:



Fig 2.2: IoT in Healthcare

By now, most of you have probably heard of smart medicine dispensers, which are simply smart devices that store, distribute, and manage your prescription medications for you. Now, though this is only a small portion of a much bigger picture, one or more of the following three issues afflict healthcare and drug practices in general.

- No real-time evidence is accessible.
- There seem to be no smart care devices.
- Standard analytics are inappropriate.

In the long run, the Internet of Things strengthens healthcare providers and improves patient

satisfaction, cutting the unsustainable massive cost of medical instruments.

Solutions supplied through IoT in healthcare:

- IoT gives you real-time information,
- Makes your device intelligent,
- Gives you far better analytics.

3) IoT in Smart Cities:

One of the most widely discussed aspects of IoT in smart cities is that a smart town solution may be quite specific to that particular town. The challenges in Mumbai are significantly different from the difficulties in Delhi, even when it comes to global issues like,

- Waste disposal Management
- Water Resource Management
- Housing Issues
- Pollution



Fig 2.3: IoT in Smart Cities

The most practical method to make the town smarter is to become unique in your approach to its issues. One such issue that is frequent in most city towns is a smart instrument like a traffic cam, that can display a vehicle jams, incidents, rains, and many others and discuss that believability to a gateway.

4) IoT in Agriculture:

We have a area which is maximum omitted regardless of the significance it holds is Agriculture.

The following are the few issues confronted because of guide exercise in agriculture:

- Inaccuracy in farming techniques.
- Labour and instruction expenditures.
- Physical observation inefficiencies.

Solutions provided via way of means of IoT in Agriculture:

- Precision Farming
- Smart Irrigation
- Smart Greenhouse

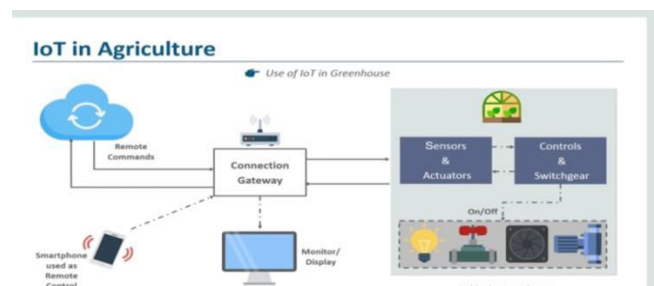


Fig 2.4: IoT in Agriculture

5) IoT in Industrial Automation

We have every other domain in which IoT may want to show to be a game-changer that is one of these fields in which each quicker tendencies in addition to the first-class of merchandise the critical elements for a better go back on investment. But there are nonetheless issues that want to be addressed this quarter they are:

- Inconsistency in Data Entry
- Labor and Staff Training Cost

- Time Consumption in Production and Reporting.
- Lack of Security

Solutions for Industrial Automation:

- Quality Assurance and Supply Chain management.
- Pricing and Labour-Efficient
- Efficiency and Time-Saving.
- Tracking and security.

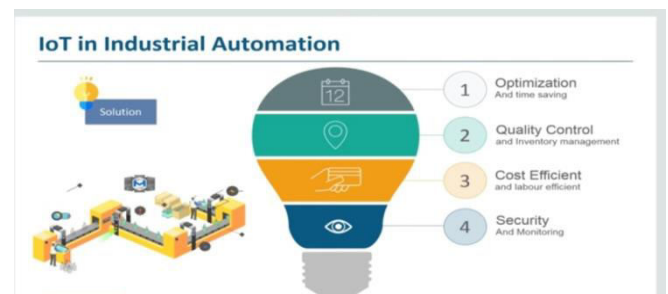


Fig 2.5: IoT in Industrial Automation

6) IoT in Disaster Management:

Due to high population density, inadequate evacuation facilities, and vulnerability to extreme weather incidents, the Internet of Things cannot prevent disasters from occurring, but it can certainly assist in disaster preparedness and resilience.

- High population density is a problem in developed countries.
- A lack of adequate evacuation infrastructure
- Experiencing Severe Weather Situations

The solution is given by IoT in Disaster Management:

- Prediction
- Preparedness
- Response

➤ Recovery

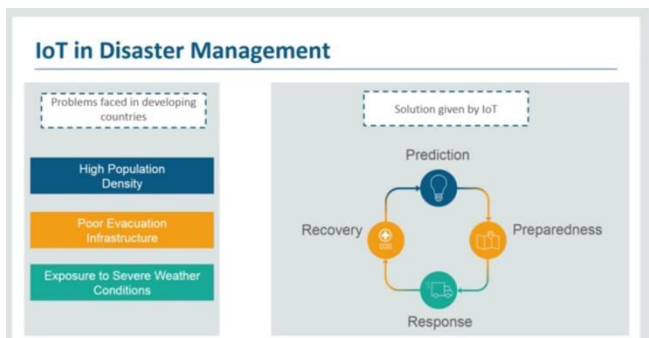


Fig 2.6: IoT in Disaster Management

Characteristics of IoT:

- 1) **Connectivity:** In the Internet of Things, things should be linked to networks, and connectivity is an essential character or necessity for an IoT INFRA, Anybody, ANYWHERE, ANYTIME – Connectivity should be guaranteed in the IoT INFRA, because nothing makes sense without it.
- 2) **Intelligence and Identity:** Extracting information from generated data is critical; sensors produce data, which must be properly disrupted! Every IoT device has its own unique identity. This identification may be used to keep track of equipment and, on occasion, to inquire about its condition.
- 3) **Scalability:** Every day, the number of connected devices to the IoT INFRA increases. As a result, an IoT setup would be able to cope with the rapid growth. Furthermore, the amount of data generated will be enormous, and it will need to be properly handled.
- 4) **Versatile and Self-Adaptive (Complexity):** IoT devices can dynamically adapt to evolving situations, for example, a surveillance camera. It may be required to work in a variety of

lighting conditions (Morning, Afternoon & Night).

- 5) **Architecture:** Architectural homogeneity is impossible in nature. It should be hybrid, allowing many manufacturers' products to connect to the IoT network.
- 6) **Security:** Having got all things connected to the internet, personal data is under threat. Hence, securing the data is a major challenge. Not only data security, the equipment getting involved in IoT networks is huge. Hence, persona safety is also to be considered privacy with protection.

Challenges of IoT:

1. Security Challenges
2. Design Challenges
3. Development Challenges

Security Challenges of IoT:

- **Lack of Encryption:** While encryption is an excellent way to prevent hackers from gaining access to data, it is not often used. It's also one of the most urgent security concerns in the IoT.
- **Inadequate Testing and Updating:** IoT makers are more motivated to produce and market their gadgets as rapidly as possible as the number of IoT devices grows, without giving security and care. The majority of these devices and IoT products are not adequately tested or updated, making them vulnerable to hackers and other security issues.
- **Brute-forcing and the Use of Default Passwords:** Because of weak credentials and login information, all IoT devices in the vicinity are vulnerable to password hacking

and brute-forcing. Any organisation that uses factory default credentials on their devices exposes their business and properties to a brute-force attack, as well as their customers and sensitive data.

- **IoT Malware and Ransomware:** As the number of devices grows, so does the amount of malware and ransomware. Ransomware employs encryption to effectively lock users out of a variety of devices and platforms while also stealing sensitive data.
- **IoT Botnets Targeting Crypto-currency:** IoT botnet staff has the ability to exploit data privacy, which could pose a significant risk to an open crypto-market. Malicious hackers might jeopardize the exact value and development of crypto-currencies.

Design Challenges:

- **Battery Life is Limited:** Issues in packaging and integration of small size chip with low weight and lesser power consumption.
- **Increased Cost and Time to Market:** The cost of embedded systems is extremely limited. Designers must also address the design-time issue in order to get embedded products to market on time.
- **Security of the System:** Cryptographic algorithms and security procedures must be used to develop and execute systems that are robust and reliable.

Development Challenges:

- **Connectivity:** Connected devices that provide useful front-end information are extremely valuable. When IoT sensors are used to track process data and supply information, however,

poor connectivity becomes a problem.

- **Cross-Platform Compatibility:** Despite the heavy operating system, device updates, and bug fixing, it is a challenge for IoT application developers to ensure that the device and IoT platform provide the best performance.
- **Data Collection and Processing:** In IoT, development data play an important role but what is more crucial here is the processing or usefulness of stored data.
- **Lack of Skill Set:** All of the above development problems can only be overcome if a qualified resource is assigned to the IoT application development.

Conclusion:

The Internet of Things will evolve into the Web of Things, affecting every part of our lives. It helps to achieve lot of things easily by reducing human effort. Many applications will spark ethical discussions. Although security is improving the total security is impossible. Detection, Response and Recovery should be priority.

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