

# FUTURISTIC TRENDS IN IOT

## Abstract

Future is demanding IoT, Machine Learning and Artificial Intelligence at present rising like anything and slowly it is calming down. Future is This document gives formatting instructions for authors preparing papers for publication in the Proceedings of an IEEE conference. The authors must follow the instructions given in the document for the papers to be published. You can use this document as both an instruction set and as a template into which you can type your own text.

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## Author

**Mulumudi Suneetha**  
Research Scholar  
Department of Computer Science &  
Engineering,  
Rayalaseema University, Kurnool &  
Associate Professor  
Vignana Bharati Institute of Technology  
Hyderabad, Telangana, India.

## I. INTRODUCTION

IoT is a setup of physical devices with software and sensors embedded, to exchange data over internet. It is fact that from home appliances to cars whatnot many physical objects can embed with software and sensors under the control of IoT. Here are top 5 IoT trends.

1. IoT in the field of Cyber Security
2. Advanced Technology in the field Healthcare
3. More opportunities with 5G technology
4. Data Management demand in the specialized way
5. The Enterprise Buyer bundled IoT

## II. IOT DEVICES – IN THE CYBER SECURITY LANDSCAPE

A Network of networks interconnected to work as a big unit is an IoT the Internet of Things means Devices or “ things “ connected and embedded with software and sensors to interchange data, over internet with other Devices.

IoT devices are ranging from all home appliances and sensor devices using artificial intelligence and machine learning technologies. The following are the applications of IoT.

1. Health monitoring field
2. Smart devices
3. Home appliances
4. Self-Driving cars
5. Smart Grid Technologies
6. Retail IoT
7. Agriculture
8. Industrial applications
9. Fitness trackers
10. Tourism and hotel management



**Figure 1:** IoT applications

There are many reasons for the weakness of the IoT Devices

1. As the software which is using for Iot devices cannot be updated frequently and mostly it is a open source.
2. Another important weakness is man made errors,
3. Default setting of the IoT devices, due to poor defaults it is easy for hackers.
4. IoT devices cannot use two factor authentications.
5. The Cloud usage allows hackers to gain the confidential information access like passwords, bank account sensitive information.

**1. The Main Cyber Security Vulnerabilities of Iot Devices:** Vulnerabilities are weaknesses in a system that allow an intruder to access unauthorized data or doing denial of service DoS attacks. Vulnerabilities are the weaknesses in hardware or software system. Vulnerabilities in the policies and procedures. There are number of factors which lead to weakness in the IoT system

- Software design flaws including human factors and software complexity.
- Technical vulnerabilities due to human weaknesses as starting a project without a plan and poor communication between users and developers.
- Lack of resources, skills and knowledge.
- Failing to manage and system control.
- User privacy is an important issue in IoT devices. Privacy in data collection and data security.

**2. The Biggest IoT Security Risks and Challenges:** IoT is one of the fastest developing technology and the same time there are many risks and challenges need to face. The following are some the main points

- Software and firmware vulnerabilities
- Insecure communications
- Data leakage from IoT systems.
- Malware risks
- Cyber Attacks.

### III. ADVANCED TECHNOLOGY IN THE FIELD HEALTHCARE

At present there is a rapid development in the healthcare field using IoT. Doctors can easily examine the patient, home services, monitoring the patient from the home etc. The situations where the doctors directly cannot help there IoT is helping. Artificial Intelligence and IoT are playing a main role in medical field. In coming days IoT can help in developing patient oriented customized devices in medical care. IoT can make the medical field more efficient, cheaper. It can help in maintain more accurate. IoT can help the patients in facilitating hassle-free visiting, easily getting treatment and getting access to more information.

**1. IoT Revolutionizing Health Care Industry:** Now IoT is penetrated in the lives of both Doctors and Patients. The few applications of IoT is listing down.

- Electrocardiograms
- Glucose Monitors
- Thermometers
- Ultrasounds etc.,

All devices become connected and letting patients track their health easily. This is essential in the situations where doctor monitoring is mandatory.

**2. IoT Health Care Companies and Start ups:** Many familiar companies are competing in developing medical appliances. Increasing collaborative development and research.



Fig 2. The four stages of IoT Solutions

We can see the four stages of IoT solutions.

Stage 1: All Medical Devices in connection with IoT using for the patients.

Stage 2: Data Pre processing

Stage 3: Data Storing and easily can retrieve the information of a particular patient.

Stage 4: Analysis of the patient report based on the observations.

#### IV. MORE OPPORTUNITIES WITH 5G TECHNOLOGY

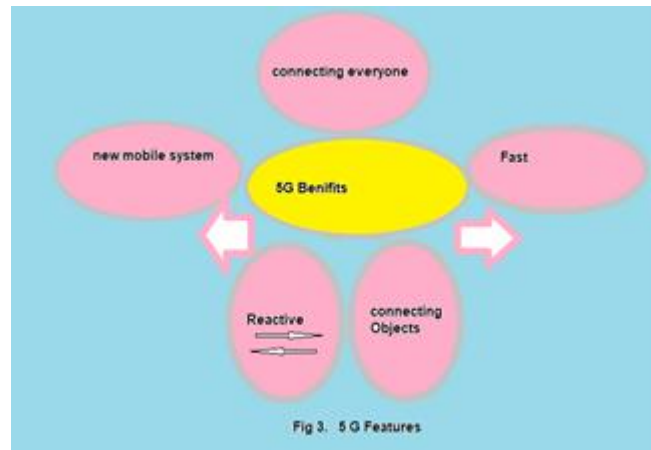
5G is the fifth generation wireless technology, at present shaking the field of mobile communications. In the past we experienced upgrading technology from 2G to 3G and 3G to 4G, finally now 5G. Enabling may be critical for IoT applications with 5G, but many can survive with 4G and connecting with LTE-M, NB-IoT and low power wide area networks such as LPWA.

**1. The Benefits of 5G for IoT:** The role of IoT will be in peak, can be used almost in every Industry. The things can be connected with new improve business services and processes. From smart utilities to automotive almost every industry will depend on IoT by minimizing the wastage of water, controlling electricity, time management, controlling fluctuating supply. We can observe the key benefits of 5G as follows.

- Mobile broadband enhancement with high speed.
- Low latency ultra-reliable communications.
- Energy saving innovative services for all devices and Industries.
- At present 2 G is upgraded and replaced with 5G

Longer battery life, better indoor coverage such as parking areas, cellars, underground. Efficient simpler hardware and enhanced bandwidth. 5G is the first mobile

network which is designed to work with IoT. This design considered assisted driving, Delivery robots, public safety services, automated services, Drone applications etc. 4G and 5G available for future upto 30 years both technologies can be experienced with for longer time and dynamic spectrum and mobile IoT are the example for this co-existence. Mobile technology like 5G can give direct relationship with the companies and customers. This may create a new channel for extra profits to the companies.



Wifi networks connectivity can well work with 5G. An IoT Device connecting to Wifi is not user friendly and sometimes may break. The secure connection can be provided only by the mobile IoT technology that will continue over the device life time. Fig 3 shows clearly all the features of 5G.

All operators with 5G will offer dual mode wherever LTE is the primary access for 5G mobiles. The lower frequencies used by the 4 G is more efficient and no need of extra value to use 5G. If required 5G devices can be redirected to a new radio network with 5G. The usage of both 4G and 5G is 5G non standalone standardized by 3GPP the mobile network standard.

## V. DATA MANAGEMENT DEMAND IN THE SPECIALIZED WAY

IoT is top data contributor of the massive volume across the world, and needs learner approaches to Data management. Iot data management can help in understanding in pattern utilizing in decision making cycle in the development of a product design. Efficient strategies of data management can detect business errors, analysing performance getting fast access to metrics. This helps in spotting the areas where the requirement improvement in the existing systems which results in better user experience. The following are few present challenges to the IoT Data Management.

- Data Volume
- Heterogeneity in the Data
- Data flow control
- Creating large Data histories
- Data auditability
- Meta Data Management

The Data requirements are scalability, Data Integration and Data gravity. Figure 4. Shows clearly Requirements of Data.

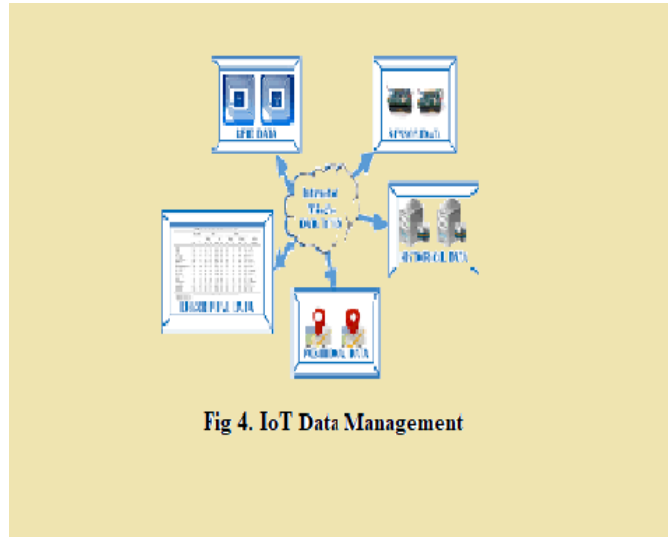


Fig 4. IoT Data Management

The following are some advantages of Iot in the field of Data management.

- IoT offers a simplified business model for the development of better products.
- User friendly, as per the requirements of the user needs concentrate on the future development.
- Determination of wear and Tear.
- Efficiency
- Accuracy
- Streamlining
- Customer satisfaction and much more.

**1. The Enterprise Buyer Bundled IoT:** If the average enterprise buyer interested to invest in IoT business has to face many challenges Initially. The IoT commercial off the shelf products are available in the public marketplaces for the specific capabilities. For general use it can be replace with certain systems and components when the industry needs.

## VI. CONCLUSIONS

Whichever Technology without internet not must effective. Whatever updated technology that can be easily embed with IoT. The upcoming days are demanding Iot to make the things simple and manageable. IoT can handle the world on its finger tips. The entire world is now under the control of IoT.

## VII. ACKNOWLEDGMENT

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