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Internet of Things (IoT)

Mrs.Harshada.S.Rayate[1], Mrs.Amrutha.A.Hippalgaonkar[2], Miss.Tejashree.L.Nawale[3]
[1,2]*K.K.Wagh Institute of Engineering Education and Research*
Hirabai Haridas Vidyanagari, Amrut-Dham, Panchavati, Nashik, Maharashtra 422003
[3]*Government Polytechnic College, Samangaon,Nashik, Maharashtra 422214*

Abstract - As communication is essential for human beings, communication has also become crucial for machine, physical devices or items embedded with circuits, software, censors. Kevin Ashton has coined the term "Internet of things" and established MIT's Auto-ID center, a global research network of academics laboratories focused on RFID and IoT. These are the devices or items provided with ability to transfer data over network without human-human, human to machine interaction. Using various technologies data is collected and exchanged autonomously within devices. It has numerous implementations in various fields like smart cities, health, security, traffic monitoring, transport and logistics, daily life and demotic. IoT will have massive impact on data, inventory tracking and management, speed, accessibility, efficiency and productivity.

Keywords - RFID, smart cities, monitoring, transport and logistics, demotic.

I. INTRODUCTION

Internet of Things helps device or items to represent themselves via embedded system using internet. This forms connectivity with the other devices helping them to capture, receive, and exchange data .These devices can be controlled from any place with increased efficiency, safety and security. With improved tracking of devices/objects using sensors and connectivity, they can benefit from real-time insights and analytics, which would help them, make smarter decisions. IoT thus helps organizations reduce cost through improved process efficiency, asset utilization and productivity. The vast network of devices connected to the Internet, including smart phones and tablets and almost anything with a sensor on it – cars, machines in production plants, jet engines, oil drills, wearable devices, and more bringing a kind of "super visibility" to nearly every industry. Prototyping an IoT product is a little different than the general prototyping process. **.**Hardware prototyping is also different than the mass production and build with the self components**.**

II. HOW DOES IoT WORKS

Internet of people has converted to Internet of Things. It is created by people, for people and about people. IoT is composed of deivces, internet principle, prototyping, embedded devices, physical Design, online components and embedded code. In Iot hardware, data, software and connectivity plays vital role. Hardware is something which allows connecting digital items to objects. Data helps to sense the things around forming universal language for things and software. Software is what interoperates or analyze data. While connectivity is wifi, Internet, Ethernet, GSM, 2G, 3G, 4G etc. The Internet of Things (IoT), also sometimes referred to as the Internet of Everything (IoE), consists of all the web-enabled devices that collect, send and act on data they acquire from their surrounding environments using embedded sensors, processors and communication hardware. Connected devices also generate massive amounts of Internet traffic, including loads of data that can be used to make the devices useful, but can also be mined for other purposes. All this new data, and the Internet-accessible nature of the devices, raises both privacy and security concerns. The future of IoT is more fascinating than this where billions of things will be talking to each other and human intervention

will become least. IoT will bring macro shift in the way we live and work**.** IoT gateways perform several critical functions such as device connectivity, protocol translation, data filtering and processing, security, updating, management and more. Newer IoT gateways also operate as platforms for application code that processes data and becomes an intelligent part of a device-enabled system.

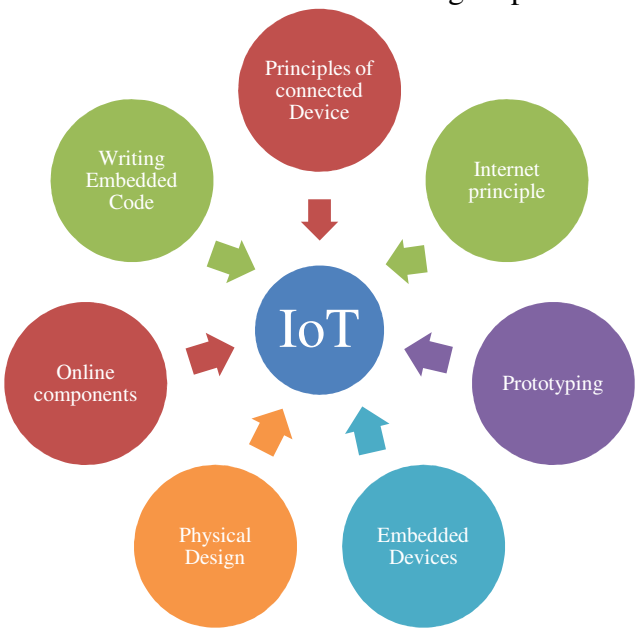

Figure 1:-Components of IoT

III. APPLICATIONS

IoT systems have applications across industries through their unique flexibility and ability to be suitable in any environment. They enhance data collection, automation, operations, and much more through smart devices and powerful enabling technology. There are real world applications of IoT like smart homes, wearables, connected cars, industrial interenet, smart cities, IoT in agriculture, smart retail, energy engagemen etc. While listed below are some more applications-

- Internet of Things with Android and Arduino
- Automatic Street Lighting system using IoT
- Smart Building Project using PIR
- Smart Water Monitoring System using IoT
- Cloud-ready temperature sensor with the Arduino Uno
- An IoT Temperature Monitor for Balcony Garden
- Smart Irrigation System using IoT
- Intelligent Traffic Information System Based on Internet of Things
- Wireless Sensor System using IoT -Internet of Things
- IoT Application Using Raspberry Pi
- Temperature & Humidity Sensing using IoT
- IoT Based Biometrics Implementation on Raspberry Pi
- Raspberry pi Based Smart Supervisor using Internet of Things (IoT)
- Motion Controlled Servos using IoT
- Multi Room Music Player using IoT
- Automatic Street Lighting system using IoT
- Smart Building Project using PIR
- Smart Water Monitoring System using IoT
- IoT Remote Soil Moisture Monitor
- Smart Security Solutions based on Internet of Things (IoT)
- IoT Smart Bulb

- Internet of Things Enabled Wireless Sensor Network
- Internet of Things based Controlling of Appliances using GSM/GPRS
- Secured Smart Healthcare Monitoring System Based on IOT

IV. CONCLUSION

IoT is evolution of mobile, home and embedded application connected to internet with computing abilities using data to extract meaningful information. Millions of devices are connected to internet and become intelligent and smart systems of systems which share data and analyze it. IoT has transformed human life and businesses in numerous ways.

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