

A Survey – Communication Methods on Internet of Things

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Abstract—The Internet of things is nothing but a connection of physical devices, vehicles and other items fixed with sensors, actuators, and network connectivity that allow these objects to collect the data and exchange the data. The initial speculation is to have smart sensor which inherits direct communication without the use of any other external or human. In the coming years IoT is relied upon to be one of the principle centres between different advancements by interfacing savvy physical items together and permit diverse applications in help of shrewd basic leadership. The primary quality of the IoT thought is the high affect it will have on a few parts of ordinary life and conduct of potential clients. From the perspective of a private client, the most evident impacts of the IOT introduction will be noticeable in both working and local fields. This paper describes about the methods and applications of IOT.

Keywords—IoT, Applications, machine Communication, Internet.

I. INTRODUCTION

History of IOT: The term Internet of things was first coined by Kevin Ashton at Proctor and Gamble in 1999 while linking radio Frequency identification (RFID) in P&G's supply chain with Internet. Internet of things is revolutionizing modern wireless telecommunications. Things communicating to things directly without human intervention are called device to device communication or Internet of Things [1][2]. They include things like RFID, Wi-Fi, barcodes, smartphones, sensors, actuators Near field communications etc. An important need of IOT is that for connecting devices, each device must have a unique address. It is similar to machine to machine technologies used in Industries but in an optimized manner for the end level consumer. IoT enables considerable items to see, hear, think and per-frame

occupations by having them "talk" with each, to share data and to synchronize proclamations. [1][2][3] The IoT changes these items from being ordinary to brilliant by controlling its basic advancements, for example, inescapable and unavoidable registering, installed gadgets, correspondence advances, sensor systems, conventions and applications.

II. METHODS OF IOT

A. RFID

RFID stands for radio frequency identification. It has two parts a tag and a reader RFID use radio waves for communication and it contains a chip that stores data and antenna for transmission. RFID tags receive signal

from reader and transmit additional information they come in three different configurations [1].

- ❑ Passive reader active tag
- ❑ Active reader passive tag
- ❑ Active reader active tag

(a) Passive reader active tag

A Passive Reader Active Tag (PRAT) framework has an aloof per user which just gets radio signs from dynamic labels (battery worked, transmit as it were). The gathering scope of a PRAT framework per user can be balanced from 1– 2,000 feet (0– 600 m), permitting adaptability in applications, for example, resource assurance and supervision.

(b) Active reader Passive tag

An Active Reader Passive Tag (ARPT) framework has a functioning per user, which transmits investigative specialist signals and furthermore gets verification answers from aloof labels.

(c) Active reader active tag

An Active Reader Active Tag (ARAT) framework utilizes dynamic labels awoken with an investigator motion from the dynamic per user. A variety of this framework could likewise utilize a Battery-Assisted Passive (BAP) label which acts like an aloof tag however has a little battery to control the label's arrival revealing sign.

B. Near field communication

This is similar to RFID. NFC technology uses RFID readers in mobile devices and when it comes in vicinity of another device, they transmit signals. It uses electromagnetic waves in radio frequency for communication. It is a low power wireless link with a short range used for communicating small data packets. It is seen as a promising technology for implementing Internet of Things. Already Apple Inc is using NFC in its wireless payment technology known as apple pay. NFC

antenna is integrated into apple devices like Smart phones, smart watches etc. Using NFC, these devices connect directly with point of sale machines wirelessly and make payment. This technology is seen as an alternative to debit cards & credit cards.

C. Machine to machine communication

It was first used in industrial manufacturing system like SCADA for remote monitoring. Later it was introduced to various other applications in healthcare, business etc. It is more economical than SCADA because it transmits signals through public networks like ethernet. The main parts of an M2M system are sensors, WIFI or cellular link, RFID and a computer software to infer sensor data and take decisions. M2M uses many device specific standards like OMA DM (open mobile alliance device management, MQTT a messaging protocol, oneM2M communications protocol etc. It alludes to the correspondences between PCs, installed processors, keen sensors, actuators and cell phones. This kind of correspondence is expanding nowadays. There are four segments of M2M, that are detecting, heterogeneous access, data preparing and applications and handling. [4][5]

D. Vehicle to Vehicle communications

It is a wireless transmission of data between moving motor vehicles. It is mainly used to avoid collision between moving vehicles by transmitting their location and speed to other nearby vehicles over an ad hoc Network. This technology is being explored for driverless cars. V2V interchanges include a vehicle, which goes about as a hub in a system and correspondence is finished by the utilization of different sensors associated in a specially appointed system. [3][5] The framework of this system is very muddled in light of the fact that there is no any settled topology to be pursued as vehicle is moving starting with one place then onto the next unequaled. There are four more extensive classifications of this system, to be specific wellbeing and crash evasion,

traffic framework the executives, vehicle telematics, and stimulation administrations and Internet availability.

III. APPLICATIONS

A. WEARABLES

Wearable gadgets are introduced with sensors and programming projects which gather information and data about the clients. This information is later pre-handled to separate basic bits of knowledge about client. These gadgets extensively cover wellness, wellbeing and amusement prerequisites. The pre-essential from web of things innovation for wearable applications is to be profoundly vitality productive or ultra-low power and little measured.

B. SMART CITY

The shrewd city like the name proposes is a major development and ranges a wide assortment of utilization cases, from water dispersion to traffic the board to squander the board, natural observing, and urban security. The motivation behind why it is so prevalent is that it endeavors to expel the inconvenience and issues of individuals who live in urban communities.[5] IoT arrangements offered in the Smart City zone take care of different city-related issues containing traffic, lessen air and clamor contamination and help make urban areas more secure.

C. INDUSTRIAL INTERNET

One approach to think about the Industrial Internet is, as interfacing machines and gadgets in enterprises, for example, control age, oil, gas, and human services. It is likewise made utilization of in circumstances where spontaneous downtime and framework disappointments can result in dangerous circumstances. A framework installed with the IoT will in general incorporate gadgets, for example, wellness groups for heart observing or savvy home apparatuses. [4] These frameworks are practical and can give usability however are not dependable in

light of the fact that they don't regularly make crisis circumstances if a downtime was to happen.

D. CONNECTED SMART CARS

Smart cars are one connected to other moving vehicles and road infrastructure. They can help in providing traffic updates to the driver in the road ahead from the connected network of sensors. They can alert a driver in case an emergency vehicle such as an ambulance is approaching and needs to make way for it. An associated vehicle is a vehicle which can enhance its very own task, upkeep and additionally solace of travelers utilizing locally available sensors and web network. [5] Most vast vehicle producers and also some fearless new companies are dealing with associated vehicle arrangements. Real brands like Tesla, BMW, Apple, Google are chipping away at getting the following insurgency autos.

E. SMART HOMES

It uses devices connected through internet for remote monitoring and management of home appliances such as thermostats, TV, security cameras etc., to reduce energy consumption and to improve user experience. It uses communication protocols like Zigbee, Z-wave, X10 etc. The widespread popularity of smart homes has led major technology companies like google, Amazon to launch smart home products like Amazon echo, Google home etc. However, security of connected devices remains a major concern [5].

E. IOT in medical applications

Nano devices are being increasingly used in medical applications. Internet of Nano things is Nano devices communicating with each other. Nano pacemakers are being developed to monitor human heart rate, trigger heart beat when needed and to inform medical staff in case of emergency all by using IOT. [6]

IV. CONCLUSION

Due to internet our world has been changed rapidly and with the help of IOT communication process becomes so easy. Several techniques have been implemented to make IOT technology to reach a greater extend.

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