Role of IoT to make a smart city

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ABSTRACT

IoT plays very beneficial role to make city SMART. IoT is the concepts which are rapidly used in this IT sector. Nowadays IoT is most useful field in IT sector. IoT- Internet of Things is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and connectivity which enable these objects to connect and exchange data. Here we study articles to analyze what is the role of IoT to make a smart city. So, we identify that the major role of IoT to make a smart city. Smart city always uses very efficient environment to establish a network to connect the devices into a system. To make a city smart we use sensors or attached sensors to detect the devices. Arun Kumar says that Nowadays, IoT is rapidly used in this time and have been enormous discussions around building smart cities in India. Sometimes, one questions always in my mind i.e., what really defines a smart city? Imagine a city which acts likes a smart city like a living organism, interacts with you and continuously fulfilled our needs. A smart city is smart due to its inherent intelligence in dealing with its resources and environment. It makes the effective use of available "ICT", especially the "IoT". Here one keyword used "inherent intelligence", it means sensors.

Keywords— IoT, Smart City, Sensors, Connected Device

1. INTRODUCTION

1.1 About IoT
The Internet of things (IoT) is the network of physical devices, vehicles, home appliances and other terms embedded with electronics, software, sensors, actuators, and connectivity which enable these objects to connect and exchange data.

1.2 Role of IoT to make a smart city
The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that provides with different identifiers and transfer data over a network. The Internet of Things refers to the rapidly growing network of objects which are connected and able to retrieve data using sensors.

Thermostats, cars, lights, refrigerator, and more appliances can all be connected to the IoT. Nowadays, IoT is rapidly used in this time and have been enormous discussions around building smart cities in India. Sometimes, one questions always in my mind i.e., what really defines a smart city? Imagine a city which acts likes a smart city like a living organism, interacts with you and continuously fulfilled our needs. A smart city is smart due to its inherent intelligence in dealing with its resources and environment. It makes the effective use of available "ICT", especially the "IoT".

Here one keyword used- "inherent intelligence", it means sensors. IoT network objects exchange data by using sensors. Sensors controlling energy usage, parking lots, traffic flows, water usage, infrastructure, cameras which is used for security purpose and sending the data directly to the city monitoring control center.

2. REVIEW OF LITERATURE

Author Name	Study	Magazine	Result
Arun Kumar	IoT to play a major role in building a Smart city	-	IoT is fast growing and pervasive reality.
Andrea Zanella, Nicola Bui, Angelo Castellani, Lorenzo Vangelista, Michele Zorzi	IoT to play a major role in building a Smart city	IEEE Journal (2014)	IoT shall be able to incorporate transparently and seamlessly a large number of different end systems.
Yoginder Singh, Sweta Bhattacharya, Brijendra Singh	IOT: FRAMEWORK FOR SMART CITY	IEEE (2016)	IoT act as a backbone of smart cities and regular mundane activities would be handled with the help of IoT based devises.
Jiong Jin, Jayavardhana Gubbi, Slaven Marusic, Marimuthu Palaniswami	An Information Framework of Creating a Smart city through Internet of Things	IEEE (2013)	-

3. DISCUSSION

When we will make a city "smart" then first question put on in our mind is which city is called smart? A city is smart if

- The city interacts with user.
- The city understands the data from sensors or any other devices.
- It generates dynamic relationship between citizens rather than normal relationship.
- It uses some automatic tools like home automation, parking techniques, etc.

A smart city considered because its inherent intelligence in dealing with its resources and environment. A smart city makes an effective use of available "ICT", especially the "IoT". Following things makes the city smart:

(a) Smart lighting
(b) Smart parking
(c) Smart waste management
(d) Smart traffic management system
(e) Smart environment monitoring

Nowadays IoTs is most useful in today's technology. IoTs is the fast-growing and pervasive reality to make smart cities. These smart cities will have individual network and everything connected to a network. The smart cities will be a combination of physical and non-physical infrastructure environment.

3.1 Smart lighting

IoT based lighting system is the system where lighting failures are automatically reported by the system. Lighting turns into weather adaptive; the digital system smartly plans the maintenance work for the entire city. Lights can automatically dim according to the time of the day. Lighting is the most important and essential part of any city, home, etc. In IoT, the lighting system is completely automatic and it is automatically generated electricity in the city.

3.2 Smart parking

Smart parking refers to finding the space to park the vehicle, to find the particular vehicle for the person. In today's traffic, the parking of vehicle is the most typical task for any person especially in India. On one hand, sometimes it frustrates the computer and on the other hand it increases the pollution while the computer system is trying to find a place to park the vehicle. Mostly it generates problem for four wheelers such as car.

Here we using IoT concepts to make smart parking system that's why we use sensors to sense which space are occupied or free. All the parking can be further connected with a city navigation system which can help the drivers to find the nearest location for parking. Here we used GPS system. The city navigation system gives outputs on the basis of saved petrol or fuel as well as time also, road utilization hours and CO_2 emission.

3.3 Smart waste management system

Smart waste management of any city can be a smarter by using garbage containers having a sensor to determine the filling level of waste material in the container. It is use to make the city clean as well as smart. Here the smart garbage container contains garbage then they can transmit the data to the central city waste management system which can automatically guide the waste collection trucks to the nearest garbage container which is full. Here we can also use to collect the dry waste and wet waste individually. First the system will check it is dry waste or wet waste then it will contain at particular container to both wastes individually.

3.4 Smart traffic management system

IoT can help to make smart traffic management system by installing battery or solar powered wireless traffic sensors which can detect real time traffic volume, road occupancy and average speed to travel the vehicles by road. It can also classify them by sizes and speed. These sensors can be directly connected to the central traffic management of the city, giving a complete scenario of the present situation of traffic.

3.5 Smart environment monitoring

Sensors can be placed around the city to continuously control the critical parameters of environment like electromagnetic field, noise, temperature, humidity, toxic gases, and so on.

4. REFERENCES

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