Measurement Systems

(Survey)

IOT Based Measuring Instruments

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Abstract : The new era of computing technology that many are called as Internet of Things (IOT). Currently sensors has been considering a highly prospective feature of research. IOT based sensors plays important role in the industry. Sensors helps to monitor our state of health, soil and air quality, home security and widely used to monitor production process. In early times Industries have been using various types of sensors but the invention of the Internet of the things has promoted the growth of sensors completely different level.

Introduction :

Another name of Internet of things (IOT) is Internet of object. As Internet occupied wide range in every sector i.e. education, communication, business, government sector and mankind. The idea behind IOT is to promote communication between anything from anywhere at the time through context-aware applications.

IOT works in all the fields such as smart cities, smart transportation, Smart Industries etc. IOT can be accessed at any time, any place connectivity for anyone. This new and current technology provides many applications to interconnect the things with the help of internet. Internet of things is a new technology which provides many applications to connect the things to things and human to things through the internet.

Types Of Sensors

1] Physical sensors :

Physical sensors generally measure physical quantities such as length, temperature pressure, electricity, weight, sound, etc. It can be defined as device that corresponds to physical property, called stimulus and produces a corresponding, electrical signal that can be measured.

2] Chemical Sensor :

Chemical sensors are widely used in industrial purposes. These sensors play a very significant part in developing industry based smart cities. It should also need to consider the protection and environmental friendly smart city. The important and featured use cases of chemical sensors only can be found in industrial environmental checking and monitoring process control.

3] Bio sensor :

Bio-sensor is a chemical sensor subset, but is often treated as a separate area. It is an interdisciplinary area that cannot be easily defined with exact boundaries. Basically, a biosensor is a self-contained analytical device that selectively and reversibly responds to the concentration or activity of biological sample chemical species.

4] Temperature Sensor :

These are one of the sensors commonly used to measure a given medium's temperature or heat. These sensors use a number of methods to determine and quantify and object's temperature. Some of the temperature sensors required physical contact with the object while other types do not require contact.

5] Proximity Sensor:

Sensors of proximity are the best way to detect any movement. In applications such as safety or efficiency, they are widely used. These sensors are used as the best possible sensor for map building to avoid obstacles in navigating to a crowded place or any complex route.

6] Pressure Sensor:

A pressure sensor is a sensor which helps to senses the pressure and converts that into an electrical signal. The value of pressure sensor is correlates to the pressure applied. These sensors produce IoT systems that monitor new systems and devices which are pressure propel.

7] Optical Sensor :

Optic sensing technology is used to detect electromagnetic energies such as light. It uses the photoelectric effect concept, says electrons will be ejected when a negatively charged plate of some suitable light sensitive material is hit by a photon beam. Then the electrons can flow as a signal from the plate feed as a current.

8] Humidity Sensor :

Humidity is water content in the air. As well as many manufacturing processes, the amount of water vapor in the air can affect human life. Humidity sensing is therefore important for industrial processes and human life control system. Many industrial, agricultural and domestic applications are important for controlling or monitoring humidity.

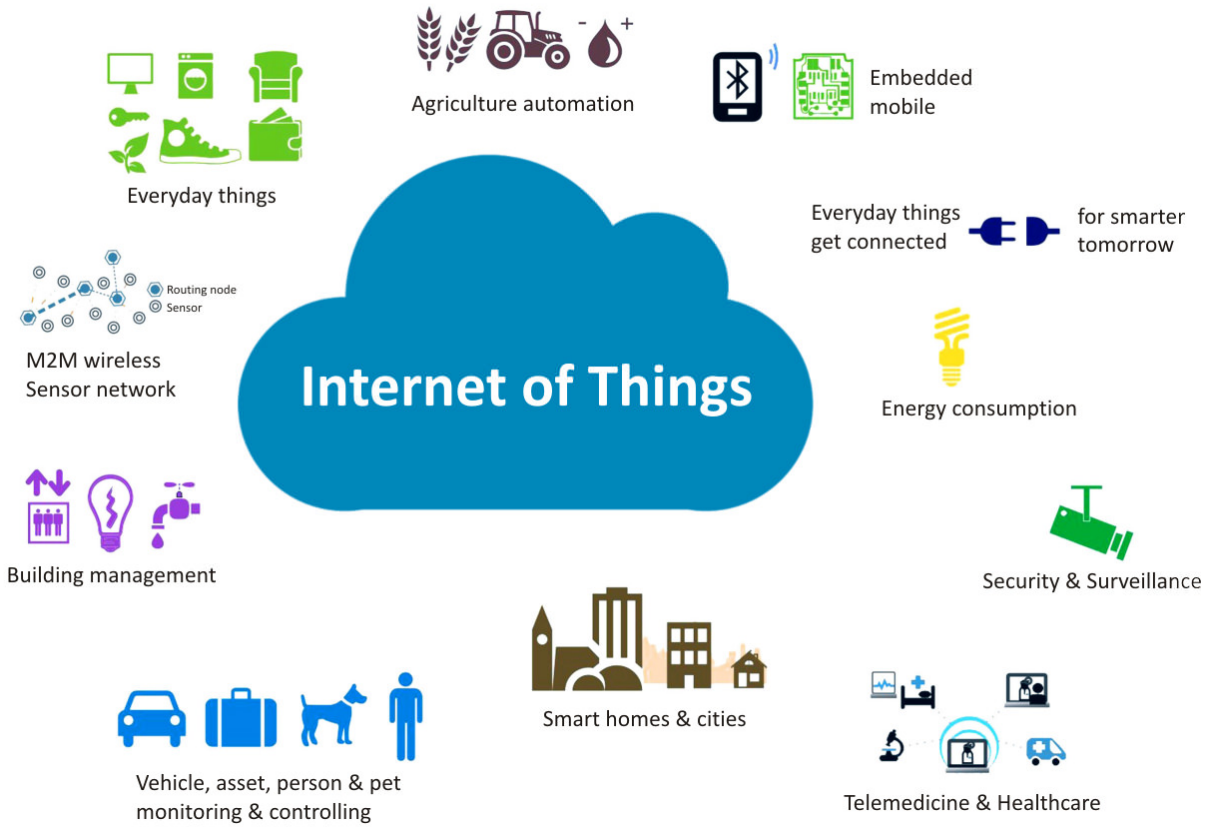
9] Micro Sensor :

Micro sensor is an extremely small device that can collect and relay information about the environment. Such devices can measure and send biological, thermal, chemical, and the other data forms to a processor, which then converts the information into a meaningful form for a variety of users to allow access to it.

10] Odour Detection Sensor :

The odour detection systems can be commonly arranged into four categories such as gas sensors, bio-sensors, gas chromatography systems and hybrid systems. Other common odour detection instruments like electronic noses (E-noses), mass spectrometers (MS), differential optical absorption spectrometers (DOAS) are frequently used sensors.

Applications of IOT Sensors



IOT sensor application includes air pollution, water pollution, forest fire detection , home automation , smart cities and smart industries where we can connect everything can connect from anywhere to anything to make our life easier.

Smart Cities:

The Smart city projects held in various countries such as Dubai, New York, and Singapore have supported many major smart cities development. The smart city development can be seen as the future of leading smart life, and entering the development of IoT technology will become very reasonable whereas the innovation rate of creating today's smart cities is remarkable. The smart city development using sensors requires very cautious and systematic planning at all in single stages, with government policy approval and citizens agreements to appreciate the internet of things technology.

Home Automation :

The electronic devices used in home such as Television, Air conditions, Refrigerators, mobile devices needs automation through internet. The home usage electronic devices automation is the primary need to make smart home development. The Wireless fidelity has become a part of Internet protocol network whereas mobile devices and computing being used and adopted.

Smart Health :

Health is considered very vital one around the people and people needs automation to monitor the health. Efficient and effective health monitoring system needed because a person is affliction from bad health and does not have automated usage. The current situation is very critical and identified being patients is very decisive in disease identification. To resolve this issue an automated IoT connected wireless automated system makes possible for monitoring health oriented issues. This solution is best and captures patient health in a protected manner.

Smart Transportation :

The development in transportation system is the main factors indicate the nation's infrastructural growth. The main application is IoT sensor based automated transportation system. The principles of crowd sourcing and sensing provides the significant idea to make the smart transport and mobility. Many countries funded smart transportation research projects to make the environment safer and smarter. Particularly Lithium-ion battery performance for electric vehicles as explored and these projects have been funded in numerous.

Smart Agriculture :

IoT based agricultural convergence technology creates high quality and increased production value, as well as significantly reducing the burden on farmers. The data generated from GPS and smart sensors on the agricultural field specifically used with the integration of smart farming equipment in conjunction with Big Data analytics.

The farmers would be able to improve crop yields and make efficient use of water, thus reducing waste of any kind of to a remarkable level.

Security and Emergencies:

The system proposed can detect smoke, various flammable gasses and fire. This system is capable of providing the nearby fire department with hazard location coordinates. This fire hazard sensing system with a systematic IoT framework highlights an innovation in application to the public safety and service life support sector.

Issues and Challenges :

The number of internet connected devices and industries is growing exponentially and having them all interconnected through wire or wireless will put a powerful source of information at your fingertips.

1] Power sensing solution :

IoT sensors use some of the latest technology in the design and manufacture of sensors. It provides the simplest, quickest and most robust way to develop Internet of Things applications.

2] Smarter:

The variety of sensors delivers various different kinds of data. These data are based on IoT platforms function. The collected data are shared using network using autonomous function which requires providing the ecosystem very smarter. By combine a set of sensors and a communication network, devices share information with one another and are improving their efficiency and functionality.

3] Efficiency :

For a long time, different types of sensors have been used by industries, but the discovery of the Internet of Things has considers sensors evolutions to a entirely special level. By combining a set of sensors and a communication network, devices share information and improve their efficiency and functionality.

Conclusion :

IoT's exponentially growing popularity is increasing attention in IoT devices and applications toward security issues. In this I have surveyed on different types of IoT sensors devices and its applications. In IoT devices and existing sensor management systems adapt in commodity IoT, There is countless use of IoT sensors application in all fields including medical, manufacturing, industrial, transport, education, governance, mining, etc. The use of sensors in IoT devices inevitably increases the devices' functionality. For example, several recent attempts have been made to exploit the security of IoT device through their sensors. So, security is important in IoT based sensors. The combination and fusing of all the sensors make the complete platform in various applications very smarter one. The concept of collecting smart sensors data collection and analysis makes the IoT very smarter and IoT becomes smarter in the future technologies.

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7] IOT Sensors And Applications: A Survey

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