



A REVIEW OF IOT WITH GRID COMPUTING IN INDUSTRIAL AUTOMATION

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ABSTRACT: -In this paper, we talk about IOT in combination with grid computing. The “Internet of Things,” is commonly abbreviated as “IoT,” in short form. It contains a vital word: the word “Things.” It is outlined by this word that in this present world with the help of Internet it is possible to connect any sort of object on the planet. For the functioning of Internet of Things devices (or nodes) the requirement of screen or any user interface is not necessary at all. It may depend on battery power for operation. Generally they are dedicated to a single task. Internet of Things devices are commonly illustrated as “smart objects, edge devices, or connected devices. With the help of this proposed work we would provide the use of applications of various devices those are related to IOT. It would tell the impact of IOT on the society. It is a considerable objective, because it will outline the changes in society which take place due to IOT. It would be helpful to establish cloud environment to host IOT application. Grid computing has been determined as computer network. In this, the resources of computer are distributed in every other computer in the system. The Processing power, memory and data storage all community resources are shared in the users. It influences the particular type of tasks. In this research IOT based application is supposed to run over the grid computing based environment.

KEYWORD: IOT, GRID COMPUTING, INDUSTRIAL AUTOMATION

[1] INTRODUCTION

It is well known that the internet is an interconnection of worldwide networks. The arise of internet take place in the early 80's. As end users, we also know that the most interesting part of this network is not the infrastructure itself, but the smart devices and smart applications that it connects with and that make our work easier and our life better. The Internet started to connect computers, mobile phones, and more recently tablets, and Smartphone. The expression “Internet of Things,” abbreviated as “IoT,” consists of an important word: the word “Things.” This word highlights the fact that the Internet is now also connecting any sort of object on the planet. Internet of Things devices (or nodes) often operate without a screen or any user interface at all, may rely on battery power for operation, and are usually dedicated to a single task. Internet of Things devices are typically described as “smart objects, edge devices, or connected devices,” such as

1. Networked home appliances that can be monitored or controlled remotely.
2. Smart home components, such as lighting, heating, or ventilation units with remote management/monitoring access.

3. Wearable or connected clothing and fashion accessories
4. Sensor networks
5. Connected industrial and manufacturing equipment Networked
6. vehicle telemetric sensors
7. Other embedded devices that are network-connected and computationally capable.

[2] BASICS OF IOT

One of the important characteristic of Internet of Things is that it is possible to identify or address each and every device uniquely. The computers and laptops which are used in everyday life either in homes or in office contain a unique identifiable address. This unique identifiable address is known as IP address. In the same way devices on the Internet of Things must be identified. It might be expected that in this present moment many different kinds of methods are available in the market by which those devices are uniquely identified. The communication requirement in a particular situation is different. Therefore the unique component which is required for identification purpose is also different in each situation.

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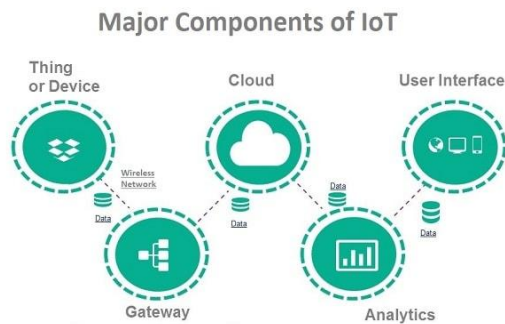


Fig 1 Major Components of IOT

It will depend upon the communication requirement. For example let us assume that intelligent refrigerator wants a way to connect to the Internet as well as a unique address. The consumables items which are stored in refrigerator don't require any internet connectivity. But it is possibility that in some situations they might require this kind of internet connectivity on the order of a specialized barcode or RFID tag because they contains information regarding product freshness date. Despite of the fact that similar kind of technologies and infrastructures are utilized for these purpose still, machine-to-machine technologies (M2M) and the Internet of Things are separated at the consumer level. This is done so that consumer can easily understand the difference between machine-to-machine technologies (M2M) and the Internet of things. In this present situation it is clearly seen that in almost all the industrial and enterprise spaces M2M technologies is utilized. With the help of this technology companies are able to operate their businesses in a best way. It releases the burdens off supply chains. It relay more on informative data in real-time. This M2M technology is adopted by internet of things.

[3] GRID COMPUTING

Grid computing has been determined as computer network. In this, the resources of computer are distributed in every other computer in the system. The Processing power, memory and data storage all community resources are shared in the users. It authorized the users tap into and influence the particular type of tasks.

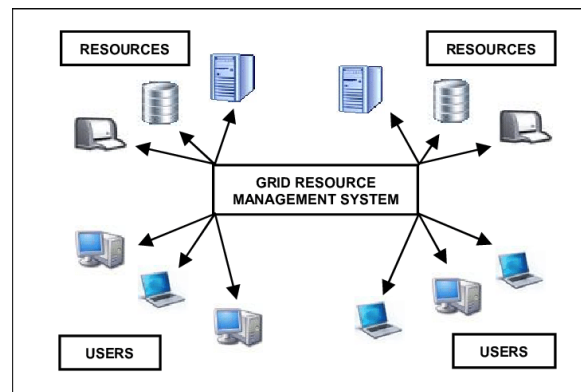


Fig 2 Grid Resource management system

[4] REVIEW OF LITERATURE

There are several research in the field of IOT. Some of those researches have been discussed in this section.

In 2009, JayavardhanaGubbi et al. wrote Vision, Architectural Elements, and Future Directions in IOT.

In the present scenario many areas of daily life are covered by Ubiquitous sensing. Ubiquitous sensing is make possible because of Wireless Sensor Network(WSN)technologies. With the help of this it is possible to figure out, gather and understand environmental indicators, from delicate ecologies and natural resources to urban environments. The development of these devices in a communicating active system formed the Internet of Things (IoT). In this sensors and actuators are combined seamlessly with the environment around us.After that the information is shared across platforms in order to form a common operating picture (COP). In the present timeIoT contains avariety of wireless technologies such as RFID tags. ,actuators etc.Therefore it is consideredas anext revolutionary technology. It would be helpful in transforming the Internet into a fully integrated Future Internet. Due to our progress from www (static pages web) to web2 (social networking web) to web3 (ubiquitous computing web), therequirement for data-on-demand using sophisticated intuitive queries increases significantly.

In 2009, Anurag Tiwari et al. reviewed the Challenges and Ongoing Researches for



IOT. From the last few years it is seen that Internet of Things has become arising technology in Information technology discipline particularly in networking field. For IOT, Internet is the keystone. With the help of IOT technology it is possible to handle the electrical, mechanical objects if they are connected to the internet remotely from anywhere of the world. A number of profitable data and information will be exchanged by millions of devices and facilities. All these facilities and devices will be powered by Internet of Things. The IOT systems are very common and are widespread. Therefore chances of security and privacy problems are common. Due to this all the things which are associated with internet may face safety issues. Due to the issue which are related to security and privacy IOT could not set himself as a reliable technology.

In 2010, Akanksha Bali et al. study of various applications of internet of things.

The internet of Things has shown a great performance in this era which is related to networking. It will be very helpful for the inclination of information technology future. With the help of IOT user can use connections from anywhere, anything and at any moment. The concept of IOT is very productive. It has capabilities by which it can transform the real world objects into virtual objects. With the help of IOT it is feasible to manage labeled items like door locks, lights, microwave, led, lcd, coffeemaker, washing machine, window lock etc. In this way it will enlighten the state. The definition of IOT concept represent various technologies. These technology make the internet available to each real world tangible objects.

In 2010, Kwok-Yan Lam I and Chi-Hung Chi proposed identity in the Internet-of-Things (IoT): New Challenges and Opportunities,

As we are moving from the world of digitization to datafication, the role of designer is played by Internet-of-Things in the value creation process from big data. It is anticipated that security has consistently become one main concern in the IoT deployment. The characteristics and requirements of IoT are exclusive. The various characteristics and requirement of IoT are limited compute resources, power, bandwidth and massive number of deployed

IoT objects, and its loosely coupled networked architecture. In order to give feasible and practical solutions to IoT security latest methods and planning is required. Internet-of-Things (IoT) has generally been agreed to the foundation for digital economy; and cybersecurity is always a big concern when mission critical applications are built on top of IoT.

In 2013, Teng Haikun and Liu Xinsheng wrote a paper representing application of the IOT Gateway Based on the Real-Time Specification for Java,

An essential work is done by Internet Of Things (IOT) gateway in order to provide a connection between the traditional information network and network awareness. In view of the fact that at present old fashioned development methods are employed by people for the realization of Internet gateway software. Therefore they put forward a method of using real-time Java technology. In this article ARM cortex-A57 architecture of AMD Opteron 1100 processor is employed for the formation of IOT gateway system hardware platform, through the gateway to realize remote monitoring of underlying device.

In 2014, Chirag M. Shah, Vamil. Sangoi & Raj M. Visharia introduced smart Security Solutions based on Internet of Things.

The demand of Internet of Things & its devices are increasing at a rapid rate. In this paper the concept of improving access control systems is described. It is ensured by the methods which are used for boosting of access control system that system is wireless. Prototype described in this paper has provision of accepting inputs from a smart card reader or a biometric sensor. Such inputs are processed inside controller.

In 2014, Wei Zhou, Yuqing Zhang, and Peng Liu, Member represented the Effect of IoT New Features on Security and Privacy. They provided New Threats, Existing Solutions, and Challenges.

The growth of Internet of Things (IoT) in future is totally depend upon us. At present the application of IoT have been commonly employed in many areas of social production and social living for example healthcare, energy and industrial automation. In addition to the facilities and efficiency which is



provided by IoT to us, certain threats are also presented by IoT.

In 2015, M.U. Farooq did review on Internet of Things (IoT).

Internet is a rebellious discovery. It is certain that in future it will be transforming into some new kind of hardware and software. Due to this it becomes unavoidable for anyone. At present the communication is done either between human-human or human-device. But the Internet of Things (IoT) promises a great future for the internet where the communication can be done between machine-machine (M2M). The main objective of this paper is to give a comprehensive overview of the IoT scenario and reviews its enabling technologies and the sensor networks.

In 2016, Muhammad A. Iqbal et al. wrote a review on Internet of Things (IoT). They discussed Security and Privacy Requirements and the solution Approaches.

The world is undergoing a dramatic rapid transformation from isolated systems to ubiquitous Internet-based-enabled ‘things’ capable of interacting each other and generating data that can be analyzed to extract valuable information.

In 2018, Dina Fitri Murad et al. introduced IoT for Development of Smart Public Transportation System. They provided a systematic literature review.

At present lot of researches are still done in the field of IoT from various researchers. Various models, platforms and applications are proposed and designed in such a way as to benefit society. This paper was developed using the systematic literature review method by conducting surveys on issues oriented towards the utilization of IoT related to the development of intelligent public transport.

Nikesh Gondchawar and Prof. Dr. R. S. Kawitkar introduced IoT based Smart Agriculture. A great amount of work has been done by agriculture for the growth of agricultural country. If one can take the example of India, in India farming is the method of earning for almost 70% of overall population. Therefore it is assumed that one third of the nation’s capital comes from farming. The development of the

country slows down by the agriculture concerning issues.

[5] PROPOSED WORK

1. To study the use of applications of various devices those are related to IOT.
2. To study impact of IOT on the society is also an considerable objective, especially the changes in society due to IOT.
3. To establish grid based environment to host IOT application.
4. To develop IOT Application using MATLAB.
5. To Integrate IOT within Infrared Array sensors in order to implement proposed work.
6. To make Implementation of image capturing module from two different dimensions.
7. To deploy IOT application on grid computing environment.
8. To use system for security of organization.
9. To provide a way of to increase Testing efficiency of system within existing on.

Process flow of proposed work

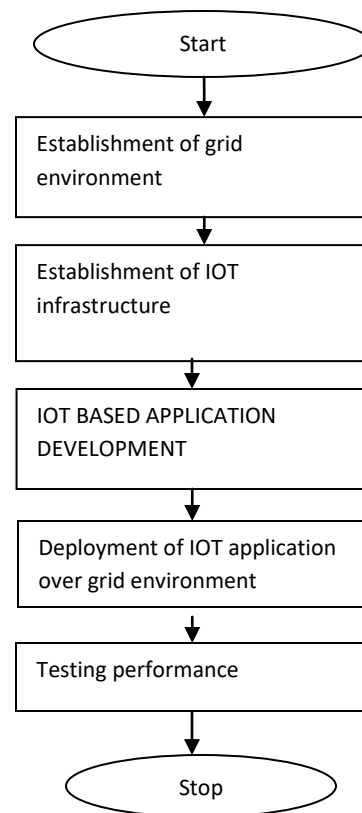




Fig 3 Process flow of proposed work

[6] MATLAB

MATLAB is known as Language of Technical Computing. It is considered as a high-level language within interactive environment. Matlab enables us to perform computationally tasks quicker as compare to other programming languages such as C, C++, & FORTRAN. Matrix is a rectangular array of numbers in MATLAB environment. Its Meaning is attached to 1x1 matrices. These are scalars. In order to matrices within one row or column there are vectors. MATLAB had different ways to store numeric & nonnumeric data. At start each and every thing is considered as a matrix in beginning. The operations in MATLAB have been designed to be natural. Programming languages other than Matlab work within numbers one at a time but MATLAB offers to work within complete matrices quickly & easily.

Characteristics of MATLAB

1. It is High-level language for technical computing
2. It had development environment for managing code, files, & information
3. It had Interactive tools for different purposes such as iterative exploration, design & to solve problem.
4. Matlab consist of Fourier analysis, filtering, optimization, Mathematical functions for linear algebra, statistics, & numerical integration
5. The two dimensional & three dimensional graphics functions have been used to visualize information
6. Matlab is tools to build custom graphical user interfaces
7. There are parcel of Functions to coordinate MATLAB based calculations including outside applications inside dialects like C, C++, Fortran, Java, COM & Microsoft Excel

[7] CONCLUSION

In this research, the use of applications of various devices those are related to IOT has been discussed.

Here the study impact of IOT on the society is also a considerable objective, especially the changes in society due to IOT. Here the establish cloud environment to host IOT application has been described. In this paper yo develop IOT Application using MATLAB platform. The IOT has been integrated within Infrared Array sensors in order to implement proposed work. In the research the implementation of image capturing module has been made from two different dimensions. The deployment of IOT application on grid environment has been made. The use system has been used for security of organization. The paper is providing away to increase Testing efficiency of system within existing on.

[8] SCOPE OF RESEARCH

The proposed work would provide the study the use of applications of various devices those are related to IOT. It would offer the study impact of IOT on the society is also a considerable objective, especially the changes in society due to IOT. It would be helpful to establish grid environment to host IOT application. The proposed work has developed the IOT Application with the use of MATLAB programming platform. The research work would be beneficial to integrate the IOT within Infrared Array sensors in order to implement proposed work. In future time, it would be beneficial for those who want to know about implementation of image capturing module from two different dimensions. It would deploy the IOT application on cloud environment. The paper has been proposed the system for security of organization. It would also offer a way of to increase Testing efficiency of system within existing on.

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