ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 9, September 2016

The Social Internet of Things: Concept and its Application

Dr. D. M. Bhalerao[1], Vaibhav Kalhane[2]

Professor, Dept. of ECE, Sinhgad College of Engineering, Vadgaon Pune, Maharashtra, India[1]

PG Student [CN], Dept. of ECE, Sinhgad College of Engineering, Vadgaon Pune, Maharashtra, India[2]

ABSTRACT: Internet of Things (IoT) has been created by the escalation of technologies as Wireless Sensor Networks (WSN) and ubiquitous sensor network (USN) which are the one who connects sensors in a given environment which could be global and also to measure, infer and understand environmental indicators, these technologies provide the suitable methods from delicate ecologies and natural resources to urban environments.At an unprecedented rate realizing the idea of the Internet of Things (IoT), numbers of physical objects are being connected to the Internet. On the idea of IoT, sensors and actuators are whisk together coherently.Applications on these technologies include health care, automation, transportation etc. Here, in this paper, we are focusing on one of the application of IoT. An application is designed to monitor the sensors used in household work.

KEYWORDS: Internet of Things (IoT), Wireless Sensor Networks (WSN), ubiquitous sensor network (USN).

I.INTRODUCTION

Integrative computing devices, digital machines, mechanical machines, animals, people and objects which are provided with the UID (i.e. Unique Identifier) are combine to form Internet of Things to transfer data over a network without requiring human being-to-computer interaction or human being-to-human being interaction.

Figure No 1Internet of thing

The overall concept of IoT is shown in figure 1, in which sensors and actuators are directly communicating with each other and every domain specific application is interacting with domain independent services.To communicate, to hear, to think, to see etc., IoT enables physical objects to do all these things. To match customer needs and market demands, innovations and emerging technologies, and service applications need to grow proportionally.Real-time availability on smart things and the advent of online social network (e.g. Facebook, Twitter, and Google+) are enhanced with the use of IoT. The set of technologies that can interconnect anything, from daily life objects to more sophisticated networked devices are known as IoT.

Internet of Things is making the information and physical world information world together. A very important role to bridge the gap between the physical world and information world is played by sensors. It generates information raising

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 9, September 2016

awareness about context and also collects data from their environment. This property of sensors is useful to monitor the changes of their environment and the corresponding things can make some responses if needed.
Here, in this paper, an application will be explained which is designed for smart objects to control these physical devices with the help of sensors and the idea of Internet of things (IoT). Previously, technology to implement this concept had some disadvantage such as bulky setup, immobile setup, large hardware are required etc. and with the help of this application, we tried to overcome some of the disadvantages.

II. LITERATURE SURVEY

Internet of Things Architecture:

IoT has a need of a flexible architecture. The basic architecture is 3-layered architecture. It contains the layers as application layer, network layer and perception layer. Some other models have been proposed that add more abstraction to the IoT architecture.

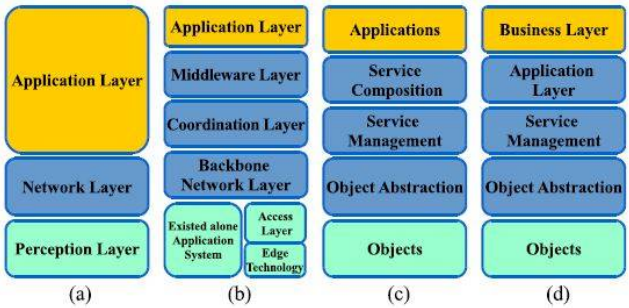

Figure 3 the IoT architecture (a) Three-layer. (b) Middle-ware based. (c) SOA (d) Five-layer.

I. **Object Layer:** It represents the physical sensors which are used to collect the information and process it.
II. **Object Abstraction Layer:** In this layer, through a secure channel, data processed by object is transferred to service management layer.
III. **Service Management Layer:** In this layer, based on addresses and names, requestor deuces with the service.
IV. **Application Layer:** Main goal of application layer is to provide the service as per the demand of customer.
V. **Business Layer:** Overall IoT services and system activities are manages by this layer.

Internet of Things Elements:

IoT elements are nothing but the IoT building blocks.

Table I. IoT Building Blocks

Block	Description
Identification	Used to match and name the services with their demand. **Example:** • **Naming:** EPC, uCode • **Addressing:** IPv4, IPv6
Sensing	From a given IoT environment, it gathers data and sends it back to cloud. **Example:** Smart sensors, Embedded Sensors etc.
Communication	To provide smart services, it connects the objects together. **Example:** RFID, NFC, Bluetooth, UWB etc.

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 9, September 2016

Computation	It includes processing units **Example:** • **Hardware:** Arduino, Raspberry pi etc. • **Software:** OS and cloud.
Services	Customer needs. **Example:** Identity related, information aggregation etc.

III. METHODOLOGY

ESP8266:
ESP8266 low cost Wi-Fi module, suitable for adding Wi-Fi functionality, is an impressive via a UART serial connection to an existing microcontroller project.It acts as a standalone and for that Wi-Fi connected device the module can even be reprogrammed.
The feature list is impressive and includes:

- 802.11 b/g/n protocol
- Wi-Fi Direct (P2P), soft-AP
- Integrated TCP/IP protocol stack

The hardware connections required to connect to the ESP8266 module are fairly straight-forward. To note related to power, following are the important items:

- The ESP8266 requires 3.3V power–do not power it with 5 volts!
- The ESP8266 needs to communicate via serial at 3.3V and does not have 5V tolerant inputs,

To communicate with a 5V microcontroller like most Arduino use, you need level conversion.

IV. RESULT AND DISCUSSION

In the figure4,it shows the functioning of application. First it check for the proper connection of application with the server as Figure No 4(a) and FigureNo 4 (b)

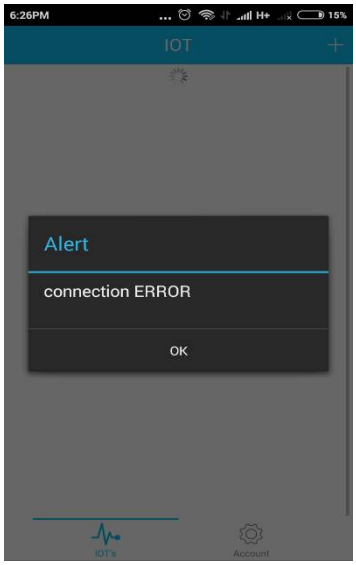

Figure No 4. (a)

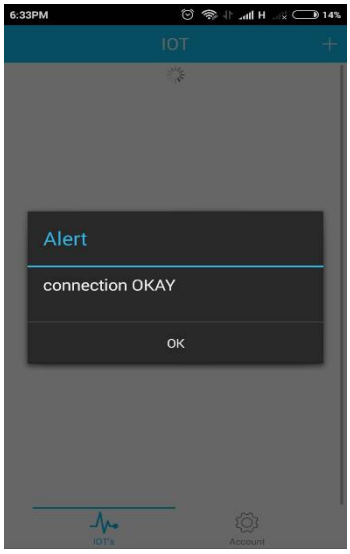

Figure No 4. (b)

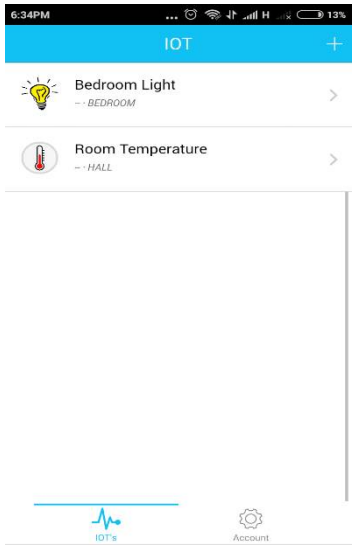

Figure No 4. (c)

ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 9, September 2016

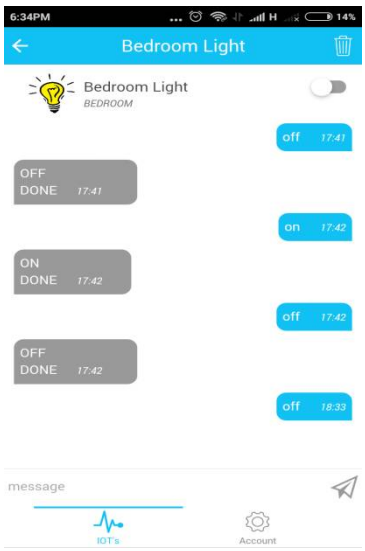

Figure No 4. (d)

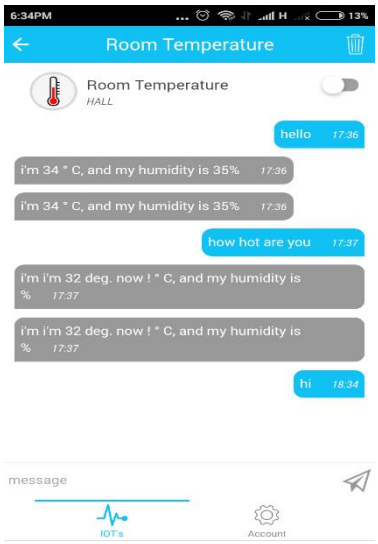

Figure No 4. (e)

The application is use to test light and temperature sensor as shown in FigureNo 4 (C) and other functioning is done as in FigureNo 4 (d) And FigureNo 4 (e).

V. CONCLUSION

This project proposes a novel discovery and implementation protocol forIoT networks which can be used to achieve secure and fast connection with the remote devices and sensor known as Things (nodes). This technique is a combination of the concepts of network coding and connecting the nodes with the real world through internet. The advantages of this implementation can help to introduce the IoT to general public. End user can also able to operate the nodes and able to add new nodes to the network without any prior professional knowledge. Machine to Machine communication can help to reduce human efforts. Connectivity of sensors and the smart object (mobile) is achieved through this implementation. Mobile application is developed for monitoring and controlling the nodes (Things). Overall implementation works on minimal internet speed, includes light weight protocol, completely isolated nodes, low implementation cost.

REFERENCES

[1] 'The implementation method and value analysis of IoT based social network'Yan Lu*, Jie Zhou*, Fei Hao* * R&D Center, China Mobile Jiangsu Company, Nanjing, Jiangsu, China 210012978-1-4799-2860-6/13/$31.00 ©2013 IEEE
[2] H.Wu. Thinking about the internet of things,Internet of things technologies, 2012, Vol 5, pp. 17-20
[3] Q.Guo, Profit model of Micro-blog, *Nanfang Media Research*. 2009.12,14
[4] W.Ma, The smart IoT social network, *Shanghai informatization*, 2012 Vol.3, 12
[5] Z.Cheng, H.Du, T.Lv Study on Influence of Online Interaction on Purchase Intention in Online Social Network. *Journal of BeijingUniversity of Posts and Telecommunications(Social Sciences Edition)* Dec. 2012, Vol.14, No.6.