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A Study of Home Automation in IOT Technology

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***Abstract*—IOT popularity is very high in present time because everything is depends on like sensors. And everyone ignores hard work and use smart work. So home automation is right things in smart work. In home automation simply connecting appliance electrical device to the internet or cloud storage, and cloud computing help to connect the things surrounding everyone. And system control wireless based network, and system also remotely accessed via a packet PC with a windows mobile based application**

***Index Terms*— Automation, IOT, Relay, Arduino, HC-05, Bluetooth Module, motion sensors, smart garage door, fire detection sensors**

I. INTRODUCTION

In the home automation control the entire device from a central point. Basically turning on or off a central device or remotely access, the advance computer technology helps the connect and communicate to the wireless network.

One of most application is wireless network for home automation. The basic ides of home automation is to use sensor and control system to monitor dwelling and adjust the various other control system service.

In an intelligent home automation system control automation system based on single device control, like all home light, switch and other device connect and control using PC, laptop, phones. and system over the internet. IOT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration between physical world and computer based system. In IOT sensor or things are connected to each other which transfer the data over a network cloud. As per the survey of technological expert's 50-55 Billion thing will be connected in IOT technology by 2021. IOT technology offered wide ranges of connectivity of sensors with various protocol and various properties of applications for obtaining complete interaction.

II. LITERATURE REVIEW

A literature review is necessary to know about the home automation au research area and what problem in that area has been solved and what need to be solved in future. A proper literature review provides solid background for a noble research work. According to the Anita M. Bhagat All the physical devices, things, object and sensor connected to create a new world technology. Existing model is represented IOT based home automation and reporting system where people can control all the automation system on web. In IoT technology, servers are used to manage the resources of the network. The information provided by the internet that is connected through various networks, which is available for people or users via smartphones and web browser.

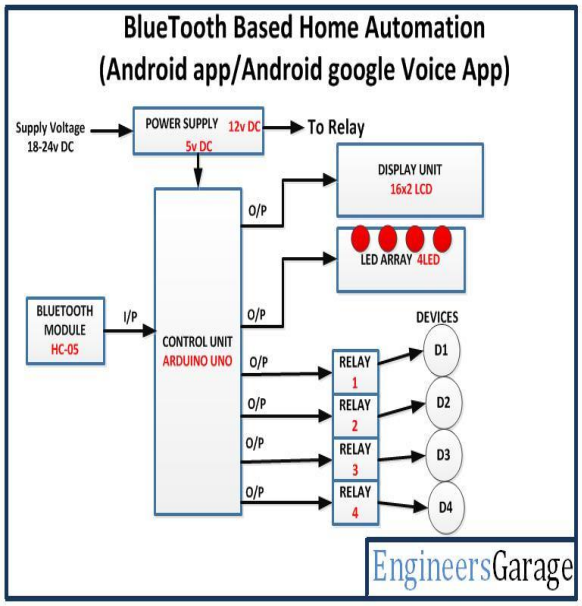

Fig. 1: Block Diagram of Home Automation

1. Relay module: A relay is an electrical operated switch. It consists of a set of input terminals for a single or multiple controls single, and a set of operating contact terminals. In any relay four parts shows: Electromagnet, Armature, spring, set of electrical contacts Relay are used when a control a circuit by separate low-power signal, or circuit must be control by one single. First relay used in long distance telegraph circuit as amplifies: they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relay can handle high power required to directly control an electric motor or other loads is called a contactor

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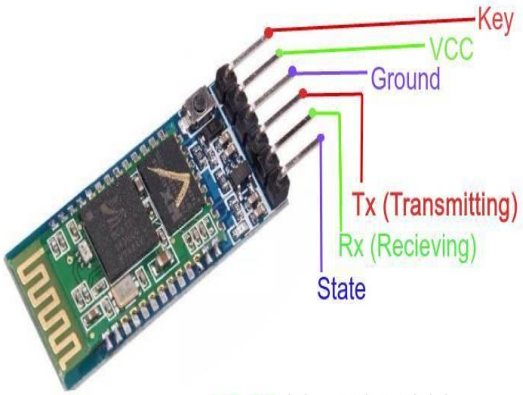
2. Arduino: -- Arduino is a tectonic device which is used as a Software and Hardware. Arduino provide open source platform. When we used Arduino as Software we can write programs using higher level language to perform a specific task of Iota technology, on the other side when we used Arduino as hardware, we can connect various sensors, actuator to the port of Arduino hardware.

At that time different kind of Arduino devices are available in the market which is following:-

- Arduino Uno (R3)
- Arduino Micro.
- Arduino Due.
- Lily Pad Arduino Board.
- Arduino Bluetooth.
- Arduino Decimal.
- Red Board Arduino Boar0064

3. HC-05 Bluetooth Module: - HC-05 Bluetooth Module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Its communication is via serial communication which makes an easy way to interface with controller or PC.



HC-05 (Bluetooth Module)

4. Motion sensor: - Motion sensor is the type of sensors which detects motion and movement in an area. These sensors stand guard when you are not home, they can alert you if there is movement within your home.

5. Smart garage door: - When the Wi-Fi connected smart garage door give you some extra piece of mind. The concept is simple, but can be powerful never wonder if you left the garage door open. You can open and shut your garage door from your phone from any location.

6. Fire detection sensors: - these is the another important type sensors. The fire detection sensor is used to detect the fire in a particular area. Fire is far and away the number one cause of property damage so by using these type sensors saved or protects the damage.

III. OTHER IOT APPLICATION

1. Smart City:- Use of smart work and smart device then smart cities are supposed to be made of. Smart work like Traffic management, Waste water, Water distribution, Electricity managemen and more. These work done in city then we can say city is a dream city.

2. IoT Retail Shops:- The retails store use allows online payment mode. Means allows cashless and deducting money from your UPI id. We add item anytime in your cart and pick products from the shelves. If you change the item then replaces with new item. Main things is you don't have to stand in line, just pick up product and go back and delivery comes your address.

3. Farming:- In farming sector IoT use many thing. IoT provide many tools for devlopment of agriculture. Tools like drip irrigation, understanding crop patterns, water distribution, drones for farm surveillance. This technology used then famer comes op with a more productivity and take care of the concern better.

4. Smart grids:- It is a holistic solution that applies of information technology resources that outcome is new gridlines to reduces electricity waste and cost. An in future smart grid improve the efficiency,reliability,and economics of electricity.

5. Industrial Internet:- In industrial internet of things is interconnected sensors, and other physical devices connected with computers industrial apllications like manufacturing. Industrial internet to have the higest overall potential.

6. Wearables:- Wearables used in medical, wellness to fitness in the market. And all IoT startups, jawbones,a wearables maker,is second to none in terms of funding.

7. Telehealth:- Telehealth, or telemedicine include the communication of medical Imaging, remote medical diagnosis & evaluations and video consultations with specialists.

8. Self-driven Cars:- Self-driven cars main aim is ensure better safety for the passenger and those on the roads. In self-driven cars use many sensors and embedded system connected to the cloud and the internet to keep generating data and send them to cloud for informed decision-making through machine learning.

9. Smart Supply-chain Management:- Smart supply-chain management is can be solutions for tarcking goods whilw they are on the road. These technology used and sure to stay in the market for long run.

10. Transportation:- The IoT could assist in intrigation of communication, control, and information processing across various transportation system. Application of IoT extends to all excepts of transportation system. Dynamic interaction between this components of a tranportation system enables inter and intra vehicular communication, smart traffic control, smart parking, electronic toll collections system.

11.. Large scale developments:- There are several planned or ongoing large scale developments of IoT, to enable vatter management of cities and system. Nearly everything in city is planned to be wired, connected and turned into a constant stream of data that whould be monitered and analysis by array of computer little, or no human intervention.

Future Scope:- IoT used advanced artificial inttelligence and machine learning have IoT device automation easy. IoT scope in healthcare, automative, and argiculture industries in this blog.

1. Scope of IoT healthcare:- The internet of things has proven to be one of the most usefull technologies in the healthcare industries. It aids in the provision of specialized healthcare to patients, doctors and researchers. Smart diagnosis, wearable devices for tracking health, patient engagement,and several other services are available.

2. Scope of IoT in argiculture:- Food is one of the three essential human needs. We farms to meet the demand for food. However, as the world's population grows, argiculture industries is confronted with number challenges. Changies in the wether and the environment also have a significiant effect on the argriculture industries.

3. Scope of IoT in automative industry:- The internet of things is revolutionizing the automobile industry in the twenty first century. One of the most significant apllications is creating self driving vehicles, which has olterd the automative industry trends.

IV. CONCLUSION

The next phase for the home automation market will occur based on a few key improvements in the technology available in automation, such as improvements in wireless automation solutions as lowering of price points as the market begin to accept home automation usage in larger volumes. Some trends that we foresee for this phase of the industry are big companies like Philips, Siemens will eventually bring out fairly mass market automation products with appealing user

interface but at a lower price point today, and more people will be able to afford the products.

V. REFERENCES

[1] International Journal of Advanced Research in Computer and communication Engineering ISO 3297:2007 Certified Vol.5, Issue 9, September 2016.

[2] International Journal of Engineering Trends and Technology (IJETT) – Volume 32 Number 2- February 2016.

[3] Sagar J.S.T.,M.S Balamurugan and J.A. Vivek, "A wireless framework for automotive monitoring systems," in Indian Journal of Science and Technology, Vol 8[19], IPL0146, August 2015.

[4] https://www.openhacks.com/uploadsproductors/rain_sensor_module.pdf

[5] https://designinformaticslab.github.io/productdesign_tutorial/2017/01/24/soilmoisture_sensor.html.

[6] http://www.hackster.io/techmirtz/using-16x2-lcd-with-ardunio-d89028.

[7] https://www.arduino.cc/en/Guide/ArduinoUnoWiFi.

[8] R. S. Ransing and M. Rajput, "Smart home for elderly care based on Wireless Sensor Network", *Nascent Technologies in the Engineering Field (ICNTE) 2015 International Conference on*, pp. 1-5, 2015.

[9] http://www.designnews.com/author.asp?section_id=1386&doc_id=276684.

[10] R. Dickerson, E. Gorlin, and J. Stankovic, Empath: a Continuous Remote Emotional Health Monitoring System for Depressive Illness. Wireless Health , 2011.

[11] Chirag M. Shah, Vamil B. Sangoi and Raj M. Visharia, Smart Security Solutions based on Internet of Things (IoT) Electronics and telecommunication Engineering Department, D.J.Sanghvi College of Engineering, Vile Parle, Mumbai-4000056, India Accepted 20 Sept 2014, Available online 01 Oct 2014, Vol.4, No.5 (Oct 2014) .

[12] B. Brumitt, B. Meyers, J. Krumm, A. Kern, and S. A. Shafer. Easyliving: Technologies for Intelligent Environments. HUC, 2000.

[13] J. Lu, T. Sookoor, V. Srinivasan, G. Gao, B. Holben J. Stankovic, E. Field, and K. Whitehouse, The Smart Thermostat: Using Occupancy Sensors to Save Energy in Homes, ACM SenSys, 2010.

[14] Armando Roy Delgado, Rich Picking and Vic Grout, Remote-Controlled Home Automation Systems with Different Network Technologies, Centre for Applied Internet Research (CAIR), University of Wales, NEWI, Wrexham, UK.

[15] V. Sathya Narayanan1, S. Gayathri, Design of Wireless Home automation and security system using PIC Microcontroller , International Journal of Computer Applications in Engineering Sciences, ISSN: 2231-4946,Volume III, Special Issue, August 2013.

[16] M. Huang, J. Li, X. Song, and H. Guo, Modeling Impulsive Injections of Insulin: Towards Artificial Pancreas. SIAM Journal of Applied Mathematics 72, 5, 2012, pp. 1524–1548.

[17] M. Kay, E. Choe, J. Shepherd, B. Greenstein, N. Watson, S. Consolvo, and J. Kientz, Lullaby: a Capture & Access System for Understanding the Sleep Environment. UbiComp, 2012.

[18] S. Munir, J. Stankovic, C. Liang, and S. Lin, New Cyber Physical System Challenges for Human-in-theLoop Control, 8th International Workshop on Feedback Computing, June 2013.

[19] S. Munir and J. Stankovic, DepSys: Dependency Aware Integration of Systems for Smart Homes, submitted for publication.

[20] S. Ravi, A. Raghunathan, S. Chakradhar. Tamper Resistance Mechanisms for Secure, Embedded Systems, Proc. of 17th International Conference on VLSI Design, 2004. p. 605.

[21] A Liu, and D. Salvucci, Modeling and Prediction of Human Driver Behavior, Intl. Conference on HCI , 2001.

[22] M. Maroti, B. Kusy, G. Simon, and A. Ledeczi, The Flooding Time Synchronization Protocol, ACM SenSys, November 2004.