



International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Vol. 4, Issue 1, January 2016

Exploiting IOT on Android Devices for Home Security and Home Automation in Techno Abode

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ABSTRACT: Techno Abode, literally means a Technological Home, Mobile devices have been integrated into our everyday life. Consequently, home automation and security are becoming increasingly prominent features on mobile devices. The mobile application can be loaded onto any compatible device, and once loaded, interface with the security system. Commands to lock, unlock, or check the status of the door to which the security system is installed can be sent quickly from the mobile device via a simple, easy to use GUI. Also Visual of your home can be seen will be sent to your device through camera installed in your home.

Also Idea is to make all the Provision which is done manually through the help of Software. Switching the Street Lights, cameras ,traffic lights and the Main Power system through the help of server of city Software or Android App. And As the Risks of This Can be an Innovation in the Home Security. Also the Lights and Other Electrical Appliance can also be Controlled with the Help of this Project. Basic map of the project will be represented with the help of physical model.

KEYWORDS: Internet of Things, Home Automation, Home Security, Smart Appliances,

I. INTRODUCTION

Now a days use of Cellular Phones have been Increased, Which means we See Android Devices with most of the people. Being Busy in our Schedule, Sometimes it happens that we Forget to turn off the Lights, close the taps, or turn off other Home appliances by which we face Problems like High Electricity bills, loss of Water, leakage. When we are not at our Home, mostly when we are out of Town, we are Worried about security of our Home and Belongings. Now a days no. of Home Robbery has been Increased. because of which its Risky to keep Important Things like Money, Documents or Jewellery at Home.

So Techno Abode Aims at Controlling most of the Home Appliances present in the Home in a Remote way with the Help of combination of Software and Hardware and Android Application. We can Turn OFF or ON the Lights or any other Home Appliances, and also close the Taps. Control to the Door Locking System will keep the Home Safe and also keep a watch on it with the help of camera.

To make Techno Abode more Mobile and Remote, we are using Wireless Technology like Bluetooth, WiFi, We are Trying to use the Technology Internet of Things (IOT) Which will help to control the Devices without the bound of Range.

II. RELATED WORK

Based on the IEEE802.11 standard, wireless home network is known as WiFi, which provides a medium for transferring media files [1]. In the earlier time researcher tried to develop one set of home-security with easy-operated, DIY form, and intelligent system [2], in which the Bluetooth wireless transmitting interface replaced traditional ones to make circuits more simple and less cost[3], and combined with auto dialing and answering phone-net system, alarm system, and speech echo function, all those design were in simple process in order to make consumers easily set up in living space and built a entirely perfect and valid security system.



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The rapid development of Internet of things (IoT) technology makes it possible for connecting various smart objects together through the Internet and providing more data interoperability methods for application purpose. Recent research shows more potential applications of IoT in information intensive industrial sectors such as healthcare services. However, the diversity of the objects in IoT causes the heterogeneity problem of the data format in IoT platform. Meanwhile, the use of IoT technology in applications has spurred the increase of real-time data, which makes the information storage and accessing more difficult and challenging. In this research, first a semantic data model is proposed to store and interpret IoT data[4].

In the future Internet of Things (IoT), smart objects will be the fundamental building blocks for the creation of cyber-physical smart pervasive systems in a great variety of application domains ranging from health-care to transportation, from logistics to smart grid and cities. The implementation of a smart objects-oriented IoT is a complex challenge as distributed, autonomous, and heterogeneous IoT components at different levels of abstractions and granularity need to cooperate among themselves, with conventional networked IT infrastructures, and also with human users[5]. In this paper, we propose the integration of two complementary mainstream paradigms for large-scale distributed computing: Agents and Cloud. Agent-based computing can support the development of decentralized, dynamic, cooperating and open IoT systems in terms of multi-agent systems. Cloud computing can enhance the IoT objects with high performance computing capabilities and huge storage resources. In particular, we introduce a cloud-assisted and agent-oriented IoT architecture that will be realized through ACOSO, an agent-oriented middleware for cooperating smart objects, and Body Cloud, a sensor-cloud infrastructure for large-scale sensor-based systems[6]. In recent years, the home environment has seen a rapid introduction of network enabled digital technology. This technology offers new and exciting opportunities to increase the connectivity of devices within the home for the purpose of home automation. Moreover, with the rapid expansion of the Internet, there is the added potential for the remote control and monitoring of such network enabled devices. However, the adoption of home automation systems has been slow[7].

III. EXISTING SYSTEM

The previous research work has been done on:

- The existing system consisted has been separately developed using different hardware's which makes it difficult to operate on different devices.
- The current research also discusses about the problem of range in this system because it is made using the Bluetooth. This cause a range of 10 meters approximately, which causes problem when we go out of the range.
- Most of the existing system can only turn on/off the lights of our home in the specified range of Bluetooth.
- While the system doesn't satisfy the customer as it is of no use when we are out of our area and forgot to turn of the lights or any other electrical appliances connected to the switch board.
- Existing technology doesn't include the door locking system using IoT.
- Other approaches include different hardware which has less output ports due to which less smart devices can be controlled.

IV. PROPOSED SYSTEM

A [thing](#), in the Internet of Things, is similar as a person with a heart monitor implant, a farm animal with a [biochiptransponder](#), an automatic movable device that has a [sensors](#) built-in to alert the driver when tire pressure is low -- or any other natural or man-made object which is assigned an [IPaddress](#) and provided with the ability to transfer data over a network. So far, the Internet of Things has been most nearly related with machine-to-machine ([M2M](#)) communication in manufacturing and Fuel utilities. These Products which are built with M2M communication capabilities are often referred to as being *smart*.

The module descriptions of the proposed research work is as follows:

A. Internet of Things :

Internet of Things (IoT) is a structure in which objects or people are provided with unique identity and the ability to relocate data over a network without requiring two way handshaking between human-to-human i.e. human-to-computer or source to destination interaction. Divergence of wireless technologies brought the Internet of Things in Existence. Internet of Things extends internet connectivity ahead of traditional devices like desktop and laptop, smart-



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phones to a various range of devices and day by day things that develop embedded tools to communicate & interrelate with the external environment through the internet. Internet of Things has brought Internet to a next level. Objects are identifiable and they obtain intelligence by making circumstance related decisions by the desirable quality of fact that they can share information about themselves. The data can be accessed that has been collected by other things. The aim of the Internet of Things is to support "Ubiquity" i.e. Available globally that enable things to be connected anytime, anywhere, with anything and anyone ideally using any path/network and any service. Over the last few decades, analysis done on the development of market strategy and the applications along with their economic strength & the impact of its on focusing social and physiological, economical growth, technical current trends has been changed dramatically. Over the past four decades, the definition of Smart Cities has emerged to mean many things to many people. Meaning of "smart" is utilizing sensitive information and communications technology (ICT) remains consistent with the Internet Technologies to address urban challenges

B. WiFi

Undoubtedly, Wi-Fi is available in nearly every home, so it works with a wide range of automated devices which already support this standard and thus its advantages are many. Nearly everyone has access to Wi-Fi, if not all, consumers considering home automation systems have it installed. Wi-Fi was designed to handle large amounts of data traffic, so bandwidth to control your home devices is probably very easy. From a security point of view, Wi-Fi Protected Access (WPA and WPA2) encryption has been shown to provide reasonable security for home users when activated and implemented. However, Wi-Fi has a limited bandwidth issue. Its connection speeds can be lowered or even disrupted by having other Wi-Fi devices in the same general area. Thus, you can expect slower response times. The good news is that most home automation endpoints are not bandwidth hogs, so response time may not matter. Battery consumption is also problematic, as Wi-Fi consumes much more power than other technologies, and when combined with its limited bandwidth, it may not be an optimal solution.

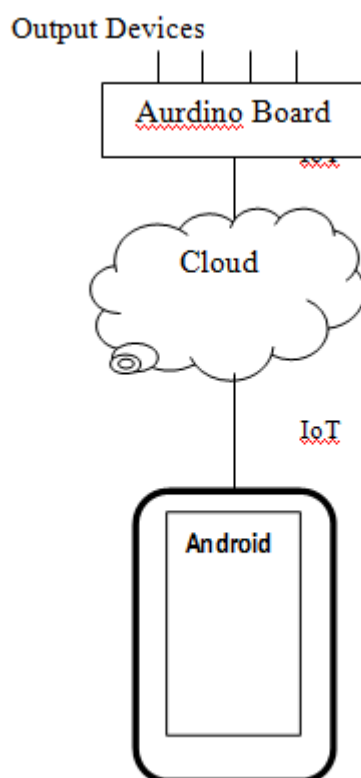
C. Home Automation and Security: Home automation is the residential extension of [building automation](#). It is automation of the home, housework or household activity. Home [automation](#) may include centralized control of lighting, [HVAC](#) (heating, ventilation and air conditioning), appliances, security locks of gates and doors and other systems, to provide improved convenience, comfort, energy efficiency and security. [Home automation for the elderly and disabled](#) can provide increased quality of life for persons who might otherwise require caregivers or institutional care. The popularity of home automation has been increasing greatly in recent years due to much higher affordability and simplicity through smartphone and tablet connectivity. The concept of the "[Internet of Things](#)" has tied in closely with the popularization of home automation. A home automation system integrates electrical devices in a house with each other. The techniques employed in home automation include those in building automation as well as the control of domestic activities, such as [home entertainment systems](#), [houseplant](#) and yard watering, [pet feeding](#), changing the ambiance "scenes" for different events (such as dinners or parties), [lighting control system](#), and the use of [domestic robots](#). Devices may be connected through a [home network](#) to allow control by a [personal computer](#), and may allow remote access from the [internet](#). Through the integration of [information technologies](#) with the home environment, systems and appliances can *communicate* in an integrated manner which results in convenience, energy efficiency, and safety benefits. Nowadays, in our daily life the home-security system is popularly adopted, but in most occasions the security system is usually occupied or organized by big insurance companies or specific security companies. That means users need to pay higher money for management fee to protect the safety of their own houses. In this paper we develop another home-security system combining with some brand-new technologies such as wireless sensor network (IoT) home-security system that was not only easy to accomplish the security work of people's houses, but also save much money. On the other hand, since the system owns the synchronous operation with Android devices far away, it is easily used for intelligent system such as digital-house in the future. The system for the "Home Automation and Security" has a vast scope & almost limitless application in today's technology driven market. The system can be made efficient by modularizing each and every component of the system hence ensuring that it can be integrated with a varied range of devices. The basic vision of the system is to provide a convenient & secure system to the user, which would aid the high degree of mobility & control we aim to achieve nowadays

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D.Circuit Diagram:



In the above Circuit Diagram, we can see that multiple output devices (smart appliances) connected to a Aurdino board. The Aurdino board sends and receives the commands from the appliances and does the Further processing with the help of IoT. And then it is sent to the Local Cloud. The Aurdino board has different outputs to which we can connect and Control Different Electrical Appliances.

The user sends the commands from his Android device and then through the Cloud and with the Help of IoT the commands are sent to the Aurdino board, to which the output devices are connected. According to the given commands, The Device gives the required output.

V. POSSIBLE APPLICATIONS OF THE SYSTEM

Security & Surveillance – Various security systems can be integrated along with this system such as, cameras, motion sensors, luminance sensors etc. to enable the users to monitor various accepts of their home via a remote machine in real-time.

Home Application– The Home appliances like Lights, fans, or any other devices connected to the switch-board can be controlled by the application software. i.e. turning ON and OFF.

The system can be programmed to switch on certain lights as & when required, using the timers in the circuit. Example: turning on the porch light at 7PM every day.

Offices/School/Colleges- Many Applications which may be left ON during the working Hours can be switched OFF using Application software.

Industries-- The Machinery which are Connected to the Software can be controlled at anytime.



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VI. CONCLUSION

The system for the “Home Automation and Security” has a vast scope & many applications in today’s technology driven market. The system can be made efficient by modularizing each and every component of the system hence ensuring that it can be integrated with a large range of devices. The basic vision of the system is to provide a convenient & secure system to the user, which would aid the high degree of mobility & control we aim to achieve nowadays.

Current State of Research in the problem of the world. Different devices using for home security, our goal is to use only device that is mobile which covers all the functionality and capability. Integration of different parts and their solution can be developed with current devices and applications. Using mobile device, a complete individual system which has all the features combine like audio , video with communication devices with wifi, Bluetooth and Internet.

REFERENCES

1. L. Ophir, “802.11 Over Coax – A Hybrid Coax – Wireless Home Network Using 802.11 Technology”, Consumer Communications and Networking Conference, (2004) January, pp. 13-18.
2. Z.Y. Zhou, “Design of Self-developed Home-security and Anti-disaster System”, Master Thesis, Dept. of Electrical Engineering, National Cheng-Kong University, Tainan, Taiwan, 2002.
3. P.L. Lai, “Bluetooth-Resolution for Short Distance Communication”, Master Thesis, Dept. of Electronic Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan, 2007.
4. [BoviXu](#) Coll. of Econ. & Manage., Shanghai Jiao Tong Univ., Shanghai, China
[LiDaXu](#) ; [HongmingCai](#) ; [ChengXie](#) ; [JingyuanHu](#) ; [FenglinBu](#).
5. [Fortino,G.](#)
Dipt. di Ing. Inf., Modellistica, Elettron. e Sist.
Univ. della Calabria, Rende, Italy
6. Guerrieri A. ; Russo W. ; Savaglio C.
7. [Felix](#)
Sch. of Electr. Eng., Noorul Islam Centre for Higher Educ., Kumaracoil, India
Raglend, I.J.