



## HOME AUTOMATION USING ANDROID

<sup>1</sup>T.Suresh, <sup>2</sup>Sd.Shabnam, <sup>3</sup>Tallam Naga Thirisha, <sup>4</sup>K. A.Sushma, <sup>5</sup>S.Eswarramakrishnasai

<sup>1</sup>Professor, Department of ECE in Narasaraopet Institute Of Technology

<sup>2,3,4,5</sup>Assistant professors, Department of ECE in Narasaraopet Institute Of Technology

### ABSTRACT

In today's world automation has played a key role in developing human's life and enhancing safety and security protocol. Mobile phones nowadays are very common to all people. Everyday household work like switching ON /OFF the fan or lights, decrease or increase in air conditioner temperature can be easily done using smartphone. Today home automation system (HAS) has been a key area of research in recent times. Home automation using android platform eliminates the process of individual involvement and enhancing easier and faster daily household needs for everyone. The home automation system (HAS) designed on android platform has been interfaced with 8 bit microcontroller i.e. arduino to control the home appliances using relay. Bluetooth has been used as the most reliable and efficient technology for short range communication. Different sensor has been used which are illustrated in details below. This paper provided a novel approach enhancing automation in household works and eliminating the traditional method of switching.

Keywords: Android Smart Phones, Bluetooth Module,

### 1. INTRODUCTION

- Home automation is the use of one or more computerized remote to control basic home appliances remotely and sometimes automatically. It is designed to control lighting points, entertainment systems, and home security such as access control as well as alarm systems.
- Automation and wireless technology have become a key technology in the twenty-first century. It helps communication between one point to another without the use of cables, and this makes the system to be more secure.
- The attractiveness of controlling electrical devices through a phone has been increasing because of its high performance and availability. Connecting appliances through smartphone is useful for the elderly and physically disabled persons, who can access and control the appliances from where they are located and access them remotely without the help of others.
- Time is a precious thing; everybody wants to save time as much as they can. Home automation systems are a technological means of intelligent monitoring, control, feedbacks and actions of home appliances according to the needs of the home occupants.
- Wireless medium such as ZigBee, Bluetooth, wireless Fidelity (Wi-Fi), Short Message Service (SMS), Android Application, Wireless Sensor Network (WSN), Radio frequency identification (RFID) and Software Defined Network just mention a few serves as a medium of communication between the appliances and the control unit and according to home automation are essential for non-invasive and non-intrusive implementation of the advanced automation system.



- Today's homes require sophistication control in its different gadgets which are basically electronic appliances.
- This has revolutionized the area of home automation with respect to an increased level of affordability and simplicity through the integration of home appliances with smart phone and tablet connectivity. Smart phones are already feature-perfect and can be made to communicate to any other devices in an ad hoc network with a connectivity options like Bluetooth .
- With the advent of mobile phones, Mobile applications development has seen a major outbreak. Utilizing the opportunity of automating tasks for a smart home, mobile phone commonly found in normal household can be joined in a temporary network inside a home with the electronic equipments. Android, by Google Inc. provides the platform for the development of the mobile applications for the Android devices .
- Home automation system is a mobile application developed using Android targeting its vast market which will be beneficial for the masses. According to the International Data Corporation (IDC) Worldwide Quarterly Mobile Phone Tracker, Android maintained its leadership position in global market share .
- Bluetooth is a short-range wireless communication technology that comes in handy as the solution while communicating over an ad hoc network environment like the home environment

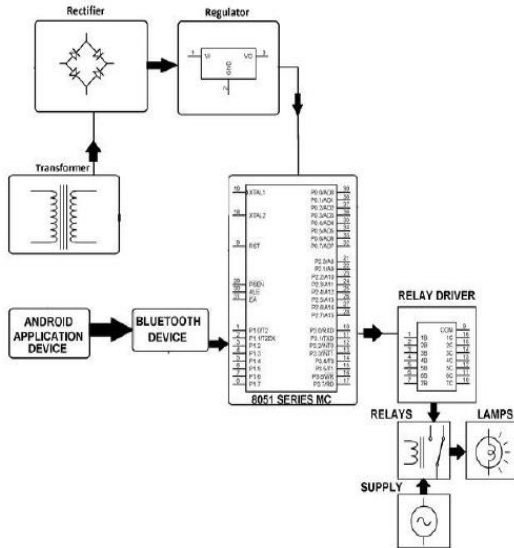
for connecting the home appliances with the mobile phones.

- Bluetooth works over 2.4 GHz frequency range up to the range of 100 m with 1 Mbps speed, providing a safe and efficient solution for controlling home automation .

## 2. Existing systems

This paper describes an investigation into the potential for remote controlled operation of home automation systems. It considers problems with their implementation, discusses possible solutions through various network technologies and indicates how to optimize the use of such systems. The home is an eternal, heterogeneous, distributed computing environment (Greaves, 2002) which certainly requires a careful study before developing any suitable Home Automation System (HAS) that will accomplish its requirements. Nevertheless the latest attempts at introducing Home Automation Systems [1] in actual homes for all kinds of users are starting to be successful thanks to the continuous standardization process that is lowering the prices and making devices more useful and easier to use for the end user. Even so several important issues are always to be handled strictly before developing and installing a Home Automation System; factors like security, reliability, usefulness, robustness and price are critical to determine if the final product will accomplish the expected requirements

### 3. BLOCK DIAGRAM :



### 4. PROBLEM STATEMENTS:-

Today people are looking at ways and means to better their life-style using the latest technologies. Any new facility or home appliance that promises to enhance their life-style is grabbed by the consumers. The more such facilities and appliances are added, it becomes inevitable to have easy and convenient methods and means to control and operate these appliances. Conventional wall switches are located in different parts of a house and thus necessitates manual operations like to switch on or off these switches to control various appliances. It gets virtually impossible to keep track of appliances that are running and also to monitor

#### 3.1 PROPOSED SYSTEM:

- The proposed system eliminates the complication of wiring in case of wired automation. Considerable amount of power supply is also possible. Operating range is more than the Bluetooth.
- The existing system does not allow remote monitoring and controlling of appliances. But where as in the proposed system the system using the android based home automation system it allows to monitor and control the appliances.
- The home automation of the existing system in 1990's, the people in every home has electronic devices which are controlled manually but in our proposed system we are controlling all electronic appliances through remotely.
- The android application have become this popular in this 21st century is due to dominant use of the internet, evolution of smart phone technology and raised standard of mobile communication.

#### ADVANTAGES:

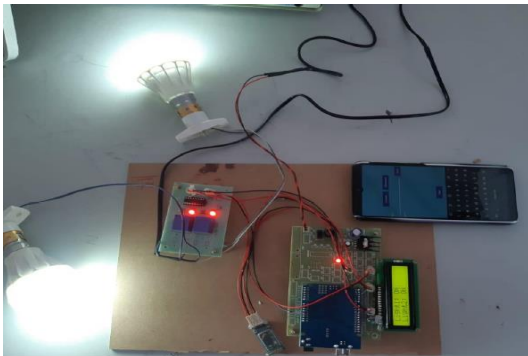
Managing all of your home devices from one place. The convenience factor here is enormous. Being able to keep all of the technology in your home connected through one interface is a massive step forward for technology and home management. Theoretically, all you'll have to do is learn how to use one app on your smartphone and tablet, and you'll be able to tap into countless functions and devices throughout your home. This cuts way back on the learning curve for new users, makes it easier to access the functionality you truly want for your home. home automation systems can connect motion detectors, surveillance cameras, automated door locks, and other tangible security measures throughout your home so you can activate them from one mobile device before heading to bed. You can also choose to receive security alerts on your various devices depending on the time of day an alert goes off, and monitor activities in real-time whether you're in the house or halfway around the globe. Easier to Lock

and Unlock the Doors Save Energy with Smart Energy Consumption: Know About Maintenance and Service: Customize as Per Your Convenience: Ease of Using smart home technology:

### DISADVANTAGES:

As with all computing devices, security will become a greater issue as more people use home devices. Certainly there will be a range of security concerns that arise and a subsequent mushrooming of home security software and devices. Significant installation costs. Reliable internet connection is crucial. Security issues Technological problems in connected homes. You may lock yourself out of your own house. Some people may not like smart technologies.

### 5. Results:



### Execution:

Step-1: Power on.

Step-2: Now the bluetooth module HCO5 will on then the red light present in the bluetooth module will be on.

Step-3: On bluetooth from mobile and scan to match the pair by entering password. (password: 1234).

Step-4: Next install the BT Terminal App and then connect this HCO5 to BT Terminal App, after connecting connection

message will be displayed at the top.

Now in App we see Tx, Rx and now first light will on at Tx and First Relay will on as follow:

First light ON

First Light OFF

Second Light ON

Second Light OFF.

Step-5: Now same will display on LCD.

### : WORKING:

We are sending commands from BT Terminal Tx, Rx and bluetooth Tx will be connected with aurdino Rx and aurdino Tx will be connected with Bluetooth Rx.

When we send commands from BT Terminal app then from phone Bluetooth signal will transfer and communication occurs. From Bluetooth we are using oneway communication so from phone at Tx we are giving commands and at Rx we get light on and off symbols.

We send Tx to Bluetooth then Bluetooth module hco5 will receive signal from phone hco5 and send signal to microcontroller aurdino UNO (The command that received from android mobile will be send to the aurdino uno using Tx and Rx pins here we are using UART Communication).

U - Universal

A- Asynchronous

R-Receiver

T- Transmitter

Using UART communication data will be passed from android to aurdino uno.

Now aurdino uno will on and off relay 1 and relay 2 of Rx UART communication data based on the signal provided by user.

Finally relay 1 and relay 2 is connected to 2 loads. So in our project we attached two Led bulbs for two loads.





## 6. CONCLUSION:

The paper proposes an intelligent automation system using Google Cloud Messaging server and Android operating system as the emerging technologies used in home automation area.

The system has three hardware components: a local device to transfer signals to home appliances, a web server to store customer records and support services to the other components, and a mobile smart device running Android application. The functionalities of each different component of the system are dissected and the communication infrastructures of the parts are explained. Distributed cloud platforms and services of Google are used to support messaging between the components. Such a design of service and data distribution through public and free Google platform makes the system cost-effective.

The prototype implementation of the proposed system is evaluated based on the criteria considered after the requirement analysis for an adequate home automation system. According to the evaluation results, the proposed home automation system, which uses state-of-the-art cloud technologies and Android applications, is adequate in overall.

The feature work may be to focus on how to measure those criteria in units rather than summarizing the result as "adequate" or "inadequate".

## 7. FUTURE SCOPE:

This project can be additionally created by coordinating it with the web to screen your home while sitting in a remote region. By doing this, one can watch out for his or her home through a web associated with the client's cell phone or PC. This won't just enhance the security of your home in this advanced world however will likewise aid preservation of vitality like in the event that

you exited any home apparatus exchanged on by botch, at that point you can check the status of the machine on the graphical interface made on your versatile and can turn it off utilizing the web availability.

## REFERENCES:

1. K. Bromley, M. Perry, and G. Webb, "Trends in Smart Home Systems, Connectivity and Services", [www.nextwave.org.uk](http://www.nextwave.org.uk), 2003.
2. M. Kovatsch, M. Weiss, and D. Guinard, "Embedding internet technology for home automation", Proc. of ETFA, 2010, pp. 1-8.
3. F. Moraes, A. Amory, N. Calazans, E. Bezerra, and J. Petrini, "Using the CAN protocol and reconfigurable computing technology for Web-based smart house automation", 14th Symposium on Integrated Circuits and Systems Design, pp. 38-43, 2001.
4. K. Gill, S.-H. Yang, F. Yao, and X. Lu, "A zigbee-based home automation system", IEEE Transactions on Consumer Electronics, vol. 55, no. 2, pp. 422-430, May 2009.
5. N. Sriskanthan, F. Tan, and A. Karande, "Bluetooth based home automation system", Microprocessors and Microsystems, vol. 26, no. 6, pp. 281-289, 2002.
6. A.R. Al-Ali and M. Al-Rousan, "Java-based home automation system", IEEE Transactions on Consumer Electronics, vol. 50, no. 2, pp. 498- 504, 2004.
7. H. Ardam and I. Coskun, "A remote controller for home and office appliances by telephone", IEEE Transactions on Consumer Electronics, vol. 44, no. 4, pp. 1291-1297, 1998.
8. E.O. Heierman III and D.J. Cook, "Improving home automation by discovering regularly occurring device



usage patterns”, Proc. of Int. Conf. on Data Mining, pp. 537-540, 2003.

9. Grid-Control web site, [www.grid-control.com/Heimautomatisierung.htm](http://www.grid-control.com/Heimautomatisierung.htm) (accessed 24 November 2013)

10. Fukuoka Smart House web site, [www.smartenergy.co.jp/fukuoka/](http://www.smartenergy.co.jp/fukuoka/) (accessed 24 November 2013).

11. IlkerKorkmaz, Member, IEEE, “An Android Based Home Automation System”, IEEE Department of Computer Engineering, Izmir University of Economics Balçova, 35330, Izmir, Turkey 2013.

12. Shiv Kumar, Member, IEEE, “Android Based Smart Home System with Control via Bluetooth and Internet Connectivity”, School of Engineering and Physics University of the South Pacific Suva, Fiji 2014.