

PERVASIVE SMART HOME SYSTEM USING BLUETOOTH: A REVIEW

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Abstract

Evolution in electronics and embedded systems in past decades has made remarkable and vital advancement in electronic world. In this rapid world, people want to save time and live trouble free life; this can be achieved by home automation technique. Thus, makes life simple and fruitful to live. Communication plays major role in today's era. This paper gives the review about the existing technologies in present world. This project is elegant mixture of android application and embedded system. The project depicts how serial communication takes place between Bluetooth module and smart phone using android application in home automation. Personal Area Network (PAN) has been arised in home surroundings due to smart automation. Smart phones & Tablets has become powerful tool in smart living. Smart phones have become common in today's life and plays major role. Thus the use of android application in smart phones helps people to operate the home appliances more easily and happily without any trouble. However, to enhance the beauty of smart living, our project shows how the home switches or appliances can be operate, controlled and monitored by smart phone which have android based application in it and which communicates with it serially. The main purpose of this project is to establish a wireless communication between several devices.

Index terms: Android Application, Bluetooth module, Relay, LEDs, ARM7 Microcontroller.

1. INTRODUCTION

Technology is changing remarkably and advancement has been made incredibly. Smart home living is a egress concept that lure the background of several area of science and engineering technology. Wireless technology plays vital role ,as it communicates with several devices wirelessly. The wireless communication brings prominent amelioration in field of automation. The automatic control on appliances helps people to live easy life. Bluetooth technology is easy to use and efficient. The features of Bluetooth is it has short range upto 100m , small size thus portable, low power consumption. Android application i.e HyperTerminal is installed in the smart phone which communicates serially with Bluetooth device. In the world of integrated circuits, microprocessors & microcontrollers it gives us the breakthrough to enrich the beauty of standard of living by using home automation. The benfit of this project is it saves electricity, time & money. It also helps the disabled people to operate and control home appliances with ease, while sitting in a particular room. We can use several microcontrollers like 8051, FPGA microcontroller, ARM7, ARM9 etc. To control devices, In this project we have used ARM7 microcontroller because of portability and low power consumption. Coded signals are sent to several appliances in order to operate it smoothly by smart phone. This project is combination of the Android mobile technology and embedded system

[5]. The main cogitation of this project to make the smart home ubiquitous.

2. LITERATURE REVIEW

[1]. Smart Bluetooth And GSM Based Home Automation System. This project depicted the difference between Bluetooth and GSM used for home automation. Advantages of using Bluetooth: - Bluetooth do not contain cables to connect two devices. Hence by using Bluetooth one may save money and time required for connection of two devices via cables. Bluetooth is small size device, hence do not make system bulky. Consume low power of the order of mW and of low cost device.

Advantages of using GSM: - GSM is worldwide used global system for mobile communication. Also using GSM controlling done by SMS.

This proposed system also gives brief explanation of working of project using Bluetooth and GSM. If Bluetooth is used then Appliances connected to the output gets ON or OFF by sending alphabet controlled by Blu Control application of android phone. eg. "A" press -first LED get ON or OFF depending upon the programming written for alphabet A. If GSM is used then controlling and monitoring of appliances done by message system ex. "All OFF" -to switch off all appliances.

[2]. GSM Bluetooth Based Remote Monitoring And Control System With Automatic Light Controller: This project introduced the classification of existing remote and control systems, processors used in different system, and techniques. There are 5 types of remote monitoring and control system (1) Internet (2) Bluetooth (3) GSM (4) RF (5) GPRS. In this system they combined Bluetooth module as well as GSM module. It is advantageous over single Bluetooth or GSM module. Because Bluetooth is used to control devices within range and GSM is used to control devices through GSM network by transmitting and receiving message. Used of temperature sensor gives information about temperature rise, IR sensor gives control of light. A/D and EPROM used to convert analog data to digital data and recording of data providing by sensors respectively.

[3]. Smart Home System Controlling Electrical Appliances via Bluetooth ad hoc Network Communication On Android Platform:

Basically ad hoc network [3] is infra structured. It is having concept of nodes connection .Two main hardware concepts are (1) Android node (2) Arduino node. Android nodes work on android platform using mobile phone basically called domain mode used for communication having speciality of blocking and permitting devices for communication network. Slave nodes are arduino nodes having different roles like intermediate node and destination node. It uses GUI to configure the electrical appliances connected on the arduino nodes from domain node. Also gives information about routing table of nodes and message packets.

[4]. Home Automation And Security System Using Android ADK:ADK is accessory development kit and it is microcontroller based on ATmega 2560[4]. It has USB host interface to connect the android based phones. Block diagram includes Android device, USB connector, ADK and embedded devices. By using this project gas leaks, water leaks and fire can be detected. Smoke detector is used for detection of fire. Security camera provides information about activities around the house. Likewise lots of applications mentioned in this paper [4]

[5]. Android based home appliances control system:In this project they represents two units in their section viz. Process unit & monitoring unit. Process unit includes PIC microcontroller, LCD and Bluetooth module whereas monitoring unit consist of smart- phone. They have used PIC16F877 microcontroller which is 8 bit, RISC type architecture and 40 pin IC. They make use of dimmer circuit in their system. Dimmer circuit are the devices used to vary the brightness of the light, by decreasing and increasing the RMS voltage. Bluetooth is technology used for exchange of information. Thus, home automation plays vital part in wireless communication.

[6].Smart Home Automated Control System Using Android Application and Microcontroller:

They have used arduino UN microcontroller. Their project gives the idea about home automation using Bluetooth module .RS232 from smart phone sends data to the Bluetooth module via wireless network. Bluetooth module receives data and futher pass it to

microcontroller. The microcontroller sends data to the output. As per data receives by the home appliances the switches will turn ON and OFF.

3. CONCLUSION

Thus we conclude that , the automation project has various future scope. By connecting embedded devices to the system we can reused the project ex. connecting sensors to the system gives security and automation. There is no need to develop another security module. There are different techniques for controlling and monitoring of home appliances and these techniques have been surveyed. During survey we find all systems are economical and reliable. Very useful to all persons in this fast moving world as well as for handicapped persons.

ACKNOWLEDGEMENT

I owe a debt of gratitude to **Dinesh V. ROJATKAR** Head of Department of Electronics &Telecommunication Engineering Government of College Chandrapur (M.S) for providing his precious time and advice along with excellent supervision.

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