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GSM Based Home Appliances Monitoring System for Handicapped People

[1]Aakriti Roy, [2]Priyanka Gurjar, [3]Pooja Morkile

[1,2,3] ENTC Dept., BVCOEW, Pune, India

Abstract: **The aim of the project is to use Bluetooth communication for controlling the home appliances and monitoring the main door of home using smartphone. Now-a-days it is a kind of requirement to have a modern technology for security of our homes and also be able to monitor the various activities around without interrupting the current work one is doing. Fine –grained access rights are built into the system which also leverages external social networking sites for making access control and invitation interface easier for the end users. So the following system is designed using which a person will be able to control (switch on/off) any of the appliances connected in home .The proposed system consists of a control console interfaced with different sensors using bluetooth. Suspected activities are conveyed to remote user through SMS (Short Message Service) or Call using GSM (Global System for Mobile communication) technology. Upon reply, the remote user can control his premises again through GSM-Bluetooth combination.**

Keywords: **GSM-Bluetooth combination, Bluetooth communication for controlling the home appliances.**

I. INTRODUCTION

As the web is transforming from being the medium of just carrying pages towards becoming a platform for disturbed services, we are in the era olf havin g everything in the "cloud".[2]The world has become a global village due to revolution in the technology. In this revolution the IT (information technology) played an important role. Similarly the revolution in IT makes mankind dream come true to have an automated home. Home automation use microprocessor-based intelligence to integrate or control electronic products and systems in the home. So a variety of research and many solutions had proposed on home automation. These systems use GSM Bluetooth etc. [1]

Generally, home automation research targeted many needs. Some applications fulfill the sophisticated and luxury requirements, other focuses the special needs like elderly and the disabled etc.

The system consists of a real-time home monitoring sub-system and a light control sub-system. A home server with a home camera caters for home status through video to client. It also works as a home gateway to provide interoperability between the heterogeneous GSM and local and remote control over the home's light devices through the light control sub-system. [4]

A client can access the home server through a web service or smart phone. The client can monitor home status through a real-time monitoring sub-system and control the lights through the On/off control panel. [3]

This project is about developing a system which will have connection to different sockets through relay and whichever appliance is connected to the socket can be controlled that is, switched on/off using a cell phone. Normally in a home appliance, there is fan, lights, refrigerator, television, mobile chargers etc. All of these can be controlled sitting in one place through a phone. The action to be performed will be commanded through the phone using Bluetooth connection to the system developed through. An extra control unit circuit called as door unit is also added to control the movements happening outside and in and around the door for which ARM7 microcontroller is used. A PIR sensor is used to detect

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any human presence or motion outside the main door. A camera is also attached to the door to recognize the image of the person outside which again will be viewed on cell phone. [2]

This is a fully-fledged system in order to keep control over all the home appliances by sitting on one place. It also provides security system. From medical point of view it is also useful for the handicapped person who cannot move like the normal people. [1]

II. LITERATURE REVIEW

A. Home Networking Standards:

Digital home related standardization activities, such as those of the UPnP Forum and digital living network alliance (DLNA) have been focusing on common protocols and guidelines for enabling device interoperability. Their target is to provide a framework that allows devices from different manufacturers and vendors to seamlessly co operate. The scope of these standards has been how devices discover each other, communicate their capabilities and use each other's services, in order to provide to home users richer experiences. In the area of home hosted content, the UPnP Audio/Video (AV), architecture allows media, stored on a home media server such as a Networked Attached Storage (NAS).[2]

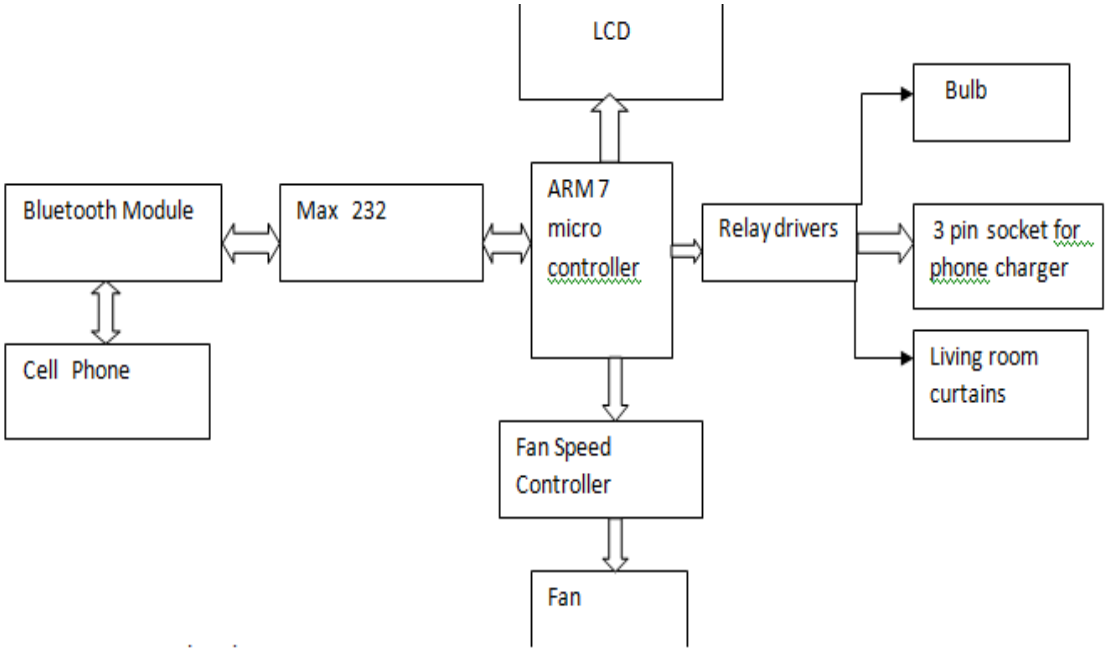
B. Remote Access to Home Networks:

A few solutions to access home hosted content, have been proposed by the research community . this allows interconnection of multiple homes, using an extension of the home getaway, for bridging the home networks. But, solution is focused on interconnection of homes, with a static home to home configuration, which does not cover the use cases of single remote devices accessing home resources. Other solutions cover this use case. [2][4] However this solution is limited only to multimedia content sharing service to the remote clients.

C. Hosting Services At Home:

There has been two approaches for electric power management in homes from smart grids and home network. A smart grid measures and reads the consumption of electricity remotely using a smart meter and communication network.[3]. The main contribution has been to design and implement energy measurement and control systems. The work proposes the usage of the web service paradigm in home.[2].

III. SYSTEM BLOCK DIAGRAM



(Appliance unit)

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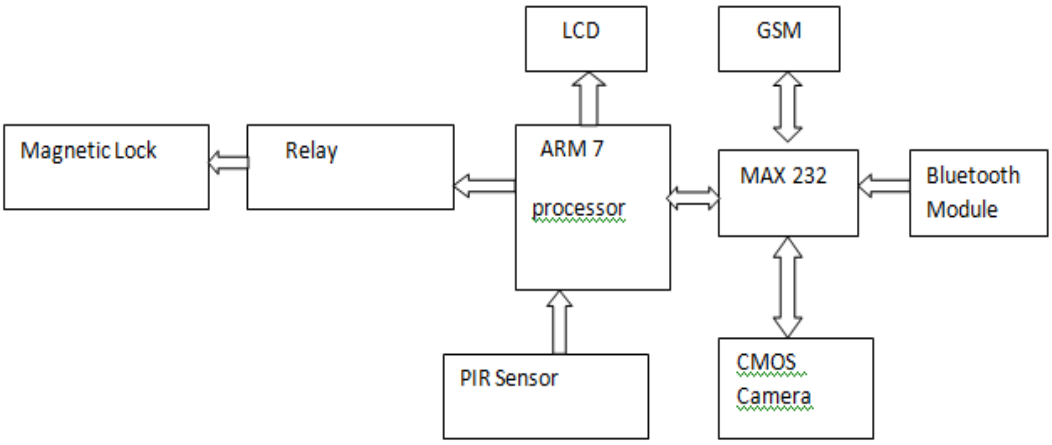

(Door unit)

Figure: Block Diagram of System

IV. SYSTEM ARCHITECTURE

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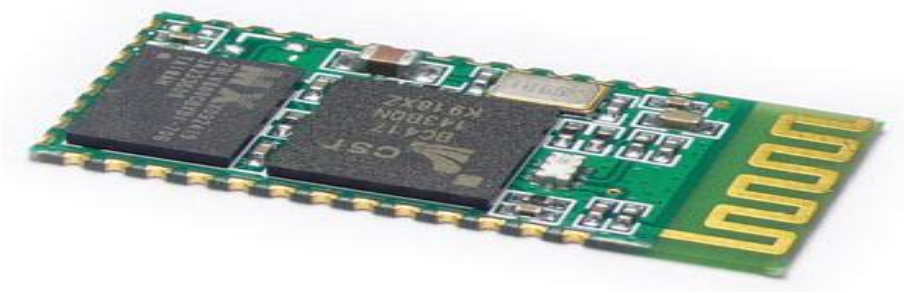

Bluetooth module HC-05

GSM-Modem:

G-2403R delivers all the power of instant wireless connectivity to your multiple applications. Because the modem is fully type approved, it can dramatically speed up the time to market with SMS features. Housed in a rugged aluminum extrusion casing with good aesthetics and surface finish to withstand toughest field environments. The open interfaces and AT commands can embed and run your applications very efficiently. With its proven technology, the modem can be relied on for enduring and dependable performance.

V. CONCLUSION AND FUTURE WORK

In the system, low cost, secure, ubiquitously available, auto-configurable, remotely controlled solution for automation of homes has been introduced. The approach discussed in the system is simple and has achieved the target to control home appliances remotely using the sms based system satisfying user needs and requirements.

GSM technology capable solution has proved to be controlled remotely, provide home security and is cost-effective as compared to the previously existing system. Hence we can conclude that the required goals and objectives of the system have been achieved.

We will be implementing the basic level of home appliance control and remote monitoring.

The system is extensible and more levels can be developed.

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