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Automatic Smart Home Security System

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Abstract - *Today is the world of advanced ubiquitous mobile applications which are used thoroughly to save energy and time. These applications ease day-to-day life of a common people. Based on these applications and technologies we designed a "Automatic Smart Home Security System". An attractive market for "Smart Home Security System" is for busy families and individuals with physical disability. Users can controls electrical appliances in home or office via smart phone. Application will also provide secure notification and alarm for Burglary, fire hazards and LPG leakage. This project aims at controlling every happening at home or offices on your fingers.*

Key Words: Wi-Fi, Android, Fire Sensor, LPG Sensor, IR Sensors, Microcontroller, Relays.

1.INTRODUCTION

The current situation is such that people have to manually operate various kinds of appliances which at times is not workable for busy families and individuals with physical limitations. Also there is no effective means of controlling various accidents due to gas leakage, fire and burglary. Our system will provide proper notifications to users for such incidents and alert them through messages on their mobile phone. Smart home is a very promising area, which has various advantages such as providing increased comfort, safety and security to people. It is rational use of energy and other resources thus contributing to a purposeful savings in terms of time and more secure. Such system will be affordable, portable and compatible so that new devices can be easily integrated in to systems. The technology is easy to use and targeted for people without technical background.

2. THEORY

The aim of this project is to design and implement a cheap and open source home automation system that is capable of controlling and automating most of the home appliances. This application is an easy and manageable web interface for user to run Smart Home Security System. In this project we have integrated technologies like Android mobile phone with Wi-Fi to execute "Smart Home Security System". We developed user Interfaces using Android because Android operating systems are occupyings most of the mobile market. It has technical advantages of scalability, flexibility, availability, security and its ease of use for users. The aim to select Android as platform is because people are familiar as many applications are installed in Android mobile phone. Android provides interactive graphical user interface which makes an application easy to use for users. In this project, we used fans, bulbs etc. execute graphically for better understanding of the users. Users can turn ON/OFF any appliances like fans, tube lights etc. as per their convenience through mobile application. They can also check the status of home appliances even when they are not present at home. This application is scalable to add or delete any appliances as per user's requirement.

In this system we embedded features like gas leakage alerts at home to user by sending simple text message on user's mobile phone. If there is a gas leakage, our system will sense it and send the signals immediately to the server of PC. Server will send message to user Android mobile application connected with server of PC through Wi-Fi. User can take immediate action on receiving SMS from server by automatically turning off the cylinder valve and opening windows via Android application as per user's command. In addition, features like fire alarm is also embedded to sense increase of temperature above threshold value. Server will take proper action by sending message through Android application to user. To keep phone safe from burglary this project behaves in the same way .We have selected Wi-Fi technology for this project because it will keep Home Automation Security System active and user can keep in touch with server even if user is not present at home. This system maintains log information as well regarding the units consumed by various home appliances which can help the user to get the knowledge about individual device power consumption.

3. PROPOSED SYSTEM

3.1 FEATURES

The Entire project consists of two main parts i.e. Hardware and Software. User has the control over home appliances by using Android mobile phone applications. User commands through Android mobile application whose signals are given to the server of PC through Wi-Fi connectivity .Server is

configured to handle both hardware and software modules. Microcontroller using serial communication ports interact with server .As per user's command particular appliance is operated (ON/OFF). Server keeps record of all log information which are provided to users on demand. In case if gas leakage or fire hazard occurs, it will send notifications to user's Android mobile phone about it, so necessary actions could be taken and hazards can be avoided. Using Wi-Fi technology, server and user's Android application are connected. In case if no one is present in the room, the appliances will automatically get switch OFF, thus saving electricity.

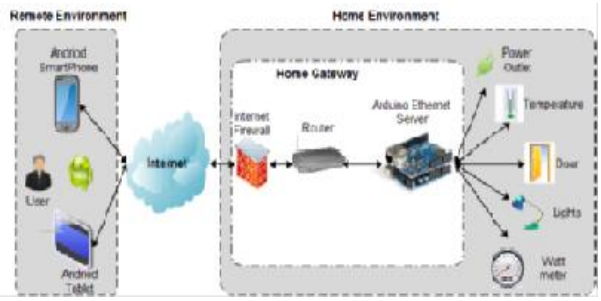

Figure 1: Overview Diagram

4. FLOW CHART

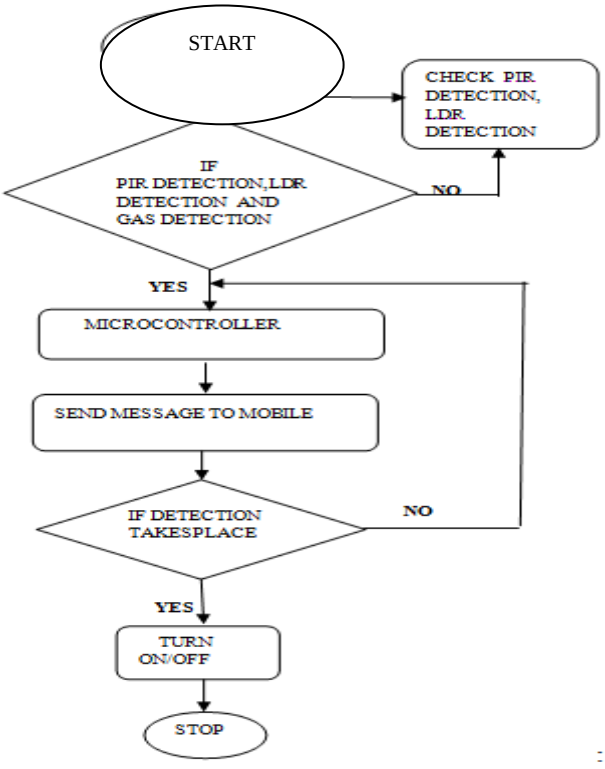

Fig-2: Flow Chart

5. FUTURE WORK

We can build cross platform system that can be Installed on various platforms like Windows, iOS etc. Security cameras can be controlled, allowing the user to observe activities around a house. Security systems can include motion sensors that will detect any kind of unauthorized movement and inform the user. Scope of this project can be expanded to industries, hospitals etc and thus not restricted to homes.

6. CONCLUSIONS

This paper proposes a low cost, secure, ubiquitously accessible, remotely controlled solution for home automation system. The approach discussed in the paper is new and has achieved the target to control home appliances remotely using the Wi-fi technology to connect system components, satisfying user needs and requirements. Looking at the current situation we have chosen Android platform so that most of the people can get the benefit .The technology is easy to use and selected for people without technical background. This technology also provides great assistance to handicapped and aged old people. The proposed system is better from the scalability and flexibility point of view than the commercially available home automation systems.

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