

# Home Security System

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**Abstract**— Home Security is an important issue everywhere. Now a days as the possibilities of intrusion are increasing so home security is required. We propose home security system which focus on monitoring home space to detect intruders and the visitors that are visiting our home. The Android phone is the advantage of the system as it is carried by everyone and used at any place at any instant as compared to personal computer. The user can monitor the home status using the android phone even when the user is not at home. Internet will be the main communication media between the android phone and the home security system.

**Index Terms**—Android phone, IR, Raspberry pi, ZigBee.

## I. INTRODUCTION

In today's world security is an important aspect in the smart home applications. The new arising technologies related to smart home security provides a comfortable and safe environment for users. In present home security systems sensors are installed to detect the intruders, and alarm is generated. The system uses the wireless technology for communication between the devices. The various objectives of the system is to detect intruder and also convey the messages of visitor to user and vice versa. If the intruder is detected then the images of intruder are send to the user on android phone. If there is a visitor and user is not at home then visitor can convey the voice message and also the camera which is installed outside the home captures the image of visitor. The message and the image is sent on the android phone. The user can reply to the visitor by sending messages. The general structure of the system is shown in Fig. 1.

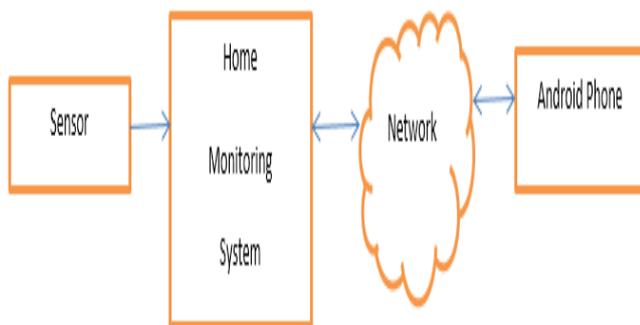


Fig. 1 General Structure

Manuscript Received on November 2014.

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## II. THE SURVEY

Mohd Abdul Samad, M.Veda Chary proposed Design of Remote Intelligent Smart Home System Based on Zigbee and GSM Technology. Based on ZIGBEE and GPRS technology a wireless remote and smart home security system has developed. Wireless remote systems for smart home application is developed to analysis and detect the status of home equipment's based on GPRS and ZIGBEE technology. It consists of host control system and several sub function module and software. The host control system has GPRS module, a controller, ZIGBEE module and PIR sensor. The several sub function modules consists of the data acquisition module, centralized switch and ZIGBEE module. [1]. Shiu Kumar proposed a ubiquitous smart home system using android application. It presents a flexible standalone, low cost smart home system, which is based on the Android app communicating with the micro-web server providing more than the switching functionalities. The Arduino Ethernet is used to eliminate the use of a personal computer (PC) keeping the cost of the overall system to a minimum while voice activation is incorporated for switching functionalities. [2]. Rajeev Piyare and Seong Ro Lee proposed Smart Home-Control and Monitoring System Using Smart Phone. It gave a cheap home control and monitoring system using an embedded micro-web server, with IP connectivity for accessing and controlling devices and appliances remotely using Android based Smart phone app. There is no need of a dedicated server PC with respect to similar systems in the system and offers a novel communication protocol to monitor and control the home environment with more than just the switching functionality. [3]

## III. HARDWARE DESIGN

Hardware design depicts the overall arrangement of hardware units. The different hardware units used are IR sensor, camera ,buzzer, microphone, raspberry pi, zigbee module. IR is connected at window because the entry from window is illegal.[5] The proposed system design is shown in Fig. 2.

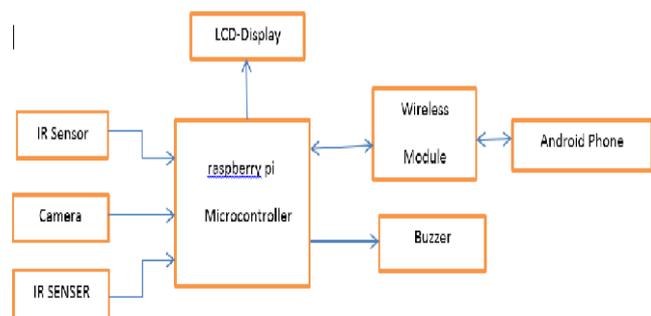


Fig. 2 Proposed System Architecture

## A. Raspberry Pi

The Raspberry Pi is a credit-card sized computer that plugs into your TV and a keyboard. It is a capable little computer which can be used in electronics projects, and for many of the things that your desktop PC does, like spreadsheets, word-processing and games. It also plays high-definition video. It is a 32-bit minicomputer having advanced RISC architecture. It uses ARMv6 processor which belongs to ARM 11 family. Other features are like clock rate is 700 MHz and has Branch prediction.

## B. Zigbee Module

ZigBee is a specification for a suite of high-level communication protocols used to create personal area networks built from small, low-power digital radios. ZigBee is based on an IEEE 802.15 standard.

## C. Data Capturing Devices

An Infrared sensor (IR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in IR-based motion detectors. A camera is an optical instrument that records images that can be stored directly, transmitted to another location, or both. These images may be still photographs or moving images such as videos or movies. Microphones are used in many applications such as telephones, hearing aids, public address systems for concert halls and public events, motion picture production, live and recorded audio engineering, two-way radios, megaphones, radio and television. We will going to use it for recording the message.

## D. Android Phone

Android phone is a small device which has a linux based operating system and user friendly UI. The interaction from the system to user is done via android phone. The android phone will have an application installed on it that will be used to notify the user and also send reply from the user.

## IV. FLOW CHART

The Fig.3 depicts the flow chart for communication between the user and the visitor. The Fig. 4 depicts the flow chart for detecting the intruder in the house.

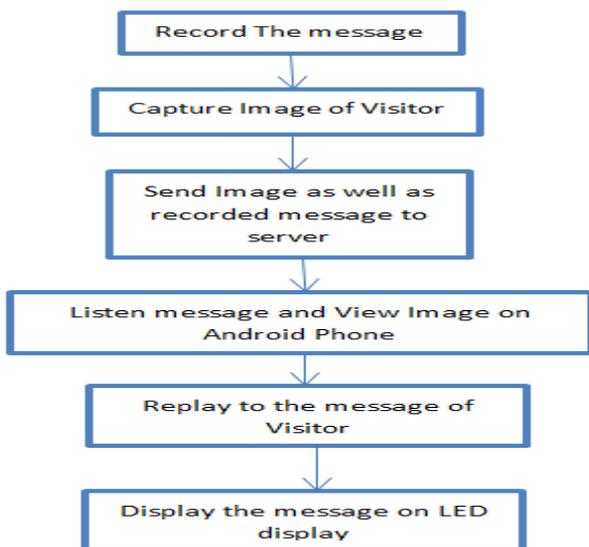


Fig. 3 Flowchart for Interacting with Visitor

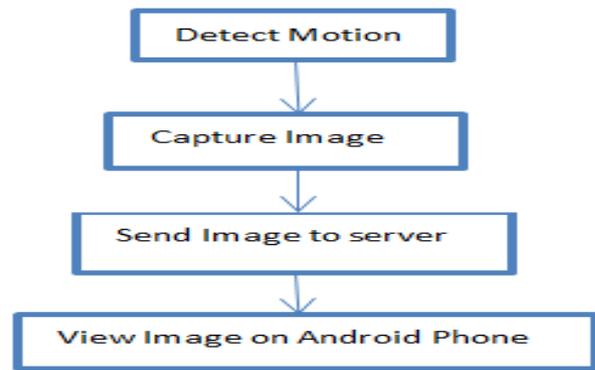


Fig. 4 Flowchart for detecting Intruder

## V. DISCUSSION

The system provides various advantages over other system like the android phone which is used by most of the people now a days is used in the proposed system also it will provide monitoring of house if ever owner is not at home and will provide a good security to detect intruder. The system has some drawbacks like it need continuous internet connection and there might be hardware failures which will harm the system also hacking will have impact on the security system. The proposed system will require android phone which will run app on it that will communicate to the system and also require the hardware devices like image capturing device. The user must be able to handle the android phone so that he can effectively use the system.

## VI. CONCLUSION

The Home Security System will provide the real time monitoring of the home. In this paper a simple Home Security System is proposed. It will notify the owner or the user if any intruder has entered the house. The visitor can interact with the owner even when the owner is not at home and get the reply from the owner. Thus, the android phone which is the main advantage of system is used by the owner to get the images of the house and give reply to the visitor and if the intruder has entered the house then owner can take appropriate action based on the images it got from the system.

## ACKNOWLEDGMENT

We would like to thank Prof. Deepali Javale of Department of Computer Engineering of MIT College of Engineering, Pune. She has helped us a lot. Her guidance has been a path for completion of this paper.

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