International Journal for Research in Engineering Application & Management (IJREAM)
ISSN : 2454-9150 Vol-03, Issue 04, May 2017

Auto-Theft Discovery Using Rasberry PI

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Abstract **security and safety is just a click of the appropriate Technology away, and with such advancements happening, the security of one's home must also not be left behind. Modern advances in electronics and communications technologies have led to the miniaturization and improvement of the performance of computers, sensors and networking. These changes have given rise to the development of several home automation technologies and systems. Automated home is the combination of home security and surveillance system. Surveillance can be defined as monitoring of the behavior, other changing information, activities, observing or analyzing particular area for th1e purpose of influencing, directing, managing or protecting. A home security system should provide security and safety features for a home by alarming the residents from natural, accidental and/or human dangers such as: fire, flooding, theft, animals invading, etc. Many of the home automation systems that are commercially available can be classified into two categories: locally controlled systems and remotely controlled systems. Locally controlled systems use an in-home controller to achieve home automation. This allows users complete use of their automation system from within their home via a stationary or wireless interface.**

Keywords: Embedded home security system, PIR Sensors, IR Sensors, GSM Modem, Raspberry pi, Buzzer Alarm, LCD Display.

I. INTRODUCTION

In the present days, mobile devices like smart phones and iPods are being used to handle daily tasks that traditional desktop and laptop computers once handled. Home automation can be defined as accessing or controlling many of our home appliances, security, climate, and video monitoring from a remote or centralized location. A home automation system allows us to check in on our home from a remote location, giving us true peace of mind. In this system, we can handle remotely our home or office using this security system. This home automation systems will alert user by phone, text or email if there is any unusual movements within our home. The design and implementation of this system to detect an intruder at home when nobody is present. Presence of individual is detected when the system senses the signal generated by many sensors like PIR sensor, IR sensors. The system sends a message to the user through GSM modem after detecting the presence of unauthorized person. The user then monitors the intrusion from anywhere, on an Internet enabled device by using IP address of the installed IP webcam of mobile in home, and alerts the neighbors and police. This system also provide when intruder is detected then windows and doors are closed immediately after accepting the users command using the crime watcher app. The user can also save the images and record the videos using the cheaper rate of cameras.

Today security and safety is just a click of the appropriate Technology away, and with such advancements happening, the security of one's home must also not be left behind. Modern advances in electronics and communications technologies have led to the miniaturization and improvement of the performance of computers, sensors and networking. These changes have given rise to the development of several home automation technologies and systems. Automated home is the combination of home security and surveillance system. Surveillance can be defined as monitoring of the behavior, other changing information, activities, observing or analyzing particular area for the purpose of influencing, directing, managing or protecting. A home security system should provide security and safety features for a home by alarming the residents from natural, accidental and/or human dangers

such as: fire, flooding, theft, animals invading, etc. Many of the home automation systems that are commercially available can be classified into two categories: locally controlled systems and remotely controlled systems. Locally controlled systems use an in-home controller to achieve home automation. This allows users complete use of their automation system from within their home via a stationary or wireless interface. Home automation systems using Bluetooth and Zigbee also come under this category. These have limitation of limited access range. Remotely controlled systems use an Internet connection or integration with an existing home security system to allow the user complete control of their system from their mobile device, personal computer, or via telephone from their home security provider. Associating mobile devices such as PDAs and Smart phones with the automation system gets easier in wireless networks. There are a number of issues involved when designing a home automation system. Cloud networking and data infrastructure allow individuals to monitor, manage, and control their personal data points through the Internet. This paper presents the implementation details of the home security system using a public cloud server to detect an intruder at home when nobody is present. This system uses an ARM7 microcontroller and is divided in two sections: viz. Inhome system and Remote user access. Figures 1 and 2 show the block diagrams of the home security system (In-home and Remote user access). As soon as the intruder is in, Infrared (IR) and Pyroelectric Infrared (PIR) sensors detect the intrusion, and report intrusion events to the user by using GSM modem. The installed android mobile IP webcam helps the user to monitor the intrusion from anywhere, on an Internet enabled device by using the IP address of IP webcam and can also use login id and password for authentication.

II. LITERATURE SURVEY

This paper presents the implementation details of the home security system using a public cloud server to detect an intruder at home when nobody is present. This system uses an ARM7 microcontroller and is divided in two sections: viz. Inhome system and Remote user access. show the block diagrams of the home security system (In-home and Remote user access). As soon as the intruder is in, Infrared (IR) and Pyroelectric Infrared (PIR) sensors detect the intrusion, and report intrusion events to the user by using GSM modem. The installed android mobile IP webcam helps the user to monitor the intrusion from anywhere, on an Internet enabled device by using the IP address of IP webcam and can also use login id and password for authentication. If the intrusion is genuine, the user is provided with options to stealthily alert neighbors, play alarm sounds or even report to the police. The user can also save the images and videos in a public cloud server by accessing internet. Using this technique, burglary can be evaded effectively.

III. SYSTEM ARCHITECTURE

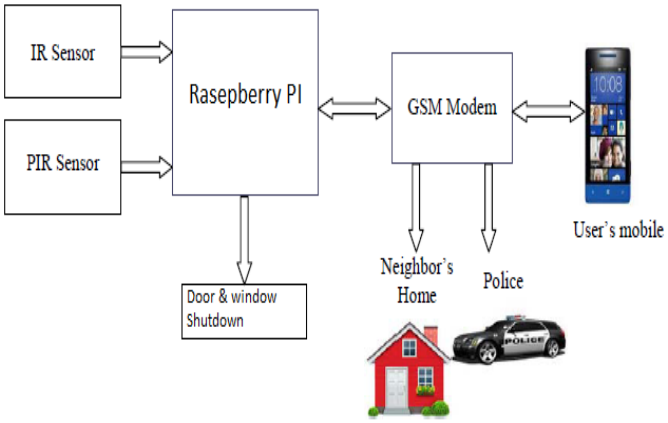

Fig. 1 Block Daigram

A. Raspberry Pi

Diagram Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python.

The Raspberry Pi is a series of credit card–sized single-board computers developed in England, United Kingdom by the Raspberry Pi Foundation with the intent to promote the teaching of basic computer science in schools and developing countries.

B. Sensors

1) IR Sensor: helps to detect the intruder. They are usually placed at the doors and at windows. In this work, we placed the IR sensor at the window. IR sensor consists of IR transmitter and receiver module. IR transmitter which is a IR ARM7 LPC2148 Microcontroller GSM Modem IR Sensor Buzzer alarm Neighbor's Home Police User's mobile PIR Sensor User can save video and images on Public Cloud Server Internet User accesses IP Webcam installed in Home through his laptop User's Laptop

LED emits infrared continuously when power is supplied to it. Oppositely, the IR receiver will be connected and perform the task of a voltage divider. When the IR sensor is interrupted, a SMS is sent to user reporting that "Someone entered in your home". The IR transmitter and receiver pair detects an obstacle within the range of about 3m. Figure 3 shows the setup of IR transmitter and receiver module.

2) PIR Sensor: A passive infrared sensor (PIR) sensor is used in the home to detect the intrusion by sensing motion.

A PIR sensor (Fig. 4) is an electronic sensor that measures IR light radiating from objects and senses the movement of people, animals or other objects in its field of view. PIR sensors are used as proximity sensor and are made from pyroelectric materials. They have an effective range of about 6m, and a field of view less than 180□. All objects with a temperature above absolute zero emit heat energy in the form of radiation. Usually this radiation is invisible to the human eye because it radiates at infrared wavelengths, but it can be detected by electronic devices designed for such purposes [7]. The term passive refers to the fact that PIR devices do not generate or radiate any energy for detection purposes. They work by detecting the energy given off by other objects in its field of view. It is important to note that PIR sensors don't detect or measure "heat" per se; instead they detect the infrared radiation emitted from an object. The sensor has three terminals, viz., Vcc, GND and Vout. When the sensor detects any motion it provides +5V output

C. GSM Module

Global System for Mobile communications (GSM) is the most popular wireless standard for mobile phones around the world. The main application of the GSM is to provide worldwide wireless communication. GSM supports multiple users by using TDMA technology. During the past two decades, GSM technology has continuously improved to offer better services in the market. New technologies have been developed based on the original GSM system, leading to more advanced systems. A GSM modem works like mobile phone, it accepts a SIM card, and operates over a subscription to a mobile operator. GSM modem allows transmission of short message service (SMS) in Text mode and Protocol Description Unit (PDU) mode. SIM900A GSM module is used in this design. This module operates on AT command over TTL interface. AT command is an abbreviation for Attention command that is recognized by GSM module. If any intrusion is detected, GSM sends SMS to user as "Someone entered in your home". It is also used to send reply SMS to system when intrusion is genuine and helps to inform neighbor and police.

E. LCD Display

LCDs are used as numerical indicators. The LCD display used in this work displays 16 characters each in two lines, Maximum of 32 characters can be displayed. LCD is usually Controlled by microcontroller. LCD is used to display GSM Commands and messages.

F. IP Webcam

Surveillance is very useful to observe, recognize and monitor threats, and helps to prevent/investigate criminal activity. In this project, we are using a IP webcam. It is an android application used for security surveillance. It supports remote viewing and recording from anywhere anytime via web browser. It also provides user authentication with login id and password. IP webcam turns android mobile into a network camera. It requires Android OS2.2+. After getting the alert of intrusion event, the user can monitor the intrusion from anywhere, on an Internet enabled device using IP address of the IP webcam which is placed in the home.

IV. RESULT ANALYSIS

A. Login inf*ormation*

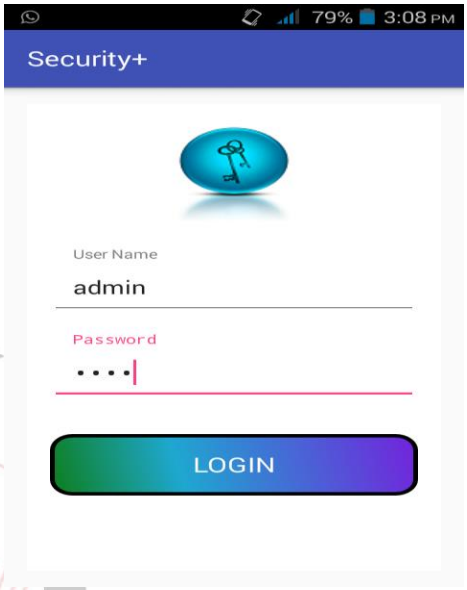

Fig. 2 Login information

The above fig is Login Information. User logs in using his username and password.

B. Login Successful

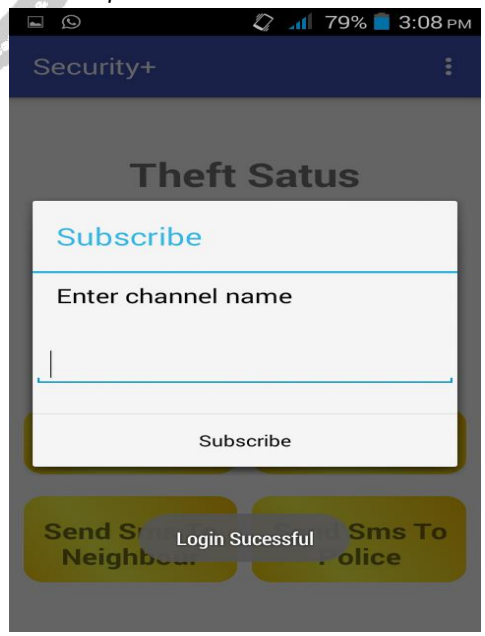

Fig. 3 Login Successful

After successful login we need to give channel name through which we are connecting with system.

C. Channel name

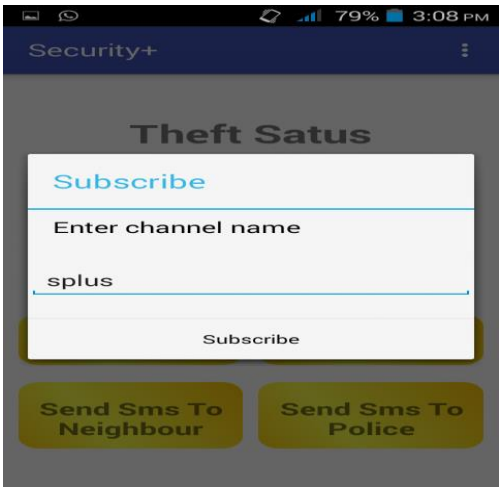

Fig. 4 Channel name

The Above fig are shows the Channel Name. Splus is the channel name to get connected.

D. Theft Status

Fig. 5 Theft status

These are the options for user to check for the image and to take actions.

E. Image Downloaded

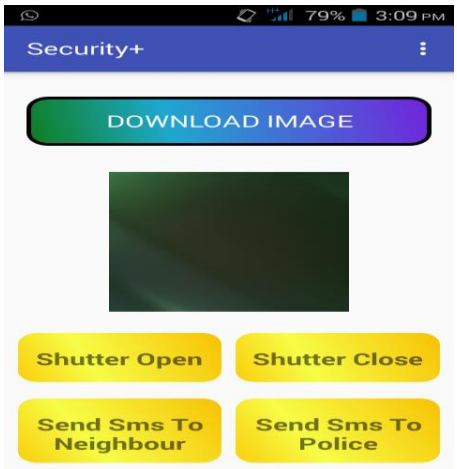

Fig. 6 Image downloaded

Image downloaded on user's cell to verify whether intrusion is genuine or not.

F. Contact to which message will be send

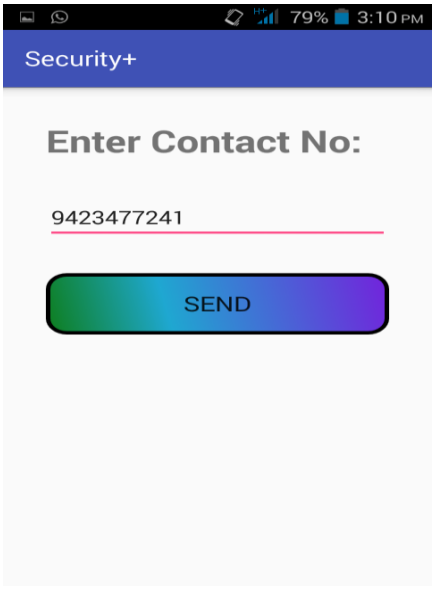

Fig. 7 Contact to which message will be send

Here is the contact specified by user for sending message that there's an intrusion in my place.

G. Message Received

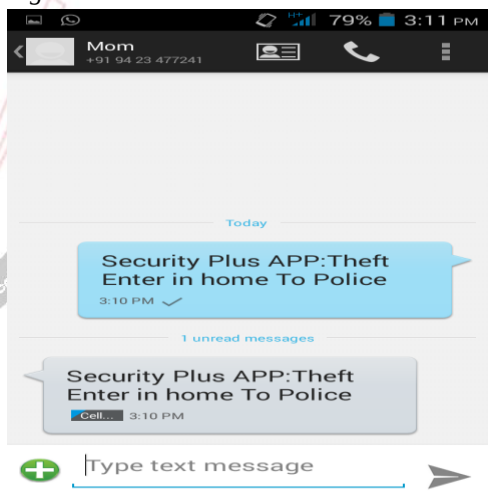

Fig. 7 Message received

The message sent to the contact given by user.

V. CONCLUSION

We have designed and implemented a cost effective Raspberry PI based home security system. The proposed system provides home security and surveillance. Deploying sensors, GSM and android mobile IP webcam helps to detect, report and monitor intrusion events to users. Also the system informs to the neighborhood and alerts police, thereby reducing damages caused by burglary. The use of cloud network in the system allows for storage of captured images

and recorded videos. Multiple PIR sensors may be used to obtain wider coverage. By integrating multi-touch mobile devices, cloud networking, wireless communication, and power-line communication, a fully functional home automation system can be designed and built.

ACKNOWLEDGMENTS

It gives us great pleasure in presenting the Result Paper "AUTO-THEFT DISCOVERY USING RASBERRY PI" I would like to take this opportunity to thank my internal guide Prof. R. D. More for giving me all the help and guidance I needed. I am really grateful to them for their kind support. Their Valuable suggestion were very helpful

REFERENCES

[1] Das, S.R., Chita, S., Peterson, N., Shirazi, B., and Bhadkamkar, M., "Home automation and security for mobile devices", IEEE International Conference on Pervasive Computing and Communications Workshops, pp. 141-146, 21-25 March 2011, Seattle, WA..

[2] Dickey, N., Banks, D., and Sukittanon, S., "Home Automation using Cloud Network and Mobile Devices", Proc. Of IEEE Southeastcon, pp. 1-4, 15-18 March 2012, Orlando, FL.

[3] Reinisch,C., Kastner, W., Neugschwandtner, G., and Granzer, W., "Wireless Technologies in Home and Building Automation", Proc. of 5th IEEE International Conference on Industrial Informatics, Vol. 1, pp. 93- 98, 23-27 June 2007, Vienna.

[4] Maiti, A., and Sivanesan, S., "Cloud Controlled Intrusion Detection and Burglary Prevention Stratagems in Home Automation Systems", 2nd Baltic Congress on Future Internet Communications (BCFIC), IEEE, pp.182-186, 25-27 April 2012, Vilnius.

[5] Steve Furber, "ARM System-on-Chip Architecture, Addison Wesley, 2nd ed, March 2000.

[6] NXP Semiconductors, "UM10139: LPC214x User manual", Rev. 4, 23 April 2012.

[7] Chowdhury, Z.I., Imtiaz, M.H., Azam, M.M., Sumi, M.R.A, and Nur, N.S., "Design and implementation of Pyroelectric Infrared sensor based security system using microcontroller", Proc. of IEEE Students' Technology Symposium (TechSym), pp. 1-5, 14-16 January 2015.

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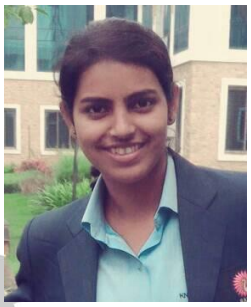

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