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Implementation of assembled Home Security System against Theft to protect senior citizens

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ABSTRACT
Today is a hi-tech world. Innovative projects are on the rise with great competitions. Smart technologies progressed provide quick solutions in less time. The other part has also led to an increase in crime , threats and intrusions in the society. It is mandatory for all of us to be safe and secure. Home security is one of the major issue today irrespective of our presence or absence at home and especially when only senior citizens are at home living far away from their beloved ones due to number of reasons. The main goal of this paper is to focus on a security system which could be helpful for the old age people to be safe from thieves. Examining the existing work on security systems and challenges ,the proposed system here is a hybrid of cameras and sensors with sound detector as the main device being added for alerting the people in and out of the house or the surrounding environment due to theft.
Key words: Home Security, CCTV, Sound detectors, Sensors.

I. INTRODUCTION

The development of advanced technologies globally has led to few advantages and few disadvantages. Crime, theft is on the rise of high end.

There are a number of things that make older aged group people more likely to be targets — and victims — of fraud and identity theft. Sometimes it's a generational issue; many of today's elderly were brought up in a time when people were more open and trusting of one another. Other times, older adults don't want to be viewed as helpless by their family or caretakers, so they keep quiet about things that trouble them. It may also be a matter of how the brain changes as people age. A study conducted by a UCLA psychologist in 2012 discovered older adults might have less activity in the areas of their brains which help process risk and subtle danger. Seniors tend to be more positive about life and trusting of others, which can be a nice trait but also leaves them vulnerable to exploitation of that trust.

Although all the people cannot make use of all the technologies available like sending and receiving messages through mobiles,e-mail,etc, citizens have to be able to survive without it with less or no usage of these hifi technologies.So let us think a liitle wide on this concept as well as Why are seniors more susceptible to fraud and what steps can help protect seniors from becoming victims? Can the

research work be extended in this field to find out good home security systems   with less technology involved so that the old age people could operate and safeguard themselves.

II. LITRATURE SURVEY

Home security system is an efficient system really required for today's life.The characteristics of it should be of 24 hours monitoring the intruders, ease of use, reliability, efficient, fast and precise notification system. Today numbers of home security systems are available in market, which guarantee to keep homes safe and secure. . [1] A Multilevel Home Security System (MHSS)The sensor nodes consist of a thief alarm, presence detecting circuit and the break-in camera. The captured images are delivered to the house owners and the police forces via email. The system is used to monitor the RFID reader, RFID tag and the GSM terminal and send information to server. The laptop and vehicles security is controlled by RFID and GUI respectively. Microcontroller PIC184520, infrared sensor nodes, and fire alarm, Gate sensor node, Presence Detecting Node, Break-in Sensing Node, thief alarm are used. [2] Design and Development of a House-Mobile Security System, The system is designed to avoid the entry of possible intruders into the house and to alert the owner via a mobile phone text message, If the house has been opened or an

attempt has been made to open it illegally. It has the ability to activate/deactivate and will automatically open or close the door for the user. Microcontroller ATMEL 168,PIR sensor is used to detect the motion of doors or windows. The magnetic sensor type DS10A, Vibration sensor is used when movement or vibration occurs, the unstable portion of the circuit moves and breaks the current flow, which produces an alarm. A Numeric keypad is used for authorization and the failed authorization results in an alarm . [3]Home Security System Based on PIC18F452 Microcontroller, This system is based on PIC18F452 microcontroller and specially designed to avoid robberies and thefts by monitoring the doors and windows of house and can set alarm and sends warning signal to the nearest police station if anybody tries to break in. This also provides the functionality to identify the residents ID card to get access to the house without turning on the warning signal and alarm. [4] GSM Based Home Automation, Safety and Security System Using Android Mobile Phone, This system detects the ultrasonic sensors ,Relay Module, MQ7 detects carbon monoxide gas, MQ2 detects smoke, LPG, butane, propane, methane, alcohol, Hydrogen, smoke, and alarm are used in this system. [5]Advanced low-cost security system using sensors, Arduino and GSM communication module, This system focuses on the controlling of home appliances remotely and providing security from fire and thefts, when user is away from the place. The system is SMS based and in case of **intrusion an SMS is sent to the home's owner and** another SMS to the Police Station, in case of fire an SMS is sent to fire brigade too. [6] Anti-theft home security system, This project is designed to protect houses from thieves. There is constant monitoring between the transmitter and receiver and as soon as some moment is detected by the sensors or reed switch, immediately the buzzer will go ON and the user will come to know about the activity through LCD. Design and Implementation of Low Cost Home Security System using GSM Network, This system is proposed to protect from thief intrusion and fire attack. SMS service is provided to alert users of a possible intrusion into the property. The system contains sensors to detect obstacle, touch, heat, smoke, sound and warns about any intrusion, fire and leakage of any kind of gas 8-bit Microcontroller PIC16F76 controls the whole system, GSM MODEM is used to automatically receive the call and also sends the voice message to the preconfigured number about the status of appliances and intrusion through AT commands. IR sensor TSOP1738 (IR RX1), NPN transistor BC548 (T1)

and timer NE555 are used for obstacle detection, IR transmitter and Receiver for smoke detection AMP LM358 for sound detection. The thermal sensors for fire detection, PIR and Proximity sensors are used for motion detection attached to the windows and doors. Pyro-electric sensor senses heat generated form human body which detects unauthorized intruders.

III. OBJECTIVE

The main objective is to make a safe Home alert system which can provide security from almost every perspective specially for the senior citizens and home alone citizens.
- To provide three safety measures from any kind of intrusion related activities.

IV. PROPOSED SYSTEM

The methodology of working on a home Alert System as one of the solution to thefts and other miss happenings is proposed . It monitors the motion and other activities in the surroundings and updates owner in case of any threat. The system is composed of Sound operated Intruder alarm with flash light ,CCTV,Livewatch motion incorporated PIR sensor with image capture.
Devices Used at the installation level: Livewatch Motion sensor with image capture,Sound Alarm with Flash Light,CCTV.
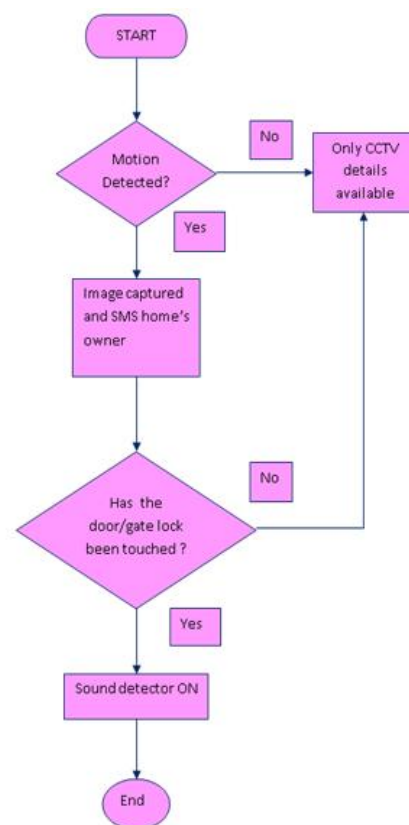

Fig: Flow Chart

The flow chart describes the working of the proposed system. It detects the motion around it and sends an alert message to the user. The system is also incorporated with sound operated intruder alarm with flash light.If the intruder tries opening the door or gate lock then this device senses it and produces an alarm sound .This will be helpful for the owner who might be in deep sleep at night alerting him and even the neighbours. Beside these two security systems a CCTV is also used.The reason behind this is that the smart work process of the robber details is captured and also in case of any failure of the other two devices ,information will be available by using CCTV.So this a highly secured system especially for old age people staying at home and even if a single person stays at home. Thus the people can have track of their home safety specially if the houses are situated in remote areas or eve in very busy areas.

Figure 1: Sound Operated Intruder Alarm with Flash Light

Fig 2. PIR Sensor

Fig 3. Livewatch Motion Sensor with image capture

The Live Watch Image Sensor combines a wireless PIR (Passive Infrared) motion sensor, an integrated still camera, completely wireless communication, and Live Watch Interactive Services. It offers an entirely new service designed to deliver better security through visual verification of alarms and increased engagement through on-demand property views.

Passive infrared sensors are the most widely used motion in home security systems. When your system is armed, your motion sensors are activated. Once the sensor warms up, it can detect heat and movement in the surrounding areas, creating a protective "grid." If a moving object blocks too many grid zones and the infrared energy levels change rapidly, the sensors are tripped. The picture is shown below.

Picture of effect of PIR Sensor

V. RESULT

The real time data is been collected by sensors and information is updated to the owner of home by alarms.The motion sensor captures the motion,alerts the owner   that some intruder is present .If the intruder quickly tries to unlock the door or gate,the sound intruder alarm   produces sound which is helpful to be alert.Beside these CCTV collects the real time data and records it. Thus provides high secure and safety system from thefts.

VI. CONCLUSION & FUTURE SCOPE

The implementation of the proposed system provides highly efficient and good security safeguarding the individuals all the time. It is cost effective and further research work can be done by adding extra features and making it less cost effective with minimum cameras taking into account to make it more efficient and security oriented to safeguard senior citizens.

REFERENCES
[1] Jer-Vui Lee, Yea-Dat Chuah and Chin-Tin **Chai." A Multilevel Home Security System (MHSS) ", International Journal of Smart** Home Vol. 7, No. 2, March, 2013

[2] Ashraf Elfasakhany1, Jorge Hernández2, Juan

[3] Carlos García2, Mario Reyes2, Francisco **Martell2."**Design and Development of a House-**Mobile Security System", 2011, 3,** 1213-
1224doi:10.4236/eng.2011.312151Published Online December 2011

[4]   Md. Shafiul Islam. "Home Security System Based on PIC18F452 Microcontroller "Department of Electrical Engineering university of North Dakota Grand Forks, ND 58202 978-1-4799-4774-4/14/$31.00 ©2014 IEEE

[5]   Akanksha Singh, Arijit Pal, Bijay Rai ."GSM Based Home Automation, Safety and Security System Using Android Mobile Phone (IJERT) ISSN: 2278-0181www.ijert.orgIJERTV4IS050648 Vol. 4 Issue 05, May-2015

[6]   Sadeque Reza Khan, Ahmed Al Mansur, Alvir Kabir, Shahid Jaman, Nahian Chowdhur**y."**Design and Implementation of Low Cost

[7]   **Home Security System using GSM Network ",**International Journal of Scientific & Engineering Research Volume 3, Issue 3, March -2012- 1 ISSN 2229-5518

[8]   Hasan, R., Khan, M.M., Ashek, A. and Rumpa, D. (2015) Microcontroller Based Home Security System with GSM Technology. Open Journal of Safety Science and Technology, 5, 55-62

[9]   SantosoBudijono,JeffriAndrianto,Muhammad AxisNovradin Noor,BinaNusantara University, Indonesia. "Design andimplementation of modular homesecurity system with short messaging system" EPJ Web of Conferences 8,00025(2014),Published byEDP Science(2014)

[10] Diomidis D. Spinellis, "The Information Furnace: User-friendly Home Control", SANE-2002, Conference proceedings, pp. 145-174, NLUUG.

[11] Nikhil Agarwal and G.Subramanya Nayak. Department of EC Engineering MIT, Manipal Special Issue of InternationalJournal of Computer Applications (0975 **– 8887)** **"b**ased Home Security System with Remote **Monitoring",International Conference on** Electronic Design and Signal Processing (ICEDSP) 2012.

[12] Azid, Sheikh Izzal, and Sushil Kumar. "Analysis and performance of a low cost SMS based home security system." International Journal of Smart Home 5, no. 3 (2011)

[13] Mukhopadhyay, Subhas C., Anuroop Gaddam, and Gourab S. Gupta. "Wireless sensors for home monitoring-a review."