Network Security Surveillance System for Jewellery Shop

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***Abstract*- Todays primary concern of every jewellery shop owner is security of valuables jewelleries in shop, especially from thefts in the absence or presence of owner. The purpose of the system is to design a system for alerting theft in jewellery shops. This Paper presents design and prototype implementation of security system based on SMS technology. The main components used in this proposed system are Raspberry-pi, Proximity sensors, pi-camera, GSM modem. Proximity sensors are able to detect the presence of human being. After detecting any person after that image will be captured using cameras. This captured image will immediately upload on the cloud, which can be used as future evidence. The use of GSM modem is to exchange data between users and security system. It works as communication interface between the system and the user. As soon as sensor senses the human activity, it sends notification to the owner in the form of text SMS. Power supply to this system is given by an adapter. In absence of electricity battery backup is also provided. This system is useful for providing security in shop, home, ATM, bank lockers, Army Areas etc.**

***Index terms*- Raspberry-pi, GSM, Proximity Sensor, Security, Camera, Cloud Computing**

I.INTRODUCTION

As new technology is developed and deployed where demand is greatest, As technology impacts everyone's lives to make things easier and more efficient, it can have a huge impact on jewellery store security. Nowadays security is considered as one of the most important and most essential requirement for people owning the shop with valuable items on a sale like a jewellery shop. It is very suitable for remote Monitoring of confidential area. Due to increase in robbery and theft day by day , security at some places is very important , so the main aim of our project is provide high security to the bank lockers, ATM, Jewellery showroom, research center, military application etc. the objective of the project is to design low cost system. It has low power consumption. To maintain the visual records is important for the security purpose. Most of the recent theft control technologies based on the face recognition, but it requires image processing technique. It has increased the cost and complexity. To protect this valuable jewellery from the any unauthorized person is most crucial task for those who own this. Previously CCTV surveillance is the only possible way to capture those unauthorized action, but somehow by using CCTV the signals can be transmit within the range of distance and to very limited device. Whenever someone tries to steal the jewellery in the shop there will be one proximity sensor is used to detect the motion of the person. When any misbehavior is detected then alert to the owner of that shop is given thorough the SMS using GSM communication. Theft prevention would become a godsend in this increasingly technology conscious world. System should notify the victim about the invasion or any illegal activity. Collecting proofs about invasion. The best feature about today's modern security systems is that, one can control their jewellery shop just by using Internet.

II. LITERATURE SURVEY

A. E-MAT Security System for Jewellery Shop

This research investigates to provide "full security to shop", which is the aim of Network Security Surveillance System for jewellery shop. The security system for jewellery shop using E-mat has analysed in research paper. In this paper push buttons are used. When there is shop closed and thief put feet on E-mat SMS send to the owner [1].

B. Fully home control system

In the area of home automation technology, Global System for Mobile Communication (GSM) modem has used. This system has analysed and implemented to control home appliances such as conditional system, power and security system via text message was presented in this paper [2].

C. Advance Security System For Personal Area using Raspberry-Pi

This paper uses raspberry-pi. The main drawback of CCTV is, camera requires more storage to store the recorded video because continuous capturing of frames and it also require human to keep eye on screen and it is more cost effective too. But Raspberry-pi consumes less power and comparatively provides better solution and it is cost effective [3].

D. Review on theft Prevention System Using Raspberry Pi and PIR Sensor:

In this paper PIR sensor is used to detect object. After detecting human being relays are triggered to switch on the light after lights are turn on buzzer will start ringing and image will be captured using cameras and this captured image upload on the web page. Also the text message will send with the help of GSM module [5].

E. Design and Implementation of Security Based ATM Theft Monitoring System:

In this paper rather than PIR vibration sensor is used, which only detects when person have physical contact with system. This is the main drawback of the system. Camera is used to take the continuous video clips and GSM to send message [6].

III. PROPOSED SYSTEM

This proposed system used to further improve the quality of security level in private area like Jeweller Locker, Bank Locker, Warehousing and Army Area with the help of IoT. This system consist of Raspberry-pi 3, GSM module, Proximity Sensor, Camera, and AWS Cloud .The entire system can be powered from 12VDC/2A power supply unit/battery. The block diagram of the proposed system is shown in figure 1.

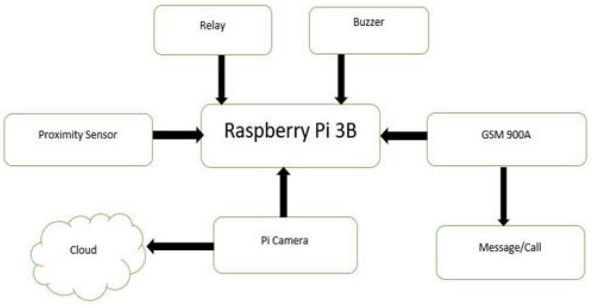

Fig 1: Block Diagram

Basic Bricks of Architecture:

Raspberry-pi:

The system uses Raspberry-pi 3 model having 40 pins and 4 USB ports. It has 26 GPIO (general purpose input/output) pins that allow you to control electronic components for physical computing and explore the Internet of Things (IoT).When image is captured it is stored in raspberry pi memory. It is also responsible for activating GSM module for notification purpose.

Raspberry-pi Camera:

In this system Pi-camera of 5MP has used. It captures the image of detected object having good resolution. It is directly fixed on to the raspberry pi board.

GSM Module:

GSM stands for Global Standard for Mobile communication. SIMCOM SIM 900 is the GSM module used in our system. It is used to send short alarming message to owner The working of GSM modem is based on commands, the commands start with AT(which means Attention) and finish with a <CR> character modem.

Proximity Sensor:

Proximity capacitive sensor detects presence of object without physical contact of that object. It is designed to detect both metallic and non-metallic targets. When human/thief comes near the sensing surface it enters the electrostatic field of the electrodes and changes the capacitance of the oscillator. As the result it changes the output of sensor and next circuit runs.

Cloud Computing:-

Cloud computing is a way of leveraging the Internet to consume software or other IT services on demand.

Users share processing power, storage space, bandwidth, memory, and software. With cloud computing, the resources are shared and so are the costs. Users can pay as they go and only use what they need at any given time, keeping cost to the user down. Cloud computing is very much a business model as well. Providers of cloud computing solutions, whether they are software, hardware, platform, or storage providers, deliver their offerings over the Internet. There are no shrink wrapped boxes containing discs or hardware for you to buy and set up yourself. Cloud providers typically charge monthly recurring fees based on your usage [7].

III. DESIGN OF SYSTEM SOFTWARE

The proposed system works as follows:

1. In scenario where human or thief enters in the area of the system for theft
2. If human/thief comes in the range of proximity sensor output of the sensor sent to Raspberry-pi
3. After sensing raspberry-pi camera starts capturing image and saves on cloud.
4. Raspberry-pi acts as server and controls GSM module
5. Massage/mail to owner will sent using algorithm.

This system will lead to prevention of theft.

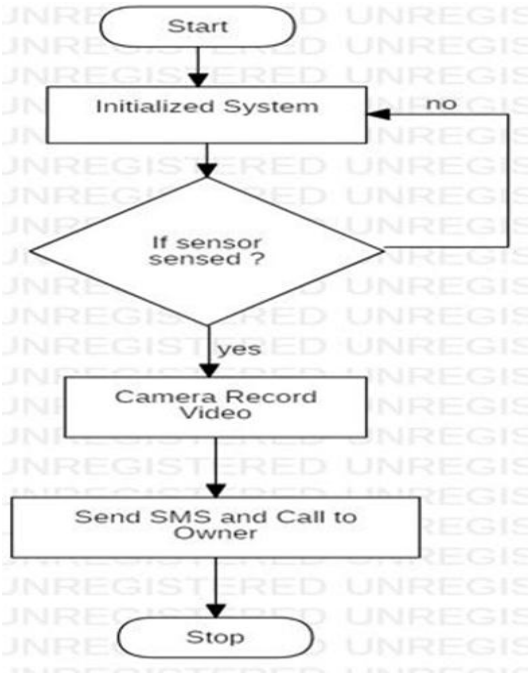

Fig 2: Flowchart of Proposed System

IV. CONCLUSION

This system is enhancing the security level in restricted area without human participation for monitoring 24*7. It avoids the user to monitor the private area 24*7. Data in the format of images and video is save on cloud that will be useful in further investigation. The gsm is useful for sending message and call alert to owner as well as nearby police station.

V. ACKNOWLEDGEMENT

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REFERENCES

[1] Mohammad Furqhan A and Mohammad Faizan M.A “E-MAT Security System for Jewellery Shop” International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS) , 2017 IEEE

[2] Huiping Huang and Shide Xiao, “Fully home control system”, Systems, Process & Control (ICSPC), 2013 IEEE Conference on: 13-15 Dec. 2013, Conference Location: Kuala -Lumpur

[3] R. Hariharan , S. Saran Raj, Chandran Madan Kumar, K. Nimmi , “Advance Security System For Personal Area using Raspberry-Pi” International Journal of Pure and Applied Mathematics, ISSN NO : 1314-3395, Volume 118 NO. 22 , 2018

[4] Sadhana Godbole ,Shivani Deshpande, Neha Barve, Sakshi Galim, "Review on theft Prevention System Using Raspberry Pi and PIR Sensor", International journal of Computer Application, volume 155-No 11. December 2016
[5] Kanchan P.Borade, Rutuja Bagul, Vidya Salunkhe," Design And Implementation of Security Based ATM Theft Monitoring System" JETIR (ISSN-2349-5162), March 2017.
[6] Wu Chengdong, Zheng Jungang, Liu Daren, Xie Kun, "Study on Smart Home Network Technology Based on Wireless Sensor Network", Academic Journal of Shenyang Jianzhu University, Vol. 21, No. 6, pp.753-756, Nov. 2005 (in Chinese)
[7] Gajendar pal , Kuldeep kumar barla , manish kumar "review paper on cloud computing" Vol.2 Issue IX, ISSN: 2321-9653I , September 2014