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A Survey on IOT Based Security System

Indrajit Patil[1], Saurabh Jaiswal[1], Pallavi Sakhare[1], Mohammad Shoaib[1], Asst. Prof. Poonam Gupta[2]

BE, Computer Department, G.H Raisoni College of Engg and Management, Pune, India[1]

Assistant Professor, Computer Department, G.H Raisoni College of Engg and Management, Pune, India[2]

Abstract: Today security is a main issue for protecting the resources. Security is important because risk of intrusion and theft has become increasing. Security is also necessary for protecting homes from fire and other leaking gases. Many people are using various types of security systems. We have found that most of the security systems are developed using Raspberry Pi, because the Raspberry Pi is a powerful small credit card size computer. Raspberry Pi works as computer it allow user to remotely access and control resources, it is affordable system than any other security systems. Raspberry Pi is compatible with most of the programming languages. Using Raspberry Pi user can monitor and provide security to their homes and commercial spaces. Raspberry Pi works with different sensors (PIR, Smoke, Temperature, Humidity, Gas) to detect or identify intruder or unauthorised access to homes and commercial spaces, it will also notify to the user about the illegal activity. Other than security Raspberry Pi also useful for learning so many things. This survey paper is focused on the design and implementation of security system based on IOT.

Keywords: Raspberry Pi, PIR, Wi-Fi, Sensor, Camera, ZigBee, Smart phone, IOT

I. INTRODUCTION

This In today's world risk of intrusion has increased in the developing technology. Crime prevention using remote monitoring is one of the aims of current Study. There are several monitoring systems such as camera, CCTV etc. However, today even if the person is moving from one place to another place person can monitor and prevent the criminal activity. A video surveillance system is important in different Fields of our environment such as in personal security, banking, etc. However, it is expensive for normal peoples to set up such Kind of system so the peoples are using IOT based low cost security systems which will help them for secure their commercial places.

In raspberry Pi based home security systems sensors are installed to detect the intruders, and alarm is generated. Raspberry Pi security system uses wireless technology and smart phones for security purpose. The main Benefits of the current security systems is simple to implement, Small size portable capable with immediate alert, truly Low-cost for residential use.

The Raspberry Pi based security system focused to save valuable lives, money and time.

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II. LITERATURE SURVEY AND RELATED WORK

We have found different papers related to security system. Different security systems used for different purposes.

Sushma .N. Nichal, Prof. J.K. Singhhas done abstraction of Smart supervisor system using IOT based on embedded Linux O.S. with ARM11 architecture. In this Paper they have implemented real-time video monitoring system and acquired data. In this system they have also used PIR, temperature, Humidity sensors the system first requires authentication from user to activate the system if the system detect human it will send that data to the server or user smart phone [1].

Sowmiya. U, Shafiq Mansoor. J. Have developed to connect any door with internet, in this system user also implemented PIR sensor and camera. PIR sensor used for detecting person and camera used for capturing the video of person comes at door. The video will be send through 3g dongle to authorised person. They have also discussed some advantages of this system. They have concluded use of this system like bank, hospital etc. [2]

Ms. Renuka Chuimurkar, Prof. Vijay Bagdihave presented smart monitoring system using Raspberry Pi, PIR sensor and mobile device. Authors have also used smoke detector to detect the fire. User will be notifying about the intruder or fire after capturing the image to user mail via Wi-Fi. They have used background subtraction algorithm for motion detection and smoke detection algorithm. They have stated advantages like reliability and privacy [3].

ShivprasadTavagad et alConducted survey on various Surveillance System, they have discuss the importance of video surveillance and benefits of many security systems. They have discussed why the security system is important Authors also explained Architecture of proposed system, they have concluded that new design will be implemented to provide security and safety [4].

Khushbu H Mehta, Niti P Guptahave presented real time monitoring and security system using Raspberry Pi the system allow user to live monitor from any place. In the system Authors have discuss that if motion is detected it will check for face detection if the face is detected it will stored on local storage, they have used background subtraction Algorithm for face detection. Authors concluded that system is able to identify faces and user can able to monitor remotely [5].

Dr. S. Kanagasuba raja et alhas focused on home automation and security system using Raspberry Pi. In this paper authors have implemented security system which

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detects the intrusion and captures the video for playing in future. They have also implemented the automation of the home appliances. User can remotely on or off the home appliances [6].

Md. Nasimuzzaman Chowdhury et alhave implemented security system where if any person comes at door it will be notify to the home owner via e-mail and twitter then the user can see the person comes at door using camera from remote location. The image of person captured and sends to twitter and e-mail. They have stated that user can control the door remotely. They have concluded that this system is useful for preventing unauthorised access [7].

R.Chandana et alhave implemented monitoring and home security system using think and speak with the help of raspberry Pi, they have used Gyro sensor to detect the movements of person if the movements is detected camera will be captured image and the image will be send to the owners mail id with captured image. They have also stated some importance of this system. Authors have concluded that this system is important for security purpose [8].

K Saravana Kumar et alhave developed the security system with proximity sensor, Raspberry Pi, and Camera, proximity sensor detect the person after detecting the person camera will be initiated and capture the image and image will be uploaded to drop box and user gets the notification about the intruder in the form of SMS. They have discussed few advantages like cost effective, portable. Authors concluded that this security system is useful for security of homes [9].

Dhadiwal Kalpesh Paraskumar et alhave designed and implemented security system with Raspberry Pi, IR sensor and camera IR sensor detects the person then the camera will be capture image of intruder and microphone records the vice of the person then the captured image along with vice recorded will be send to user mobile phone. They have also discussed advantages and disadvantages of this system in this paper. Authors concluded that this system is useful for real time monitoring of home [10].

Yogita Vijay Narkhede,S. G. Khadkehave presented smart security system with Raspberry Pi and IR sensor if IR sensor detects the person camera will capture image as well as video of the person, the data then encrypted first and then decoded.

User will get notification on his mobile device. Authors discussed that user can also perform the live streaming and provide security. Authors have concluded that this system is important for commercial places; they have discussed few advantages of the system [11].

Harikrishnan G.R. et alhave implemented home automation and security system in this system user can continuously monitor home from remote location if the intruder detected system will generate alarm and captures the image of the intruder and the captured image will be send to owners mobile through SMS, WhatsApp, Call, E-mail. They have discussed few advantages of this system. Authors have concluded that this system is useful for securing commercial places [12].

III. SUMMERY

Table.1 summarises work done by different authors in different years in field of security. Proposed systems and future works are listed to better summarise.

TABLE I

Year	Authors	Techniques/Algorithms	Tools used	Future work
January 2016	Ms. RenukaChuimurkar, Prof. Vijay Bagdi	Background subtraction and smoke detection Algorithm	Raspberry Pi, smoke sensor, Camera	Locating number of persons
February 2016	ShivprasadTavagad et al	MPEG-2 Algorithm	Raspberry Pi, Camera	Making everything Wireless
February 2016	Khushbu H Mehta, Niti P Gupta	Background subtraction Algorithm	Raspberry Pi, OpenCV	Home Automation
February 2016	Yogita Vijay Narkhede, S. G. Khadke	Encode & Decode, Algorithm for video streaming	Raspberry Pi, Camera, 3g Dongle	Fire Detection
February 2015	K Saravana Kumar et al	Intrusion detection Algorithm	Raspberry Pi, Camera, Smart Phone	Live Streaming
April-2015	Sowmiya .U, ShafiqMansoor.J.	Alarm switch, Algorithm for video streaming	Raspberry Pi,sensor,3g Dongle	Designing of battery backup system
May 2015	Harikrishnan G.R. et al	Motion detection algorithms	Raspberry Pi, camera, sensor	Face detection and Elimination of unwanted motion
July 2015	R.Chandana et al	Quaternion algorithm	Raspberry Pi, I2C, Camera,	Home Automation

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July-2015	Sushma.N.Nichal, Prof.J.K.Singh	Encode & Decode, Algorithm for video streaming	Raspberry Pi, sensors, Camera	Locating number of persons on that exact area
August 2014	Dr. S. Kanagasuba raja et	Intrusion detection Algorithm	Raspberry Pi, Camera, sensor	wireless relay connection
November 2014	Dhadiwal Kalpesh Paraskumar et al	Intrusion detection Algorithm	Raspberry Pi, Camera, Microphone	Home Automation
November 2013	Md. Nasimuzzaman Chowdhury et al	Face detection Algorithm	Raspberry Pi, Camera, sensor	Automated fire existing system

IV. CONCLUSION

Based on the survey of all these papers different authors have presented different security systems. We have found that most of the security systems are developed using Raspberry Pi because it is cost effective and it is compatible with many programming languages. Raspberry Pi can work with various sensors like PIR to detect movement of person, smoke sensor to detect fire and temperature sensor to detect temperature. With the help of Raspberry Pi person can implement security system which will be accessed remotely and user will be notify about the illegal activity.We can conclude that every person needs cost effective security system. There are different tools and parameters are used to provide the security. These security systems are useful for securing many places from remote location using mobile devices. In future we can implement energy efficient security systems.

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BIOGRAPHIES

IndrajitPatilis a student of Computer Engineering Department, G.H. Raisoni College of Engg. And Management Pune, SavitribaiPhule Pune University. He received Diploma in Computer Engineering in 2014 from MSBTE. His research interests are IOT, Database, and Cloud Computing etc

Saurabh Jaiswal is a student of Computer Engineering Department, G.H. Raisoni College of Engg. And Management Pune, Savitribai Phule Pune University. He received Diploma in Computer Engineering in 2014 from

MSBTE. His research interests are IOT, Web Technologies, and Cloud Computing etc.

Pallavi Sakhare is a student of Computer Engineering Department, G.H. Raisoni College of Engg. And Management Pune, Savitribai Phule Pune University. She received Diploma in Computer Engineering in 2014 from MSBTE. Her research interests are IOT, Software Testing, and Cloud Computing etc.

Mohammad Shoaib is a student of Computer Engineering Department, G.H. Raisoni College of Engg. And Management Pune, Savitribai Phule Pune University. He received Diploma in Computer Engineering in 2014 from MSBTE. His research interests are IOT, Cloud Computing, and Android etc.

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