INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 10 Issue: 02 | April - June 2019
Paper is available at www.jrps.in | Email : info@jrps.in

A REVIEW OF INDUSTRIAL AUTOMATION

[1]Abhimanyu Malik, [2]Mrs. Rupali Malhotra

[1]Research Scholar, M.Tech. Department of CSE, , SPGOI, MDU, Rohtak, Haryana., erabhimanyumalik@gmail.com

[2]Assistant Professor, Department of CSE, , SPGOI, MDU, Rohtak, Haryana., rupaliahuja4@gmail.com

ABSTRACT: A review of IOT used in home automation has been proposed here. IOT is a keen network of physical devices, buildings, vehicles and all other items. These are embedded with electronics, software, sensors, & network connectivity that enable these objects to collect & exchange data. There are several researches in the field of IOT in home automation. Some of them have been discussed here. This research would establishment the host automated application. Implementation of picture capturing module works from two different dimensions to boost the security. The size of captured frame sample would be reduced in order to save the storage space. Secondly any suspicious activity would be traced more quickly using edge detection mechanism during frame comparison in order to make system fast. Here the matrix of picture are captured and compared if the content is matched then there is no suspicious activity. Otherwise signals would be sent to physical Vault security on cloud.

ISSN : 2278-6848 03
9 772278 684800
International Journal for Research Publication and Seminar

KEYWORDS: IOT, MATLAB, IMAGE COMPRESSION MODULE, MULTIPLE CAMERAS, EDGE DETECTION

[1] INTRODUCTION

IOT is a keen network of physical devices, buildings, vehicles, & all other items which are embedded with electronics, software, sensors, & network connectivity that enable these objects to collect & exchange data.

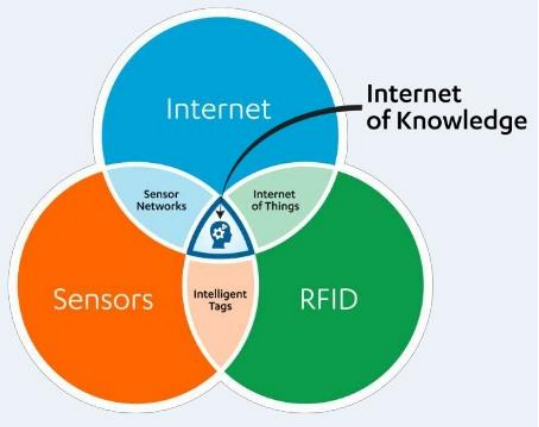

Fig 1.1 Working of IOT

In IoT objects can be sensed & controlled at a large distance across present network infrastructure, which creates opportunities for direct combination of physical world into computer-based systems, & resulting in improved efficiency, accuracy & economic benefit; when IoT is augmented with sensors & actuators, technology becomes an example of general class of imitated-physical systems, that includes technologies like smart homes, smart grids, smart transportation & advanced cities. Each thing can be separately identified through its implanted computing system but it can interoperate within present Internet infrastructure. Experts have estimated that IoT will include near about 50 billion objects up to 2020.

SCOPE OF IOT

IOT has many advantages into our lives that could help individuals, society & business on daily basis. Its new concept can be presented in many forms which includes safety, health, financial matters, & planning of each day. IOT Integration in health care system can be very beneficial for both individual & society.

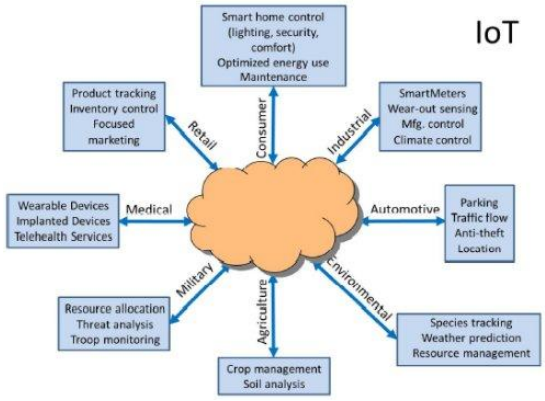

Fig 1.2 Scope of Internet of Things

A chip can be planted into every individual, which allows monitoring vital signs of patients for hospitals. By finding their important signs, it can help in indicating whether seriously assessment is necessary or not. All of information which is available on Internet, it can also scare people to believe that they have to take more care than what is in need. Hospitals are already struggling to judge & caring of patients that they have it gives them ability to judge who requires primary attention only by monitoring individual's health. IOT can help people in their personal safety. ADT is a home security system, which permits individuals in monitoring their security

systems at home by their phones, with ability to control.

[2] INDUSTRIAL AUTOMATION

By using this technology, we could automate manufacturing processes remotely. It could also prove useful in optimizing production processes. We could manage inventory & supply chain. We could also diagnose if machines require repair & maintenance. We could monitor emission of toxic gases to avoid damage to workers' health & environment.

[3]LITERATURE REVIEW

There are several researches in the field of IOT in home automation. Some of them has been given below:

In 2014 Abhay Kumar & Neha Tiwari published a research titled "Energy Efficient Smart Home Automation System International Journal of Scientific Engineering and Research Volume 3 Issue 1, January 2015.

Licensed Under Creative Commons Attribution CC BY Energy Efficient Smart Home A " told about high energy required by home instruments (like white goods, audio video devices & communication equipments) & air-con systems (heating & cooling) , makes our homes one among foremost essential areas for impact of energy consumption on natural surroundings.

Authors Juan Felipe Corso Arias, Yeison Julian Camargo Barajas & Juan Leonardo Ramirez Lopez in 2014 published their research paper heading "Wireless Sensor System According to Concept of IOT -Internet of Things" International Journal of Advanced Computer Science and Information Technology Vol. 3, No. 3, 2014,

They tell us about design of a wireless communication system, responding to sensor concept applied to a scaled industrial process where temperature variables used. Sensors are connected to internet (IoT) to be monitored remotely from anywhere in world. Sensor data is downloaded from cloud using a graphical programming platform to control & communicate system within a programmable logic controller (PLC), which perform sections according to temperature value (set point) of sensors.

James Brown & UtzRoedig published a research titled "How Temperature Affects IOT Communication" International Journal of Advanced Computer Science and Information Technology (IJACSIT) Vol. 6, No. 36 2015 in which they write that In future they would rely on applications built on top of Internet of Things (IoT).

Example applications are smart cities, smart grids & smart healthcare. These IOT applications require a reliable service within predictable quality, & that sensor data & actuator commands are delivered reliably & timely. Unfortunately IOT performance is highly affected by environmental conditions, especially by ambient temperature.

In 2014 a research was published tilted "Smart Security Solutions based on Internet of Things (IOT) International Journal of Current Engineering and Technology" by Chirag M. Shah, Vamil. Sangoi & Raj M. Visharia.

With increasing popularity of IOT (Internet of Things) & devices getting smarter day by day, this paper presents an idea to reform existing access control systems. Their approach of enhancing access control system ensures that system is wireless thereby reducing wiring issues. Prototype described in this paper had provision of accepting inputs from a smart card reader (RFID reader) or a biometric sensor. These inputs are processed inside controller (TM4C123GXL-based on ARM Cortex-M4). If inputs are found to be valid, access is granted to user & logs are wirelessly transmitted to computer using a Wi-Fi module (CC3100). Machine learning algorithms are implemented to monitor & analyse collected data.

A Survey was conducted by Vishwajeet H. Bide in 2014 & was titled "The Survey of Smart Homes using Internet of Things (IoT)" International Journal of Advance Research in Computer Science and Management Studies Volume 2, Issue 12, December 2014 findings of survey are as follows.

Things are expected to become active participants where they are able to interact & communicate among themselves by exchanging data & information sensed about environment. For that they react autonomously to real world events & provide services within or without direct human intervention. In this paper they use l0T for energy efficient Environmental Conditions sensing & controlling in Home.

In another research published in 2014 by author ByungMun Lee tiled "Design Requirements for l0T Healthcare Model using an Open l0T Platform Vol.66 (Networking and Communication 2014)

Tell us that most l0T platforms have been developed in an effort to be universally applied to various services & applications. However, critical success factor of l0T is an explosion of demand for services. Therefore goal would be achieved if service & application are reflected their characteristics for each use case. Hence it presented an l0T platform for healthcare & suggested to configure it within 5 components in this paper.

"Intelligent Healthcare Service by using Collaborations between l0T Personal Health Devices International Journal of Bio-Science and Bio-Technology Vol.6, No.1 (2014), pp.155-

164 " was published by ByungMun Lee & Jinsong Ouyang in 2014

In which they opine that management of chronic diseases is important to self-management for health. IOT concept plays a significant role in self-management for health. In order to accomplish it, personal health devices need two functions such as application network protocol & intelligent service. But, most of them have only simple function such as indicating measured data & storing data temporarily. In this research, they proposed an intelligent service model for healthcare which gives an effective feedback to an individual.

In 2014 a research titled "A Design of l0T Gateway for Agricultural Greenhouse" Vol. 172, Issue 6, June 2014, International Journal of Advance Research in Computer Science and Management Studies by authors GuohongLi, Wenjing Zhang & Yi Zhang write about a method to realize transmission between wireless sensor network & Internet. l0T (Internet of Things)

Gateway is used as part of greenhouse monitoring system. Design compatible multiple access method such as LAN, Wifi, GPRS, EDGE, 3G & so on, also data could stored locally. l0T gateway uses STM32 as MCU, µC/OS-III as embedded operating system. Application demonstrates gateway is reliable, compatible, & extendible. Because of this gateway greenhouse monitoring system realized real-time detection & control of greenhouse, & improved ability of automation & intelligent of greenhouse monitoring.

A research paper titled "IoT-based Intelligent for Fire Emergency Response Systems" International Journal of Smart Home Vol. 9, No. 3 (2015), was published by Chang-Su Ryu in 2014 in which he talks about Modern buildings around world having become complex & augmented.

Given structural characteristics of modern buildings, quick evacuation using emergency exits or evacuee guidance markers during blackouts due to fire, building collapse, earthquakes, or aging of buildings need to be possible. His paper suggests an Internet of Things(IoT)-based intelligent fire emergency response system that could control directional guidance intelligently according to time & location of a disaster & design of an integrated control system using wireless sensor networks to address problems within existing fire emergency response systems in times of fire or building collapse.

2014 Yun Qu & Bu Tao in 2014 write a research paper titled "The constitution of vegetable traceability system in agricultural IOT Computer Science and Management Studies Journal of Chemical and Pharmaceutical Research, 2014,

In their article introduces constitution of vegetable traceability system in agricultural IOT. In addition, they discuss application in processes of planting, logistics, & consumer. Then some existing problems could be analyzed. Finally, they forecasts application of vegetable traceability system in future. According to them within development of agriculture in modern society, l0T had been significant means to reduce costs, improve efficiency & achieve intelligent infield of agriculture.

[4]PROBLEM STATEMENT

The Internet of things could be used to remotely control & program appliances within your home. It could be useful in detecting & avoiding thefts. Home automation is process of controlling home appliances automatically using various control system techniques. Electrical & electronic appliances within home such as fan, lights, outdoor lights, fire alarm, kitchen timer, etc. could be controlled using various control techniques. Infrared Array Sensors allow systems to detect an individual's presence & their direction of movement, including motionless. This technology could be useful in applications in areas like medical imaging, retail, building automation & security. There is always need of integration of such complex technology in order to enhance capabilities of infrared array sensors. cost of system increases as this system requires more technical person to handle. This system is also considered technically challenging as access of data from remotes system requires high speed network connection too. So speed of network is big issue.

[5] TOOLS AND TECHNOLOGY

Introduction of MATLAB

MATLAB is widely used in all areas of applied mathematics, in education & research at universities, & in industry. MATLAB stands for MATrix LABoratory & software is built up around vectors & matrices. This makes software particularly useful for linear algebra but MATLAB is also a great tool for solving algebraic & differential equations & for numerical integration. MATLAB has powerful graphic tools & could produce nice pictures in both 2D & 3D. It is also a programming language, & is one of easiest programming languages for writing mathematical programs. MATLAB also has some tool boxes useful for signal processing, image processing, optimization, etc.

[6]CONCLUSION

This research is the establishment to host home automated application. Implementation of picture capturing module works from two different

dimensions to too boost the security. The size of captured frame sample is reduced to save the storage space. Secondly any suspicious activity has been traced more quickly using edge detection mechanism during frame comparison to make system fast. After identification of suspicious activity signal is forward to trigger the alarm so that urgent action could be made in reduce the changes of loss. In picture comparator the picture is compare using picture comparison mechanism in Matlab. Here the matrix of picture are captured and compared if the content is matched then there is no suspicious activity. Otherwise a signal is sent to physical Vault security on cloud.

[7]FUTURE SCOPE

This research would establishment the host automated application. Implementation of picture capturing module works from two different dimensions to boost the security. The size of captured frame sample would be reduced in order to save the storage space. Secondly any suspicious activity would be traced more quickly using edge detection mechanism during frame comparison in order to make system fast. Here the matrix of picture are captured and compared if the content is matched then there is no suspicious activity. Otherwise signals would be sent to physical Vault security on cloud.

REFERENCES

1. Philip L. Worthington (2002) had proposed enhanced canny edge detection using curvature consistency.
2. Nas sir Salman (2006) had put forward a work in graphical picture segmentation based on watershed & edge detection method s.
3. Miroslav Galabov(2003) "Fractal picture Compression" , International Journal of Innovative Research in Computer and Communication Engineering Vol. 7, Issue 12, 2003.
4. John Kominek (2006) "Algorithm for Fast Fractal picture Compression" Electronic Journal of Information Systems Evaluation Volume 19 Issue 3 2006.
5. P. Raviraj and 2M.Y. Sanavullah(2007) "The Modified 2D-Haar Wavelet Transformation in picture Compression" Middle-East Journal of Scientific Research 2 (2): 73-78, 2007.
6. Dr.S.Vijayarani1, Mrs.M.Vinupriya(2013) "Performance Analysis of Canny and Sobel Edge detection Algorithms in picture Mining" International Journal of Innovative Research in Computerand Communication EngineeringVol. 1, Issue 8, October 2013.
7. Zolqemine Othman, habibollah haron, mohammed rafiq, abdul kadir, "Comparison of canny and Sobel edge detection in mri images".
8. Mike heath, y sudeep sarkar, thomaz sanocki.z and kevin bowyery "Comparison of edge find ors a methodology and initial", Study computer vision and picture understanding vol. 69, no. 1, january, pp. 38–54, 1998.
9. PratikChavada, Narendra Patel, KanuPatel (2014) "Region of Interest Based picture Compression" International Journal of Innovative Research in Computer and Communication Engineering Vol. 2, Issue 1, January 2014.
10. Ali Tariq Bhatti, Dr. Jung Kim(2015) Implementation of Lossless Huffman Coding: picture compression using K-Means algorithm and comparison vs. Random numbers and Messages.
11. MalwinderKaur(2015)A Literature Survey On Lossless picture Compression.
12. R. Sumalathaand M. V. Subramanyam (2015) *"*Hierarchical Lossless picture Compression for Telemedicine Applications*"* Procedia Computer Science 54 (2015).
13. Er. Kiran Bala, Varinderjit Kaur (2016), "Advance digital picture compression using fast wavelet transforms comparative analysis with DWT", International Journal of Engineering Sciences & Research Technology Bala et al., 5(7): July, 2016.
14. Anurag, Sonia Rani(2017) "JPEG Compression Using MATLAB" 2017 IJEDR | Volume 5, Issue 2.
15. Dr. Vijaya Kumar C N, Kumar D(2017) " Performance Analysis of picture Compression Using Discrete Wavelet Transform" International Journal of Advanced Research in Computer Science and Software Engineering Volume 7, Issue 3, March 2017.
16. Mohsen sharifi, mahmoud fathy, maryam tayefeh mahmoudi "A classified and comparative study of edge detection algorithms" Proceedings of the international conference on information technology: coding and computing ieee (itccí02) 0-7695-1506-1/02.
17. Mitra basu, senior member, ieee ―Gaussian-based edge- find ion methods—A survey‖, ieee transactions on systems, man, and cybernetics—part c: applications and reviews, vol. 32, no. 3, august 2002.

18. M sudarshan*, p ganga mohan and suryakanth v gangashetty ―Optimized edge detection algorithm for face recognition.
19. G.t. Shrivakshan dr.c. Chandrasekar ―A comparison of various edge detection method s used in picture processing‖, ijcsi international journal of computer science issues, vol. 9, issue 5, no 1, september 2012 Issn (online):1694-0814.
20. Pinaki pratim acharjya, ritaban das & dibyendu ghoshal ―Study and comparison of different edge find ors for picture segmentation‖, Global Journal of Computer Science and TechnologyGraphics & VisionVolume 12 Issue 13 Version 1.0 Year 2012.
21. Peter Wilkins, Paul Ferguson, Alan F. Smeaton and Cathal Gurrin, ―Text Based Approaches for ContentBase picture Retrieval on Large picture Collections‖, Department of Strategic Technology Korea Telecom research Center, Department of Computer Science Korea University, Seoul 137-792, Korea, 1995.
22. Soumya Dutta Bidyut B. Chaudhuri International Conference on Advances in Recent Technologies in Communication and Computing 978-0-7695-3845-7/09 $25.00 IEEE 2009.
23. Gonzalez G. Hemantha Kumar Tian Jipeng ―Different Edge detection Algorithms Comparison and Analysis on Handwritten Chinese Character Recognition‖, International Journal of Computer Applications (0975 – 8887) Volume 47– No.17, June 2012.
24. Dr. S.K. Mahendran ―A Comparative Study on Edge detection Algorithms for Computer Aided Fracture detection Systems‖, International Journal of Engineering and Innovative Technology (IJEIT) Volume 2, Issue 5, November 2012.
25. Rajwinder Kaur, Monika Verma, Kalpna, Harish Kundra ―Classification Of Various Edge find ors‖.
26. S.Lakshmi, Dr.V.Sankaranarayanan ―A study of Edge detection method s for Segmentation‖ Computing Approaches IJCA Special Issue on―Computer Aided Soft Computing method s for Imaging and Biomedical Applications‖ CASCT, 2010.
27. Vineet Saini, Rajnish Garg ― A Comparative Analysis on Edge detection method s Used in picture Processing‖, Journal of Electronics and Communication Engineering (IOSRJECE) PP 56-59,2012.
28. Adnan Khashman ,"Automatic detection , Extraction And Recognition Of Moving Objects" ,International Journal of Systems Applications, Engineering and Development, Issue 1, Volume 2,2008.
29. Jacinto C. Nascimento, Member, IEEE, and Jorge S. Marques, "Performance Evaluation Of Object detection Algorithms For Video Surveillance", IEEE Transactions on Multimedia, Vol. 8, no. 4, August 2006.
30. Kinjal A Joshi, Darshak G. Thakore ,"A Survey On Moving Object detection And Tracking In Video Surveillance System", International Journal of Soft Computing and Engineering (IJSCE) ISSN: 2231-2307, Volume-2, Issue-3, July 2012.
31. Roshni V.S, Raju G ,"Image Segmentation Using Multiresolution Texture Gradient And Watershed lgorithm",International Journal of Computer Applications (0975 – 8887) Volume 22–No.6, May 2011.
32. Y.Ramadevi, T.Sridevi, B.Poornima, B.Kalyani, " Segmentation And Object Recognition Using Edge detection method s", International Journal of Computer Science & Information Technology (IJCSIT), Vol 2, No 6, December 2010.
33. Kavitha Ganesan,Shanmugam Jalla,"Video Object Extraction Based On A Comparative Study Of Efficient Edge detection method s",The International Arab Journal of Information Technology, Vol. 6, No. 2, April 2009.
34. Houari Sabirin and Munchurl Kim,"Moving Object identification And Tracking Using A Spatio-Temporal Graph In H.264/Avc Bitstreams For Video Surveillance",IEEE Transactions On Multimedia, Vol. 14, No. 3, June 2012.
35. Lu Wang and Nelson H. C. Yung, ,"Extraction Of Moving Objects From Their Background Based On Multiple Adaptive Thresholds And Boundary Evaluation",IEEE Transactions On Intelligent Transportation Systems, Vol. 11, No. 1, March 2010.
36. Beant Kaur, Mr.Anil Garg ," Comparative Study Of Different edge detection method s",International Journal Of Engineering Science And Technology (IJEST).
37. Bindu Bansal, Jasbir Singh Saini, Vipan Bansal, And Gurjit Kaur ,"Comparison Of Various Edge detection method s",

Journal Of Information And Operations Management ISSN: 0976–7754 & E-ISSN: 0976–7762 , Volume 3, Issue 1, pp-103-106, 2012.