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COMPARATIVE STUDY ON VARIOUS SYSTEM BASED ON RASPBERRY-PI TECHNOLOGY

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Abstract - *In this ever changing world of global data communication, inexpensive Internet connection and fast paced software development, security has become more and more of an issue. Automation is becoming more and more popular day by day due to its numerous advantages. This can be achieved by local networking or by remote control. The Raspberry Pi is a low cost single-board computer which has recently become very popular. Raspberry Pi makes network security cost effective and easy to implement. Raspberry PI are open and well documented as well and things you can build and modify yourself. It has powerful hardware and also upgraded power system (up to 900MHz to 1.2GHz) with four USB Ports .This Literature review aims at discussing a different applications such as home automation, Intelligent Safety of human, Automatic System for patients, Intrusion Detection System based on Raspberry Pi technology through Interfacing camera.*

***Key Words*: Raspberry pi, interfacing camera.**

I. INTRODUCTION

The development in embedded system has proved to a reliable solution in monitoring and controlling the environment monitoring system. Raspberry Pi is a credit-card-sized single-board computer developed in the UK by Raspberry Pi foundation with the intention of teaching basic computer science in schools. Due to the advancement of wireless technology, there are several different of connections are introduced such as WIFI, Ethernet and each of the connection has their own unique specifications and applications. The capabilities of these connection will indirectly reduce the cost of the system. Raspberry Pi is a credit-card-sized single-board runs on Linux operating system which can support many programming languages like C, C++, Python, Java etc. Computer securities have several security related objectives among them the three fundamental objectives are: Secrecy i.e. to protect information; Incorruptibility, to protect information accuracy. It is necessary to put high priority to system security, minimize loop holes and secure the computer system against intrusion. There has been an increase in video surveillance systems in public and private environments due to a heightened sense of security. Raspberry pi camera is used as web-camera for capturing video. Wireless video monitor system provide a practical solution for remote wireless monitoring with low cost. Raspberry pi with digital opt coupled inputs and active internet connection can read all the values given by the machine easily.It can be widely used in many fields and also used for long distance transmission. In developing countries like India, many of these technologies have significant potential and promise.

II.LITERATURE SURVEY

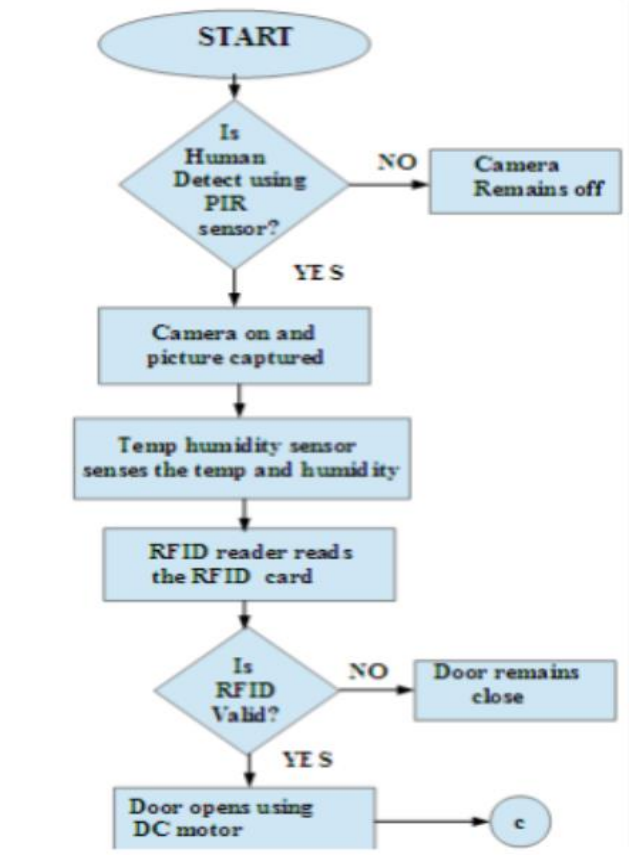
[1] In this proposed system a smart helmet is a special idea which makes motorcycle driving safer than before. This is implemented using GSM and GPS technology. Here we are implementing a model which uses DC Motor which in real time system is related to the ignition system of the Motorcycle. In proposed system the DC Motor turns on only when the rider is wearing the helmet from which Standard symbol is detected with the use of raspberry Pi camera, which in turn will be connected to Raspberry Pi. GSM and GPS technology. This project is specially developed as to improve the safety of the motorcycle's rider. Motorcyclist will be alarmed when the speed limit is exceeded. The project is expected to improve safety and reduce accidents, especially fatal to the motorcyclist. System with low cost and less complexity. Reduce the worked load of traffic policeman.The scope of this project is a motorcycle rider that they care about their safety while riding.

[2]In this author purposed an automatic attendance system implemented with raspberry pi camera module and Mat lab R2014a version. The system includes raspberry pi 2 model B module with raspberry pi camera module for capturing the classroom image/ video.An attendance management system is proposed here using Mat lab R2014a and Raspberry pi 2 using computer vision toolbox as:

- Formation of students' database.
- Capturing of class room video.
- Frame selection from the video.
- Face detection by Viola-Jones algorithm
- Features extraction by LBP and HOG algorithms.
- Face recognition by comparing with database stored features.
- Marking of attendance in database.

The system is user friendly, easy to use and reliable which provides more security, privacy and well organized data on board.

[3] In this proposed system in home automation using raspberry pi is discussed. It uses proximity sensor and Camera interfacing a proximity sensor is a sensor able to detect the presence of nearby objects without any physical contact. Proximity sensors can have a high reliability and long functional life because of the absence of mechanical parts and lack of physical contact between sensor and the any object. Its range could be varied by using pot. In our project we use of proximity sensors for door purpose (i.e. Opening and closing of door).A web interface for the Raspberry-Pi Cam that can be opened on any browser (smart phones included) .It takes single or multiple (time lapse) full-res pictures and save them on the rom. We are interfacing camera with raspberry pi which is used for home security purpose. It captures images of stranger entering house and the images are saved on ROM and could be send on browser. The goal of the paper is to implement smart home ideas interfacing it with the kit and making Home to perform automated Operations.



[4]In this proposed system, Design and Implementation of Environment monitoring system using Raspberry-Pi which is interfaced with various sensors like temperature, Humidity, CO2, LPG gas sensor-MQ-6, Vibration is stated. Real time data will be collected by all the sensors and will be fetched by the Web server. This data can be accessed by the user through web browser. This is a simple-to-use liquified petroleum gas .The DHT11 is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermostat to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed). The ADIS16220 is a digital vibration sensor that combines industry-leading sensing technology with signal processing, data captures, and a convenient serial peripheral interface (SPI).

[5] Author proposed the Intrusion Detection system (IDS) is a security application for computers and networks that gather and analyze information by scanning all the inbound and outbound network activities. The usage of Raspberry Pi-Honeypot as a decoy in the network represents a simple and an efficient solution for enhancing network security using raspberry pi and open source tools. A decoy based technology, Honeypot along with a Raspberry Pi makes network security cost effective and easy to implement. This proposed Honeypot is developed as a separate device (Raspberry Pi) physically present in the network. The apport of this work is to introduce a new and cost effective mechanism for network security. This mechanism combines the security tools in order to minimize the disadvantages and maximize the security capabilities in the process of securing at decoy based technology, Honeypot along with a Raspberry Pi makes network security cost effective and easy to implement.

[6] For patient parameter monitoring system author suggested that Patient monitoring system and control using feedback and GSM technology is used to monitor the different parameters of an ICU patient remotely and also control over medicine dosage is provided. When threshold value is reached, the alarm system that consists of buzzer and LED alerts the doctors and he can act more quickly. The objective of developing monitoring systems is to reduce health care costs by reducing physician office visits, hospitalizations, and diagnostic testing procedure. The GSM technology helps the server to update the patient data on website. The biometric information of the patient which is stored and published online can be given to scientists and researchers of medical fields to analyze the value and find patterns or for other research work. To simplify the hardware and reduce wiring we can have used wireless sensors. Instead of medical application this system can uses in industrial and agricultural application by using sensors like humidity sensors, fertility check sensors, etc.

[7] In this method Dulari Sahu developed a wheelchair system which enables the disabled patient to move their wheelchair independently in their own direction. Eye movement controlled wheelchair is to enable completely paralyzed patient as well as elderly to make their life more accessible in the real time application, this system uses camera, emergency switch and ultrasonic sensor depends on their application. The wheelchair movement operation with some delay time. Dark light places affect the performance of wheelchair, difficult to track the eye pupil in dark light. To

make the system more interact with patient we need to add some additional sensors. Delay time may be further reducing to a second. Operation of system depends on eye movement of totally paralyze patients. There are different eye based method will be use for controlling wheelchair such as EOG, ECG, EEG based, Eyeball sensing method Thus wheelchair moves in all required direction with good response.

[8]In this paper, an embedded real-time video monitoring system is designed; the embedded web streaming server is based on the Linux Operating System. Wireless video monitor system provide a practical solution for remote wireless monitoring with low cost. The system selected Linux operating system as software platform, use embedded Linux 2.6 kernel. And there are mainly three function modules, that is, Video capture module, Video Compression module, and Video Streaming module. Real time video monitoring using arm we get better performance and we can transmit video using wire and also possible for wireless hence long distance transmission is possible.

III.CONCLUSION

The survey is just brief over view of some proposed methods for study in the area of raspberry pi. To develop automated technique in conjunction with the advantageous features of pre defined method ,robust method is needed which will produce favorably good result in compared to existent approaches.

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BIOGRAPHY

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