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A Survey on Different Digital Video Monitoring Systems

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ABSTRACT
The video monitoring systems are now the essential part of our life. And apart from the cons of the traditional monitoring systems researchers have shown interest in the embedded technology to implement the video monitoring system. Different researchers have developed their algorithm for getting better results. This review paper will focus on different published video monitoring systems.

Keywords:- Literature Review, Video Monitoring Systems.

I .INTRODUCTION

Now a days video monitoring is playing very important role in our day to day life as they are the integral part of our life such as banking, family security, finance, industries. These monitoring systems are trying to make our life really easy and safe. The system maintains the security of social life. Traditional monitoring systems are used for small distance communications. In those systems Monitor and camera are connected by using coaxial cable. Such systems are having some problems like complex structure, higher cost; lower stability. The problems of the traditional systems are overcome by the embedded technology which is poor quality image, small distance communication and speed. Really monitoring systems with high speed are useful in many industries where continuous monitoring is necessary.

The two main types of the video monitoring systems are as follows [1]

1. Traditional analog video monitoring system.

2. PC based monitoring system.

Analog monitoring is having low transmission range, it is a one way communication, Low quality audio and video, Disassembly is difficult. Susceptible to interference. Where as in PC based monitoring systems it has large size, inconvenient wiring, high costs are the problems. [1] To overcome these difficulties researchers have shown interest in the digital video monitoring techniques and this paper will review some different techniques. The main goal of the digital video monitoring system is the good quality video processing and reception.

Section I give the brief discussion of the need of video monitoring system and goals of the monitoring system. Section II gives the literature review of the video monitoring systems and different algorithms and methods proposed by different researchers. Section III gives the conclusion based on the literature discussion.

II. RELATED WORK

Basically video monitoring can be done by using many ways and can use different techniques to perform it.so now in this section will see that techniques. Many have used GPRS; many of them have used ARM 9 or ARM 11. Many of the systems are using MPEG compression and also there is difference in the camera used. So there is difference in the compression techniques, camera, microprocessor and other factors.

Shichang Du in "The implementation of remote digital video monitoring based on ARM 11" developed a system which includes CMOS camera, ARM 11, PC, web server are used for monitoring the video in real time. And for interfacing between ARM 11 and CMOS camera LINUX operating system have been used. System uses S3C6410 chip as a microprocessor.H.264 coding technique is used. [1] And also RTP (Real time transport protocol) is used. And software part is having LINUX kernel, Nand flash driver, boot loader and network card. ARM 11 is the main core of the system as it's having its strong control capability and processing good video capability. Video data is taken by the CMOS camera and then using H.264 coding technic it is compressed and then it is transferred to the receiver, as ARM 11 is controlling it. The compressed data is received at the receiver and then after performing several operations it is displayed. Transmission and processing are the two main goals of the system. [1] As the system is using Darwin's streaming server cost of the system may increase.

Nagaraja G in "Design of Remote Security system using embedded Linux based video streaming " have proposed video streaming using ARM 9 and WI FI module. In this they have also shown two different types of monitoring systems

and comparison of them is done. And they used the JPEG and H.264 compression technique. [2]

H.264 is the latest compression technology which is efficient and works without degrading image quality.Rucha Bahirat in" Video compression using H.264 AVC standard" proposed the principles and standards of the H.264 latest technology. There a basic method called block based coding is also introduced. And the History of the video standards and block diagram of the H.264 is also explained. [3]

Kavita Mamindla in" Embedded real time video monitoring system using ARM" proposed the analysis of the basic needs and performance of the monitoring systems. This paper implements about the acquision, transmission and compression techniques. This is a low cost, small, digital monitoring solution to all the problems. This system uses the CMOS image sensor to capture the images. This system has low power consumption, cost, Integration. [4]

Manivannan m in "Design of online interactive data acquisition & control system for embedded real time application" proposes the design and development of online embedded web server. It is a digitally distributed control system which is network intelligent. This system is using ARM 9 processor with Linux OS. 'C' Language is used to port Web server application into ARM processor.HTML is used to write Web pages. [5]

Ali zia alkar in" An internet based interactive data acquisition system for real time application" in this paper presents the principles of internet based data acquisition system which is flexible and of low cost .[6] Embedded hardware ported with Linux is the main part of the system. Using General Packet Radio Service (GPRS) embedded device communication takes place, which can be accessible through a web server from anywhere in the world. This system operates with the large amount of data and reduces the operational cost. Server software is not needed here. [6]

P Krishna Kishore in "ARM Based Mobile Phone-Embedded Real-Time Remote Video Surveillance System With Network Camera "developed the remote video surveillance system, using an integrated web server, network cameras, remote control devices and clients connecting the internet. It can use high performance mobile phones having Wi Fi.[7] At the center of the surveillance system a server which is integrated server is located. It captures video from network cameras and compressed it.It will be saved in the internal buffer as a MPEG video temporarily. The system is using ARM 11with Linux ported on it. And the programs are written using 'C' language. [7]

Mr krunal solanki in "Wireless Real Time Video Surveillance System Based On Embedded Web Server and ARM9 " proposed An USB camera by which background data is captured and used mjpg streamer algorithm .By using embedded web server and ARM9 board data transmission takes place over internet on the TCP/IP based network.[8] For real time operation , Using mjpg streamer algorithm live streaming data get converted into different frames and the transmission of the frames via the internet using DM-900 Ethernet controller in ARM9.mjpg streamer algorithm are used for streaming of the JPEG files over an IP-based network from the webcam. This is LINUX based system, systems design is in CGI (Common Gateway Interface) script. Using CGI programs Web servers interact dynamically with users. In this system S3C2440 chip is used as controller in ARM9 board is the core of the whole system. [8]

C.H.SREEDHAR in "Design of Wireless Monitor System Based on S3C2440 and GPRS" Proposed, The S3C2440 Microcontroller based on ARM9 core, and the software includes Embedded Linux operating system, and uses GPRS for Wireless transmission. [9] USB camera is used to capture real time video data. It is compressed and encoded with MPEG4. Monitoring of compressed data will be using Socket Communication Mechanism through wireless transmission system. At higher data rates data is transmitted. It is a small size, portable design. It is a beneficial in Industrial Field for low cost solutions. [9]

This survey states the different algorithms and methods of video monitoring systems. Different researchers developed their systems to give best results. But still there is much advancement to be made like less pricing, Real time implementations. And this will be the future challenges.

III. CONCLUSION

There are different monitoring systems which are used in industries. Among that video monitoring systems are important one. From above literature review it is clear that there are different video monitoring systems, each one has its cons and pros. Many of them have used ARM 9 and ARM 11 from that ARM 11 is latest Risk machine. Different compression techniques are used i.e. MPEG, JPEG, H.264 among which H.264 is most efficient technique which works without degrading image quality And the camera used are USB camera, VGA camera, some used CMOS sensors which is used according to the range and scale of the application.

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