RESEARCH ARTICLE

REMOTE CAMERA CONTROLLER

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Abstract— This paper illustrate the remote camera controller which perform actions like capture image, rotate camera. Camera surveillance systems are capable of effective situational awareness across multiple scales of space and time. It describes GSM based remote control and surveillance architecture [1]. It is very suitable for remote area monitoring etc. The purpose is to set up a computer terminal equipped with a GSM Modem at proposed location, which can be used to transmit/receive images/photos and/or commands to and from the administrator/owner. It makes use of Wi-Fi network to capture camera images and transfer the image to user [1]. Once the transfer is done and an image is received, it sends the image to remote administrator. Admin can then take appropriate action and alert local security [5].

Keywords— Remote Control, Microcontroller, GSM Module, Communication Channel, Real Time Monitoring

I. INTRODUCTION

Observing or analysing a particular site for safety and business purposes is known as camera surveillance. Security and intruders concerns are the motivating factors for the deployment of image surveillance cameras [1].Image surveillance cameras are used in shopping complex, public areas, banks, industries and ATM machines. Nowadays, researches experience continuous growth in network surveillance. The reason being is the instability incidents that are happening worldwide. Therefore, there is a need of a smart surveillance system for intelligent monitoring that captures data in real time, transmits, processes and understands the information related to those monitored. The image data can be used as a forensic tool for after-crime inspection. Hence, these systems ensure high level of security at public places which is usually an extremely complex challenge. As images cameras are available at good price in the market, hence camera surveillance systems have become more popular. Camera surveillance systems have wide range of applications like traffic monitoring and human activity understanding [1].This paper makes use of Wi-Fi network to transfer camera images. Once the image capturing is done, it sends the image from server to remote administrator.

II. LITERATURE REVIEW

W Hu, T Tan, L Wang, (2004)it is an active research topic in laptop vision, visual surveillance in dynamic scenes tries to detect, recognize and track certain objects from image sequences, and more generally to understand and describe object behaviours. The vision is to develop intelligent surveillance to replace the traditional passive video surveillance that is proving ineffective as the number of cameras exceeds the capability of human operators to watch them. The goal of surveillance is not only to put cameras in the place of eyes, but also to complete the overall surveillance task as automatically as possible [12]

T.Mankrupkar, M.Kumari and R.MANE, (March, 2013) it illustrates a image system for surveillance which uses smart image sensor.   In this system, each image derived by numbers of sensors has no-overlapped area and is equivalent to the partial image of the wide view obtained by only sensor. Therefore deep estimate from sensor to each object is not required for combination. This paper describes the surveillance imaging system by using random access image sensors we have designed [1]

T.D Raty, (2010) this paper reviews briefly the actual development and existent state of the three different generations of existent surveillance systems. Recently, in extension to the employment of the incessantly demonstrate variety of sensors, the movement has been to test more intelligence and situation awareness capabilities to aid the human surveillance personnel Several generations are decomposed into multisensory virtual reality, video and audio supervision, wireless sensor networks, distributed intelligence and knowledge, middleware and architecture, and the employment of mobile robots. The eminent complications of the current surveillance systems are underlined. These challenging conundrums are comprised of the attainment of real-time dispersed architecture, intelligence and knowledge, existing problems in video surveillance, the hard pull of wireless networks, the ability of remote sensors, the area problems of surveillance, and scalability problems. The paper is ceases with brief summary and the upcoming surveillance systems for public safety [13]

III. PROBLEM STATEMENT

  The system captures image from portable camera which is then processed and streamed over the server-client system for viewing and analysis. The experimental results of the system show that it can handle multiple images data running on standard computers. A number of interconnected clients can view the multiple images feeds simultaneously.

IV. PROPOSED SYSTEM

- Sending command using .NET framework which uses Wi-Fi network to transfer the command.
- Sending the signal to microcontroller, the message will be specified meaning to which the motor software respond according to it.
- Perform action over camera i.e. to capture image and rotate at specific degree.
- Acknowledgement of delivered message to the user to ensure the message is being delivered properly.
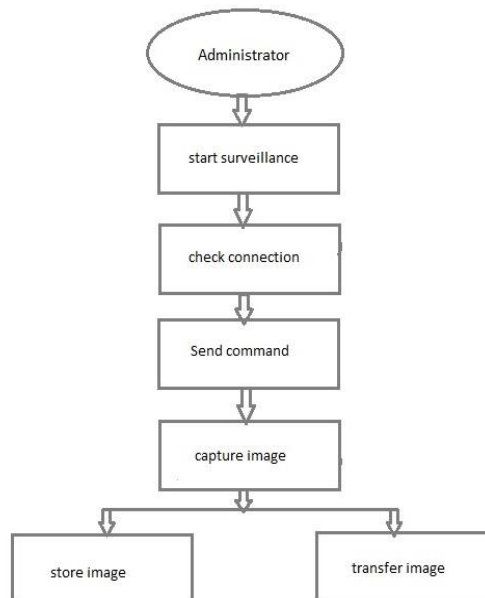- Transfer the image to the server.

Fig.1 Flowchart of the proposed system

36

A) The Client-Server Communication

Today, client-server communication has become an essential part in almost every type of organization. An organization having many computers (client) needs to exchange their information to work to accomplish a particular task. For the purpose of security and to avoid leakage of private data to an organization, the concept of client-server communication has risen. In client-server communication, there is a main computer that is server, which has all the rights for working, and it stores all data from different computers that is client associated with it. For the purpose of communication and exchange of data between client and server, the client firstly sends a request to server to allow it to exchange information. A server checks the client whether it is the client computer of the same organization or is it some external computer trying to connect in an unauthorized way.
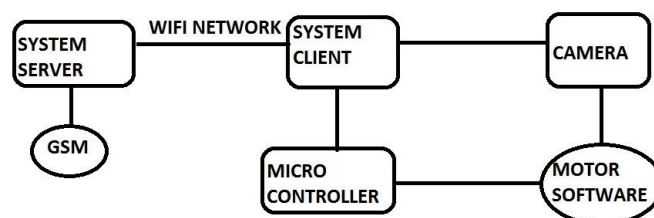
Fig. 2 System architecture

B) Microcontroller 89C51 IC

It is a low-power microcontroller which consists of 8-bit CMOS microcomputer that gives high performance by programmable and erasable read only memory consisting of 8 kilo-bytes. Atmel's high-density non-volatile memory technology is used in this microcontroller having standard 80C51 and 80C52 instruction set and pin out. The program memory can be reprogrammed in-system using on-chip Flash. By synthesizing a flexible 8-bit CPU with Flash on a monolithic chip, the Atmel AT89c51 is an effectual microcomputer which provides a highly-versatile and cost-efficacious solution to most of the embedded control applications. The following standard features are provided by AT89C51: 4K bytes of Flash, 128 bytes of RAM, 32 I/O lines, two 16-bit timer/counters, five vector two-level interrupt architecture, a full duplex serial port. The Idle Mode bar the CPU while letting the Random Access Memory, timer/counters, serial port and interrupt system to continue working. The Power-saving Feature saves the Random Access Memory contents but stops the oscillator disabling all other chip functions until the next hardware reset.

V. RESEARCH METHODOLOGIES

A) Analysis

3-Tier Architecture: The image surveillance system uses 3-tier architecture that comprises of client side, application server and a database server. The application server consists of the image server i.e. a central PC which is equipped with a GSM modem / cellular phone. A standard image is stored at the server. A web-camera is connected to the image server which captures the images. System can start and stop camera using Wi-Fi network functions also image capture takes place using Wi-Fi network. These captured images are standard image and it is checked for the intrusion.

B) Security

Command received from any other system will be rejected. Moreover the communication via system is authenticated by password. Hence no other user can check the system from one of the owner's mobile number.

C) DESIGN

- Our system allows user to view captured images even if he is at some remote place. The system provides the functionality of online command so that user can handle the camera from a remote place [10].
- Our system provides a software solution to rotate, zoom, capture image.
- Our system uses Wi-Fi network service technique to control the camera remotely, so it gives more precise and accurate results [7].

- The whole paper is consisting of four modules:-
- Module1- To send a command using Wi-Fi network.
- Module2- Encode and decode the command into operable command for microcontroller.
- Module3- Interfacing of microcontroller with motor software.
- Module4- Operate camera remotely.

VI. CONCLUSION

Smart surveillance systems considerably contribute to situation awareness. Such systems alter image surveillance from data acquisition tool to information and intelligence retrieval systems. Capturing the image analysis provides smart surveillance systems with. Our system captures the image and sends image to authorized persons so that action can be taken to counter the intrusion.

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