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Electronic Eye for Security System

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Abstract: -- Humans interest in the heavens has been universal and enduring. As the automation is emerging technology these days, we introduce Electronic Eye which describes the design and implementation of Door image capture using Microcontroller based security system for homes and offices. It provides the user with efficient and reliable security system for Door image capture that supports the use of a sensor at the door to send the signals to control unit of electronic eye with buzzer alarm for security purpose with image capture as soon as the door opens with image capture at the output of laptop or PC with VB application.

I. INTRODUCTION

Security is primary concern with day to day life and properties in our environment. This paper describes effective security alarm system that can monitor image capture system with the help of VB application. As soon as door opens sensor gets activated with image captured with help of Web camera in PC captured image gets saved with in VB application. It also serves function of sensing and detecting false instruction here is used to mean any form of attempt to gain entry without proper pre design protocols.

Robbery has become common in our day to day life. Countering it, Security systems with Web Cameras are commercially available. These systems are powered entire time and they capture videos, images throughout the day and hence consuming large amount of electricity. In most of the places remote surveillance is needed. These system captured image as door opens alarm gets on with transferring data through microcontroller control unit with image can be seen on PC or Laptop with VB application software.

Security system has been concern of worldwide. As technology is emerging every second, abundant home based or office based or industries based security systems have been developed and implemented to keep welfare security system is an essential mean of protecting homes from illegal invasion and false intrusion. A general home security system consists of CCTV capture image in 24 hours to identify what goes around the house. The power consumption is considered as concern of installing a security system.

II. WORKING

Early days with advancement of technology things are becoming simpler and easier for users. Automated systems machines are being preferred over manual system. In this paper the basic definitions needed to understand the

project better and further defines the technical criteria to be implemented as a part of this project. Automation reduces the need of human work and also the use of control systems and information technologies reduces the need for human work in the production of goods and services. In the scope of industrialization, home automation is a step beyond mechanization. For machineries mechanization provided human operators with machinery to assist them with the muscular requirements of work, where automation greatly reduces the need for human sensory and mental requirements as well. Automatic security systems are being preferred over manual system. Through this paper have showed home automatic security system control of a house as a result of which power is saved to some extent with the help of home automation for door image capture for security is shown in fig1 below:

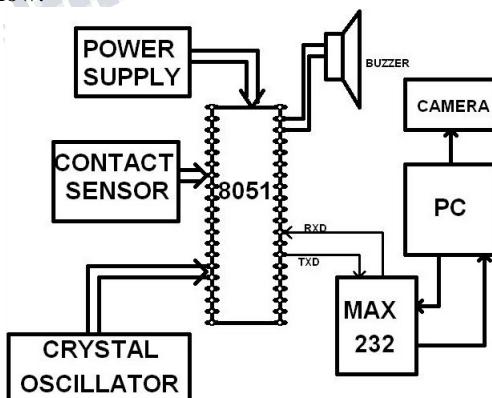


Fig.1. Block Diagram of Hardware System Design.

As per the above block diagram the camera is connected to PC and the microcontroller with contact sensor and buzzer is connected via RS232. There are hardware and software tools used to design the proposed system. The tools and sensors used in system are following:

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Door Image Contact Sensor:-

The NOM02B4-DR11G contact image sensor (CIS) module integrates a red LED light source, lens and image sensor in a compact housing. The module is designed for document scanning, mark reading, gaming and office automation equipment applications and is suitable for scanning documents up to 256 mm wide with a comparator referenced to an externally supplied voltage level to produce a serial digital output. The analog output signal is processed by a digitizing comparator referenced to an externally supplied voltage level to produce a serial digital output. The NOM02B4-DR11G module employs proprietary CMOS image sensing technology from ON semiconductor to achieve high-speed performance and high sensitivity.



Fig.2. Door Image Contact Sensor

- Light Source, Lens and sensor are integrated into a single module.
- 256mm scanning width at 8dots per mm resolution.
- 410 sec/line scanning speed @5.0Mhz pixel rate.
- Two-level tracking digital output.
- Support B4 paper size upto 52 pages per minute.
- Red LED Light source.
- Wide Dynamic Range, Low power.
- Compact 272.0 mm*21.5 mm module housing.
- Light weight 2.4oz packaging.
- These devices are Pb-Free, Halogen Free/BFR free and are RoHS Compliant.

Web Camera:-

Web Camera Image Save is currently based on 'Video for Windows' API(VFW), which is a very old and problematic programming interface for capturing camera images/video, available in all versions of windows. This programming interface has some limitations. It doesn't work well with more than one camera. If you have more than one camera plugged to your computer, an unfriendly dialog-box of VFW will appear on the screen and you will be requested to choose the desired camera. VFW may cause web cam image save to hang in some circumstances, for example, if we unplug the web cam while web cam image save is

running. Controlling the camera settings, like brightness and contrast, is done with external dialog-boxes provided by 'Video for Windows'.



Fig. 3. Web Camera

A video camera collects the images from the reference points and then converts them into electronic signals. The collected images are converted from visible light into invisible electronic signals inside a solid-state imager. These signals are transmitted to the monitor. This type of automatic wireless video monitors is quite suitable for the isolated restricted zones, where the tight security is required. Once upon a time much importance was not given for the security system. But now-a-days security has become a major problem and need has aroused to develop different types of security systems. Security has become a major problem and need has aroused to develop different types of security systems for various applications to safe guard the zones of various types like industries, offices, homes etc.

- High resolution CMOS colour sensor.
- 5M pixels (software enhanced).
- USB Hi-speed connection.

Buzzer:-

The burglar alarm is built around the 89C51 microcontroller from Atmel. The microcontroller provides all the functionality of the burglar alarm. A maximum of 8 sensors can be connected to the burglar alarm. A power supply voltage of +5V DC is available for each sensor at the corresponding wiring terminals.



Fig.4. Buzzer

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On-Off Electronic switched:-

In electronics, a switch is an electrical component that can break an electrical circuit, interrupting the current or diverting it from one conductor to another. The most familiar form of switch is a manually operated electromechanical device with one or more sets of electrical contacts. Each set of contacts can be in one of two states, either 'closed' meaning the contacts are touching and electricity can flow between them, or 'open', meaning the contacts are separated and non-conducting.

A switch may be directly manipulated by a human as a control signal to a system, such as a computer keyboard button, or to control power flow in a circuit, such as a light switch. Automatically-operated switches can be used to control the motions of machines, for example, to indicate that a garage door has reached its open position or that a machine tool is in a position to accept another work piece. Switches may be operated by process variables such as pressure, temperature, flow, current, voltage, and force, acting as sensors in a process and used to automatically control a system.

RIDE Software:-

RIDE is a fully featured by Integrated development Environment that provides integration and easy access to all seamless development tools. From editing compiling, linking, debugging and back to the start, with a Simulator, ICE, Rom Monitor or debugging tool, RIDE conveniently manages all aspects of the Embedded development with a single user interface. The project manager creates links between the various files that comprise a project and the tools necessary to create that project.

Microsoft Visual Basic application:-

Visual Basic is an advanced version of BASIC programming language with visual and event driven programming. It is helpful in creating a graphical user interface in many applications with help of the components available on the window. Visual Basic 6.0 is the latest version used in this work. Figure shows the screenshot for the electronic eye for door image capture home security system in visual basic.

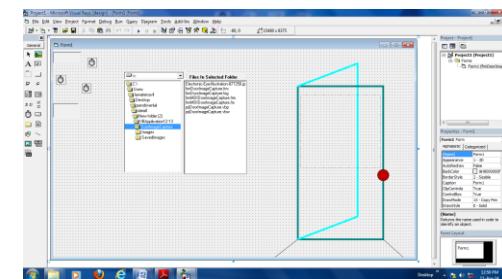
The Visual basic program has used here for producing the interface of secure door capture image for home security purpose. It mainly consists of the interface that connects the electronic eye (control circuit) and the VB

application programming in PC. The VB application software to interface hardware system connected to the PC using the COM ports and provides GUI for user. COM ports of hardware system and PC can be easily selected from the boxes provided on the interface. The GUI basically provides user friendly environment to operate and monitor the system.



Fig.6.Screen Shot for Created Main screen for Electronic Eye for Security System

The results are shown in the Fig. 8 and Fig. 9. The contact sensor scans for intrusion movement around the access door. And on detecting motion, it triggers the buzzer alarm system module and to capture the image and gives the processed result (Fig. 8 and Fig.9). If access is granted, the alarm turned on as soon as the person may enter the room the web camera captured image and image will be saved through VB application software in webcamera save.



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III. CONCLUSION

Hence, Microcontroller based Electronic Eye for security system, device that utilizes Sensor input as key for users' access. It has been successfully demonstrated that, this will serve as a device for securing personal wares in environments where it is deployed against intruders by setting off appropriate alarm for every door opens. Therefore, it can be said that the objectives have been met, hence conclusion is made that this is a successful undertaking design and implementation of Door image capture using Microcontroller based security system for home and offices. It provides the user with efficient and reliable security system for Door image capture for home, offices and industries that supports the use of an sensor at the door to send the signals to control unit of electronic eye with buzzer alarm for security purpose with image capture as soon as the door opens with image capture at the output of laptop or PC with VB application output.



Photo of project on Electronic eye for security system.

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