Smart Eye

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Abstract—The main agenda of this work is to style advanced security with reasonable and fewer complex system referred as “SMART EYE”. In this epoch, property crimes are a lot of predominant. This necessitates our need to develop a sophisticated security system that is the SMART EYE. It is basically one camera based mostly security system which will be wont to shield valuables unbroken in a very space of a house or property. Most existing camera based mostly security systems involve the employment of multiple cameras placed around the room to be monitored. This camera endlessly records the video footage of the room and saves it on a central observance station. The biggest advantage is that we will avoid having to wade through hours of footage of empty rooms and conjointly avoid having to put in multiple cameras to cover a single room. SMART EYE security system solves several of the issues round-faced by the multiple camera based systems at an easily affordable cost.

Keywords—Sensors, Microcontroller, Stepper Motor, GSM

I. INTRODUCTION

In this advanced life, property crimes are more primary. This require our need to develop an advanced security system which is the SMART EYE. It works with single camera supported security system which can be wont to defend valuables unbroken in a very area of a house or property. Manage can only view footage which was alerted on the presence of trespasser. Once the trespasser has been detected this information regarding entrant are directed to cop and owner through the SMS. The Cameras which continuously record footage of the area and put it aside on a Central watching Station. And the same time camera will slew round the area and record only it’s alerted by the presence of entrant. This type of system would cause less time intense and this may facilitate to stay track of the entrant simply in less time. Such a system would consists 3 components: Sensors that sight trespasser; the camera that slew to the purpose of entrant and take pictures; and also the data input device that’s wont to interface with the system that permits a person to disable the system by getting into the correct countersign. The biggest advantage is that we will avoid having to buckle down and do hours of footage of empty rooms and conjointly avoid having to put in multiple cameras to hide one area.

SMART EYE security system solves many of the problems sweet-faced by the multiple camera primarily based systems at associate simply reasonable value.

II. SYSTEM ARCHITECTURE

III. SENSOR

A detector could be a device, module or subsystem whose purpose is to detect events or changes in its environment and send the data to different physical science, frequently a computer processor. A Sensor is a device that detects and responds to some style of input from the physical surroundings. In today’s life the sensors are used in everyday objects such as touch sensitive elevator buttons and lamps which dim or brighten by touching the bottom, besides uncounted applications of that most of the people area unit ne'er aware. Sensors area unit used for form detection an electrical detector PIR (Passive Infra-Red) module is developed. In combination with Fresnel lens a PIR detector is mounted on computer size PCB with an analogy IC and restricted parts to make the module.
For human body detection a pyro electric sensor PIR module is developed. In combination with lense a PIR detector is mounted on a compact size PCB with IC-SB0081 and different parts to make module. The variable width of high level output is usually preferred and used.

PIR sensors permit you to sense motion, almost always used to detect whether a human has moved in or out of the sensors range. They are little, inexpensive, low-power, easy to use and don't wear out. For that reason they're normally found in appliances and gadgets employed in homes or businesses. They are often stated as PIR, "Passive Infrared", "Pyro electric", or "IR motion" sensors. To increase the efficiency of SIP signalling, yet maintain 100% standards compatibility with external VoIP systems and soft switches, xG has created patent unfinished SIP compression technology for the SMART EYE system that reduces SIP overhead information measure from four-hundredth to sixty six on the over the air links and backhaul links from the bottom Stations to the SMART EYE MSCs. The MSCs do the SIP compression and decompression to keep up 100 percent ability with third-party VoIP systems. This also has the benefit of creating a lot of information measure offered for mobile knowledge applications being carried aboard voice traffic.

IV. AVR (MICROCONTROLLER)

An AVR microcontroller could be a form of device factory-made by Atmel, that has explicit edges over alternative common chips.

The easiest method of wondering it’s to match a microcontroller together with your computer, that includes a motherboard in it. On that motherboard may be a micro chip that gives the intelligence, RAM and EEPROM memories and interfaces to rest of system, like serial ports disk drives and display interfaces. A microcontroller has all or most of those options inherent to one chip, thus it doesn’t would like a motherboard and plenty of elements, LEDs. AVR microcontroller come in different packages, some designed for through-hole mounting and some surface mount. AVRs are available with 8-pins to 100-pins, although anything 64-pin or over is surface mount only. A PC has an operating system and this runs programs, such as Word or net soul or Chrome that do specific things. An 8-bit microcontroller just like the AVR doesn’t sometimes have Associate in Nursing OS, though it might run an easy one if needed, and instead it just runs a single program.

An 8-bit microcontroller just like the AVR doesn’t sometimes have Associate in Nursing OS, though it might run an easy one if needed, and instead it just runs a single program. The AT89S52 is Associate in Nursing 8-bit low-power, superior CMOS microcontroller with 8K bytes of in designed system programmable non-volatile storage. This device is factory-made victimisation Atmel’s high density non-volatile memory technology and is compatible with the industry-standard 80C51 instruction set and pin out. The on-chip nonvolatile storage permits a standard non-volatile memory engineer to be programmed or by the program memory to be reprogrammed in-system. The monolithic chip, by combining in-system programmable Flash with a versatile 8-bit CPU, the Atmel AT89S52 is a potentially huge microcontroller which provide a highly-manageable and cost-serviceable solution to many embedded system control applications. The features of AT89S52 are 8K bytes of Flash, two data pointers, watchdog timer, 32 I/O lines, 256bytes of RAM, three 16-bit timer/counters, a two-level interrupt architecture, full duplex serial port and clock electronic equipment and a on chip generator.
In addition, for operation down to zero frequency the AT89S52 is designed with static logic and supports two selectable power saving software modes. The Idle Mode permits the RAM, port, timers, counters and interrupt system to continue functioning and stops CPU functioning. The Power-down mode solidifies the generator, until the next hardware or the next interrupt resets it disables all other chip functions but saves the RAM contents.

A. Knowledge Memory:

This AT89S52 microcontroller implements on-chip RAM of size 256 bytes of memory. In Special operate Registers the parallel address house is occupied by the higher 128 bytes of memory. This means that the special operate registers have constant addresses as that of the higher 128 bytes of memory however higher 128 bytes of memory and therefore the special functional registers are clearly separate from each other.

B. Watchdog Timer (One-time Enabled with Reset-out):

The CPU is also subjected to package upsets therein case the watch dog timer is planned as a recovery methodology. The watch dog timer consists of a watch dog timer special practical registers reset (WDTRST) and a 14-bit counter. To disable the watch dog timer from exiting reset it's simply created default. A user must write 01EH and 0E1H to enable the watch dog timer with regard to the WDTRST register (Special operate Register location is 0A6H). When the oscillator is running if Watch Dog Timer is enabled, then it will get incremented for every machine cycle. The external clock frequency is usually passionate about the watch dog timer fundamental measure. Disabling of dimension is completed by reset (either WDT overflow reset or the hardware reset). When output RESET HIGH pulse at the RST pin the WDT overflows.

C. Baud Rate Generator:

Timer 2 is selected as the baud rate generator by setting TCLK and/or RCLK in T2CON. If Timer a pair of is employed for each the receiver and transmitter and Timer one is employed for the other operate then the information measure rates for the receive and also the transmit are different. If the RCLK and/or TCLK area unit set then it puts Timer two into its baud generator mode. The auto reload mode is similar to the baud rate generator mode that a rollover in TH2 causes the Timer 2 registers to be reloaded with the 16-bit value in registers RCAP2H and RCAP2L, which are preset by software. According to the subsequent equation the information measure rates in Modes one and three area unit calculated by Timer 2’s overflow rate.
A Stepper Motor or Step Motor or motor could be a brushless DC motor that divides a full rotation into variety of equal steps. The motor’s position will then be commanded to maneuver and hold at one among these steps with none position device for feedback, as long as the motor is carefully sized to the application in respect and speed. Stepper motors are unit DC motors that move in distinct steps. They have multiple coils that are unit organized in teams referred to as “phase”. The motor will rotate, one steps at a time. Stepper motors are available many alternative sizes and designs and electrical characteristics. Usually for the interfacing of the unipolar stepper motor usually the four wire affiliation methodology is employed, but we can even more simplify the design by the help of the 2 wire affiliation methodology by creating the controller use less variety of pins. The circuit for 2-wire connection is shown below.

A. Step Angle:

To determine the step angle, simply divide the full rotation 360 by the number of steps which a motor takes to complete one revolution. The number of steps rotated by the motor to complete one full revolution gets doubled in a half mode, so alternatively step angle reduces to half. As in above examples, to complete a revolution Stepper Motor takes 4 steps to rotate in full mode So step angle can be determined as

Step Angle $\phi = \frac{360^\circ}{4} = 90^\circ$.

VI. GSM (GLOBAL SYSTEM FOR MOBILE COMMUNICATION)

GSM (Global System for Mobile Communications, originally Group Special Mobile), is a standard set developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second generation (2G) digital cellular networks used by mobile phones.
Multi messaging system sending messages using GSM modem. The system provides handiness thanks to development of high speed system. Sending vital data in faculties and universities to students and supposed recipients is a lot of versatile and effective system. A GSM modem is a specialized type of modem, which accepts a SIM card and operates as mobile operator. GSM modem just like mobile phone. GSM modem is communication medium. GSM modem is an external device that is connected via serial port RS232 to PC. GSM modem sends and receives messages by using radio waves, AT commands is set of commands which are used for communicate with GSM modem.[1]. These commands can be used for sending, receiving and deleting messages. Any processing unit can make an interface with GSM modem using these command sets.

D. Accessing a GSM network:

Any user wants 2 things so as to ascertain access to any GSM services

1. A request relationship with a transportable operator.

   This is usually either where services are paid for in advance of them being consumed (prepaid), or where bills are issued and settled after the service has been consumed (post-paid).

2. A transportable that's GSM compliant and operates at identical frequency because the operator.

A subscriber Identity Module (SIM) card, which is activated by the operator once the billing relationship is established. After activation subscriber’s Mobile Subscriber Integrated Services Digital Network variety (MSISDN) (the phone number) is then programmed with the card. Personal data like contact variety of friends and family can even be hold on on SIM by the subscriber.

After subscribers sign up, the services that are allowed to access and the information about their identity (telephone number) are stored in a “SIM record” in the Home Location Register (HLR). Once the SIM card is placed into the phone and the phone is switched on, it will check for the nearest available mobile phone mast (that is also called as a Base Transceiver Station) with the powerful signal in the operator's frequency band. If a mast can be successfully approached, then there is said to be coverage in that particular area. The phone then correspondingly detects itself to the network through the available control channel. Once this is successfully made, the phone is said to be associated to the network. The basic key feature of any transportable is that the ability to form and receive the calls in any explicit space wherever the coverage is offered. This is generally referred roaming from a customer perspective, but when describing the underlying technical process it is also called as visiting. Each geographic region encompasses a information known as the traveler Location Register (VLR), which contains details of all the mobiles currently in that area. Whenever a phone visits or connects the new area, the Visitor Location Register must approach the Home Location Register to acquire the details for that particular phone. When the GSM network wishes to locate the mobile phone the current cellular location of the phone (i.e., whichever Base Transmitter Station it is at) is entered into the Visitor Location Register record and also the same are going to be used throughout a method known as paging.

The authentication and encoding services of each SIM card is provided by a secret key of that specific SIM card.

VII. CONCLUSION AND FUTURE WORK

SMART EYE security system solves several of the issues featured by the multiple camera based mostly systems at associate degree simply cheap price. The biggest advantage is that we are able to stop recording the hours of footage of the empty rooms. One may avoid putting in multiple camera to hide an entire single space. Cost needed for the installation is incredibly less compared to multiple camera based mostly system. Good read of the video footage is obtained as camera turns 360 degrees.
This work can be extended to completely eliminate the use of the microcontroller and instead use parallel port of the PC to monitor the sensor. Also, advanced image processing techniques are applied to trace the entrant once his position has been known.

REFERENCES