Security System with Image Capturing using Microcontroller

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Abstract- Security is a vital concern around the world and it has been a major threat for all confidential departments. Robbery rate is very high. We are proposing a novel system to prevent robbery in highly secure areas with lesser power consumption. This system has face-recognition technology which grants access to only authorized people on entering that area. If others enter without access using some other means, the system alerts the security personnel and streams the video captured by the security camera.

Keywords-Microcontroller, integrated circuit, Displays, Camera, Buzzer.

I. INTRODUCTION

The AT89C51 is a low-power, high-performance CMOS 8-bit microcomputer with 4Kbytes of Flash programmable and erasable read only memory (PEROM).[1] The device is manufactured using Atmel’s high-density non-volatile memory technology and is compatible with the industry-standard MCS-51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Atmel AT89C51 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many embedded control applications.

The AT89C51 provides the following standard features: 4Kbytes 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, and on-chip oscillator and clock circuitry. In addition, the AT89C51 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port and interrupt system to continue functioning. The Power-down Mode saves the RAM contents but freezes the oscillator disabling all other chip functions until the next hardware reset.[2-3]

The 89C51 is a low cost Microcontroller from either ATMEL or PHILIPS. It has a 40-pin Configuration and other components are interfaced to its ports. The entire function of the CLIP device is under the control of Microcontroller. The Microcontroller takes input from the external devices and routes them to the appropriate sources as programmed in it.

A. EMBEDDED APPLICATIONS

- Navigation system using a GPS receiver;
- Communications systems for protocol conversion;
- Mobile data applications using BREW–MP3 player and salary survey;
- Real-time systems using RT Linux–printing, messaging and more[4];
- Windows CE database applications –salary survey and energy meter reading;
- Mobile Java appliances–electronic city guide, Jini appliance control, ACRremote application;
- Windows XP embedded applications –air conditioner remote control, audio player remote control, typing speed indicator, database application, electronic voting.
- Medical equipment’s like Electronic stethoscopes, Microscopes and equipment for medical imaging etc.
- Automotive safety systems like Anti-lock braking systems, Electronic stability control etc.

II. OUR WORK

Security is very important in every aspect. To protect the data, information in the offices, business establishments from leakage and for theft control security is important. So many people prefer security system arranged usually at the entrance of a restricted area.

An Access control system forms a vital link in any security chain. The Microcontroller based digital lock presented here is an access control system that allows only authorized persons to access a restricted area. This is helpful in industrial areas where only authorized persons are allowed to enter into a particular area.
III. BLOCK DIAGRAM AND EXPLANATION

EXPLANATION OF BLOCKS

- An 8051 microcontroller is used here which is of 8-bit one.
- Keys used here helps to enter the password to get the door opened.[5]
- Here we use 2 LEDs green and red, which resemble the entry of password either correct or not if password is correct green LED glows and if wrong red LED glows.

A. LCD

- LCD is output device which display the entered password and name assigned to the person in the code.
- Camera captures the image continuously one who enters password and display the image on the monitor of TV or PC

B. Wireless Camera: The wireless camera used here designed using wireless video monitoring system, for detecting the presence of things which are exactly at the entrance of the restricted zone [6]. This type of automatic wireless video monitors is quite suitable for the isolated restricted zones, where the tight security is required. The principle of remote sensing is utilized in this, to detect the presence of any things/persons at very near to particular point.

A video camera collects the images from the reference points and then converts 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.

C. Keypad: User will enter the password using the keypad. Various keys of keypad are as following[7],

I. 0 to 9  II. Enter  III. Escape

D. Buzzer: We are going to use a buzzer to indicate the wrong password to open the door.

IV. CIRCUIT DIAGRAM AND DESCRIPTION
The project security system with image capturing is successfully implemented. Security is prime concern in our daily life. Everyone wants to secure much and security is very much essential in every aspect. In the same way security should be provided in restricted areas of industries and many other places. Our project deals with how security is provided to stop entering unauthorized persons into a place. Using this project we can detect the entry of unauthorized persons and provide security. This will lead to increase in the market adoption rate and the technology will proliferate.

VI. CONCLUSION

The system comprises a small electronic unit with a numeric pad which is fixed outside the entry door to control lock simulated by Green/Red LEDs and LCD display. It also consists the wireless camera outside the door. When an authorized person enters a pre-determined (number password) via the keypad [8].

The wireless camera shoots the image and that image can be viewed in the TV so that we can check whether the person is an authorized or not. At the present delay, the relay de-energies and the door get locked again. If the entered password is wrong it gives a longer beep of one second.

V. RESULT

The project is being tested in protous and is working properly. It is also tested in bread board and is properly working. It has lots of application like we can use this project in door for home and office security, lockers, ATM, and anywhere where security is needed. Here we can easily change the password and it has features like if wrong password is entered more than three times it would be locked until and unless reset button is pressed. In this project we have used very less component so it is cost effective and it is less complicated than a simple micro controller based code lock system.

APPLICATIONS

- Restricted areas of industries
- Offices
- Business establishments
- Household purpose
- Door lock systems
- ATMs
- Other fields requiring user authentication and avoiding identity theft.

REFERENCE

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