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Microcontroller Based Bank Security System

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Abstract: ***For the past few years, security systems getting more awareness and importance. A multi-layer bank security system is a system Security confirmation, monitoring and control in the bank locker room. Today, there are lots of banks using authorize access control approaches .Prevent the locker room from unauthorized access. In this paper, the most efficient locker room security system has been designed. The system includes biometric System i.e. a fingerprint scanner and an iris Scanners, which are responsible for security Locker room and system main door Including an RFID system to provide access locker room area to authorize only people, To Monitor the unauthorized people in the locker the area of the room has been set to be an idle infrared sensor. In Picture from any unauthorized speed case the camera will be sent to the security officers and alarm will be turned on to inform local security. The proposed system in this paper is better security system in case of multi level Security.***
Index Terms: Security systems, Biometrics, Digital (electronic) code locks, Authentication, Iris Scanner, Vein Detector, Unique Password, Registered Identification Number, Wireless motion detector.

I. INTRODUCTION

The present system of protection is not very efficient because it can be easily worn by smart lasers because they can catch keys or passwords. Apart from this, it is a painful job to keep details of locker activities for the administration of banks, because there is no dedicated employee employed for this.

To get rid of these issues, this type of bank security system is required for which no manual presence of the officer is required. It also reduces the waiting time of the customer. When a new customer wants to open a bank locker, they should scan the iris scan and vein identity there. They are also given a unique password and the other is the proof registered with the driving license number, passport number, voter ID number or any other official authorized proof. They should also be given the option of all the above samples so that it can be used to reach lockers in case of any accident. The speed detector that works at night helps protect the locker area for any theft.

Biometrics (or biometric certification) refers to the identities of humans with their characteristics or symptoms. Computer science, biometrics are used for identification, identity and access control. It is also used for identifying individuals in groups which are under surveillance.

Biometric identifiers are used to label specific, scalable characteristics and describe individuals. The first time someone uses the biometric system is called Nomination. During enrollment, biometric information is captured and stored from a person. In later uses, biometric information is detected and compared with information stored at the time of enrollment. The biometrics work system can be written in phases.(A) Nomination is done by capturing and storing data of any person in the form of a template.(B) Templates are stored for future verification.(C) If a user wants to be certified, he then scans his iris or nerves and therefore produces a new template. It is compared to other archived templates.(D) After this, the comparison has been rated and if it crosses the threshold levels, then they are authenticated or else it gives another attempt.

II. COMPONENT USED

A. IRIS Scanner

A vein iris scanning appears to be something that is very innovative, but it is a simple CCD (charge coupled device) digital camera that is able to capture a clear, high-contrast picture of a person's iris, visible and near-infrared light Uses. The use of near infrared light is to separate a person's student and iris, because the student of a person is very black, making it easy for the computer. When we look in an Iris scanner, the camera, which is 3 to 10 with your eyes, takes a picture, underlines the computer: (A) the center of the student (B) The edge of the student (C) The edge of the iris d) Eyelashes, then analyze patterns in iris and translate them into a template.

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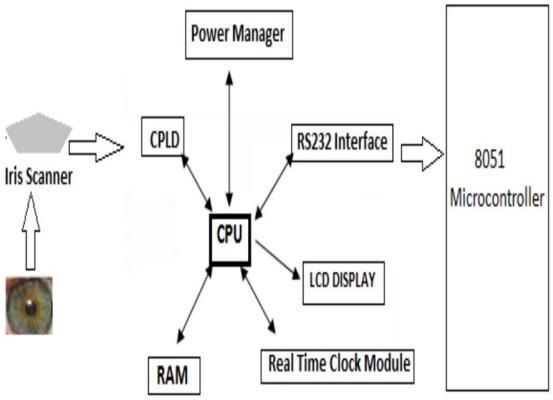


Fig. 1.Architecture of the Iris Scanning mechanism

Iris scanners are becoming the source of authentication of any person because everyone has unique eyes. For comparison; more than 200 reference points are stored in each template. Although the iris is preserved, it does not change with time. In most cases, people's eyes remain unchanged even after eye surgery. Even blind people (with the iris) you can use this feature. In addition, the presence of the eyeglasses or contact lenses does not interfere. Hardware part of wireless iris recognition system Iris recognition validation module, microcontroller, Power modules, real-time clock modules, and LCD display modules. Figure 2 shows architecture of hardware design. Microcontroller 8051 is interfaced using RS-232 interface as transmission and receiving data packets Production of CPU. The power module provides the necessary power and ensures that the system is also functional, when available power is low. Real-time clock module meets the accuracy of the time required for the database an objective. The LCD display indicates whether the authentication has been confirmed or not. Microcontroller also goes to the next level if the verification fails.

B. Wayne Detector

As mentioned in the case of iris, nerves of every person are completely specific. Even twins are not the same veins the right and left sides of any person's veins are also different. Most of the nerves are not visible through Skin, and therefore can not be easily latticed or fiddled. Like the case of iris, their size does not change with age. In this system, you can use your finger, wrist, palm or back of your hand to scan has near infrared light. The camera is to capture the image. The light is absorbed by hemoglobin and black appears in the veins picture. This photo is used to create a template that is stored and then it is compared whenever it is necessary.

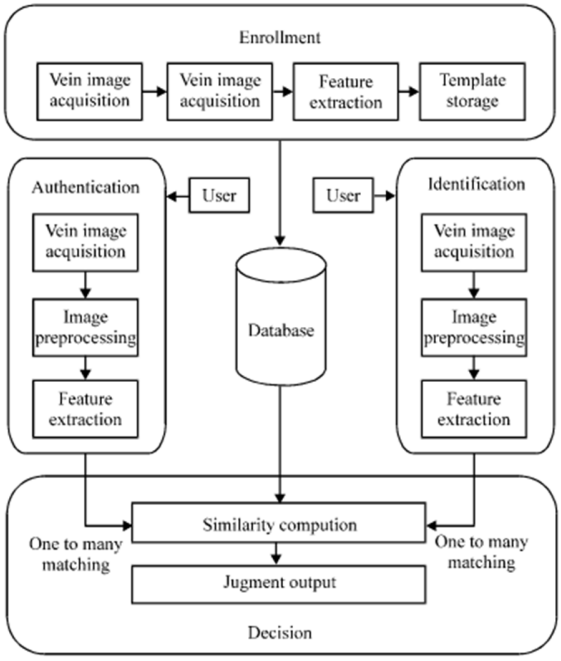


Fig. 2.Architecture of Vein Recognition system

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Hardware architecture has a pass-infrared camera, which is a device for capturing veins Pattern They are processed by the CPU by the Complex Programming Logic Design (CPLD) for verification. The device has a light unit with infrared diode (recommended wavelength approximately 900 nm), a digital Signal processor is linked to video preprocessing and image enhancement and processing. Then, there is one Microcontroller to peripheral control Memory is available to store animated templates. When there is an organ the source of the lead is placed in the area around it, it radiates infrared rays on the arm and then captures the IR camera. Image of veins and then stores them. Figure shows architecture arrangements.

C. Digital code Lock

This is a lock which is not common to the locker cluster, unlike the above two. It is individually installed on the door of every locker. This is a microprocessor based digital lock system that opens when the correct password is entered. Password is numerical without any character. Passwords of 6 numbers are mandatory. This is interfaced with lock; there is a memory within microcontrollers for storing passwords. The whole system is not so expensive and therefore can be installed on each locker. This will certify the person and will act as a medium to lead the locker holder to next Level of Verification; this holder will be issued when they select the locker and can only be changed authorized Bank Officer after their verification. Three tests have been provided, if not verified the system returns to the signal of danger and authentication fails. This lock includes LCD screen, keyboard and microprocessor 8051. The keyboard contains 12 keys (4 * 3)1,2,3,4,5,6,7,8,9, *, 0, # and password is used to input. Where * A digit is used to remove When 6 points entering the password, #is has been pressed to submit that password. LCD screen is used for display. LCD is used here shows the typed digits and act as the interface.

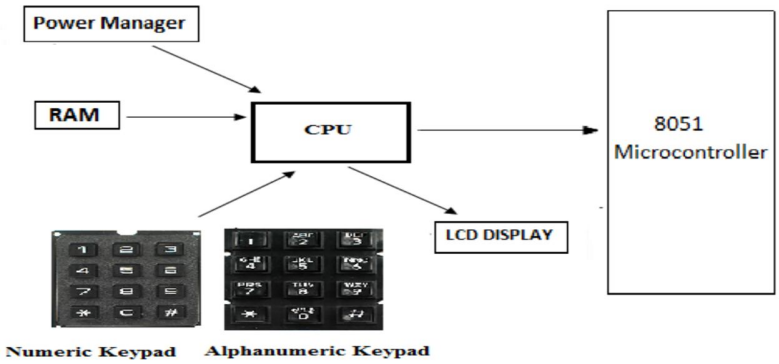


Fig. 3.Architecture of Digital lock



Fig.4 .Digital lock

D. Identification Number

Just like the above-mentioned digital code lock, it works on the same principle. This is the only thing that recognizes as a registered nationalist, the user has a government registered identity number as a password. This may happen anything for driving license, passport, voter ID, PAN card or any other proof. This is what used as identification objective during opening or closing the locker it is determined by the bank administration after verification. This last step of authentication is, the locker can then be used. This is an alphanumeric key and number depending on the letter proof. It gives you three occasions to verify again and reach the locker. After the tests, any other entry will be given to the bank officials. Hardware is similar to the above mentioned digital clock with the presence of an alphanumeric keypad instead of a numerical.

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E. Wireless Motion Detector

Motion detection sensors are revolutionary security tools that provide excellent security to banks. They can find out any kind of physical movement in its environment and with the help of infrared heat sensor can get the alarm. Crystal, which shows the electric effect i.e. if they have slight modification in infrared radiation as heat they produce current on their surface, they are the materials that are used as thermal sensors. Every human body emits infrared radiation which is about 9.4 micrometers in the wavelength. Therefore, the speed of any human result in change in the area around the sensor, in the local infrared radiation pattern. With the use of 'frictional lenses', radiation can be concentrated on sensor. Since it is done only for working at night, there is no possibility that the temperature related to sunlight.

The change unnecessarily triggers the reaction of a speed sensor. Wireless motion detectors include 8051 microcontrollers and PIR sensor modules. PIR sensor is a 3 pin connector: VCC, production and ground .Whenever a moment is felt; its voltage reaches its peak. Microcontroller manages voltage collector of transistor under normal circumstances, the transistor is cut off and the collector voltage is at its high. When the motion is felt, saturator transistors and voltage on the high output collector droplets from the sensor module below and alarms are turned on to reduce the argument.

III. FLOW OF CONTROL

There is a series of tools in the bank locker. Once the person enters the locker area, he has to go through four authentication testing. The first of them is the Iris scan. In this test, the person's iris is scanned using a special machine, which compares the iris with the scanned records stored at the time of account opening. After this, the next step is nerve detection each person has a unique vein position and this detector will compare the current vein template archived templates. If any of these two tests have not been cleared, an alarm will be raised. But if any of the self the certification testing is being approved, the next step is the digital code lock in which a person has to enter a unique entry .The code given to each account holder while opening the account. The last step is the number registered Identity Card. Someone has to choose identity proof which was deposited during the inauguration one of the account and the match code has to be entered. All the final outputs of these devices are interfaced with 8051 microcontroller which checks authentication If any of the three levels are valid, the locker opens. This is very helpful in many ways If a person fails to bring his registered identification number or loses his possession, he can still manage open the locker if the other three certifications are positive. Similarly, if someone is unable to validate the first two scan, the alarm is raised by the system. Wireless motion detector is programmed in such a way that it works after the bank's closing time as long as the bank opens this can also work on specific days when the bank is closed. The alarm system has been designed in such a way that it not only gives security to the bank's security officers but also provides an alarm to local police station also if any wireless motion attempts to enter the range of detectors; an alarm is sent for security officials nearby police station and top bank officials. In this way, bank lockers ensure silly security.

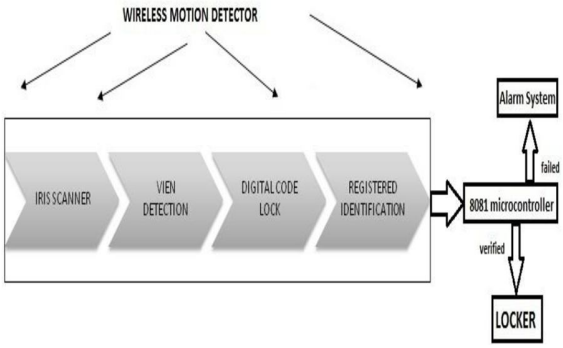


Fig. 5.Block Diagram of the flow of control

IV. CONCLUSION

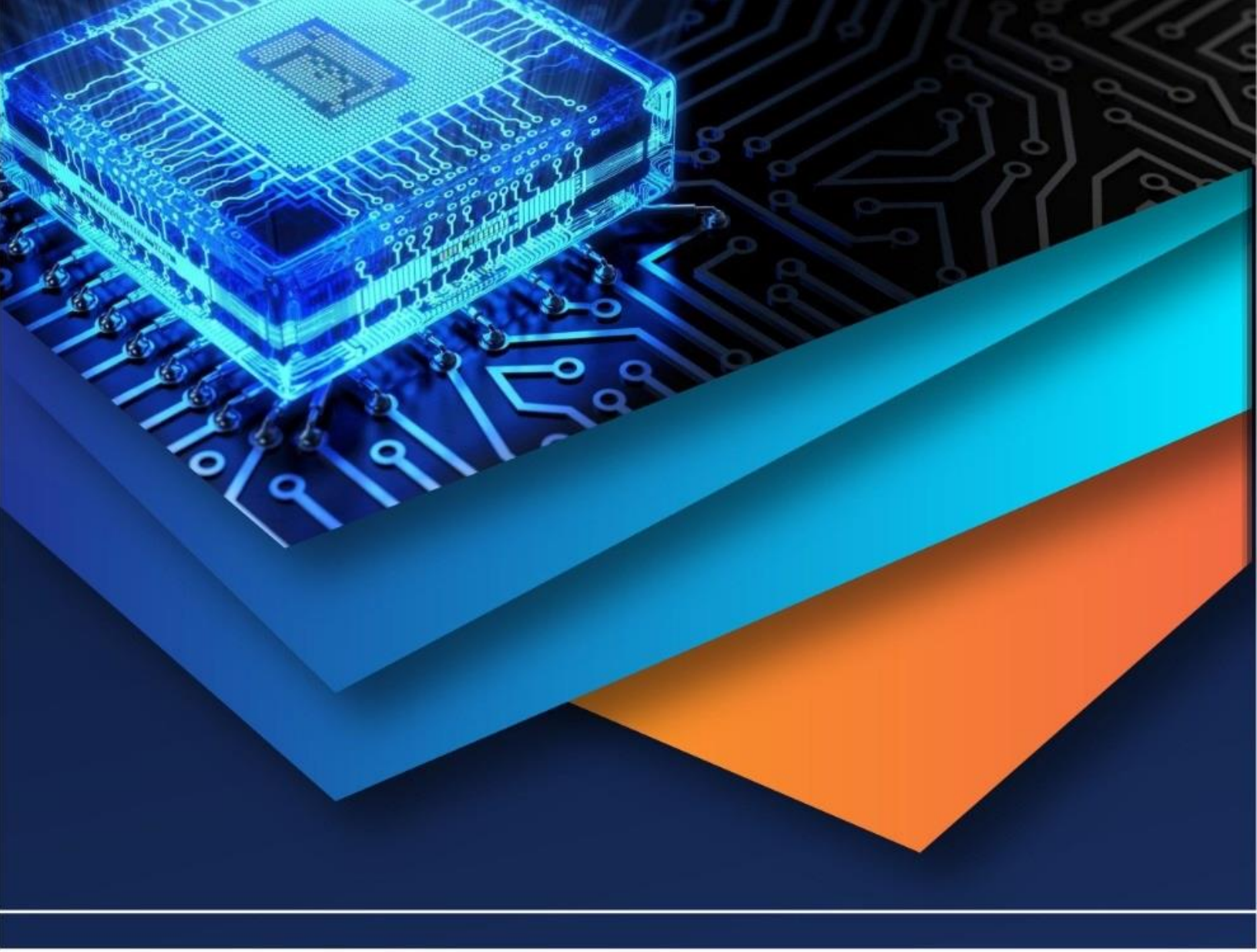
This is a real-time application-based paper that states that there is a need to revolutionize the bank locker. Security system by making the process a little easier and more systematic for Bank Official .It's just a proposed model which will definitely give a very good security of lockers to prevent theft and build upon implementation .Bank customers will be assured that they will be forced to use it and so will protect them from any kind of theft .The purpose of this is not to make the work of the bank official easier, but also makes it easy and comfortable process for your users, general public .Since it is protected by surrounding sensors, it can be detected .The bank can protect the lockers in the most efficient and lockers in an unwanted or forced entry.

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