

ACCESS CONTROL SYSTEM USING ARM PROCESSOR AND FACE RECOGNITION

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ABSTRACT

In past, most of the companies were using a magnetic stripe card, which is a type of card to storing data by Card has a Personal Identification Number (PIN) allow to access account electronically. Now days, RFID card has been used widely. In this project. We used RFID card because it does not need a Physical contact. This is a very useful application of RFID (Radio-frequency identification). It is very commonly used in institutes, offices, homes and so on. A tag has a unique serial number which is identified by the reader. RFID has been interfaced with controller to provide secured access. The relevant messages displayed on a LCD. If the PIN in the RFID card matches then a response is send to a remote station by a GSM modem. Today, Face recognition is also used for security purpose. By using met lab software can recognized authorized person face which enter the office, parliament, institutes etc. In this project, also used attendance software for persons daily scheduling. It counts person in time, out time of office. Our aim is to develop the system using ARM Processors board for attendance of employ in office application. The system will consist of ARM Processor, camera, DC motor driver, DC motor, RFID interface and GSM modem etc.

Key words: ARM Processor, RFID, Webcam, Face Recognition, GSM, Personal computer, VB Software, Buzzer etc.

INTRODUCTION:

In this project uses RFID which make the security stronger and reliable. The mat lab program is developed. It met the design criteria and solve the paper problem. Face recognition (FR) is an active field in computer. The need is accurate face recognition systems for security and commercial purposes. Under uncontrolled conditions, FR is still a challenging task face images are still an important problem for most face recognition system .Normalizing detected face images can improve FR system robustness and reliability. Access control system in which a Personal Computer can be interfaced with a RFID and ARM Processor. A Personal Computer System is designed to communicate with the overall system.

To access this data a database is designed on the PC using VB Software. Data transfer from ARM Processor to PC for Door Access security system The RFID Card number which is tracked by the RFID reader or also Face Recognition is now compared with the data present in

the database. If the Card number & also saved image is present in the database then the PC will send a signal to the ARM Processor through programming for Door Access Security. And message is send to remote station through GSM modem.

If the RFID Card & Face recognition will not properly detect then buzzer will be on. GSM Modem is used to send the message for particular user.

The Aim of this Project, to provide a security system for Industries, Offices, Military, and Parliament etc. In this project we use RFID Reader & Face recognition to detect the Authorized & Unauthorized person, also used Attendance Software to get time to time information about Authorized person.

Objective of Project

- 1 To identified the authorized and unauthorized person.
- 2 To send information to PC and GSM through ARM processor.

3 To count the entries of authorized person and display on PC.

4 To provide security by using RFID and Face Recognition.

1. BLOCK DIAGRAM:

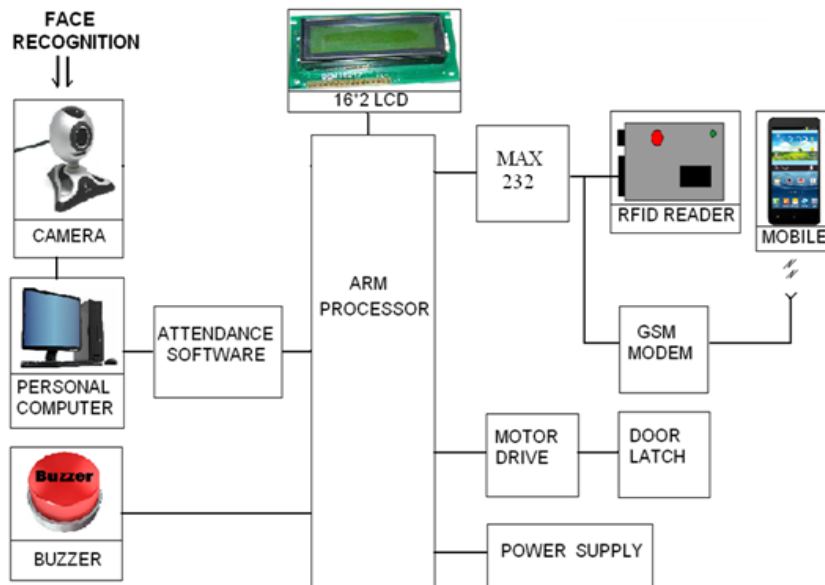


Figure 1: Block Diagram of Access Control System

BLOCK DIAGRAM DESCRIPTION

At access log unit, show RFID tag to the reader. If the tag is valid then open the gate wired connection.

At server gateway unit, receive that tag ID from access log unit. Log that ID in ARM Processor. There is one camera used for identification.

Here RFID has been interfaced with Processor to provide secured access. The messages are also displayed on a 16x2 LCD.

The door security system requires few basic modules such as radio frequency identification (RFID). For door we can use the Dc motor to count the entry of person or in time & out time of that Authorized person. When person take CL/EL/ML/OD send to attendance software send signal to processor for register its schedule.

According to overall information, processor registered the time, name & monthly salary of person.

When person go outside timer note the out time of that person. Door security system can be either wired. In wireless communication, the connectivity will be secured which also guarantees authentication process. The door security system basically requires few basic modules such as RFID. For door we can use the Dc motor to count the entry of person or time of that Authorized person. The researcher chose RFID because it is more strength to any

security system, which are systems that enable an authority to control access to protected areas and resources. In this project attendance software is also used to collect the presence of person. The web-cam of the security system takes a snapshot when a person presents his RFID card to the system.

2. WORKING:

A.RFID

Access control is, in reality, an everyday phenomenon. A lock on Car Door is essentially a form of access control. APIN on an ATM system at a bank is another means of access control. The possession of access control is prime importance when persons seek to secure important, confidential or sensitive information and equipment.

The system in organization can trust another system component to securely provide user information, such as the user's identity or numbers.

Up to date, attendance system has been taken manually which causing time waste, paper work, besides it is inaccurate. Face recognition technology can be utilized to build an automated attendance system that makes counting and identifying students much easier and convenient. Face occlusions, face scaling, and posture are still important problems in such systems.



Figure 2: To Swap RFID card

B.GSM

Global System for Mobile Communications (GSM) is the most popular mobile phone system in the world. The name GSM first comes from a group called Group Special Mobile (GSM), which was formed in 1982 by the European Conference of Post and Telecommunications Administrations (CEPT) to develop a pan-European cellular system that would replace the many existing incompatible cellular systems already in place in Europe. But when GSM service started in 1991, the abbreviation "GSM" was renamed to Global System for Mobile Communications from Group Special Mobile.

GSM uses Frequency Division Multiplexing, Time Division Multiplexing. A multi frame consists of 51 frames, 51 multi frames make up a Super frame, and 2048 Super frames make a Hyper frame which is 2715648 frames.

The GSM network can be divided into two parts.

- Mobile Station
- Base Station

C.ARM PROCESSOR

ARM processor is the heart of the entire system and used for real time operating system. It capture the all the answers feed by users and will do the comparison with standard answers enter by system operator. ARM Processor plays very important role in Access control system. It is heart of our project. In this ,we used 32-bit processor which is available in tiny package. It has 8 KB to 40 KB of on-chip static RAM and 32 KB to 512 KB of on-chip flash memory And 128-bit wide interface/accelerator enables high-speed 60 MHz operation.

In ARM Processor Power saving modes include idle mode and Power-down mode. When authorized or unauthorized person enter at the door then ARM processor Send information to PC and GSM .Also when unauthorized person will be detected then ARM processor send signal to Buzzer.

D.FACE RECOGNITION

In Face Recognition we used Image processing. There are important terms related to image processing which are as follows,

Pixel: Pixel is the building blocks of image. In other words, a pixel is the smallest possible image that can be detected on your screen.

Face recognition (FR) is an active field in computer vision and many other areas .The need for robust and accurate face recognition systems for security and commercial purposes is increasing.

Face recognition technology can be utilized to build an automated attendance system that makes counting and identifying students much easier and convenient. Face occlusions, face scaling, and posture are still important problems in such systems.

Web cam-Web camera will be rotate in 360 degree and memory used 512 MB DDR RAM.

The Resolution will be 640&480. For opening the door, after person identification we use DC motor to rotate or open the door for entry.

E.SOFTWARE

1. Attendance Software-

In Attendance software we used to take the time to time information about the Authorized person. These data will

be storage in VB database. After 30 days or one month processor tally the salary of that person according to its overall performance in its work.

2. MAT LAB Software-

MAT LAB is a high-level language .By Using MAT LAB; we develop algorithms, and create models and applications. We used MAT LAB for image processing for face recognition.

3. KEIL Software-

Kiel implemented the first C compiler designed from the ground-up specifically for the microcontroller.

The Kiel Compiler generates code for any device that is compatible with the 8051, 251, ARM microcontrollers.

The Kiel u Vision IDE supports two distinct methods of program testing: simulation and target debugging.

F. DATA TRANSFERRING

For connection of devices and transferring the data we use MAX 232.which is same as the source voltage of microcontroller.MAX 232 IC internally consists of two sets of line drivers, one for transmitting and other for receiving data. Webcam captures live images and send to the processor for identification and storing the data for counting the salary of that authorized person.

3. ADVANTAGES:

1. RFID tags can be read through materials without line of sight
2. High-speed operations.
3. Greater data capacity.
4. Reliable operation and maintenance.
5. Low failure rate with long life.

4. APPLICATIONS:

1. Automatic Authorized & Unauthorized person Identification.
2. Government Office.
3. Inventory Management.
4. Real Time Tracking.
5. Work- in -Process.
6. People Tracking.

5. FUTURE SCOPE:

1. The design of this project which uses RFID, can also be replaced with Biometric Finger Print Device.
2. It is use in parliament, various industries for security purpose.
3. In Future we used Live Video Streaming for Automatic Authorized & Unauthorized person Identification.
- 4.Improvement in the security issues in highly re-striated areas & Automated fire exit systems can be build, And also Industrial automation and Control through internet.

6. CONCLUSION:

Thus we have studied Access Control System by Using ARM Processor. Face recognition is a very important component in many applications like search engine and emotion detector. In this project we use RFID & Face Recognition to detect the Authorized &Unauthorized person, Also used Attendance Software to get time to time information about Authorized person.

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