

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirset.com

Vol. 6, Issue 3, March 2017

Domestic Airport Gate Pass Authentication System

Prof. V.A. Aher¹, Ms. Indarkhe Manisha R.², Maid Pooja V.³, Mr. Arane Sanket A.⁴

¹Professor, Department of Electronics and Telecommunication Engineering, Pravara Rural Engineering College, Loni, Ahmednagar, Maharashtra, India

²BE Student, Department of Electronics and Telecommunication Engineering, Pravara Rural Engineering College, Loni, Ahmednagar, Maharashtra, India

³BE Student, Department of Electronics and Telecommunication Engineering, Pravara Rural Engineering College, Loni, Ahmednagar, Maharashtra, India

⁴BE Student, Department of Electronics and Telecommunication Engineering, Pravara Rural Engineering College, Loni, Ahmednagar, Maharashtra, India

ABSTRACT: With the slogan “Leading the World in IT Airport Applications – e-Airport. Today’s world required speed in each and every field. Hence quick working and rapidness is the important thing. Now a day’s different machines and techniques are being developed for different purpose. In such a modern era small scale industries are contributing in a big way for the growth of our country. The engineer is constantly conformed to the challenges of bringing ideas and design into reality. New machines and techniques are being developed continuously to manufacture various products at high quality and low cost. Since 9-11 series of terrorist attacks, however, enhancement of security at airports has become more important, with debates taking place on how to sustain security while improving the level of efficiency and speed of procedures for passengers. For this purpose we tried to contribute and develop small equipment for Airport security purpose named as “Domestic Airport Gate Pass Authentication System” with biometric authentication technology of passengers based on the physical characteristics (biological identifying information using AADHAR CARD) that can only belong to each individual, is drawing a lot of attention.

KEYWORDS: Image Processor, Camera, Fingerprint Module, Metal Detector, PIC18F2420, IR Sensor, LCD Display.

I. INTRODUCTION

Airports are a highly complex unit that provides service to passengers, airlines and all other airport users. They must deal with tens of thousands of passengers and employees day to day and a mass of specialized services that depend on timely and accurate processes. Airports represent a very important industry in today’s economy for every country in the world. Efficient and secure airports are important to achieve economic growth for global air connections they can increase the accessibility for passengers and maximize the economic advantages. The present electronically dependent and interconnected world, the need of superior security schemes persists more than ever. Biometric technologies use a person’s unique and physical or behavioral characteristics to authenticate the identity. Biometrics authentication systems based on the usage of fingerprints are gaining massive acceptance across the world and has become a synonym for biometric authentication. Based on computer technology and information technology, bar code technology composed by encoding, printing, identification, data acquisition and processing is booming. By

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirset.com

Vol. 6, Issue 3, March 2017

Comparing bar code and two-dimensional code has significant outstanding advantages in the capacity, types, density and recovery capability of data.

Concealed weapon detection becomes an important point since global terrorism and crime growing rapidly. To prevent terrorism, detectors like baggage X-Ray scanners, Walk through metal detectors and hand-held metal detectors are used to search hidden weapons on Airports and security sensitive areas. In this Domestic Airport gate pass authentication system, the QR (Quick Response) code which is present on AADHAR CARD gets scan by QR Scanner and all the information about passenger gets retrieved from this QR code and compared with database. Metal detector is used for any metal detection for security. Biometric system is used to take thumb impression of passenger.

II. LITERATURE SURVEY

In today's era new things of wide applications are growing up. Such new development can have great importance in the coming time.

Since 1990, Federal Aviation Administration has been working on Quadrupole Resonance technology for detection of explosives at an airport. In US(United States) the First Come, First Served procedure is designed to allocate slot, for air queuing, landing and taking off from a congested airport. This requires big delay time. Also in the EU (European Union) the aircraft allocation is having slot system. This slot system is limited to the number of flights which are permitted in an Airport at busy times. "Biometrics-based airport entry is important considering India is witnessing air traffic growth is increase. Moreover, it will reduce the time taken by a guard in examine tickets and identity cards," said Amber Dubey, partner and India head for aerospace and defense at consultancy firm KPMG.

III. PROPOSED SYSTEM

The system aims to make it possible for air travelers to used their time at the airport effectively as possible by limiting the time required for procedures at the relevant areas of the airport, while increasing the security levels of air travel by preventing the changing of boarding passengers and such through positive individual authentication. This system provide comfort for the passengers and provide better security using adhaar card authentication. For better advantage of this system is this system require no human effort. Camera is used to capture photograph and provided it to PC for further processing in MATLAB . Fingerprint Module is used for Biometric authentication of user identification. Metal detector is used to detect metallic objects. Buzzer will on when metal detected and unauthorized person will found. IR sensor will detect number of person entering through door. DC motor is used for opening and closing door.

1. SYSTEM DESIGN

This system includes microcontroller and IR sensors and finger print module are connecting serially. This system have serial communication with the PC for saving the Data of Passengers. Camera is used to capture the Data Present on Adhar card. DC motors are used for closing and opening of gate. Keypad is required for the operation of finger print module and other purpose. LCD are used to Show the command and buzzer is for ringing the tone in metal is detected. Block diagram of system is shown.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirset.com

Vol. 6, Issue 3, March 2017

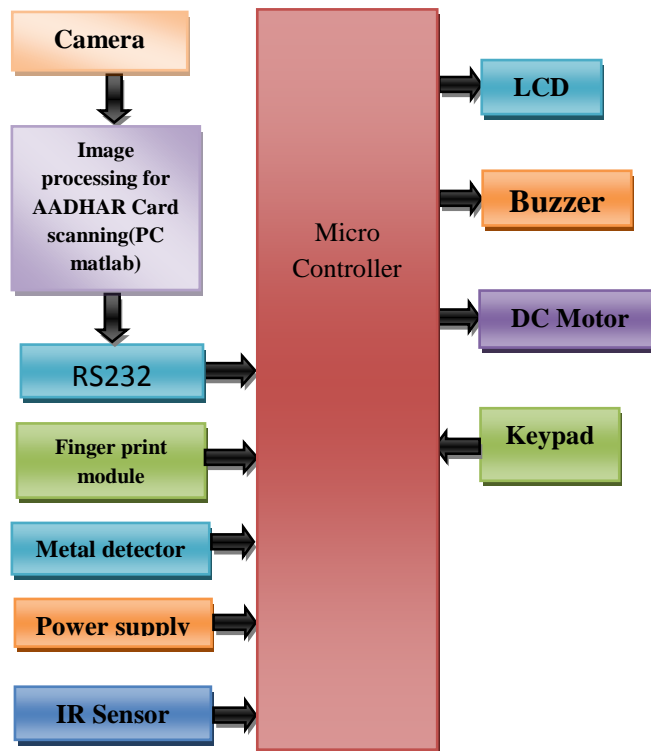


Fig.1 Block diagram of Airport Gate pass system

1) PIC18F4520 Microcontroller

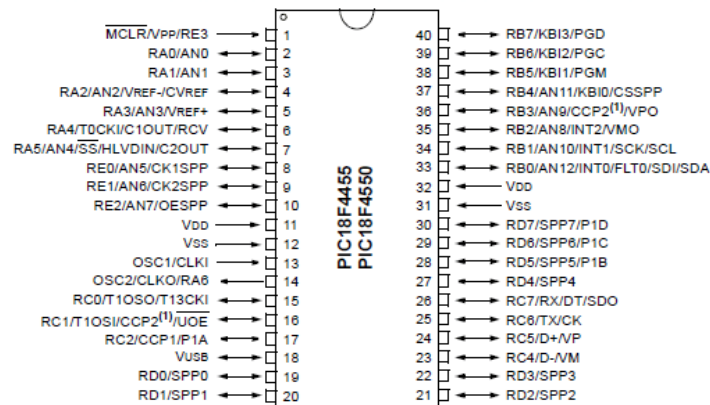


Fig- Pin Diagram of PIC microcontroller

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirset.com

Vol. 6, Issue 3, March 2017

A microcontroller is a low cost single-chip computer. The microcontroller has its most important feature that is its compatibilities of a running a program. Every microcontroller consists of several major units.

PIC Microcontroller is the high performance RISC (Reduced Instruction Set Computer) CPU. It has 10 bit inbuilt 8channel ADC (Analog to Digital Converter). Inbuilt I2C and SPI bus. Only 35 single word instructions have to learn. All single cycle instructions except for program branches which are two cycle.

2. METAL DETECTOR

A metal detector is an electronic instrument that detects the presence of metal nearby. metal detectors used for security purpose. Metal detectors are advantageous for finding metal inclusions hidden within objects and metal objects buried underground. They often consist of a handheld unit with a sensor probe which can be swept over the ground or other objects. If the sensor comes closer a part of metal this is indicated by a changing tone in earphones, or a needle moving on an indicator. Usually the device gives some indication of distance; the closer the metal is, the bigger the tone in the earphone. Another common type are stationary "walk through" metal detectors used for security screening at access points in prisons, courthouses, and airports to detect concealed metal weapons on a person's body. If a part of electrically conductive metal is near to the coil, eddy currents will be induced in the that metal, and this produces its own magnetic field. If another coil is used to check the magnetic field the change in the magnetic field due to the metallic part can be detected. And if any metal is detected then buzzer will be ring.

3. LCD DISPLAY

LCD display is used to show the messages that are authentication are correct. And all other command to running the system. The display shows 16*2 characters.

4. FINGER PRINT MODULE

Biometrical identification from a print made by an impression of the ridges in the finger is often used as evidence in criminal investigations. Yes, now we can use the same biometric identification technique to build biometric authenticator/access control system. This is an optical biometric fingerprint reader module with TTL UART interface used for direct connections to a microcontroller UART port. The user can store the finger print data in the module and can configure it in 1:1 or 1: N mode for identifying the person. This module can directly interface with any 3.3V or 5V microcontrollers, but a suitable level serial adapter is required for interfacing with the serial port of a PC.

5. IR SENSOR

An infra red sensor is an electronic instrument which is used to sense some characteristics of its surroundings by either emitting or detecting infrared radiation. Infrared sensors are also capable of measuring the heat being emitted by an object and detecting motion. In this system IR sensor are used to count the passengers entering into the airport gate. Only one passenger enter from gate and IR sensor sens that and give signal to microcontroller.

6. DC MOTOR

Two DC motor are used. One DC motor are used to closing and opening of gate of airport. and another is for metal detector movements.

IV. TECHNOLOGIES USED

1. IMAGE PROCESSING

IMAGE PROCESSING technique is used to the matching QR code with the passengers Database. with the Adhar card. Image processing is a type to converting image into digital format and perform some operations on it, in

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirset.com

Vol. 6, Issue 3, March 2017

order to get an more image or to extract some require information from it. It is signal type dispensation in which input is image, like video frame or photograph and output may be image or characteristics associated with that image. Usually Image Processing system contains treating images as two dimensional signals while applying already set signal processing methods to them.

In the science of imaging , image processing is processing of images using mathematical operations by using any form of signal processing for which the input is an image, a series of images, or a video, such as a photograph ; the output of image processing may be either an image or a set of characteristics or parameters related to the image. Most image-processing techniques include treating image as a two-dimensional signal and applying standard signal-processing techniques to it. Images are also processed as three-dimensional signals with the third-dimension being time or the z-axis. Image processing basically includes the following steps:

- 1) Importing the image with optical scanner or by digital photography.
- 2) Analyzing and manipulating the image which contain data compression and image enhancement and spotting patterns that are not to human eyes like satellite photographs.
- 3) Output is the last stage in which result can be altered image or report that is based on image analysis. Digital Processing techniques help in manipulation of the digital images by using computers. As raw data from imaging sensors from satellite contains deficiencies. To get over such flaws and to get originality of information, it has to undergo various phases of processing. The three general phases that all data types have to undergo while using digital technique are Pre- processing, enhancement and display, information extraction

2. BIOMETRICS CONTROL

Identification using biometric data stored in passports increases security and comfort. It ensures that the person being checked is the passport holder. Only authorized individuals can pass – all they need to do is look in the camera. Passengers are checked quickly, through a contact-free process. And personnel know who is actually allowed to enter the country. The Immigration Gate aids in convenient, reliable, and seamless border control in airports. Its space-saving sensor gate single door – including facial recognition, an informational display, and a document reader that effortlessly scans electronically readable ID documents. If the data matches with entry or departure permits from the border authorities, the doors open with an inviting motion. Smart sensor technology protects users and restricts entry to single individuals. If passengers' identities have been verified during check-in, and the boarding pass has been linked with a biometric feature such as the face, passengers only need to look into the integrated camera. The doors will open – but only for the actual boarding pass holder. Biometrics increase security and comfort.

V. CONCLUSION

As a conclusion, it is hoped that the proposal of this project will be approved. The main objective of the Domestic Airport Gate Pass Authentication System is used for Airport security purpose. This project is developed and modified by improving the existing security systems to get a more user friendly product. Besides, it is aimed to minimize the queuing time and human effort.

Besides, throughout the process of completing the project, it is hoped that the group members will gain knowledge in technical part and also learn on how to manage and working as a team as well as to cope with the problems. All group members need to be responsible for their parts and help within each other to ensure the successful of the project

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Website: www.ijirset.com

Vol. 6, Issue 3, March 2017

REFERENCES

- [1] Using infrared Imaging Technology for Concealed Weapons Detection and visualization.. Siu-Yeung Cho & Nanda-Pwint Tin , Forensic and Security Lab, school of Computer Engineering, Singapore.
- [2] Application of an explosive Detection Device based on Quadruple Response(QR) Technology in Aviation security.
- [3] Secure Identity Authentication And Logical Access Control For Airport Information System., M.W.David, G.A.Hussein,K.Saurai, Cuboc Corporation, Singapore.
- [4] [http://en.wikipedia.org/wiki/Test_\(assessment\)](http://en.wikipedia.org/wiki/Test_(assessment)).
- [5] PIC Microcontroller and Embedded System by Muhammad Ali Mazidi, Rolin D .Mckinlay and Danny Causey.
- [6] 121 David, M., Sakurai, K. "Enhancing Airpan Control Security", Australian Information Warfare Conference, Nov 28-29, 2002.
- [7] Department of Defense, 2002: "Department of Defense & Federal Biometric System Protection Profile for Medium Robustness Environment". Version 0.02, Mar 3, 2002.
- [8] A. S. Shinde and V. Bendre, "An Embedded Fingerprint Authentication System," 201 5,IEEE,DOL 1 O.1 1 09/ICCUBEA2015.45,pp. 205-208.
- [9] C. T. Pang, Y. W. Yun, and J. Xudong, "On-Card Matching," 2009, Springer.
- [10] Slamani M.-A., P.K. Varshney, R.M. Rao, and M.G. Alford, "Image Processing Tools for the Enhancement of Concealed Weapon Detection", ICIP 1999, pp. 518-522.
- [11] Senate Committee on Finance, "Border Insecurity, Take Two: Fake IDs Foil the First Line of Defense", August 2, 2006.
- [12] International Civil Aviation Organization (ICAO), Document 9303, Machine Readable Travel Documents, Part 1 Machine Readable Passports (2002), Part 2 Machine Readable Visas (1994), Part 3 Size 1 and Size 2 Machine Readable Official Travel Documents (2002), ICAO, Montreal, Quebec, Canada.