

# FINGER PRINT BASED RAILWAY TICKET RESERVATION SYSTEM USING MICROCONTROLLER

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**Abstract:** This project is used for providing sophisticated ticket reservation and collecting system using PIC and Finger print technologies. Each user is allowed to sensor and selects their source and destination without the need for other details. The hardware design has a Finger print scanning sensor which is used to compare the finger print of the user with the pre-stored finger print of the user in the database. During booking the finger prints are checked for matching and if it matches the user can select source and destination using keypad. LCD is used to display the corresponding status such as available seats trains. The user can select the particular source and destination using keypad. During booking, the finger prints are checked for matching and if it matches the user can select source and destination using keypad.

**Key Words:** Fingerprint, Reservation, Source, Destination, Sensor.

## I. INTRODUCTION:

A biometric system is essentially a pattern recognition system which recognizes a user by determining the authentication of specific anatomical or behavioral characteristics which is possessed by the user. During Reservation there are several important issues must be considered in designing a practical biometric system. First, a user must be enrolled in the system so that his biometric template or reference which means the fingerprint of the user can be captured. This template or reference is securely stored in a central database (memory unit) or a smart card issued to the user. The template is used for matching the captured data when an individual needs to be identified. Depending on the context, a biometric system can operate either verification (authentication) or an identification mode. Once the user needs to reserve a ticket he/she uses a captured biometric (fingerprint) in the sensor which identifies whether the stored data matches with the present data. If the data matches then it indicates authentication in the LCD and if it does not matches with the pre stored data it indicates un authentication mode.

## II.EXISTING METHOD:

In the existing system, booking a train ticket standing in a queue or online has been a challenge for the common man.

Though the Reservation Systems have gotten better over the years, a lot more needs to be done on this front to make booking of train tickets easier and transparent. Passengers have to wait for a long line to book a ticket in the railway station. This makes passengers to lose a train in emergency periods. It is the first reasons for passengers to travel in train without tickets. Many systems were developed in order to book tickets through online only for national railways not in local railway statements. Even the finger print technology has designed but making fingerprint matching is more difficult due to storing of data templates were failed. In existing system they use an image based approach which does not support minutiae because of not using biometric system.

## Drawbacks of the Existing System

- The Existing System only used an image based approach.
- This system does not support the minutiae approach.
- This system also takes long time identification.
- This system result is not accurate.

## III. OVERVIEW OF PROPOSED METHOD:

In this proposed system, fully electronic and automated ticket booking, reservation is done using finger print sensor and implemented using PIC. The hardware module consists of a microcontroller, Finger print sensor, database and PC. Candidates are provided with finger print sensor and allowed to access the railway reservation, booking without the need for name, age, address and other details that reduces time and makes booking easier. During booking process, finger print sensor is used to obtain their finger print value and check with the pre-stored value of the user. If the scanning matches, then, they can select the source and destination using keypad display. Normally finger print has some distortion.

## IV.LITERATURE SURVEY:

The purpose of the Literature Survey is to give the brief overview and also to establish complete information about the

reference papers. The goal of Literature Survey is to completely specify the technical details related to the main project in a concise and unambiguous manner.

[1] Atul Jain, Ankita Gurbaxani ,Sagar Oza ,Purvi Sankhe

This is a revolutionized idea that propagates easier ticket generation. With the help of an android application, a user will be able to login with ID and password. The user then enters important details. This information gets stored in the database, which can also be accessed even via the website. Wi-Fi hotspots will be made available for travelers at each station which will provide connection to use the application and experience hassle free ticketing. The account will be debited from the main database when the user books the ticket from the application. The ticket will then be available on the mobile device, preventing paper wastage, enabling easy ticket generation and safe generation of ticket.

[2] Amit Kumar Gupta and Priyanka Ahlawat Mann

The reservation of railway tickets in India is done through by either of the two alternatives. The first one is that the individual himself goes to the counter opened by the Indian Railways and book the advance ticket i.e. reservation of ticket and other one methods is through online reservation. This methods are valid in time dependent, timing is response 8 AM to 10 PM. Implementation of this proposed work we can provide general ticket and reservation ticket is available twenty four hours. Now here we are talking about an application which can be very useful for common people. We can use ATM for booking railway tickets besides withdrawing money.

[3] Athukorala A.U.B. ,Dissanayake C.P. ,Kumara M.G.C.P.

MobiTiki uses the train commuter’s cellular phones to store the authentication data. The users will then authenticate themselves at the train station via an automated system. As the tickets are issued using a prepaid system we expect the process to be much faster than the current manual system. This report gives a detailed description about the project including literature survey, research, design and development stages and final outcome of the project. It also suggests further improvements that can be carried out for achieving a better system.

Several technologies and designs are done by many authors based on the fingerprint technology and it has many drawbacks which I have overcome using biometric technology using fingerprint. More or less it is also the same design with little different system designs.

V. METHODOLOGY:

The objective is to increase the recognition of the finger print using the following techniques such as ridge type, ridge distance, ridge curvature direction and ridge length. By using these proposed techniques, the distortion in the finger print is reduced and recognition can be increased.

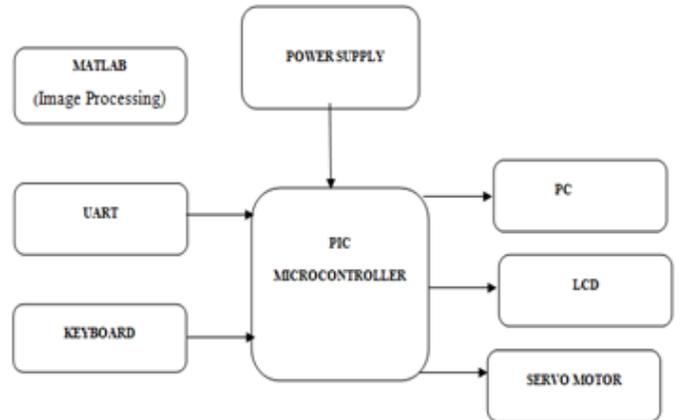
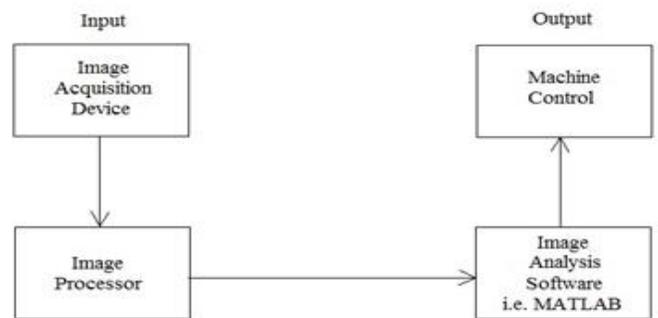


Fig (a) proposed system

1) Image processing using MATLAB:

Image processing is a form of signal processing, which uses image as input and output. Generally, an image can be of two or three dimensional array. In MATLAB, this array or matrix is manipulated. The picture shown below defines you the several stages of image processing in MATLAB.



BLOCK DIAGRAM OF IMAGE PROCESSING IN MATLAB

[1] IMAGE ACQUISITION

An image acquisition device can be a video camera, which is used for capturing images. The image captured either with the help of digital or analogue cameras can be used as the input. Most importantly, these cameras should be capable of delivering images at different resolutions.

## [2] IMAGE ANALYSIS

Image analysis can be done by extracting some of the functional details from the captured images. Therefore, if there is a requirement for identifying an object, then several robust characteristics of an object like color, pattern, edges, intensity, and structure must be noted.

## [3] CONTROL MACHINE

The final stage of image processing is the machine control in which a robot is controlled according to the details obtained from image analysis. For example, if a robot needs to identify a ball, it captures images in front of it, sends it to PC, and analyses it with the MATLAB program. If the image input and program output are satisfied, then it detects it as a ball. Otherwise, it goes on searching for a ball by this method.

Overall, MATLAB is used in robots for detecting or tracking an image by determining some of the parameters like location, size, shape, contour, etc., and planning decisions based on it.

## VI. PROPOSED SYSTEM INTRODUCTION

In this proposed system, fully electronic and automated ticket booking, reservation is done using finger print sensor and implemented using PIC. The hardware module consists of a microcontroller, Finger print sensor, database and PC. Candidates are provided with finger print sensor and allowed to access the railway reservation, booking without the need for name, age, address and other details that reduces time and makes booking easier.

During booking process, finger print sensor is used to obtain their finger print value and check with the pre-stored value of the user. If the scanning matches, then, they can select the source and destination using keypad display. Normally finger print has some distortion.

The objective is to increase the recognition of the finger print using the following techniques such as ridge type, ridge distance, ridge curvature direction and ridge length. By using these proposed techniques, the distortion in the finger print is reduced and recognition can be increased.

The proposed ridge features are composed of four elements: ridge count, ridge length, ridge curvature direction, and ridge type.

## VII. ADVANTAGES OF THE PROPOSED SYSTEM

- This system uses a minutia approaches.
- The system recognition is accurate.
- Here it identifies quickly.

## VIII. CONCLUSION

The goal of my project is to attain the aim, using this system the passenger can easily get or reserve the train ticket without wasting their time to wait in a long queue and not to miss the train. This system is mainly used to get general tickets by using finger print technology.

The proposed method uses ridge features and minutiae for fingerprint matching algorithm. Here the minutiae is designed by the biometric system of every individuals in order to restrict from forgery.

Newly, embedded technology are being used in a number of ways around the world on the other hand, security has become significant in information technology, especially in those application involving data sharing and transactions.

The Users biometric features like fingerprint and the every details of the user are saved in the data storage unit by means of microcontroller memory unit. This is the easiest and fastest way to get a ticket from the Machine sensing board.

## EXPECTATIONS:

In my project i designed using both software and hardware with referring the previous projects. It has many expectations in which the user can use a technology in a better way.

- Speed of passenger throughput – though this varies by mode
- Improved passenger convenience and ease of use
- Efficiency savings
- Prevention of fraud – user card will not be misused by another user because of a unique biometric system.

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