

Railway Security System

Bhushan M. Manjre
Assi. Prof. & Guide, IT Dept.
Priyadarshini College of Engg.
Hingna, Nagpur

Dnyandeep Tirpude
Project member, IT Dept.
Priyadarshini College of Engg.
Hingna, Nagpur

Nikhil S. Lade
Project member, IT Dept.
Priyadarshini College of Engg.
Hingna, Nagpur

ABSTRACT

The Purpose of this project is to generate the railway tickets and authenticate them to valid entity. The railway ticket will contain QR codes that are unique among themselves. Those QR code are useful to validate the identity. The system will contain a database that will keep a track of all transactions. Such flexibility is useful to improve the security and maintenance of the organization.

Indian Railway is world's largest human transport System, is currently dealing with a lot of problems. However there is no such system presently in India that is improving the complexity of platforms and railway stations. This is done even today manually. QR code is a quick response graphic which include matrix barcode that was designed by Denso Wave in Japan. Through this research we are making a system which focus on using.

QR Code that will be very effective in making the stations more secures with much less need of human labour. Passengers with the ticket will show the ticket at the entry point and the gates will open automatically with an update entry in the database and at the time of exit same process is going to be followed.

Keywords

QR-code, PNR (Passenger Name Record), Seat no, Train no, Aaadhar Card, Encryption, Decryption, Ticket No, RSS (Railway Security System)

1. INTRODUCTION

In India hold the credit of having second largest railway network. We are the one who are just behind Russia in making exhaustive use of railway as daily transport.

Mass number of people travel through railway in their day to day life. Some of them might travel out ticket i.e. invalid journey. It is very difficult to track such people who make their journey without buying a ticket. The reason behind such increasing number of people travel through railways are mentioned below.

Due such, the Indian railway get loss at 20-25% daily. Our system is capable of making ticket authenticate, provide valid entry and use of railway resource to only passenger who have bought the ticket.

1.1 Implication of Indian Railway

1. Railway is and has been the only way of passenger transport for smaller and suburban as well as long distance travelling.
2. Railways role is eminent in development and growth of our country jute industry, coal industry etc. is largely due to the development of railway network.
3. Agriculture also owes its growth to railways to a great extent. It has enabled farmers to get in touch with distant

sellers to distant places and let them get in touch with the worlds market.

4. Railways are also helpful in removing isolation between cities and countryside and have played a significant role in disseminating innovations and new ideas.
5. National integration is enabled by the help of railways as it is allowing long distance travelling.
6. In a case of natural calamities like droughts, floods, famines, earthquakes, etc. railways plays a helping hand by letting people migrate. Carrying relief and rescue teams and essential items.
7. Areas which are affected and save people from sufferings and starvation. Facing man-made calamities just as social, political, religious disturbances, insurgency, etc. is bearable because of railways. Easy movement of police, troops, defence equipment, is facilitated by railways. A railway is helping to save the country's freedom and keeping its integrity from external aggression has been seen at many occasions.
8. The British legacy is carried by railways and connects major ports to their hinterlands, thereby giving a helping hand and allowing prosperity of the coastal areas.
9. The superfast trains after being introduced and after the introduction of container services in major cities of India have allowed the quick response and movement of metal and men.
10. Long distance haulage is suited for railways and is of bulky materials like ores, coal, and petroleum.

QR Code

QR code is originated by the Denso wave a subsidiary of Toyota Inc. from the technology hungry country Japan in year 1994. It is a two dimensional bar code designed to decode the contents at a high speed. The acronym for Quick Response is QR.

The response speed of barcodes makes it effective and useful in retail market, supreme accuracy and functionality. Its huge data storage capacity making it popular all around the world.

The telecommunications industry uses the QR-code in the most commercial way where and the biggest Driver of the popularity is mobiles phones. The bridging the gap between print media and online media is done by QR code.

2. PROBLEM STAEMENT

2.1 Problems of Indian Railways

Although Indian Railways have progressed a lot, both quantitatively and qualitatively, during the last few years, this system is still plagued by a number of problems which require immediate attention.

A lot has been done, but a lot more is yet to be done. Some of

the major problems faced by the Indian Railways are briefly discussed as under:

1. Safety:

Indian Railways have been in the news albeit for wrong reasons. With the rapid increase in passenger and goods traffic, the frequency of train accidents is increasing very fast. This has raised serious doubts in the public mind about safety of Rail travel and the general health of the railway network.

The credibility of an organisation with a long and proud history of nation building seriously eroded. In such a situation it is but natural to ask where the Railways are heading. On average the Railways report 20 major collisions, 350 derailments and around 80 level crossing accidents in a year.

Table 1: Number of Persons Killed and Injured in Railway Accidents:

Year	97-98	98-99	99-00	00-01	01-02	02-03
Killed	,161	,329	,796	,473	,538	,837
Injured	,495	,724	,398	,960	,862	,976

2. Cost and revenue problems

As is the case with most of the government organizations, Indian Railways face chronic financial crisis. The annual rate of increase in cost has overtaken that of revenues during the last few years. A study of Railways finances from 1998 to 2004 reveals that the revenues increased at an average annual rate of 8.7 per cent against the 9.65 per cent average annual growth in costs.

In certain years in between, the revenue growth rate did exceed that of cost. But this position was achieved by providing inadequately for replacements and severely controlling the costs. Such a situation has long term implications as it affects the internal generation of resources. Following are the main causes of cost and revenue problems.

1. Low level of employee productivity.
2. Staff Wages.
3. Increase in lease charges.

3. Slowdown in revenue growth:

Table 2: India: Rail-road Shares in Traffic (Percentage Shares)

Year	Passenger Traffic Rail	Freight Traffic Road	Rail	Road
1950-51	80	20	89	11
1996-97	20	80	40	60
2004-05	15	85	30	60

This table shows that the share of railways in passenger traffic slipped from 80 per cent in 1950-51 to only 20 per cent in 1996-97 and to 15 per cent in 2004-05. Similarly the freight traffic fell from 89 per cent in 1950-51 to 40 per cent in 1995-96 and further to 30 per cent in 2004-05.

4. Social Burden:

Indian Railways have to play a dual role of revenue earning as well as meeting the social obligations. The Expert Group, constituted in December 1998 to study the railway sector, termed it as the 'split personality'. On one hand, the Railways are seen as a commercial organisation and on the other hand, it is treated as a social organisation which must perform its social obligations.

The two functions are diametrically opposite and difficult to reconcile. There are several social obligations on the railways which are always running below cost. Suburban passenger services, concessionary travel to certain section of travellers, concessional freight movement of certain commodities, particularly to remote and inaccessible areas like the North-east region, providing rail services to backward regions are some of the outstanding social obligations on the Indian Railways.

5. Other Problems:

A large number of miscellaneous problems include late running of trains, lack of passenger facilities including cleanliness at the railway stations, lack of security arrangement on the railways resulting in theft and dacoits, etc. Political pressure and interference is a very big problem which the Indian Railways are facing with increasing impact. Several projects which are not economically viable have been initiated for political considerations.

3. PROPOSED MODEL

The Railway Security system is the proposed model which is helpful to Indian Railway in many ways.

- Authentication of railway resources for valid person.
- Check-in for all the boarded passengers.
- If anyone willing to discontinue the journey then check-out procedure will be followed that gives the vacant seat information to the Passenger Reservation System (PRS).

Our proposed model is divided in the following sub-module.

- Authentication of railway resources for valid person.
- Booking procedure.
- Check-in, Check-out procedure.
- End of Journey.

1. Authentication of railway resources for valid person.

- Every passenger willing to book ticket should carry Aadhar card. Due to secure traveling and ticket booking is based on authentication, Aadhar card is mandatory.
- Full Detail of every passenger is must. Asked detail should be provide by the passenger. This data will help to track the passengers in future.

2. Booking Procedure.

- Booking Procedure shall be done on your own.
- No Ticket counters shall be provide instead the machine shall be provide that may be used to book the ticket by the passenger.

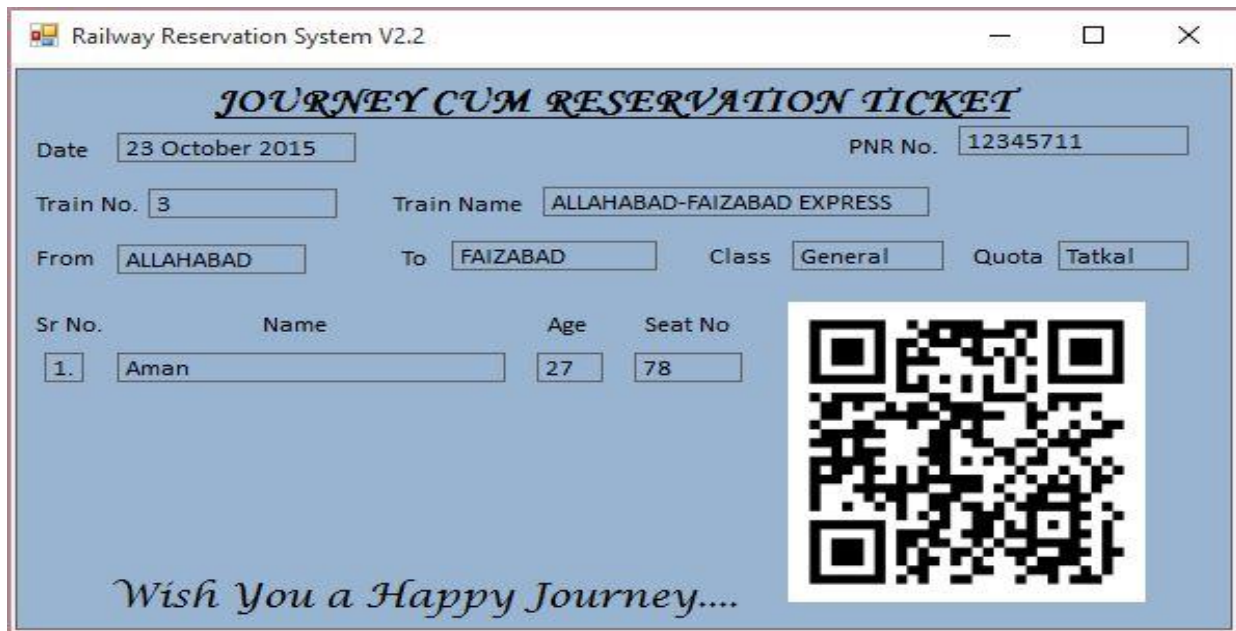


Fig 1: Sample of QR Code on ticket.

3. Check-In and Check-Out Procedure.

- Ticket containing QR-code that shall be used for check-in and check-out propose.
- For entry and exit, ticket must be scan by provided scanner which check the identity and authenticates the passenger for journey.
- Those scanning will update the date and time of passenger journey detail on the server.

4. End of Journey.

- Once the journey is over the ticket goes invalid.
- As soon as passenger reach the destination and check-out through platform, ticket will not be valid for further use.

4. BENEFITS

4.1 Reduce human efforts

It reduces human effort in terms of physical movement, no need of attendance marking manually.

4.2 Saves time

This system enable full automation so all stuff is done at automatically. This automatic work done makes system to perform work faster. And due such reasons it is a huge time saved.

4.3 Systematic database creation

Attendance monitoring using face recognition implies creation of database. This database creation is very simple and easy to maintain. And database is also created systematically.

4.4 Real time image capture and processing

Real time image capturing and processing means identifying person at current time and period. Real time image capturing enables to take image at a real or current time. And real time processing mean to perform manipulation at a current stage or time i.e. instantly.

5. CONCLUSION

- There are many existing system which deals with security but RSS mainly focus on the entity verification and ticket validation.
- Currently it only verifies the passenger ticket verification but future module will include biometric scanner to overcome the entity verification drawback.
- This system is not only applicable in railways stations but it can be used in many public places such as parking lots, shopping mall etc.
- We have chosen railway platform because it is the most difficult place to apply such system. If it meet the challenges then it can be used in place such as earlier mentioned.

6. REFERENCES

- [1] Indian railway significance and problem <http://www.yourarticlelibrary.com/railways/indian-railway-significance-and-problems-of-indian-railways/14136/>
- [2] Railway economy <https://mostlyeconomics.wordpress.com/2011/03/01/the-importance-of-railways-in-urban-economics-and-society-development/>
- [3] Importance of transportation <http://www.preservearticles.com/201101062733/importance-of-railway-in-transportation.html>
- [4] How to generate QR code <http://www.generate-qr-codes.org/advertising.html>
- [5] Significance of QR code <http://whatis.techtarget.com/definition/QR-code-quick-response-code>
- [6] What is QR Code https://en.m.wikipedia.org/wiki/QR_code
- [7] QR Code image url https://upload.wikimedia.org/wikipedia/commons/thumb/9/9b/Wikipedia_mobile_en.svg/220px-

Wikipedia_mobile_en.svg.png

- [8] Indian railway budget 2012
<http://www.nr.indianrailways.gov.in> (accessed on 16 April 2012)
- [9] Yu-Hsan Chang, Chung-Hua Chu and Ming-Syen Chen, A General Scheme for Extracting QR Code from a non-uniform background in Camera Phones and Applications, Ninth IEEE International Symposium on Multimedia 2007)
- [10] Jerry Zeyu Gao, “Understanding 2D-BarCode Technology and Application in M-Commerce- Design and Implementation of A 2D Barcode Processing Solution”, IEEE 31st Annual International Computer Software and Application Conference 2007.
- [11] Viamana Varta, India’s Complete Aviation. Automobiles. Transport News Portal, WR anti-tout squad raids travel agent for ticket frauds
<http://vimanavarta.com/2012/02/18/wr-anti-toutsquad-raids-travel-agent-ticketfrauds/#axzz1sZbbsgz6>. (Accessed on 18 February 2012)
- [12] Deccan Herald, Palmtops for TTEs in Rajdhani Trains
<http://www.deccanherald.com/content/237972/palmtopsttes-rajdhani-trains.html>. (Accessed on 28 March 2012)
- [13] Zxing library for generation of QR Code
<http://zxing.com>