

Application Of Smart Phone QR Code And Fingerprint For Anti-Counterfeiting

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Abstract: *The barcode ticket is the low-cost media for automated access control. The system issue tickets in 2D barcode format. This can be used to automate the workflow of ticket Authentication. The emergence of 2D code provides a kind of effective method for anti-counterfeit. Through real-time collection of the certificate holder's fingerprint and QR code, deciphering the information to authenticate the validity of the holder, the function of dual anti-counterfeit is realized. Using universal equipment like mobile phones to acquire QR code pictures is facile and practical..The user of the system 1st need to register to the central server. On successful registration the user can login and can buy airline tickets. On confirm reservation the system converts the ticket data into a 2D barcode format. This barcode is in the image form . The customer simply has to download the ticket and should store it in his mobile phones and should carry ticket while travelling. While traveling the ticket checker when demands the ticket the customer has to show the 2D barcode ticket image. The ticket checker will scan the data of the image through his mobile. Agent software is installed on the checker mobile phone. The agent software decodes the ticket data and can validate the passenger details.*

Keywords— QR code, information encoding, Fingerprint, and Anti-counterfeiting

I. INTRODUCTION

Quick Response (QR) codes are versatile. A piece of long multilingual text, a linked URL, an automated SMS message, a business card or just about any information can be embedded into the two-dimensional barcode. Coupled with moderate equipped mobile devices, QR Codes can connect the users to the information quickly and easily. In this paper, we explore how QR codes can be used in security purpose. The information in the code can be encrypted, which needs special software to decipher and decode, which ensure better security. Quick Response codes, QR code for short, is a two-dimensional barcode with high information density, error correction ability and convenient encryption mechanism. The fingerprint has

uniqueness, stability, universality, so fingerprint is used for verification in this system. The system based on mobile phone QR code and fingerprint, which improves the reliability and security of the system. Our project serves this purpose. Our project implements Reservation Ticket Authentication. The project involves information about different tasks such as making a reservation and authentication. This system can be used to automate the workflow of ticket Authentication.[7]

The user of the system first need to register to the central server. On successful registration the user can login and can buy railways tickets. On confirm reservation the system converts the ticket data such as passenger name, amount, coach no, seat no etc on a 2D barcode format. This barcode is in the image form. The customer simply has to download the ticket and should store it in his mobile phones.

While traveling the customer should carry the mobile phone in which the ticket barcode image is stored or the customer should carry the paper print of the ticket.

While traveling the ticket checker when demands the ticket the customer has to produce the 2d barcode ticket image. The ticket checker will scan the data of the image through his mobile. An agent software is installed on the checker mobile phone. The agent software decode the ticket data and can validate the passenger details.

A. Understanding QR code

QR Code is a form of 2D bar codes. A sample is shown in Figure. It was developed by Denso-Wave, a Japanese automatic data capture equipment company (Denso, 2009), in 1994. "QR" stands for "Quick Response." It is readable by moderately equipped mobile phones with cameras and QR scanners. Information such as URL, SMS, contact information and plain text can be embedded into the two dimensional matrix. With smart phones, we can visit the Website linked by the URL quickly, we can send the SMS message directly or we can save the contact information onto the address book easily. This format of 2D bar codes is so popular in Japan and emerges gradually around the world because (a) the patent right owned by Denso Wave is not exercised (Denso, 2010a), (b) its

specification is disclosed to the public by the company so as the specifications, ISO/IEC 18004:2000&2006 (International Organization for Standardization) and JIS X 0510 (Japanese Industrial Standards), can be formed (ISO, 2010; JISC, 2010), and (c) it has a large data capacity in a small printout size and high speed scan utilities via mobile devices are readily available. A QR code is capable of holding 7,089 numeric characters, 4,296 alphanumeric characters, 2,953 binary bytes.[7]

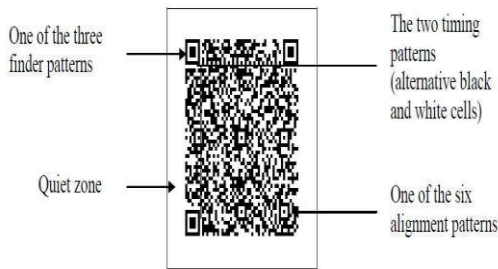


Figure 1: A QR code sample

II. EXISTING METHODS

There are following different types of mobile phone QR code Encoding and Decoding Scheme.

A. QR Code Encoding and Decoding

National standards GB/T 18284-2000 "Quick Response Code" is based and the minimum encoded version compatible with the data is selected.

Encoding: The encode procedure of QR Code including follows steps. Firstly input data is encoded in according to most efficient mode and formed bit stream. The bit streams are divided into codewords. Then codewords are divided into blocks, and add error correction codewords to each block. All these codewords are put into a matrix and are masked with mask pattern. Finally function patterns are added into the QR symbol. A QR Code symbol is formed.

B. QR code collection and preprocessing

Decoding data from a given code is the inverse process of encoding. Meanwhile, compared with images captured by special barcode reader, images acquired in natural environment have shadows and blurring defocus defects. If images are not of high quality, it is impossible to decode the code accurately or completely.[1] Therefore, preprocess the image in the consideration of image problem caused by capture. Preprocessing of mobile phone QR code follows the following steps: convert the colorful image to gray scale image, median filtering, binarization, image location, rotation, perspective transformation and interpolation. Here conversion is done by weighted mean. After median filtering, bimodal image method is adopted

to choose threshold for binarization. Then locate and rotate the image.[8]

C. Fingerprint Match Scheme

Fingerprint recognition includes the fingerprint image capture, fingerprint image process, feature extraction, data preservation, feature comparison and matching. The fingerprint pattern, when analyzed at different scales, exhibits different types of features. To improve performance and security of the system and compress the data, encryption password is used and arithmetic coding is used.[8]

III. ADVANTAGES AND LIMITATIONS

Barcode tickets cannot be forged because each ticket has a unique barcode. Barcode tickets cannot be copied because each barcode can only be used once to enter. No costs for special paper or special printing. Ticket details cannot be entered by hand if the barcode is damaged. Improved consumer convenience. Reduced infrastructure costs. Increased revenue by increasing accessibility to tickets.

IV. PROPOSED WORK

The main aim of the project is to provide software which will help in security purpose. In today's works booking a Airline Ticket and its authentication is a very critical entity. A reservation ticket booked for a person and the person traveling on that ticket should be authenticated.

Our project serves this purpose. Our project implements Reservation Ticket Authentication. The project involves information about different tasks such as making a reservation and authentication. This system can be used to automate the workflow of ticket Authentication. The user of the system first need to register to the central server. On successful registration the user can login and can buy airway tickets. On confirm reservation the system converts the ticket data such as passenger name, amount, coach no, seat no etc on a 2D barcode format. This barcode is in the image form. The customer simply has to download the ticket and should store it in his mobile phones.

While traveling the customer should carry the mobile phone in which the ticket barcode image is stored or the customer should carry the paper print of the ticket.

While traveling the ticket checker when demands the ticket the customer has to produce the 2D barcode ticket image. The ticket checker will scan the data of the image through his mobile.[2] An agent software is installed on the checker mobile

phone. The agent software decode the ticket data and can validate the passenger details.

Modern Airline Ticket validation throughout the Life-cycle.

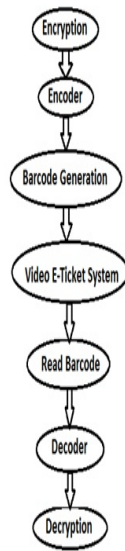


Figure 1: System Overview

V. CONCLUSION

This project has tried to show the importance of Security Management throughout the life-cycle of a Barcode based ticket validation and the various activities associated with it. Indian Airline should form a Task Force for Security Assessment Authority, who would monitor the development of

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