Online Transaction System Based on Android Phone Using QR Code

Nikhil P. Joglekar[1], Pallavi Tijare[2], Swati Wairagade[3]

[1] Assistant Professor, CSE, SSPACE, Wardha, MS(India), Email- nikhil.joglekar1@gmail.com

[2] Student, CSE, SSPACE, Wardha, MS(India), Email- ppallutijare2@gmail.com

[3] Student, CSE, SSPACE, Wardha, MS(India), Email- swatiwairagade@gmail.com

ABSTRACT

In Computer Technology, We need to communicate and accelerate our life with the help of Information and Computer Technology (ICT). We requires certain types of services on online, which require less workout or interference of Human being. Mobile payment is very significant and critical resolution for mobile commerce. A user-friendly mobile payment solution is robustly needed to carry mobile users to conduct secure and reliable payment transactions using mobile devices. This paper presents a modern mobile payment system based on 2-Dimentional (2D) barcodes called QR-codes for mobile users to recover mobile user experience in mobile payment. Unlike other existing mobile payment systems, the projected payment answer provides distinct advantages to support buy-and-sale products along with services based on QR codes. Safe QR-Pay scheme based on QR-code by expressing 2 dimensional can pay things between User and Merchant.

Keywords-- Mobile based Payment Systems, Quick Response Code, Android etc

1. INTRODUCTION

A commercial merchant shows payment information by expressing QR-code to display window. A user shots a condition by means of mobile Device fond of a camera. If a user confirms payment information furthermore ask an approval, the payment system can be complete by itself. Proposed system provides non-repudiation plus confidentiality of payment information. Also, it offers mutual Authentication between users in addition to merchant.

2. LITERATURE SURVEY

1.History

Even though e-commerce is not all about fund relocate, electronic payment (or e-payment), such as credit-card payment over the Internet, is at rest one of the most popular ecommerce applications. In other words, e-payment is one of the essential parts of an e-commerce transaction in that the ecommerce transaction cannot complete with no of it. For instance, an online book store which provides both electronic with physical books to its customers must have a behind payment system available for its customers to transfer money to it. Therefore, each customer can complete the buy which

Android Mobile Based Payment System Using QR Code includes goods relief (or commitment of goods delivery payment by the store in one transaction. Without the payment system provided, the customers are required to perform two sessions separately: one for the goods purchase and the other for the payment business. In particular, the fee transaction has to be performed by transferring cash to the store's bank account straight.

Due to the actuality that mobile payment represents e-payment, formerly per- formed in fixed environments, in wireless environments, it instructions the same services as that ordered by e-payment. Equally due to the constraints of wireless environments, low-valued expense methods, such as micropayment, which include lightweight operations and low operational cost, are likely to be more appropriate for wireless environments than other methods.

The mobile users require a payment system that they can execute transactions professionally in that a payment transaction can be finished within a limited amount of time which is suitable by users in terms of operational cost with user satisfaction. A payment operation can be performed on partial capability mobile devices.

2.Scope

A mobile payment is the procedure of two parties exchanging financial value using mobile device in come again for goods

and services. It can also be defined as the transfer of money from one party to another from end to end the exchange of information. Mobile devices may consist of mobile phones, PDA's, wireless tablets in addition to any other device that can be linked to mobile telecommunications network for making payments. For any mobile payment to be broadly accepted and adopted it is significant to overcome the subsequent challenges. Interoperability, Usability, Simplicity, Universality, Security, Privacy, Cost, Speed and Cross edge Payments. Mobile payment is especially important in addition to critical solution for mobile trade. A user-friendly mobile payment solution is robustly needed to support mobile users to conduct safe and reliable payment transactions using mobile devices. A pioneering mobile payment system based on 2-dimensional barcodes for mobile users to get better mobile user experience in mobile payment. Unlike other accessible mobile payment systems, the proposed payment solution provides distinct advantages to hold buy-and-sale products and services based on 2D barcodes. This system uses one standard 2D barcode (Data Matrix) as an example to reveal how to deal with original mobile business workflow, mobile transactions and security issues. Two main properties are necessary. First, the authenticity of a signature generated from a fixed message and fixed private key can be verified by using the resultant public key. Secondly, it should be computationally infeasible to generate a suitable signature for a party devoid of knowing that party's private key. A digital signature is an authentication mechanism that enables the inventor of the message to add a code that acts as a signature.

2. PROPOSED METHOD

There are two ways to construct 2D barcodes in mobile payment systems. First approach is to build 2D barcode-based Position- Of-Sale (POS) systems to support mobile payment dealings between mobile users and mobile terminals at anytime .This kind of POS-based payment systems can be used in Parking lots, TAXI, airport and railroad stations. 2D barcodes are useful to support product information retrievals, secured payment transactions, customer and product verification, and mobile security checking. The second approach is to build 2D barcode-based systems to permit mobile users to issue mobile payment transactions using their digital wallets based on mobile payment accounts in a mobile payment server. The stature displays its underlying payment procedure, which consists of the next steps:

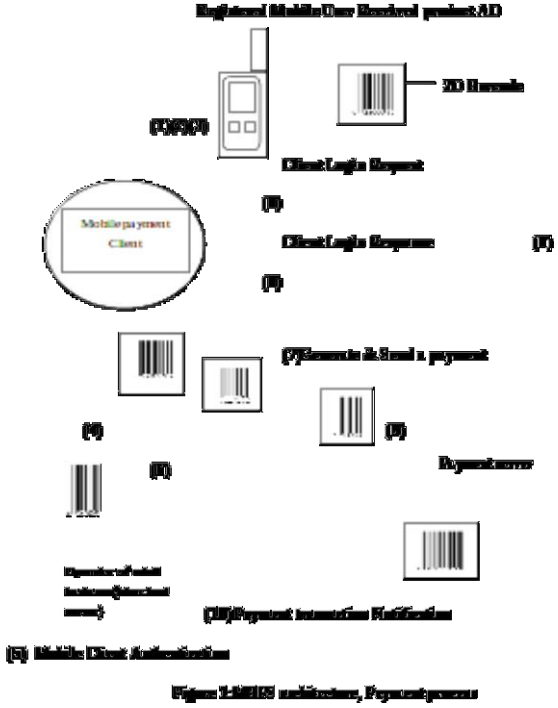
Step 0: A registered mobile user uses his/her customer account and PIN to login the mobile payment system by transfer a login request to the mobile payment server. The mobile server processes mobile client authentication with sends a login response with the server certificate ID, and secured session ID, as well as a public key for the connections. Step 1: The mobile customer authenticates the mobile server with received public in addition to server's certificate.

Step 2: The mobile client captures or receives a QR code for an interested creation from its advertisement. There are two scenarios in which a mobile user can acquire a QR code. In the first case, a mobile user may make use of a mobile camera on the mobile tool to capture the image of a QR code from a posted product. In the second case, a mobile user may receive a mobile ad on a mobile device as of a merchant. For the time being, the mobile client decodes the customary QR code, which includes product and maker's information, marketing data, merchant's mobile URL information.

Step 3: The mobile user clicks the given QR code to switch the target merchant's mobile site using the provided URL in the usual QR code.

Step 4: The mobile apply prepares and submits a purchasing request in the midst of a digital signature as a QR code to the merchant server.

Step 5: The merchant server authenticates the mobile client based on the provided the secured session ID from the mobile client, as well as the public key. For now, the received signed request is validated by the merchant using the private key.



Step 6: The merchant server generates and sends a signed purchase invoice with a transaction ID to the mobile client.

Step 7: The mobile client prepares in addition to sends a payment request with the same transaction ID and a digital signature to initiate a payment request. The digital signature is ended using the client private key. The entire message is encoded as a QR code.

Step 8: A secure session is established between the payment server and the mobile client. In this step, the payment server validates the given security information, including the certificate from mobile client, session ID, public key, and received digital signature. The mobile payment server processes the payment transaction. Step

9: The payment server prepares and sends a payment confirmation with a QR code receipt to the mobile client. The mobile client displays the received confirmed message to the mobile user.

Step 10: The mobile server also sends a payment transaction completion notice with a QR code to the merchant server. This code resolve be useful for the merchant to bring elsewhere the post-sale operations, such as pick-up validation or produce delivery.

In the proposed payment system, 2D barcodes are used for the following purposes:

1. In a product ad, a barcode is used to hold product related information. Typical examples are product tracking data, maker, marketing, merchant information. In addition, some security information is also embedded, including a certificate ID for the merchant and public key.

2. In a payment invoice, a barcode is used to carry mobile user's selected purchasing information as well as security data, including secured session ID, client ID, PIN and private key, mobile client for authentication by the merchant.

3. In a payment transaction, a barcode is used to contain the detailed payment information for a mobile user, including the credit card, PIN, private key, and secured session ID for mobile client.

4. In a payment confirmation, a barcode is used to hold the secured transaction ID and conformation code as well as validation ID.

3. ALGORITHMS

1.PiCode at a Glance

A PiCode samples should be noted that PiCode also supports various pattern sizes from 29×29 modules to 65×65 modules with a step size of 4 modules on each dimension. Generally speaking, the finder pattern of PiCode is similar to that of the Data Matrix code [10] and they both have a ‘’-shaped pattern of solid lines on the left and bottom sides and a ‘’-shaped pattern of broken lines on the top and right sides. (Note that the finder patterns of PiCode and those of the QR code are of very different shapes.) The main differences lie in three aspects. First, PiCode has an odd number of modules on each side while that of the Data Matrix code is even. This is so designed to cater for the proposed fine-corner detection algorithm which can improve the corner detection accuracy. Second, the high capacity PiCode does not include extra fixed patterns in the interior region of the barcode and hence no additional distortion due to such patterns is incurred to the embedded image, unlike most existing beautified 2D barcodes.

2.PiCode Encoding

Generally speaking, the PiCode encoding process can be divided into two parts: the input processing and the PiCode generation. In the first part, the input message is converted into a bit stream with source coding and channel coding to improve the efficiency and robustness of the encoded message. The input image is then divided into a 2D grid of image blocks according to the user's input on the number of modules per dimension. Each block consists of k ×k pixels. In the PiCode generation part, the pixels in each image block are modified by the proposed adaptive modulation scheme so that each image block conveys a bit ‘0’ or ‘1’. Finally, a layer of finder pattern of one module wide is added to the exterior of the modulated 2D grid of image blocks to form the PiCode.

3.PiCode Decoding

In PiCode decoding process, First, the captured PiCode image is converted to grayscale and is binarized to facilitate the search for the potential barcode regions which are then checked against the detection criterion. If the check is passed, the four corners are obtained; otherwise, the image will be rejected and the decoding process will be re-initiated with another image frame. Based on the barcode corner locations, the perspective distortion is then estimated and compensated on the gray level image. For the module alignment step, the region for each PiCode module is obtained based on broken line parts of the finder patterns. The following demodulation process is the reverse of the modulation process by inspecting the intensity differences between the inner and outer parts of each module. The modulated bit in each module is retrieved by the demodulation operation. Finally, then message is obtained by applying channel and source decoding to the demodulated bits[11]. In this part, we mainly cover the corner detection, module alignment and demodulation steps which reflect our major contributions.

- **Coarse-Fine Corner Detection:** The corner detection algorithm locates four extreme corners of the barcode from the captured image. This is a non-trivial task due to various image distortions, such as uneven illumination, perspective distortion, blurriness and complex background structures.

- **Module Alignment***:* The module alignment step slices the barcode region into image blocks with reference to the black and white alternations in the '_'-shape pattern is illustrated . Each block corresponds to one module which is then input to the succeeding demodulation step. The accuracy of the module alignment step is therefore critical to the decoding performance. The slicing operation depends on the broken line'_'-shape pattern, as also used in the Data Matrix code.

- **Demodulation***:* In the demodulation step, each received module resulted from the module alignment step is analyzed to retrieve the data bit. The demodulation scheme is designed according to the modulation scheme described. Before the demodulation operation, each module is first resampled with the bilinear interpolation into 8 × 8 pixels since it is the minimum size required for our demodulation algorithm, luminance change, e.g., a sharp edge and a corner.

4. ADVANTAGES

1. This technology will replace traditional mobile based payment system.

2. Less time consuming.

3. Customer will get regular update for his/her particular order purchase.

4. Easy mobile based payment system, with easy mode of transfer of confidential information between customer and merchant, which used QR code system.

5. Customer will get all information about any particular product.

5. DISADVANTAGES

1. The system will require Internet connection throughout the process.

2. Customer must need to connect to LAN for application to be processed.

3. Customer either can use mobile data for connectivity purpose.

6. CONCLUSION

As more and more products and goods are identified using 2D barcodes in commerce, there is a clear need to build new mobile payment systems for mobile users to support mobile transactions based on 2D barcodes. To address this need, this introduces an innovate mobile payment system, which supports and delivers secure and easy operating mobile payment transactions based on 2D barcodes. When digitally signed document is printed out in a human-readable text image, it is useful to include the signature information in the text image for authenticity and integrity checks. With the development of dense 2D bar codes, we can put the digital signature in 2D bar code form into a small area of the printed document.

7. REFERENCES

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