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Matrix Barcode for Private Message Sharing and Archive Verification

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Abstract—**An Internal Intrusion Detection and Protection System by Using Data Mining and Forensic Techniques (IIDPS) play a significant role in computers security. In network surroundings IIDPS find the activities that have an effect on Confidentiality, Integrity and accessibility on network knowledge. Currently, most computer systems use user IDs and passwords because the login patterns to verify users. However, many of us share their login patterns with co-workers and request these coworkers to help co-tasks, thereby creating the pattern united of the weakest points of computer secu- rity. Insider attackers, the valid users of a system who attack the system internally, are hard to find since most intrusion detection systems and firewalls establish and isolate malicious behaviors launched from the external world of the system solely. Additionally, some studies claimed that analyzing system calls (SCs) generated by commands will establish these commands, with that to accurately find attacks, with attack patterns are the options of an attack. Therefore, in this project, a security sys- tem, named the Host Based Intrusion Detection System (HIDS), is projected to find Insider attacks at SC level by optimizing data processing and rhetorical techniques. The HIDS creates user's personal profiles & log file to stay track of user's.**

I INTRODUCTION

QR code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed for the automotive industry in Japan. A barcode is a machine-readable optical label that contains information about the item to which it is attached. A QR code uses four standardized encoding modes (numeric, alphanumeric, byte/binary, and kanji) to efficiently store data; extensions may also be used

The Quick Response (QR code) system became popular outside the automotive industry due to its fast readability and greater storage capacity compared to standard UPC barcodes. Applications include product tracking, item identification, time tracking, document management, and general marketing

History:

The QR code system was invented in 1994 by the Japanese company Denso Wave. Its purpose was to track vehicles during manufacturing; it was designed to allow high-speed component scanning. QR codes are now used in a much broader context, including both commercial tracking applications and convenience-oriented applications aimed at mobile-phone users (termed mobile tagging). QR codes may be used to display text to the user, to add a vCard contact to the user's device, to open a Uniform Resource Identifier (URI), or to compose an email or text message.

Design

Unlike the older, one-dimensional barcodes that were designed to be mechanically scanned by a narrow beam of light, a QR code is detected by a 2-dimensional digital image sensor and then digitally analysed by a programmed processor. The processor locates the three distinctive squares at the corners of the QR code image, using a smaller square (or multiple squares) near the fourth corner to normalize the image for size, orientation, and angle of viewing. The small dots throughout the QR code are then converted to binary numbers and validated with an error-correcting algorithm.

Objectives

- To give double security information streamlining.
- To abstain from recollecting username and secret key.
- To give report validation.
- To give quicker outcome to Client

II LITERATURE SURVEY

In the 1960s when Japan entered its high economic growth period, supermarkets selling a wide range of commodities from foodstuff to clothing began to spring up in many neighborhoods. Cash registers that were then used at checkout counters in these stores required the price to be keyed in manually. Because of this, many cashiers suffered from numbness in the wrist and carpal tunnel syndrome.

QR codes are widely used as a means of conveying textual information, such as emails, hyperlinks, or phone numbers, through images that are interpreted using a smartphone cam- era. The code stake up valuable space in print media. The random appearance of QR codes not only detracts from the production values of the advertisement in which they appear, but the codes are also visually insignificant in the sense that a human cannot discern the vendor, brand, or purpose of the code just by looking at it, without the aid of scanning software. Though neither the aesthetics nor the visual significance of the code matter for scanning purposes, they do matter for advertising layout and, more importantly, can provide valuable brand distinction. In this paper, we show how the visually significant QR codes may be obtained by image blending. Unlike various ad-hoc methods that have been proposed by others, our method leaves completely intact the error correction budget of the code. Our method allows images as diverse as corporate logos and family photographs to be embedded in the code in full color. We provide a detailed statistical analy- sis of the method to show the effect of blending on error rates in noisy environments.

Response Code (QR code) is widely used in daily life in recent years because it has high capacity encoding of data, damage resistance, fast decoding and other good characteristics. Since it is popular, people can use it to transmit secret information without inspection. The development of steganography in QR code leads to many problems arising. How to keep the original content of QR code and embed secret information into it are the two main challenges. Hiding secret information based on bit technique is so fragile to modification attack. If an attacker change any bit of hidden bits, it is impossible to recover the secret information. In this paper, we proposed a scheme based on Reed- Solomon codes and List Decoding to overcome this problem. We also conduct our solution by analyzing the complexity, security, and experiment.

The problem of authentication of physical products such as documents, goods, drugs, and jewels is a major concern in a world of global exchanges. The World Health Organization in 2005 claimed that nearly 25% of medicines in developing countries are forgeries [1], and according to the Organization for Economic Co-operation and Development (OECD), international trade in counterfeit and pirated goods reached more than US$250 billion in 2009[2].

III SYSTEM DEVELOPMENT

This record will give a general depiction of our task, including client prerequisites, item viewpoint, and review of necessities, general limitations. Likewise, it will likewise give the particular necessities and usefulness required for this venture –, for example, interface, utilitarian prerequisites and execution necessities.

Use Situation

Sender:

The sender module function as following way :

- Standard QR_Code generator
- 2LQR_Code generator
- Private message
- Encrypt Private message

2LQR_Code generator

The 2LQR code has two levels: an open level and a private level. The general population level can be perused by any QR code perusing application, while the private level needs a particular application with particular info data. The private line bit string is encoded utilizing mistake amendment code (ECC) to guarantee the message blunder redress after the P&S task.

The proposed system uses two levels QR code for data stowing without end. This 2LQR code has taking after levels

Public Level:

The general population level is the same as the standard QR code stockpiling level; accordingly, it is clear by any established QR code application.

Private Level:

The private level is built by supplanting the dark modules by particular finished examples. It comprises of data encoded utilizing q-ary code with a blunder remedy limit. This permits us not exclusively to expand the capacity limit of the QR code, yet in addition to recognize the first record from a duplicate. This verification is because of the affectability of the utilized examples to the print-and-output (P&S) process. The example acknowledgment strategy that we use to peruse the second-level data can be utilized both in a private message sharing and in a confirmation situation.

IV PERFORMANCE ANALYSIS

2LQR code reading process

Public message storage

The public message Mpub is stored in the standard QR code, using the classical generation method described in [1]. The standard QR code generation algorithm includes the following steps. First of all, the most optimal mode (numeric, alphanumeric, byte or Kanji) is selected by analyzing the message content. The message Mpub is encoded using the shortest possible string of bits. This string of bits is split up into 8 bit long data code words. Then, the choice of error correction level is performed and the error correction code words using the Reed-Solomon code are generated. After that, the data and error correction code words are arranged in the correct order. In order to be sure that the generated QR code can be read correctly, the best (for encoded data) mask pattern is applied. After this manipulation, the code words are placed in a matrix in a zigzag pattern, starting from the bottom-right corner. The final step is to add the function patterns (position tags, alignment, timing, format and version patterns) into the QR code.

Private message encoding

The private row-bit string is encoded using error correction code (ECC) to ensure the message error correction after the P&S operation. We use the block codes, and more precisely cyclic codes (or polynomial-generated codes) such as Golay code [15] or Reed-Solomon code, for message encoding. Cyclic codes can be defined in matrix form and polynomial form .Any cyclic code C is defined by [n,k,d] parameters, where n is the length of the codeword, k is the number of information digits in the codeword, d is the minimum distance between

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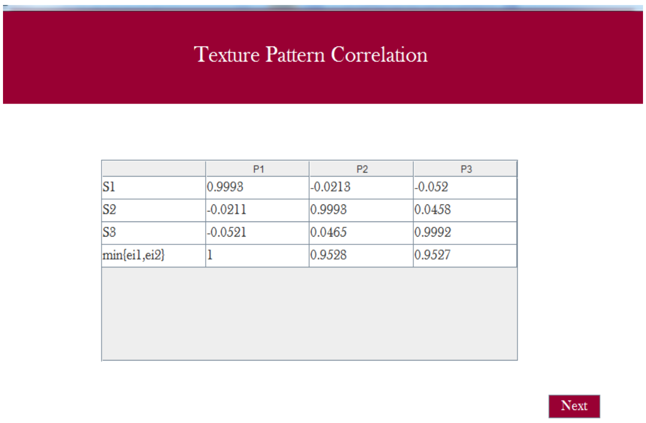
distinct codewords. The n-k digits in the codeword are called parity-check digits, and in ECC these digits are used for error detection and correction. The minimum distance d of the code C ensures that up to t=(d-1)/2 errors can be corrected by the code C.

Textured Pattern Selection

The Textured pattern Pi , i = 1, . . . , q are images of size p × p pixels. We choose q patterns from a database of Q _ q textured patterns, which are binary and have the same density (ratio of black pixels), equal to b, and have related spectra. The reading capacity of private level depends on pattern density: a large density value can disable the reading process of private level. Black module replacement . The code word Cpriv is inserted in standard QR code by replacing the black modules with textured patterns P1, . . . , Pq respecting the codeword Cpriv , starting from the bottom-right corner. Then, in the case of private message sharing scenario, the textured patterns are placed in the position tags with respect to the chosen permutation σ.

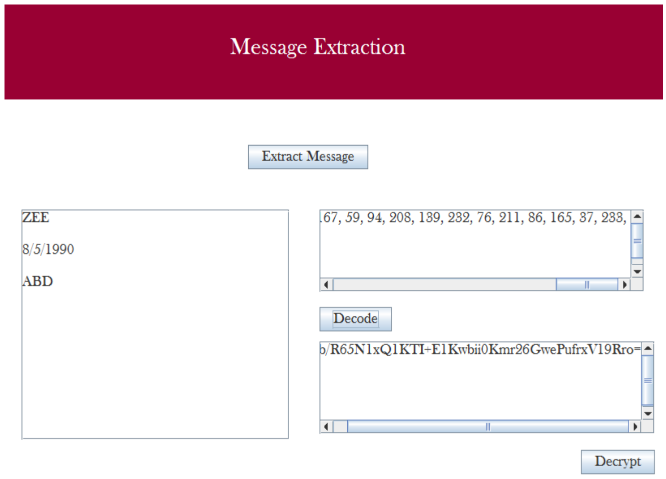
Recognition Method

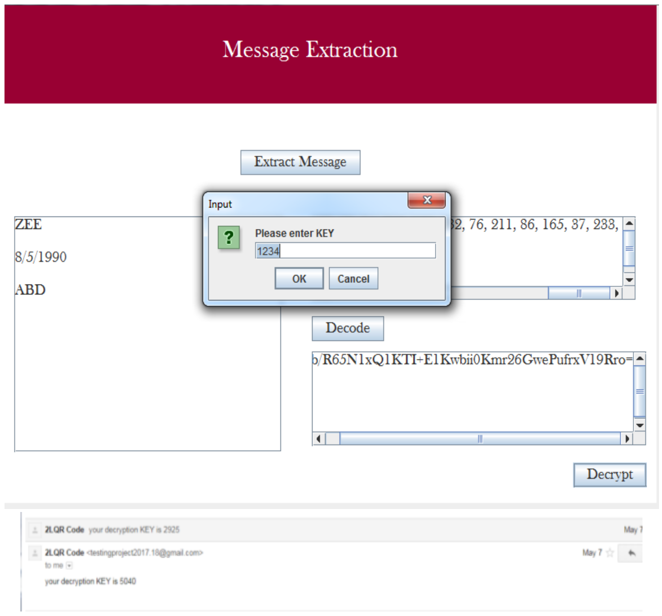
The overview of the 2LQR code reading process is illustrated in Fig. First, the geometrical distortion of P&S 2LQR code has to be corrected during the pre-processing step. The position tags are localized by the standard process [1] to determine the position coordinates. The linear interpolation is applied in order to re - sample the P&S 2LQR code. Therefore, at the end of this step, the 2LQR code has the correct orientation and original size NxN pixels. The second step is the module classification performed by any threshold method. We use global threshold, which is calculated as a mean value of the whole P&S 2LQR code. Then , if the mean value of the block pxp pixels is smaller pixels is smaller than global threshold, this block is in a black class (BC). Otherwise, this block is in a white class (WC). The result of this step is two classes of modules.



	P1	P2	P3
S1	0.9993	-0.0213	-0.052
S2	-0.0211	0.9993	0.0458
S3	-0.0521	0.0465	0.9992
min(ei1,ei2)	1	0.9528	0.9527

In the next step, two parallel procedures are completed. On one side, the decoding of public message Mpub is performed by using standard QR code decoding algorithm and the positions of the white and black modules. And on the other side, the BC class is used for pattern recognition of the textured pattern in P&S 2LQR code. The class BC contains the textured patterns BPi ,i=1,….Ncxn, where Ncxn is the total number of code word digits, Nc is the number of code words, n is the number of digits in the code word. Therefore, there are Ncxn textured patterns, which belong to q classes.





V CONCLUSION

The Matrix code conspire enhances the capacity limit of the QR code and give record confirmation guaranteeing general security. In this manner we exhibit another rich 2LQR code,that has two stockpiling levels and can be utilized for archive validation. This application abstains from recalling username and watchword and furthermore to ease online exchanges, QR Login is created. The primary point is to give secured login frameworks which likewise perform online exchanges.

This Matrix Code can be used for secure private data sharing for affirmation part. The private level is made by supplanting dark modules with particular finished examples. Picture surface examples are considered as dark modules by QR code peruser. With the goal that the private level is concealed to QR code perusers, we incorporate the private level which does not impact in at any rate the scrutinizing methodology of general society level. The proposed 2LQR code manufactures the limit furthest reaches of the conventional QR code on account of its supplementary scrutinizing level. The capacity limit of the 2LQR code can be improved by growing the amount of completed cases used or by decreasing the finished example estimate.

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