DESIGN AND IMPLEMENTATION OF A SECURE QR PAYMENT SYSTEM

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ABSTRACT

It is used to describe the design and implementation of a secure payment system based on QR codes. These QR codes have been extensively used in recent years since they speed up the payment process and provide users with ultimate convenience. However, as convenient as they may sound, QR-based online payment systems are vulnerable to different types of attacks. Therefore, transaction processing needs to be secure enough to protect the integrity and confidentiality of every payment process. Moreover, the online payment system must provide authenticity for both the sender and receiver of each transaction. In this paper, the security of the proposed QR-based system is provided using visual cryptography. The proposed system consists of a web application that implements visual cryptography. The application provides a simple and user-friendly interface for users to share links through QR Code.

Keywords— Cryptography, decrypt, encrypt, QR Code, Visualization

I.INTRODUCTION

A QR code is a two-dimensional matrix barcode that encodes and stores large amounts of data. Due to their speed and convenience, QR codes have been used extensively in many vital applications such as health, education, and finance. A number of secure QR-based online payment systems have been proposed in literature. In different payment models each providing different levels of speed and security have been presented. These models include the Operator Centric Model and the Peer-To-Peer Model.As digital image play an important role in multimedia technology, it becomes more important for the user's to maintain privacy. And to provide such security and privacy to the user, image encryption is very important to protect

from any unauthorised user access. Image encryption has applications in various fields including internet communication, multimedia systems, medical imaging,

Tele-medicine and military communication. Colour images are being transmitted and stored in large amount over the Internet and wireless networks, which take advantage of rapid development in multimedia and network technologies. The image encryption techniques are different from the data encryption techniques. And there several security problems associated with digital image processing and transmissions, so it is necessary to maintain the integrity and the confidentiality of the image. Moreover digital images are comparatively less sensitive than data because any single change in the pixels of the does not change the entire image.

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II. PROBLEM STATEMENT

A QR code is a two-dimensional matrix barcode that encodes and stores large amounts of data. Due to their speed and convenience, QR codes have been used extensively in many vital applications such as health, education, and finance. A number of secure QR-based online payment systems have been proposed in literature. In different payment models each providing different levels of speed and security have been presented. Which is less secure and less encyptive? These models include the Operator Centric Model and the Peer-To-Peer Model.

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III. LITERATURE SURVEY

"Quick Response" code is a 2D matrix code that is designed by keeping two points under consideration, i.e. it must store large amount of data as compared to 1D barcodes and it must be decoded at high speed using any handheld device like phones. QR code provides high data storage capacity, fast scanning, omnidirectional readability, and many other advantages including, error-correction (so that damaged code can also be read successfully) and different type of versions. Different varieties of QR code symbols like logo QR code, encrypted QR code, iQR Code are also available so that user can choose among them according to their need. Now these days, a QR code is applied in different application streams related to marketing, security, academics etc. and gain popularity at a really high pace. Day by day more people are getting aware of this technology and use it accordingly. The popularity of QR code grows rapidly with the growth of smartphone users and thus the QR code is rapidly arriving at high levels of acceptance worldwide.

It introduced a new data-hiding algorithm, where message is converted to QR code (Quick Response Code) and generates QR for mask (Key). QR Codes are mainly used to carry or store messages because they

have higher or large storage capacity than any other normal conventional 'barcodes'. In the present work the authors have introduced the encryption technique by XORing part (series of bits) of QR message with the same part of QR mask (key) to encrypt any message and then embedding the key into the resulted QR. The resulted QR code may be sent to destination or may be saved for future use. In this encryption method authors have used bit-manipulation, byte-reshuffling and generalized this method. The ciphering method used here has been tested on different plain texts and it was found that the method is unbreakable using traditional cryptanalysis techniques like frequency analysis, plain-text attack, Differential attack, Brute-force attack, etc. The data is encrypted using a symmetric key method, then inserted in QR code, so that data cannot be easily retrieved without adequate authorization / permission.

Spoofing attacks are one of the security traits that biometric recognition systems are proven to be vulnerable to. When spoofed, a biometric recognition system is bypassed by presenting a copy of the biometric evidence of a valid user. Among all biometric modalities, spoofing a face recognition system is particularly easy to perform: all that is needed is a simple photograph of the user. In this paper, we address the problem of detecting face spoofing attacks. In particular, we inspect the potential of texture features based on Local Binary Patterns(LBP) and their variations on three types of attacks: printed photographs, and photos and videos displayed on electronic screens of different sizes. For this purpose, we introduce REPLAY-ATTACK, a novel publicly available face spoofing database which contains all the mentioned types of attacks. We conclude that LBP, with ~15% Half Total Error Rate, show moderate discriminability when confronted with a wide set of attack types. Spoofing attacks are one of the security traits that biometric recognition systems are proven to be vulnerable to. When spoofed, a biometric recognition system is bypassed by presenting a copy of the biometric evidence of a valid user. Among all biometric modalities, spoofing a face recognition system is particularly easy to perform: all that is needed is a simple photograph of the user.

Quick response (QR) code is a convenient product for mobile phone users. People can use a smartphone camera to capture the code, and then decode it through a dedicated reader application. Specifically, that code stands for concise text, contact information, or a web hyperlink. Its existence assists phone users in keypad typing more easily. This paper proposes an on-street parking fee payment mechanism based on the QR code of an E-bill. People can regard the code as a bill to pay their parking fee, where the parking information is recorded into a remote server by the fee collectors. The main idea of this mechanism is to save on resources such as reducing paper consumption. Simulation results showed that the proposed mobile application provides a new mode for E-bill payment for on-street parking in Taiwan. Furthermore, the said application also serves as an exemplary model for other parking payment method. For mobile phone users, a quick response (QR) code is a useful tool. A smartphone camera may be used to capture the code, which can then be decoded using a specialised reader programme. That code, in particular, denotes succinct

text, contact information, or a web connection. Its presence makes it easier for phone users to type on the keypad. The QR code of an E-bill is used in this study to suggest an on-street parking fee payment mechanism.

IV. PROPOSED SYSTEM

We propose a novel framework based on the image encryption and QR Code for sharing the links. First the url will be converted to QR Code and then the QR code will be encrypted and the url of the encrypted QR Code will be again converted to QR Code. This way the QR Code will be more secure even if we share the QR Code no one will be able to gain access to the actual url only those with image decryption program will be able to decrypt the QR Code and get to the link.

V. SYSTEM ARCHITECTURE

This architecture should focus on user's attention, consistency, and simplicity
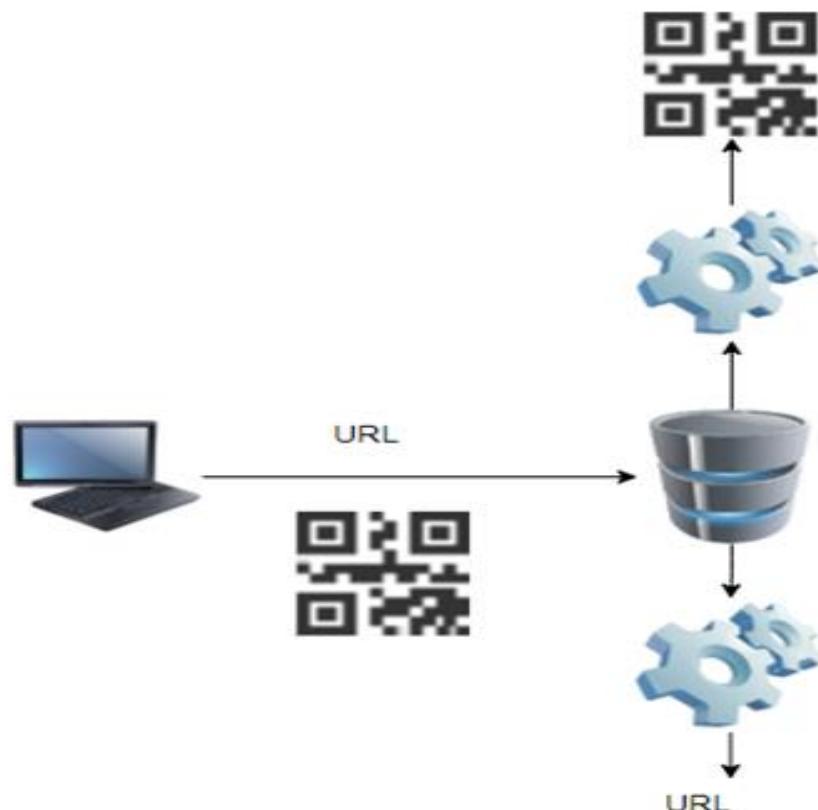
Fig 1: System Architecture

The quality of system input determines the quality of system output. Well-designed input forms and screens have following properties −

- It should serve specific purpose effectively such as storing, recording, and retrieving the information.

- It ensures proper completion with accuracy.

- It should be easy to fill and straightforward.

VI. RESULT

It can be manual, automated, or a combination of both. It shows how information enters and leaves the system, what changes the information and where information is stored. The purpose of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system.
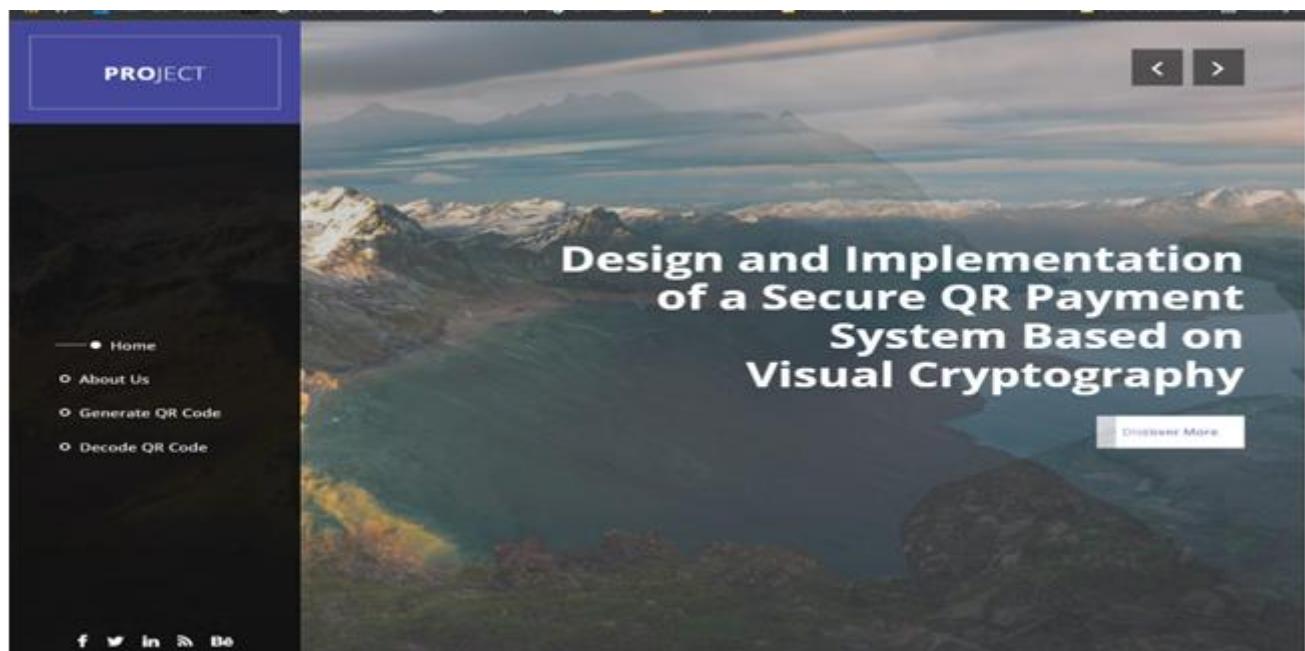
Fig 2: Home Page

Fig 3: Prediction Page

VII. *Conclusion and Future enhancement*

In this paper, we proposed a secure QR Code sharing application and increased the security of links with image cryptography. As for future works, further investigation on the use of deep learning techniques are recommended to optimize the result for predicting fake faces. It is also essential to select images from different datasets. Thus, using deep learning for face spoofing detection will ultimately enhance its accuracy.

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