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DESIGN AND IMPLEMENTATION OF A SECURE QR PAYMENT SYSTEM BASED ON VISUAL CRYPTOGRAPHY

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ABSTRACT

It is used to explain the development and application of a safe payment system based on QR codes. Because of how quickly payments are processed and how convenient they are for users, these QR codes have been widely used in recent years. As easy as they may seem, QR-based online payment systems are susceptible to a variety of threats. Thus, transaction processing must be sufficiently secure to safeguard the legitimacy and privacy of each payment procedure. Also, each transaction's sender and recipient must be able to trust the online payment system. Visual cryptography is used in this paper to ensure security for the suggested QR-based system. A web application that uses visual cryptography makes up the suggested system.

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

I.INTRODUCTION

Large amounts of data can be encoded and stored in a QR code, which is a two-dimensional matrix barcode. In a wide range of essential applications, including health, education, and finance, QR codes have been widely used because of their quickness and convenience. The literature has suggested a number

of safe QR-based online payment methods. There are several payment schemes that have been presented, each of which offers varying degrees of speed and security. These models include the Peer-to-Peer Model and the Operator Centric Model. The need for users to retain privacy grows as digital images become increasingly significant in multimedia technology. Image encryption is crucial to ensuring the user has this level of security and privacy by preventing unauthorised user access. Several sectors can benefit from image encryption.

communication in the military and telemedicine. By the use of wireless networks and the Internet, which benefit from the quick advancement of multimedia and network technologies, a significant number of colour images are communicated and saved. The methods used to encrypt images are distinct from those used to encrypt data. Maintaining the integrity and confidentiality of the image is required due to the numerous security issues that arise during digital image processing and transmissions. Digital images are also less sensitive than data because an individual modification to a single pixel does not affect the complete image.

II. PROBLEM STATEMENT

A QR code is a two-dimensional matrix barcode that can encode and store a lot of data. Owing to their efficiency and practicality, QR codes have been widely applied in a variety of crucial fields, including economics, education, and health. Several safe QR-based online payment methods have been put forth in the literature. Several payment schemes, each offering varying degrees of speed and security, have been presented. Which is less encyptive and less secure? The Operator Centric Model and the Peer-to-Peer Model are examples of these models.

III. LITERATURE SURVEY

A 2D matrix code called a "Quick Response" code was created with two requirements in mind: it had to hold a lot more data than 1D barcodes and decode quickly on portable devices like phones. In addition to offering a large amount of data storage, quick scanning, and omnidirectional readability, QR codes also offer error-correction (so that broken code can still be successfully read) and a variety of variants. There are many different types of QR code symbols, including logo QR codes, encrypted QR codes, and QR Codes, so users can choose from them based on their needs. The use of a QR code is growing in popularity these days

across a variety of application fields, including marketing, security, and education.

It unveiled a novel data-hiding technology that generates a QR code for the mask after converting the message to a QR code (Quick Response Code) (Key). Because QR Codes have a higher or larger storage capacity than any other typical conventional "barcodes," they are mostly utilised to carry or store messages. In the current work, the authors introduce the encryption method that encrypts any message by XORing a section (series of bits) of a QR message with a part of a QR mask (key) and then embedding the key into the encrypted QR. The generated QR code can either be delivered to the intended recipient or saved for later use. The authors of this encryption technique used bit manipulation, byte reordering, and generalised this technique.

Biometric recognition systems have been shown to be vulnerable to spoofing attacks, one of the security characteristics. A biometric recognition system is circumvented when it is fooled by presenting a replica of the biometric data from a legitimate user. One only only take a simple snapshot of the user to fool a facial recognition system, making it the easiest to fool of all biometric modalities. The issue of identifying face spoofing attacks is discussed in this study. We specifically examine the potential of textural features based on Local Binary Patterns (LBP) and their variants on three different types of attacks: printed images, photos and films shown on various-sized electronic screens, and attacks using printed photographs. We present REPLAY-ATTACK, a fresh, freely accessible face faking database, for this purpose. For users of mobile phones, quick response (QR) codes are a useful product. A smartphone camera can be used to take a picture of the code, which can then be read by a special reader software. Specifically, such code denotes brevity, contact details, or a web link. Its existence makes using the phone's keypad on the keypad easier. The on-street parking fee payment method proposed in this research is based on an E-QR bill's code. The parking information is entered by the fee collectors into a remote server, and people can think of the code as a bill to pay their parking fee. This system's major goal is resource conservation, such as lowering paper usage. Simulation outcomes demonstrated that the suggested mobile application offers a new

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

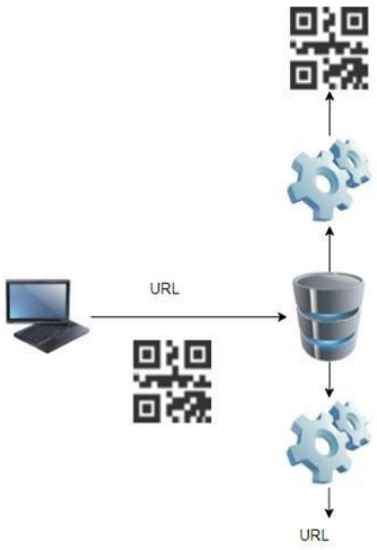

Fig 2: Home Page

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.

Fig 3: Prediction Page

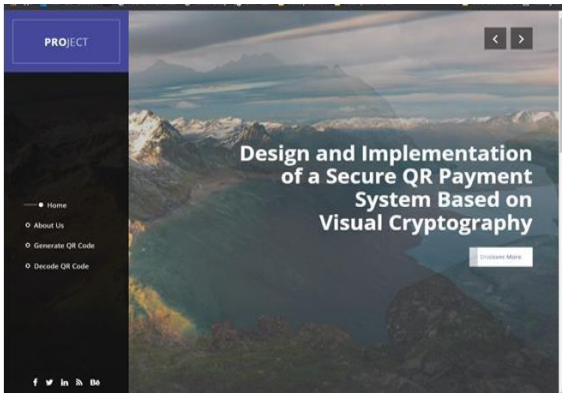

Fig 1: System Architecture

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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