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Private and Secure Medical Data Transmission Using Wireless Network with QR Code

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Abstract: ***In medical management, more and more information technology is applied to improve work efficiency. For example, the hospital information management system is used for basic information and medical management of patients, and the one-dimensional and two-dimensional codes on the wrist are used for quick reading or inputting patient identification (ID), etc. Although computerization is more convenient, due to immature technology or management flaws, there are certain security risks in various typical scenarios, such as disclosure of user privacy through reporting transparency, lack of strict control over the consultation of confidential medical records, the absence of technical verification for the confirmation of the infusion, etc. Identity is easy to fake, payment is inconvenient, etc.***
Security issues are discussed in more detail below. Healthcare applications are considered a promising area for wireless sensor networks, where patients can be monitored using wireless medical networks (WMN).
Current trends in WMN healthcare research focus on reliable patient communication, patient mobility, and energy-efficient delivery.
Keywords: Healthcare System, QR Code, Privacy Protection , Wireless network , AES, Implementation, Future scope.

I. INTRODUCTION

The rapid technological convergence of the Internet of Things (IoT), Wireless Body Area Networks (WBAN) and cloud computing has made e-health (electronic health care) a promising industrial application. information-intensive occupying important areas Improving potential for quality of care. Most of today's e-/m health systems require physicians (or system administrators) to be involved in processing medical information, which creates two problems: inefficiencies caused by manual operations and knowledge users by physicians. data.

A medical expert system that can automatically analyze the messy private data of users and reduce the involvement of doctors can solve these two problems, especially the application of a general physical examination

.

A. Problem Definition

To overcome the problem of patients, we have implemented the system where a user/patient hides their information in QR code and the system will provide the patient with a unique ID to access when that patient/user is in the processing case. Doctors identify symptoms and assign treatment options to patients. The pharmacist will scan the hat's QR code and administer the medicine to the patient/user.

Finally, there is the insurance service. Develop specific plans based on the patient's perspective.The proposed system's attention to the safety of the user's patient is an extreme requirement for healthcare applications and their insurance plans, especially in the case of patient privacy, if the patient is inconvenienced.

B. Model Architecture

In the proposed research work to design and implement a system which work with healthcare services. This research work aims to propose a unified trust computing scheme for giving most relevant, efficient and trustworthy healthcare service provider to the requesting patent.

Trustworthiness of the healthcare service/provider will be evaluated based on various attributes like QR Code, unique patient id to secure patients record in healthcare environment.

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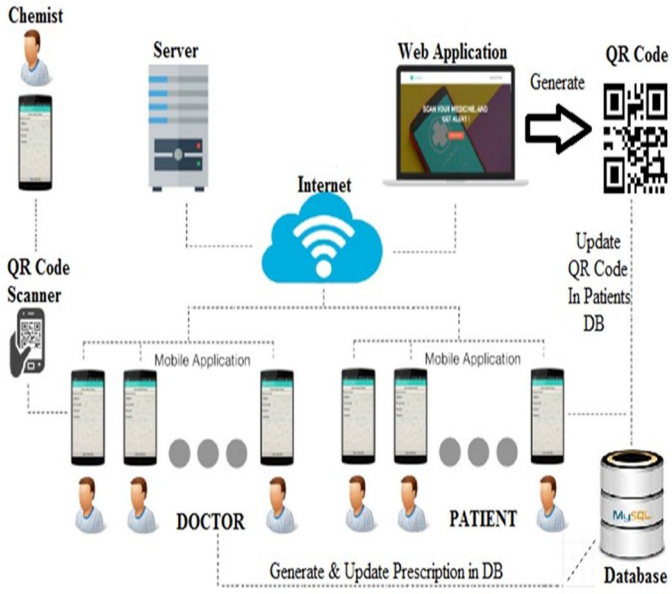


Fig -1: Model Architecture

C. Algorithm Used

1) AES Algorithm

AES is an encryption algorithm which is a symmetric block cipher with a block size of 128 bits. It transforms these individual blocks using 128, 192 and 256 bit keys. Once it encrypts the blocks, it concatenates them to from the cipher text AES operates on bytes of data rather than bits. Since the block size is 128 bits the cipher processes 128 bit input data (or 16 bytes) at a time

2) Quick Response Code

QR is a two-dimensional barcode. It is commonly used to add web links to printed pages. When you scan such a QR barcode with your webcam or phone camera, the QR reader app will take you to a website or other web content. QR codes are an easy way send people to a website without entering a URL. It also provides different types of QR code symbols such as logo QR code, encrypted QR code, iQR code, etc. Users can choose between according to their needs. Nowadays, QR codes are applied in different streams of applications related to marketing, security, academics, etc.

II. OBJECTIVES

Health information on pregnancy procedures, diabetes, flu, etc. can be incorporated into the QR method. To learn more about these health issues, these QR cannons can be your access to medical information. Case can download necessary data or information from its infiltration to better understand and learn about health-specific content.

A. Scope of Study

The proposed system to provide better way to patients & doctor of each treatment task based on user time of attempt and paperless work. This system will overcome the traditional manual work of faculty to overcome a waiting time of treatment task in few amount of time.

1) We can use this system in medical healthcare applications.
2) We can use this system to reduces paper work and save time.
3) To make India digital for user friendly application for every user/patient.

III. ANALYSIS OF LITERATURE SURVEY

1) Title: Quick response code applications in medical and cardiology settings: a systematic scoping review.
Author: Chiraag Thakrar. Journal:IEEE
| Year:2020 | Algorithm: Cochrane Library, Scopus Search

Description: Different uses of QR codes in a medical setting are increasing. Quick response codes might represent an easy and convenient digital tool to collect data and implement telemedicine programs on a small scale involving also the cardiovascular setting.
Future Scope: The proposed system to provide better way to patients & doctor of each treatment task based on user time of attempt and paperless work.

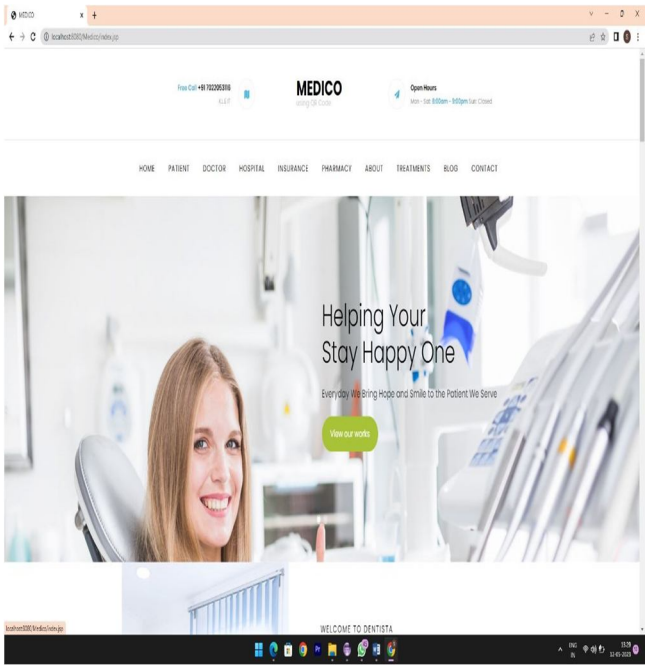
2) Title: Uses of quick response codes in healthcare education: a scoping review
Author: Saptagiri, MRavikumar, Dvenkanna. | Journal: IEEE | Year:2019 | Algorithm: Medline, HMIC
Description: The use of QR codes for healthcare education is increasing, and whilst they offer some advantages there are also some important considerations including: provision of the necessary technological infrastructure, patient and staff safety and governance and adherence to guidelines on safe and appropriate use of this technology in various settings.
Future Scope: This system will overcome the traditional manual work of faculty to overcome a waiting time of treatment task in few amount of time.

3) Title: Secure Medical Data Transmission Model for IoT-Based Healthcare Systems
Author: Abhinaya, Mohamed Elhoseny. | Journal: IEEE | Year:2018 | Algorithm: Cryptography, DWT-1LEVEL/2LEVEL
Description: IoT creates an integrated communication environment of interconnected devices and platforms by engaging both virtual and physical world together. Therefore, it is necessary to develop an efficient model to ensure the security and integrity of the patient's diagnostic data transmitted and received from IoT environment. This goal is carried out using steganography techniques and system encryption algorithms together to hide digital information in an image.
Future Scope: We can use this system in medical healthcare applications.

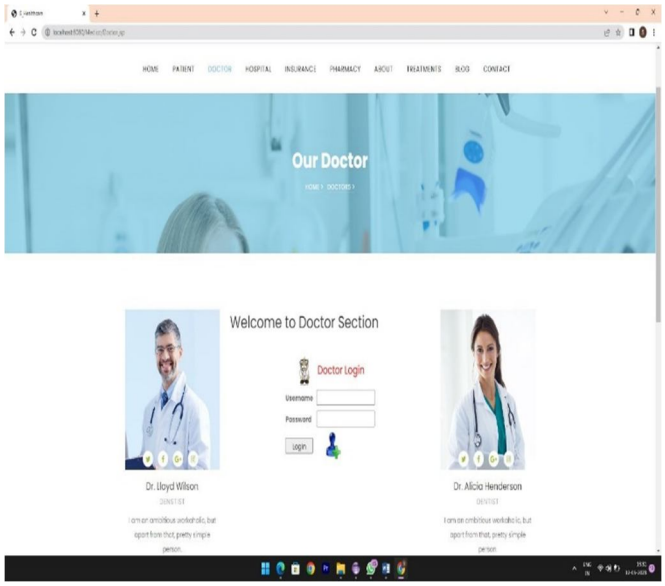
4) Title: Private and secure medical data transmission and analysis for wireless sensing healthcare system.
Author: Xuehu Yan, Ching-Nung | Journal: IEEE | Year:2017 | Algorithm: GSRM, HEBM
Description: Using low-cost and easily-deployed wireless sensor networks as the relay infrastructure for GSRM-based secure transmission of medical data from WBANs to WPANs; addressing the problem of achieving direct communications between a user's mobile terminals and embedded (wearable) medical devices (nodes); and enforcing privacy-preserving strategies HEBM and achieving satisfactory performance.

IV. OUTPUT

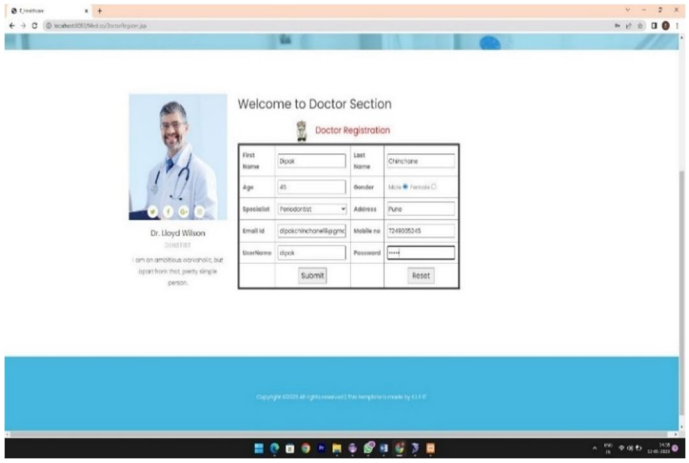
A. Admin Section



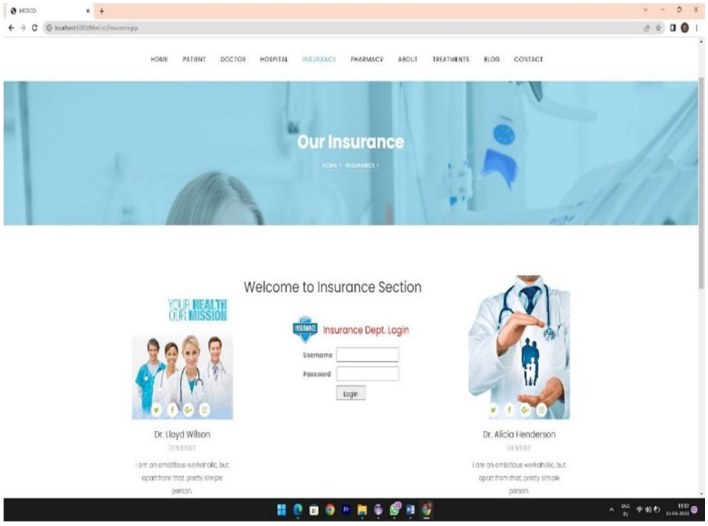
B. Doctor Login Page



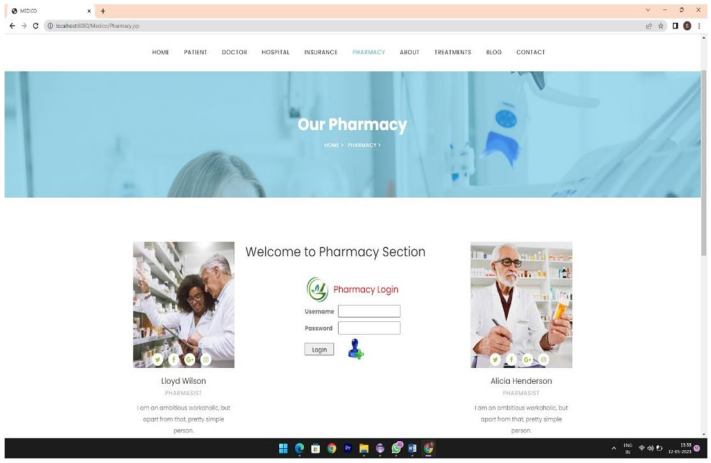
C. Doctor Section



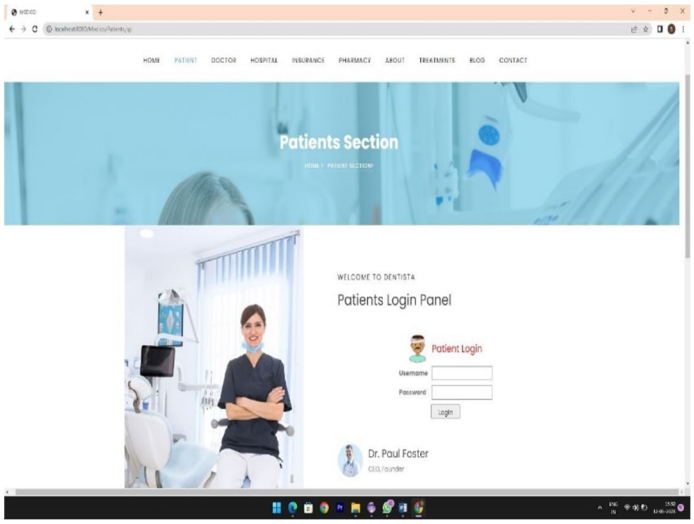
D. Insurance Section



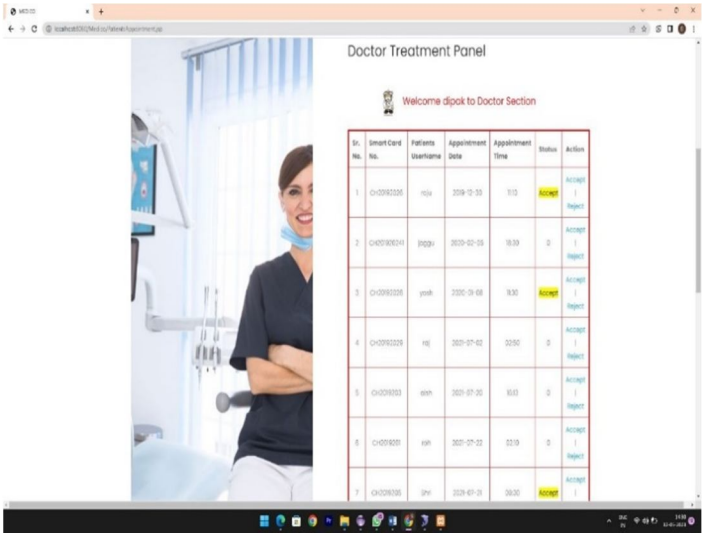
E. Pharmacy Section



F. Patient Section



G. Doctor Treatment Panel



V. CONCLUSIONS

In this system we are going to implement In medical management, more and more information technologies are applied to improve work efficiency. In this proposed system, based on the analyses of the security shortcomings of medical management technology, we exploit the idea of applying Quick Response (QR) code to secure medical management and improve many medical management security through utilizing information security technology. Further theoretical analyses and more simulated experimental results will be our future work.

VI. FUTURE SCOPE

1) In future we introduce a new technique to accomplish a system to handle system online with android application in medical stores with delivery of medicines.

2) The hospital has to create a QR code identity website first to store patients' information. Using the best QR code generator, hospitals and the rest of the healthcare industry can easily create their QR codes for information sharing and better response to crucial hospital operations.

3) The convergence of Internet of Things, cloud computing, and wireless body-area networks (WBANs) has greatly promoted the industrialization of electronic-/mobile-healthcare (e-/m-healthcare). However, the further flourishing of e-/m-healthcare still faces many challenges including information security and privacy preservation

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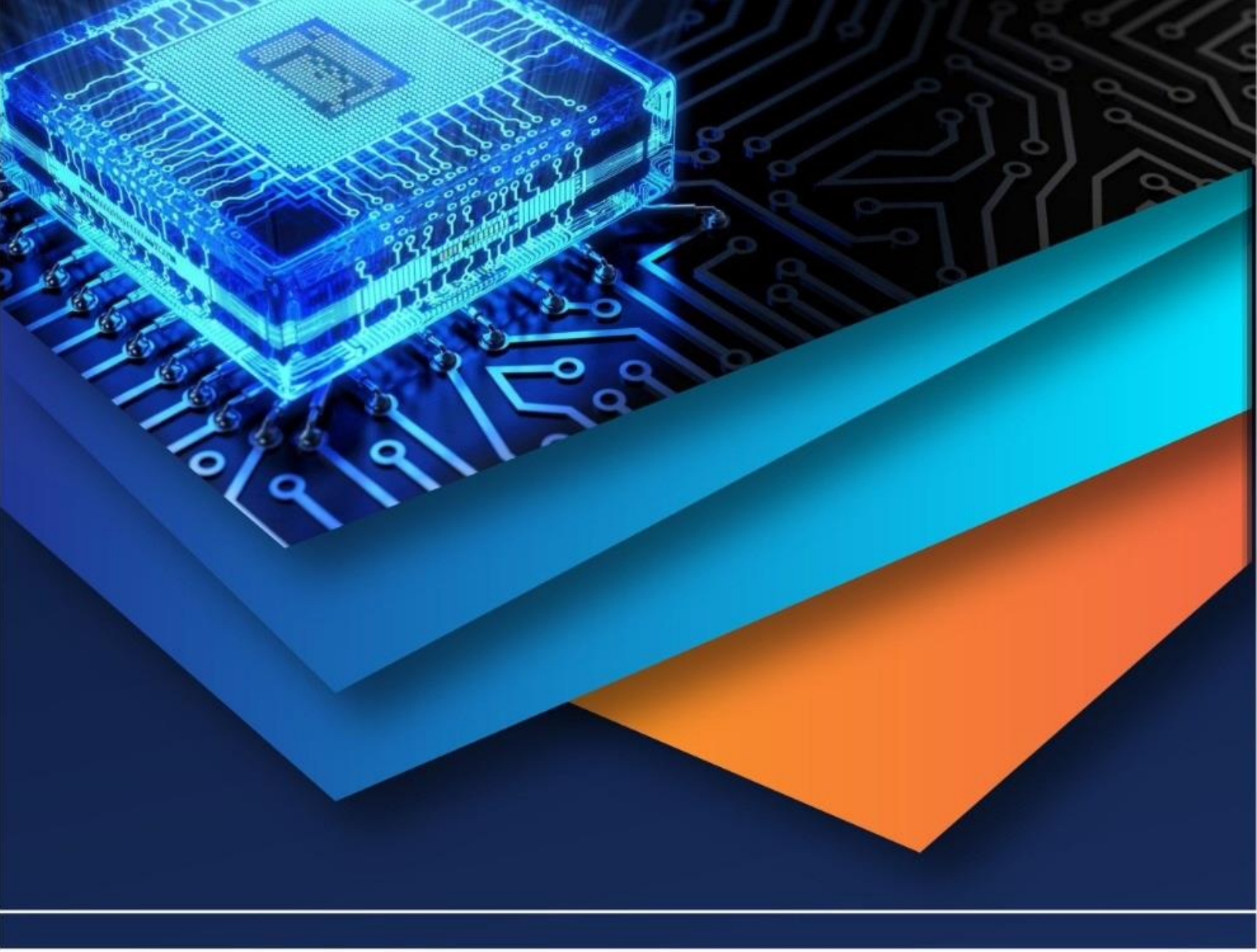
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