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# Medicine Management System for Visually Impaired and Old Age People

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**ABSTRACT:** Medication management is a complex process and is considered of daily activity. Moreover, participation in daily activities could define well-being. On the other hand, the medication management process for old, aged individuals is more difficult. Nowadays, the technologies like health have caused significant progress in both areas of medication management systems and Old, aged Independent Living. Therefore, this work aimed to develop an assistive medication management system for old, aged people to improve their medication adherence among them. The development process started with requirements extraction according to Cooper's goal-directed design methodology. Then the system needs to develop consisting of an Android mobile application, an RFID device, and a medication box with vibration motors and it is developed for Iranian Old, aged individuals in the Persian language. At the final step of this study, a functional assessment was performed to improve the system even more in the next prototypes.

**KEYWORDS:** QR Code, Medication management, Healthcare, Old People, Android Application

## I. INTRODUCTION

This project is developed to make the life of old aged people easy. This is a camera-based system to scan the QR Code behind the image and reads the description of the medicine with the help of the Id stored in the QR Code. This project can be implemented in any shopping mall, supermarket, Book store, medical store, etc. Nowadays, there is a big problem with old, aged people as they are always dependent on other people to buy products. To make them independent they should personally know about all products purchased by them. We are going to develop this project. It is very beneficial to find out the description of medicine tablet goods to old, aged people. That is because it becomes tough for old, aged people to the medicine tablet goods. We depict an innovative phone application that controls an outwardly old, aged client. Once the scanner tags them as the framework, the client is incited with sound signs to convey the point settled by the camera. Thus, this application benefits old and aged people and thus makes their work of identifying products easy. There is very easy to use and affordable as it requires a smartphone to scan the barcode.

The proposed scheme can resist internal and external attacks. The generation of keys and the algorithms are simple. The proposed scheme overcomes the dynamic access control problem.

## II. LITERATURE REVIEW

Wearable Medicines Recognition System for Old Aged People Based on Deep Learning [1]. To prevent ingesting the incorrect medications, the system uses deep learning technology to recognize drug tablets. The testing findings suggest that the proposed system's accuracy may reach up to 90%, indicating that it can meet the goal of accurate medicine for old, aged persons. Currently, irrational drug fatalities account for one-third of all disease-related deaths worldwide

According to [2] Med Glasses is a wearable smart-glasses-based drug pill recognition system for old, aged chronic patients that uses deep learning. The Med Glasses system comprises a pair of wearable smart glasses, an intelligent medicine pill detection box powered by artificial intelligence (AI), a mobile device app, and a cloud-based information management platform. Experimental findings suggest that up to 95.1 percent recognition accuracy may be attained. As a result, the



suggested Med Glasses system may successfully limit the issue of drug interactions caused by taking the wrong medications, lowering the expense of medical treatment, and creating a safe medication environment for old, aged chronic patients.

Medication Identification Aid for Patients with Old aged [3]. This might have a significant impact on their health, particularly if they have a chronic illness and must take their prescriptions regularly. Some technologies, such as a barcode or Near Field Communication (NFC) scanners, may assist such patients in recognizing their medicine boxes. Existing options are either too expensive, need the carrying of extra equipment, or are difficult to use. Computer vision technologies have made it feasible to develop and create more useable and accessible software solutions for old, aged users.

Issues, problems, and possibilities in smartphone-based assistive solutions for old and aged persons [4]. To realize the potential of ICT-based interventions for old, aged people, researchers reviewed research avenues in smartphone-based assistive technologies for old, aged people, emphasizing the need for technological advancements, an accessibility inclusive interface paradigm, and collaboration between medical specialists, computer professionals, usability experts, and domain users.

A Review of old aged Patients' Medication Identification Techniques [5]. As a result, people prefer to develop their intelligent medicine pill detection box powered by artificial intelligence (AI), a mobile device app, and a cloud-based information management platform. Experimental findings suggest that up to 95.1 percent recognition accuracy may be attained. As a result, the suggested Med Glasses system may successfully limit the issue of drug interactions caused by taking the wrong medications, lowering the expense of medical treatment, and creating a safe medication environment for old, aged chronic patients.

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A Review of old aged Patients' Medication Identification Techniques [5]. As a result, people prefer to develop their systems based on non-visual methods such as recognizing medications based on their odor or wrapping an elastic band around bottles of similar shapes. These procedures are prone to errors, which might lead to the administration of incorrect drugs. The Third Tab (3T) is an AT mega-based automated blind cane for old, aged people [6]. The goal of the study is to alleviate the suffering of old, aged people by producing a low-cost, simple-to-use technology. As a result, we created a microcontroller-based smart cane to help the old, aged. The smart cane can identify any obstacles within a 180-degree range of an old, aged person's movement direction. When an impediment is recognized, a voice message is automatically generated to alert the old, aged. The ability to recharge devices is the most intriguing aspect of our study. Mechanical rotation is produced by an array of raw magnets, which are then backed up by a tiny DC motor. Furthermore, we employed a GSM module with a panic button to determine the present position of the crisis.

Old, aged People's Smart Medicine Planner [7]. The Smart Medicine Planner (SMP), an innovative and efficient tool, has been considered. SMP will assist individuals, particularly the old, and aged, in pre-sorting their medications for the day. Dispensing and alerting systems are the two sub-systems that make up the system. The Dispenser System (DS) fills pills into The Smart Medicine Box (SMB) automatically, and the alerting is meant to remind the user of dosing times. Because it is the simplest method to communicate with old and aged individuals, the technology used to connect with them is based on voice interaction systems. The SMP will take care of storing medication information, dispensing, and notifying the user after the patient has placed his or her medicine in the container.

Medicine Recognition for the Old, aged Using CNN [8]. the effort that aids in the identification of medication by visually challenged people using smart glasses. The smart glass system, which sends an audio signal via the earphones, may read the name of the drug. Convolutional neural networks are used by the smart glass system to read the pharmaceutical name. For People with Old aged, Camera-Based Indoor Navigation in Known Environments with ORB [9]. In familiar surroundings, a real-time camera-based interior navigation tool for the old, aged, and visually handicapped. Unlike previous systems for comparable objectives, ours does all computation locally on mobile devices and does not need any sensor or signal assistance from the infrastructure. The technology may be used in two stages: offline, where a sighted person assists with landmark identification and route planning, and online, where an old, aged person can navigate using voice prompts from the app. In the offline stage, predefined landmark pictures and navigation information are saved in a database.

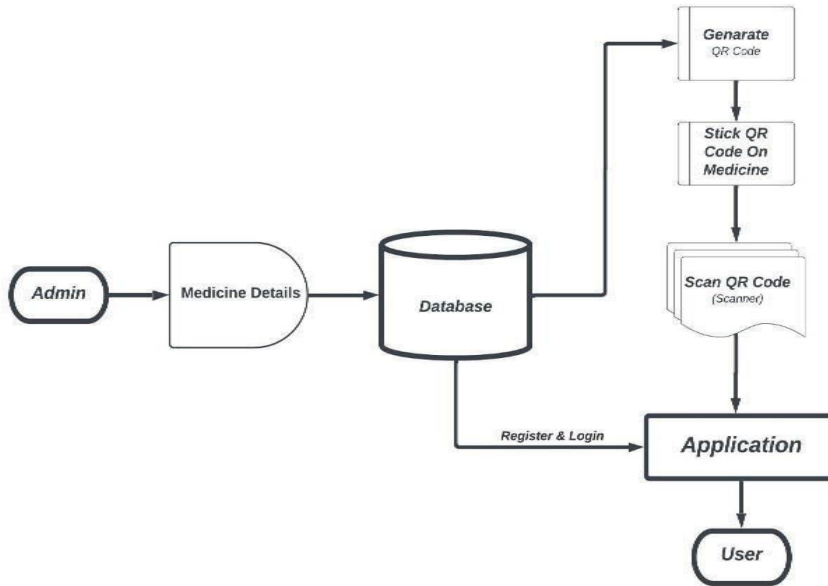
Medication Administration using a New Visual Cryptography-Based QR Code System [10]. Based on threshold-sharing technology, a secure medicine delivery technique has been developed. A picture and the patient's personal information are encoded into n QR code transparencies that can be deciphered by ordinary QR code scanners accessible on smartphones when a patient sees a doctor and the doctor prescribes n drugs. The prescription, together with its QR code transparencies, is then placed in a hospital's medication management system. When a patient gets their medication, they may use their smartphone to scan these n QR code transparencies to confirm that they have all of the medications recommended by the doctor; this capability is available even if the patient's phone does not have an Internet connection.

### III. PROPOSED SYSTEM

In this work, we are focusing on the research question, of how a mobile application and web application can support old and aged persons in managing their medication or more specifically, which technologies and functionalities should be provided to facilitate medication management for this particular user group. We introduce a corresponding concept and implement it in the mobile application. Information is encoded both vertically and horizontally, enabling it to hold several times more data than a standard bar code. These codes have swiftly gained worldwide popularity and have been adopted by many systems, notably in Japan, due to their ability to encode Kanji characters by default. QR codes are used to store important and confidential information. QR codes are made up of many portions, each of which has a specific purpose. QR code scanning is required in the data extraction step of our program utilizing a smartphone. As a result, to complete this operation, open the application and then select the scanning tab to activate the application. In our study, the voice output is the most significant module, thus we boosted the extra functionality with function. The user may determine the true position of medication by using the voice command.

Figure1: System Block Diagram

IV. ALGORITHMIC DESIGN



**QR Code Write**

Input: String data d from unique id Output: the QR code Image

- STEP 1: Start
  - STEP 2: Input the source file (d)
  - STEP 3: Convert string into byte and store in d
  - STEP 4: Input the image format and resolution of the QR Code to be generated
  - STEP 5: Input Error Correction Level
  - STEP 6: Using the zxing[1] library method convert 'd' into a Bit Matrix object 'bit matrix'
  - STEP 7: Write a bit matrix to an image
  - STEP 8: End
- N.B- Bit Matrix represents a 2D matrix of bits.

**QR Code Read**

Input: Input QR Code image and charset.

Output: show unique id

- STEP 1: Start
- STEP 2: Input the QR Code image
- STEP 3: Construct a Binary Bitmap object 'bitmap' from the source image
- STEP 4: Using the zxing library method decode the 'bitmap' and store it in the object 'result'
- STEP 5: Convert 'result' into a string and write it to 'result'
- STEP 6: Extract the result
- STEP 6: If requested by the user call readQRCode ('super', 'sig', in the file)
- STEP 7: End.

## V. TECHNOLOGIES

- 1) **JAVA:** Java is a programming language and a platform. Java is a high-level, robust, object-oriented, and secure programming language. It is a versatile language that can be used for both front-end and back-end development.
- 2) **HTML:** It stands for Hyper Text Markup Language which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page.
- 3) **CSS:** It stands for Cascading Style Sheets. It is a style sheet language that is used to describe the look and formatting of a document written in a markup language. It provides an additional feature to HTML.
- 4) **Java Script:** is designed for beginners and professionals both. JavaScript is used to create client-side dynamic pages.
- 5) **MYSQL:** MySQL is a relational database management system based on the Structured Query Language, which is the popular language for accessing and managing the records in the database. MySQL is open-source and free software under the GNU license. It is supported by Oracle Company.

## VI. CONCLUSION

This research focuses on smartphone usability for old, aged users for effective medical management. The first QR code has been used for loading medicine prescriptions with schedule and scanning data to manage every day. The collaborative approach we have designed with an Android and IoT platform to know the location of the medicine box over the Wi-Fi provides effective management of medicine for old, aged people, and older people.

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