Vehicle Documents Verification System using Advanced Digi-locker System

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ABSTRACT
All over the world, as per the Motor Vehicles Act of the respective countries, it is compulsory to that citizens always carry the original hard copy of documents like (Registration certificates book, vehicle pollution under control, certificate vehicle Insurance policy). Many times citizens do not remember to carry the vehicle-related documents. When traffic police wanted to verify citizens documents at that time citizens need to carry these documents with them otherwise they need to face consequences. To overcome this problem, the proposed system will have an RTO server, where all necessary documents of the vehicle documents are scanned and stored. The Quick Response code (QR Code) is Japanese fast readable technique which scans documents of the citizen's vehicle. The real-time android application will be used of QR code generator of citizen's documents and QR-code receiver for scanning purposes. The Traffic police will scan a unique QR Code generator for user mobility. In proposed system whenever citizens documents get expired at that time it will send notification alert. This system will help in saving a significant amount of time. To avoid intrusion of citizens original documents, so noisy QR-code will be used to provide privacy.

General Terms
QR code image for verification of documents.

Keywords
User android application, Verifier Authority Android application, RTO cloud server.

1. INTRODUCTION
Currently in India almost document as per motor Vehicle Act, It is compulsory citizens always carry the original documents like Registration books (RC), vehicle pollution under control (PUC) are whole document are checked by verifier authority i.e.; Traffic police. to minimize the use of physical documents secure access to Government issued documents through a web and mobile application using QR code In existing system this process is done manually so the lots of fake documents are available to citizens. The proposed system is based on digital locker system this facility provided by government of India citizens to store the citizens important document, Using digital locker the proposed system is electronic secure vehicle verification system using advanced Digital- locker system which avoids carrying the physical document to citizens it also avoid some security issues and also reduce the following problem:

- Eliminating usage of fake documents.
- Eliminating the need for citizens to maintain a hard copy of government-issued documents.
- Provide secure and consented access to the government issued document to user agencies.
- Reduce RTO admin overhead, and enabling the paperless transaction.
- In the existing system, there is no alert system notification system to citizens if his/her document expired.
- The main benefits are the citizens or Verifier Authority can access the documents anytime and anywhere.
- Motor vehicles document can access now web application.

Improving Transparency in system and lots of time should be saved. The proposed system can save the amount of time of user and authority, This RTO Digi-locker mechanism aims to remove the physical documents work. This work deals with the creation of an android application where all details of the vehicle. The admin (RTO Admin) can handle or control the addition, updating and removing of documents on a cloud server and also they give the Unique ID and password to the particular user and also notification alert feature if citizens documents expired.

1.1 Quick Response (QR) code
The QR code is the quick response is newest Japanese Technique which uses for Quick data scanning. The QR code is developed by Denso Wave in 1994. This is the type of matrix barcode it is much faster than UPC Barcode [6]. The Main strength of QR code is to provide a cheap, easy and secure method to transmit information which increasing trust as well as improving transparency.

Fig.1. Basic QR Code structure

1.2 Providing security to QR-code using Algorithm

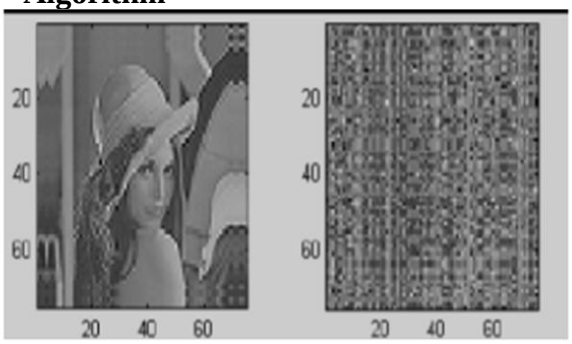

Fig. 2. Security for QR-code

The main purposed of QR code in proposed system which Generates the QR code image in secure format i.e. QR image generate on citizens mobile application whenever the verifier authority verifies the documents they will be scan the QR code of citizens from his/ her mobile application and access the documents of citizens from RTO server that time to provide security for QR code from third party i.e. Attackers to avoid the intrusion we using chaotic algorithm they provide more security and privacy to QR code image [8]. Whenever it generate noisy QR-code for security purpose and avoiding to corrupting the QR code.

1.3 Motivation

The motivation is to digitize all documents and record of the residents and make them available on real time basis.

To Design the proposed technique there are following:

- Minimize the Use of Physical Documents it is so hard to carry the original Documents. It reduces the administration overhead of Government Departments by minimizing the use of papers.
- Ensure authenticity of documents and there eliminate the use of fake documents.
- Improve the security of original documents using a QR code.
- People Forgets to renew the expired documents on correct time.
- Only the owner and Verifier has the right to see the documents.

In section we are giving the 1 INTRODUCTION of proposed system. In Section 2 LITERATURE SURVEY and Section 3 describes the PROPOSED SYSTEM. Section 4 COMPARISON OF PROPOSED SYSTEM OVER, Section 5 ALGORITHM FLOW OF PROCESS, Section 6 describes RESULTS, Section 7 describes CONCLUSION, and Section 8 describes References.

2. LITERATURE SURVEY

Mr. Nilesh R. Patil, Prof. Rajesh Dharmik [1], The summary of first paper has they described the security architecture for cloud service provider there are three different services like SAAS, IAAS, PASS, so the lots of privacy and security issue are generating for storing the information on the cloud network. After the survey, The private cloud for storing the information of citizens. This cloud model provides the more security because only authenticate person can access the information from the cloud.

Shraddha N. Karale, Kalyani Pendke, Prashant Dahiwale[2], The summary of this paper there are some cryptography algorithms like DES, 3DES, RC4, BLOWFISH, AES algorithms which help to provide strong security to cloud server and mobile authentication.

Eko Sediyono, Satya Wacana, Suhartono[3], OTP is a combination of numeric character which creates one specific password for authentication of the user, this paper shows on OTP which use the MD5 algorithm for security purpose. MD5 algorithm is less secure for user authentication. MD5 algorithm has drawback it is only one way communication algorithm, it is only use one factor Authentication.

Mr. Niteen Surv, Mrs. Jayshree Katti[4], In a previous paper [3] show the different algorithm they provides security but in comparison AES algorithm which gives the more powerful and more secure for storing the data on a cloud server. In cryptography, AES is the symmetric key algorithm which the fastest speed to encrypt the number of documents Because it uses size of key hen 128 bit then it uses 10 rounds, 192 bit for 12 rounds and 256 bit for 14 rounds. so the AES is more powerful as compare to DES algorithm and also is has the high-speed capacity for storing data to compare 3DES algorithm.

Lokesh S. Khedekar Prajakta S. Kale [5], Survey in this paper which show the strength of QR-code which eliminate the weakness of password. The main strength of QR code has lots of capacity to hold the data in securing form. The reason we choose the QR-code because to avoid the password-based authentication and dictionary authentication.

David Lorenzia, Jaideep Vaidya, Soon Chun, Basit Shafiq, Vijayalakshmi Atluri [6], as we know QR-code is two dimensional techniques and it is more powerful technique as comparing barcode and password authentication because it uses the combination of numeric character and alphabetic character and also a combination of binary data, symbolic data. In latest world the use of smartphone is increasing have lots of features like camera, android application, storage capacity, network connection lots of speed (3G, 4G etc.) The summary of this paper the QR code can use on smartphones because we scan the QR code in 360 degrees there is no limitation for scanning the data and it has more capacity to hold data and also it may possible to carry the QR-code image in portable devices using AES algorithm.

Yong Zhang, Xueqian Li, Wengang Hou[7], AES algorithm has lots of encryption speed as well as it is more fast image encryption algorithm as compare to another cryptography algorithm. Images have big volume and no longer are use as compared to text data, AES algorithm secure against brute force attack, so it has high speed and securely encrypts the images by comparing the DES algorithm. it is essential to protect them confidential image data from unauthorized access.

Qui Zhang [8]. Study on Image Encryption Algorithm Based on Chaotic Theory This paper studies about the image encryption algorithm based on chaotic algorithm. Chaotic algorithm has created noisy QR code using the Henon map formula which is shuffle the pixel of original image and creates the noisy QR code image. The chaotic algorithm gives more security to QR code as well as whenever sometimes QR code image has occurred the error that time chaotic algorithm can check this error and correct the error.

Jianhua Li, Hui Liu [9] when the third party (hacker, attacker) can exposing details of user documents from QR code and sometimes QR code images can corrupt that time to provide security to QR code image use the chaotic algorithms which create noisy QR code for difficult to hack for the third party. This chaotic algorithm is also used when any part of QR code image is corrupt or it using error correction to correct it. Using chaotic algorithm is used to encrypt color image and securely transforming from sender to receiver, and the result shows that the encryption algorithm has better security by crypt analysis. The benefits of this algorithm are safety, simplicity, efficiency and also it helps to securely transmission of QR code.

3. SYSTEM ARCHITECTURE

Digital Locker is storage facility provided by government Of India citizens important documents, So vehicle Documents verification system using Advanced Digi-Locker system is proposed for traffic police using QR code to avoid to carry the physical documents Propose system is divided into four parts :

- An android application for the user (User Application).
- servers corresponding for providing relevant documents of the vehicle (Department Servers)
- A centralized database administrator (RTO Admin Server).
- An android application for the traffic police verifier authority (Authority Application).

Proposed system is definitely digital and paperless, uses QR code, faster and efficient, simplified and centralized approach.

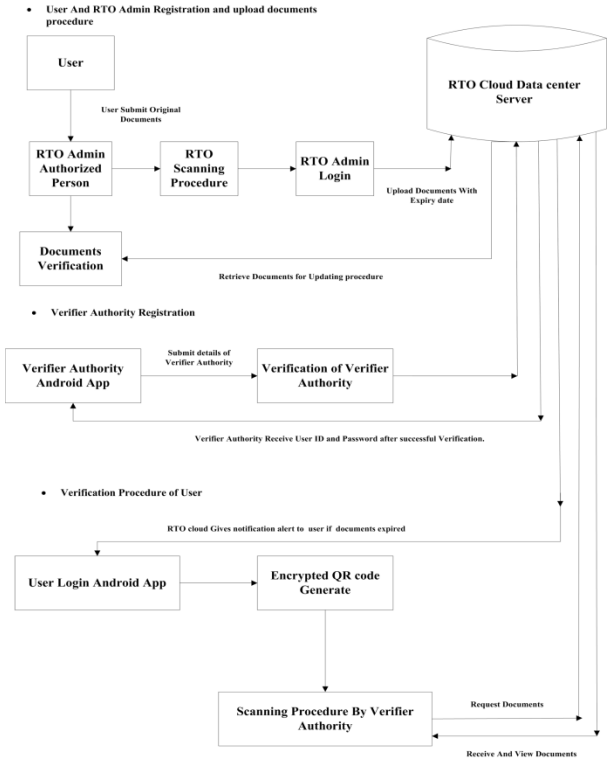

Fig.3. Architecture of vehicle Documents verification system using Advanced Digi-Locker system.

3.1 Centralized database Administrator (RTO server Admin)

One of the main parts in the proposed system is RTO Admin which scans all documents of the user and stored on RTO cloud server in encrypted form and gives the one specific user id and password to particular citizens [4]. Admin also adds the expiry date of particular user documents. Whenever any updating, deletion, modification requires the Admin can modify the data.

It securely stores the whole documents of the user, whenever traffic police scanning the QR code and send a request for user documents to RTO cloud server then we applying again parallel AES for decryption the documents of a user.

3.2 Android application for Citizen / user

The user first downloads the android application on his/her smartphone, after downloading the application He/she will be entering one on the application one Unique ID and Password which was given by RTO Admin. After the log in of user He/ She can manage the passkey for decryption of chaotic QR code, on user android mobile phone they will generate the noisy QR code image. The user can enter the correct passkey, when passkey is correct then original QR code can generate on user mobile phone. One extra Feature on user application is if User documents expired then RTO cloud server will give the notification alert.

3.3 Android application for traffic police verifier authority (verifier authority application)

In an existing system when traffic police want to verify the documents of citizens that time some user carries the fake documents, but in proposed system remove this drawback and increase the transparency about vehicle documents and also increase securely access the documents, save the amount of time of citizens and traffic police. When verifier authority wants to verify the documents of citizens he/ she first register and login into an application and scan QR code of user on his/ her mobile phone, then RTO cloud server provides the vehicle documents details of particular citizens.

4. COMPARISON OF PROPOSED SYSTEM OVER EXISTING SYSTEM

- **Security:** In the above section, we have briefly examined security issue are OTP password which is not capable to hold a large amount of data it is the weakest part of the existing system but in the proposed system we using password-based security as well as QR code technique.
- **Storage:** A large amount of data store in the inventory means QR code image has more capacity to hold data.
- **Portability**: The QR code image is easy to access on android mobile anytime anywhere.
- **Error correction high:** In case of any part of QR code image is corrupt or some error has occurred that time to provide security.

5. ALGORITHM STRATERGIES

5.1 Flow of process

Input: To Store the user driving and Vehicle-related Documents on RTO Cloud Server Using Parallel AES Algorithm.

- Step1: The algorithm will have three parts RTO cloud server Admin, user, and traffic police verifier.

  The algorithm will have three phases-. RTO cloud server,

User, Documents verifier.

- Step 2: RTO Admin Officer // RTO cloud server

  Input: All Document scan And store on the server using Parallel AES algorithm.

  Output: Gives one unique ID and Password to users.

  a. Register.

  b. Upload / modify/ delete document in encrypted format.

- Step 3: Users / Citizens

  Input: register, Login

  Output: Once user will be login it wills OTP generation

  For first time Login a. User Request.

  b. Register.

  c. Login.

  d. view documents.

  e. Show QR code to police.

  f. Notification to user if Documents expired.

- Step 4: Documents verifier //Traffic police verifier. Input: Login, Scan the QR code of User

  Output: View Original documents for the user.

  Step 5: Final Output Give Fast, Quick documents viewing using QR code with parallel AES algorithm.

5.2 In figure [4] Algorithm for the Electronic secure vehicle verification system using Advanced Digi-Locker system.

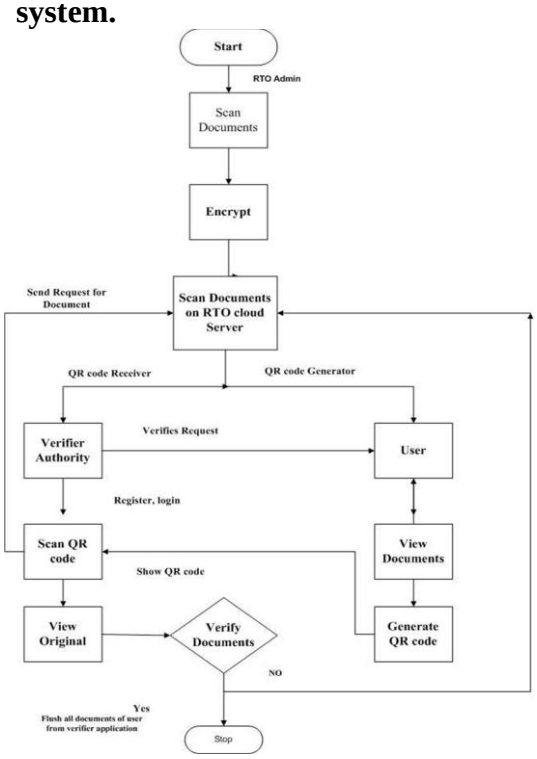

Fig.4. Algorithm for vehicle Documents verification system using Advanced Digi-Locker system.

6. RESULTS

6.1 After running the GUI project

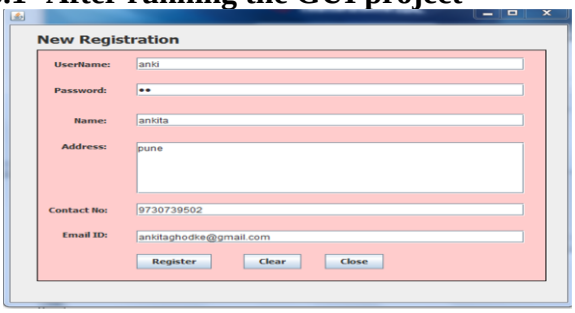

Fig. 5. I-doc application for RTO Admin Registration.

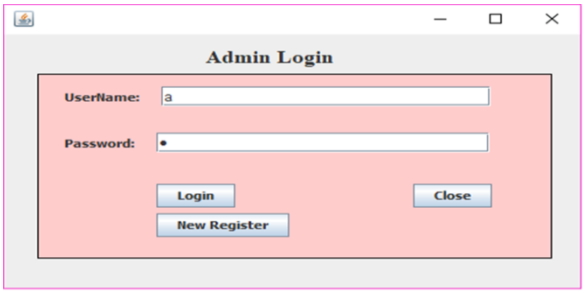

Fig. 6. I-doc application for RTO Admin Login

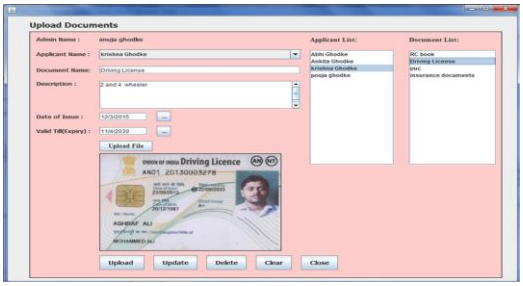

Fig. 7. RTO Admin Upload document on RTO server.

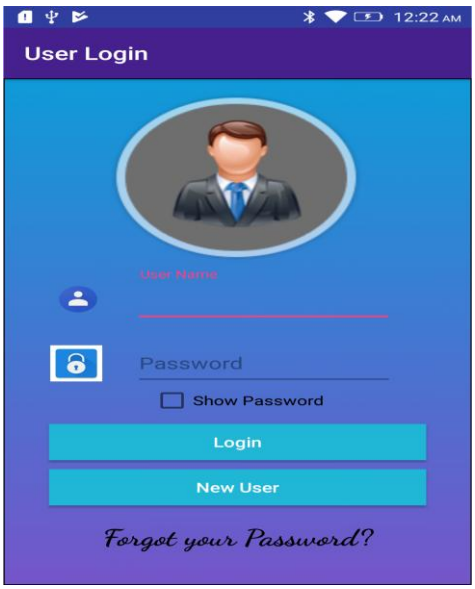

Fig. 8. I-doc application for Citizens Registration.

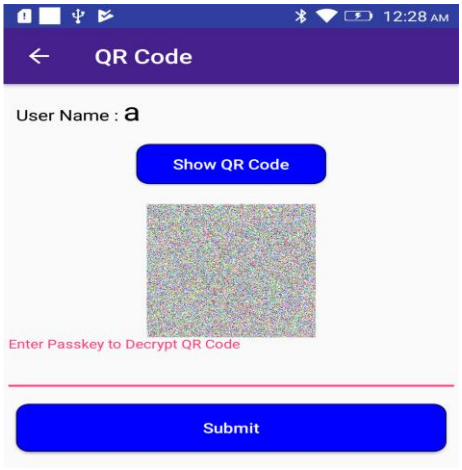

Fig.9. Generation encrypted Chaotic QR code on citizen's Android mobile phone from RTO cloud server.

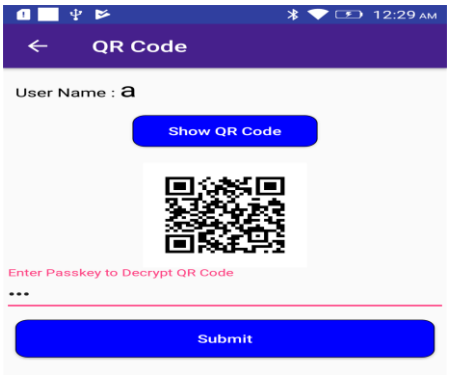

Fig.10. User enter passkey is valid then view original QR code.

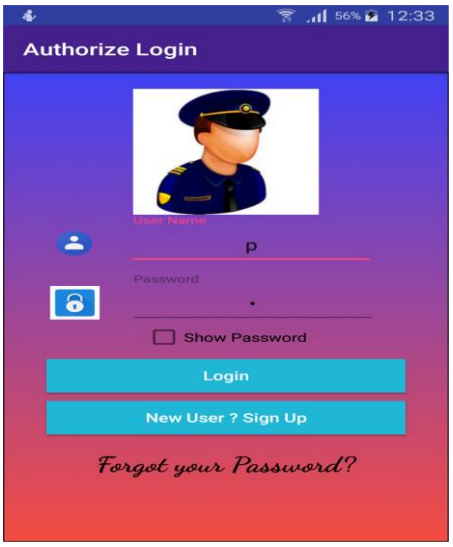

Fig.11. I-doc application for Verifier Authority Login.

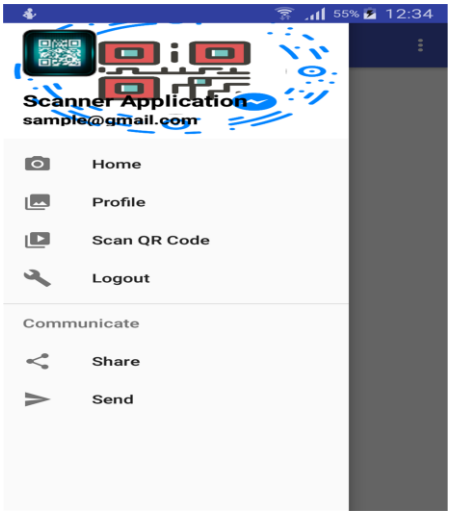

Fig. 11. Scanning QR code of user.

Fig. 12.View Original Documents of user (PUC).

Fig. 13. View Original Documents of user (Driving License)

6.1 Security Analysis of AES algorithm for storing data time on I- doc cloud server.

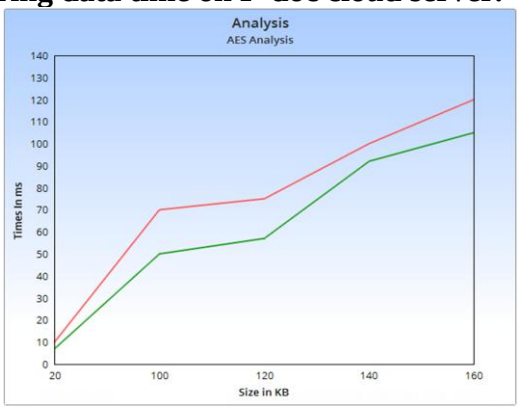

Fig. 14. Performance Analysis of AES and Parallel AES using encryption and Decryption technique.

7. CONCLUSION

Advanced Digital Locker scheme is used for vehicle verification mechanism for solving the real-time problem which takes safe custody of the important documents such as Driving License, PUC, Insurance, RC Book etc. which Verify the Vehicle User Electronically, so result in much more transparency, authenticity, and also reduce corruption of fake documents and also reduces the administration overhead of RTO Admin by minimizing the use of papers.

In future work the one new feature will be adding which is wallet system when the fine penalty will be required, it will cut the amount of transaction from user android application wallet, gives fine penalty details for a particular user through GPS to RTO cloud server. The main benefit of future work is to remove frauds.

8. REFERENCES

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