Voting With Two-Dimensional Quick Response Code Using Web And Mobile Application

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Abstract- *This project is to create a concept of voting application in an android phone. In this method the voter has to register with our application and the QR code will be generated for the user when the election commission has verified the voter's registered information based on the voter details. In this method the voter details are made to hide in the QR code. The main purpose of implementing this concept is to increase the voting percentage and to decrease the illegal activities in casting the vote. In the proposed method the concept of e-voting application is created using android. The authentication is done through the scanning of QR code through the mobile scanner application. In this method the voter has to register using the application by feeding their data and the QR code will be provided once the authentication is successful. On scanning the QR code the voter will be asked for the password. Once the authentication is done the voter is made to proceed with the voting process. When the user registers their vote then these voting details are encrypted and stored in cloud. Election committee then views these details by the process of decryption using key. After the voter has voted with our application those information are stored in the database, so that we can avoid the data stealing from unauthorized person. The main purpose of implementing this concept is to avoid fake votes and make ease of voting process to the public.*

Keywords- Quick Response code, Acknowledgement number, Android smart phone, authentication, scanning

I. INTRODUCTION

The democratic system in India is based on the principle of universal adult suffrage that any citizen over the age of 18 can vote in an election. India was earlier using paper ballots and counting used to take hours or days. Now they have moved to Electronic Voting machines. People who are above 18 can get enrolled as a voter. The first step is to get the voter ID and they are allowed to vote using this ID. But, this process has led to many fraudulent during elections. There are some people who cast fake vote in the name of others to increase the vote count of a single party.

QR code is a type of two dimensional barcode which is machine readable that contains information about the item to which it is attached. It became popular for its fast readability and greater storage than standard UPC barcodes. Applications include item identification, product tracking, document management and time tracking. It consists of black squares that are arranged in a square grid on a white background. It can be read by a camera and also by other imaging devices. The data can be acquired from the patterns that are in horizontal and vertical components of the code.

In order to avoid this, we use QR code for authentication where the voter details are encrypted and kept in the QR code by election commission. During the day of election, the election booth generates the QR code so that we can scan that code and further voting process is done. This method can reduce the people who are casting the fake vote. QR based voting system is one of the best method to avoid frauds during election. This is carried out by using mobile application in the user side and two web applications for election commission and election booth respectively.

II. PROPOSED SYSTEM

The proposed system resides in the new concept of QR-Code and Scanner application. Candidate details are made to hide in the QR-Code. Through scanner application the QR-Code is scanned and details are retrieved. Then the voting is performed. In this system, we are using QR-Code for recognizing the image codes using smart phones to provide various services that can recognize any authenticity of any voter details. QR-Code verifies voter ID number by capturing it through the smart phone then decodes and sends to the server for authentication. This forwards the selected voter ID number list to the server and the response received from the server enables the consumer to decide on the voter authenticity. After the voting process the details are encrypted and stored in the cloud. Finally the election server, administrator will sort out the final result by decrypting the data from the server using the key. Here there is no chance of increasing the vote count.

III. SYSTEM ARCHITECTURE

Here the voter will initially enter the details and request for the access to the scanning page. Till that it will be in pending state and if the Election Commission accepts the request then it will be changed to active status. The Election Commission has the access to add the candidates, can view the list and etc. The Election Commission should grant the permission by verifying the details of the voters. In the Election Booth the user has to specify their voter ID, it will check for the details in the database and if it matches the data the Election Commission will create a QR code by encrypting the user details in it else, it will throw a error saying "Invalid User". If it is a valid user then the candidate list in the specified ward will be displayed. After voting the vote will be sent to the Election Commission and the voter's account will be deactivated.

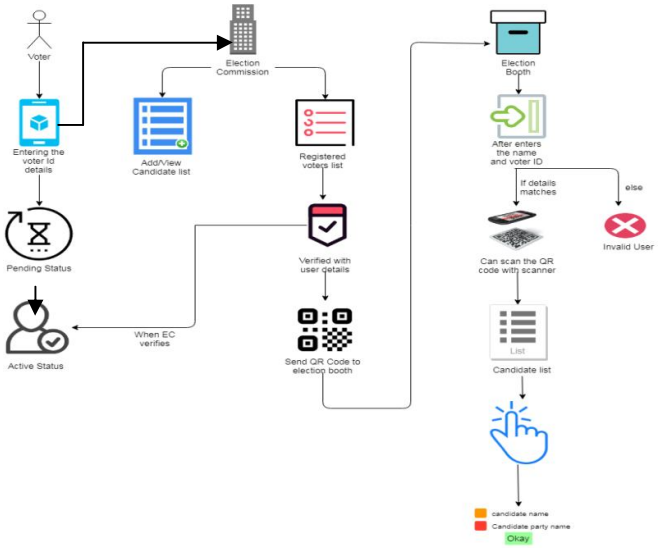

Fig 1. System Architecture

IV. EXISTING WORK

In previous studies, the biometric concept is used where the scanning of fingerprint is done. Even though it has some advantages, for some people it is very intrusive, because it is still related to criminal identification. Now-a-days biometrics is used for voting process. It can reduce the fake vote, but it has many disadvantages. There are two levels of verification which increases the waiting time in booth. The first level is biometric verification and next level is voter ID verification. Obviously, there is a time delay. Even though there is two levels of verification, we cannot assure for proper authentication. Also, election booth must have more than 2 biometric scanners to avoid long queue. But it is complex and the cost is high. So we are moving to QR based authentication and voting system.

V. RELATED WORK

1. To detect the two-dimensional QR codes, we use an algorithm that localizes and segments the QR codes. The localization involves a convolutional neural network. Then image processing algorithm was applied which segments the QR code and process it. This approach was robust to detect QR codes with rotation and deformation.
2. In voting system, we also used public key infrastructure (PKI) and hash function to present a key management on e-voting system which provides anonymity of the voters and ensures verifiability and security of the voters.
3. A framework was suggested by using hashing techniques which is based on the concept block creation and block sealing. This block sealing concept is used to make the block chain adjustable to meet the need of polling process. Here it can only accessed by government and no unauthorized access can be made from outside.
4. A comparative analysis on e-voting system using blockchain was introduces in which there is no single owner of blockchain and anyone can participate depending upon the type of blockchain. It is a read and write only database where once data is written it cannot be altered.

VI. MODULES

1. Registration and Login
2. Authentication
3. QR code creation
4. Voting Process
5. Update Database

1. REGISTRATION AND LOGIN

The basic details like voter name, voter ID, aadhar number, DOB, mobile number and ward number will be entered in the field for the registration purpose. After the registration the request is submitted to the Election Commission server for authentication and if the request is accepted then an acknowledgement number will be sent to the registered mobile number. After the login the vote can be blocked as per the user's wish.

Fig 2. Login Page

2. AUTHENTICATION

This module represents the authentication, which is used for the voter to login their details for the voting process. The request by the user will be either accepted or declined using "ACTIVATE" and "DEACTIVATE" buttons by the Election Commission. Logged voter is redirected to the scanner module if he is granted with the privilege for the voting process. The validation processes are done on the web server.

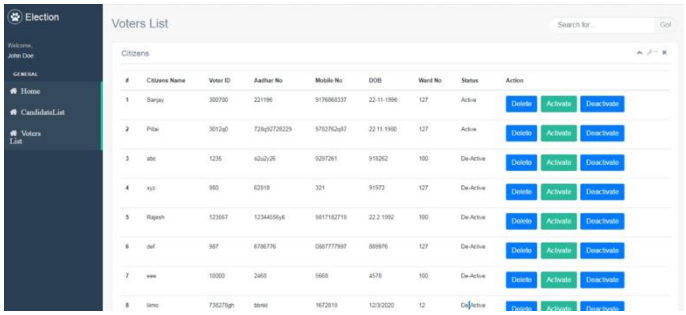

Fig 3. Authentication

3. QR CODE CREATION

This module is used to scan the QR code and read the value of the QR code inside the mobile. QR code is a matrix bar code designed to the read by smart phone. The code contains of black modules arranged in a square pattern on a white background. The voter's information is encoded in the QR code. If the voter selects the candidates, the details will directly forward to the server.

Fig 4. QR Code

4. VOTING PROCESS

This module has the process of storing the selected candidate information from client, which are send through the web service. All the information will be stored in the database. We are maintaining a centralized server in order to receive the selected voter list from the database through internet. In this module the candidate list is retrieved from the database based on the ward number. The voter will use this list to perform the voting.

Fig 5. Voting Page

5. UPDATE DATABASE

After voting through the application by the user, data regarding user and voted information are processed in two stages. In the first stage voted information are updated in the cloud storage database. Finally this updation process in cloud storage can avoid access to voted information from unauthorized persons.

VII. FUTURE IMPROVEMENTS

1. The conformation can be made at the election booth using fingerprint sensor by linking it with the aadhar card details.
2. The notification should sent by the election commission to the registered individual.
3. For verification the picture should be entered in the election booth after entering the details.

VIII. CONCLUSION

Now-a-days the QR code is used in various places for secured payment transactions and also for secured transmission of messages. This system improves the security by involving QR code to securely log in to the system and to cast the votes. Thus it will decrease the chances of forgery that can be made in voting process.

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