

North Asian International Research Journal Consortium

North Asian International Research Journal

Of

Science, Engineering and Information Technology



NAIRJC JOURNAL PUBLICATION

North Asian
International
Research Journal Consortium



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ISSN NO: 2454 -7514

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QR BASED ELECTRONIC VOTING SYSTEM

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Abstract: *The main purpose of this project is to develop a secure Electronic voting system using face recognition method, for face recognition we use AADHAR card database. At the time of voting in the elections, the electronic voting process authentication can be done using camera, which enables the electronic ballot reset for allowing voters to cast their votes. Thus using this kind of voting system voting percentage is increased. As voting is our right we can choose our leader for development purpose. Now a day number of people avoid voting because they do not like to stand in a queue and wait for their turn. Thus they can vote from home using our project and vote easily. Now the aadhar is useful for every application such as banking, any legal document, etc. Thus aadhar card is main identification proof for our project.*

Key words: Aadhar card, face recognition, GSM, QR code, etc.

I. INTRODUCTION

The aim of Electronic voting system to develop a secure system using face recognition method, for face recognition we use database which is stored in a computer. At the time of voting in the elections, the electronic voting process authentication can be done using camera, which is capture face and also quick response code enables the electronic ballot reset for allowing voters to cast their votes. It ensures that vote casting cannot be altered by unauthorized person. Instead of voter

identification card, aadhar cards are used as voter identification. The voters scan the QR code of aadhar card and also verify the face with available database. As the voter is available in database he/she will cast their vote by pressing corresponding switch. If the voter database is not available in database, voter cannot cast his vote. Though voter tries to cast his vote or tries to cast vote using others aadhar card the buzzer will be turn on and the system cannot allow voter to cast his vote. Once authorized person vote the confirmation message will be send on his mobile number by using GSM. The same message will be display on a LCD.

These days the aadhar card has been implemented by the government of India as an identification proof for each individual person. In this card all the details like name, address, age, gender is mentioned. QR Code is Quick Response code. It is also called as a two dimensional bar code or matrix barcode. Quick response code can hold information more than other bar codes. The quick response code encodes the numeric, alphanumeric, byte/binary and kanji to store data. A quick response code consists of black modules (square dots) arranged in a square grid on a white background.

Security is a heart of electronic voting process. Therefore the necessity of designing a secure e-voting system is very important. There are different levels of electronic voting security. Therefore serious measures must be taken to keep it out of public

domain. Also, security must be applied to hide votes from publicity.

A. LITERATURE REVIEW

An electronic voting system is a voting system in which the election data is recorded, stored and processed primarily as digital information. E-voting is referred as "electronic voting" and defined as any voting process where an electronic means is used for votes casting and results counting. E-voting is an election system that allows a voter to record their ballots in an electrically secured method. A number of electronic voting systems are used in large applications like optical scanners which read manually marked ballots to entirely electronic touch screen voting systems. Specialized voting systems like DRE (direct recording electronic) voting systems, RFID, national IDs, the Internet, computer networks, and cellular systems are also used in voting process.

B. OBJECTIVE OF THE PROJECT

- Develop a secure Electronic voting system
- Increase voting percentage

II. EXISTING TECHNOLOGY

The technology which is used in current method is electronic voting (e-voting) system is a voting system in which the election data is recorded, stored and processed primarily as digital information. There are two types of e-voting: On-Line and Offline. Authentication of Voters, Security of voting process, Securing voted data are the main challenge of electronic voting. This is the reason why designing a secure electronic voting system is very important. In many proposals, the security of the system relies mainly on the black box voting machine. But security of data, privacy of the voters

and the accuracy of the vote are also main aspects that have to be taken into consideration while building secure e-voting system. In this project the authenticating voters and polling data security aspects for e-voting systems was discussed. It ensures that vote casting cannot be altered by unauthorized person. The voter authentication in online e-voting process can be done by formal registration through administrators and by entering one time password. In Offline e-voting process authentication can be done using Iris recognition, finger vein sensing which enables the electronic ballot reset for allowing voters to cast their votes. Also the voted data and voters details can be sent to the nearby Database Administration unit in a timely manner using GSM System with cryptography technique.

III. PROPOSED WORK BLOCK DIAGRAM

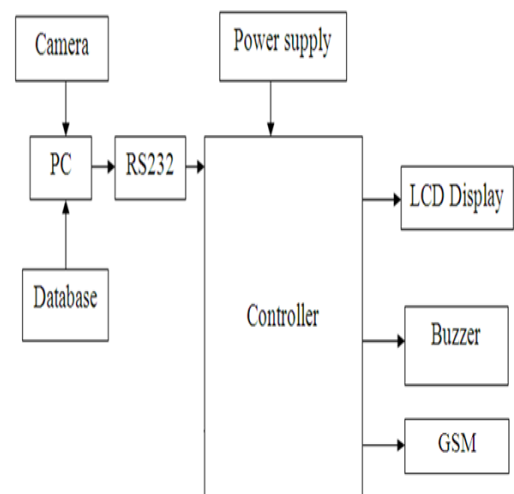


Fig.1 Block diagram for system

- **Camera:**

The camera will capture the quick response code which is present on aadhar card. The captured quick response code will check with available database. It was a newly developed database which is having all

the information about the people. By using this database we took the voter's information will be stored in the Personal Computer. The face is compared by the available database information if the user is available then only he/she will cast their vote else liquid crystal display will display message as 'Access denied'.

- **Controller (ARM7):**

The controller will help for checking is the user is present in database or not. If the user is not present then the buzzer will ON indicating that unauthorized person is going to vote. The controller is used for controlling purpose and is connected to the controlling unit. The controller is programmed in such a way if user is not available in database Lcd will display message as 'Access denied'. If user is available then access is give to user.

- **Security:**

The main goal of a secure e-voting is to ensure the privacy of the voters and of the votes. Face recognition devices Capture the face and compare or match to database, capture face and database face matched means this person will be valid for polling section and if condition is satisfied automatically, electronic voting machine buttons will be activate otherwise deactivate buttons. After the electronic voting machine buttons are activated, the voter cast his/her vote. After completion of his/her voting process, a "voting process completed" message will be displayed on the liquid crystal display screen.

IV. QR CODE IMAGE:



Fig.2 QR Code

QR code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed for the automotive industry in Japan. A barcode is a machine-readable optical label that contains information about the item to which it is attached. A QR code uses four standardized encoding modes (numeric, alphanumeric, byte / binary, and kanji) to efficiently store data extensions may also be used. The QR Code system has become popular outside the automotive industry due to its fast readability and greater storage capacity compared to standard UPC barcode. Applications include product tracking, item identification, time tracking, document management, general marketing, and much more.

For security purpose we are using QR code. As the QR code is different for every person. This QR code cannot same as any others code thus security can be achieved.

V. FACE RECOGNITION

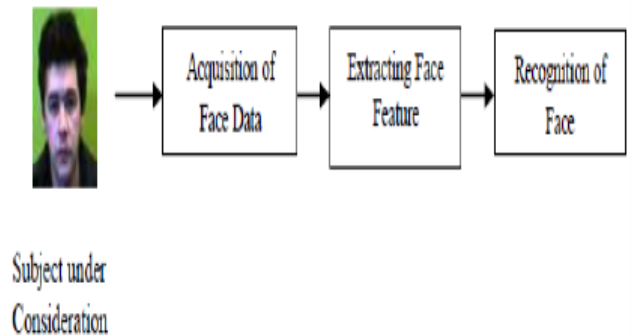


Fig. 3 Face recognition system

Face recognition is a type of biometric software application that can identify a specific individual in a digital image by analyzing and comparing patterns. Facial recognition systems are commonly used for security purposes but are

increasingly being used in a variety of other applications.

Principal component analysis (PCA) is one of the most popular methods for reducing the number of variables in face recognition. In PCA, faces are represented as a linear combination of weighted eigenvectors called as Eigen faces. These eigenvectors are obtained from covariance matrix of a training image set called as basis function. The number of Eigen faces that obtained would be equal to the number of images in the training set. Eigen faces takes advantage of the similarity between the pixels among images in a dataset by means of their covariance matrix. These Eigen vectors defined a new face space where the images are represented.

For face recognition using PCA algorithm we have to calculate different matrix.

1. Eigen Values and Eigen Vectors:

In linear algebra, the eigenvectors of a linear operator are non-zero vectors which, when operated by the operator, result in a scalar multiple of them. Scalar is then called Eigen value (λ) associated with the eigenvector (X). Eigen vector is a vector that is scaled by linear transformation. It is a property of matrix. When a matrix acts on it, only the vector magnitude is changed not the direction.

$$AX = \lambda X, \text{ where } A \text{ is a vector function.}$$

$$(A - \lambda I)X = 0, \text{ where } I \text{ is the identity matrix.}$$

2. Mean and Mean Centered Images:

Training set $\Gamma = [_1 _2 \dots _M]$

The mean face (Ψ) is the arithmetic average vector as given by:

$$\Psi = 1/M \sum_{i=1}^M \Gamma_i$$

3. Covariance Matrix:

A covariance matrix is constructed as:

$$C = AA^T, \text{ where } A = [\Phi_1; \Phi_2; \dots; \Phi_M] \text{ of size } N^2 * N^2$$

Eigen vectors corresponding to this covariance matrix is needed to be calculated, but that will be a tedious task therefore, for simplicity we calculate $A^T A$.

4. Face Recognition:

"Face Recognition" generally involves two stages:

- a. Face Detection: where a photo is searched to find any face (shown here as a green rectangle), then image processing cleans up the facial image for easier recognition.
- b. Face Recognition: where that detected and processed face is compared to a database of known faces, to decide who that person is.

To perform PCA several steps are undertaken:

- a. Stage 1: Subtract the Mean of the data from each variable (our adjusted data)
- b. Stage 2: Calculate and form a covariance Matrix
- c. Stage 3: Calculate Eigenvectors and Eigen values from the covariance Matrix
- d. Stage 4: Chose a Feature Vector (a fancy name for a matrix of vectors)
- e. Stage 5: Multiply the transposed Feature Vectors by the transposed adjusted data

VI. ADVANTAGES

Highly secure system: This system is consisting face recognition for security purpose thus bogus voting is avoided and person should present to cast vote.

Time saving: This system save time to stand in a queue and wait for their turn. The person can vote from their place.

VII. SYSTEM FLOW

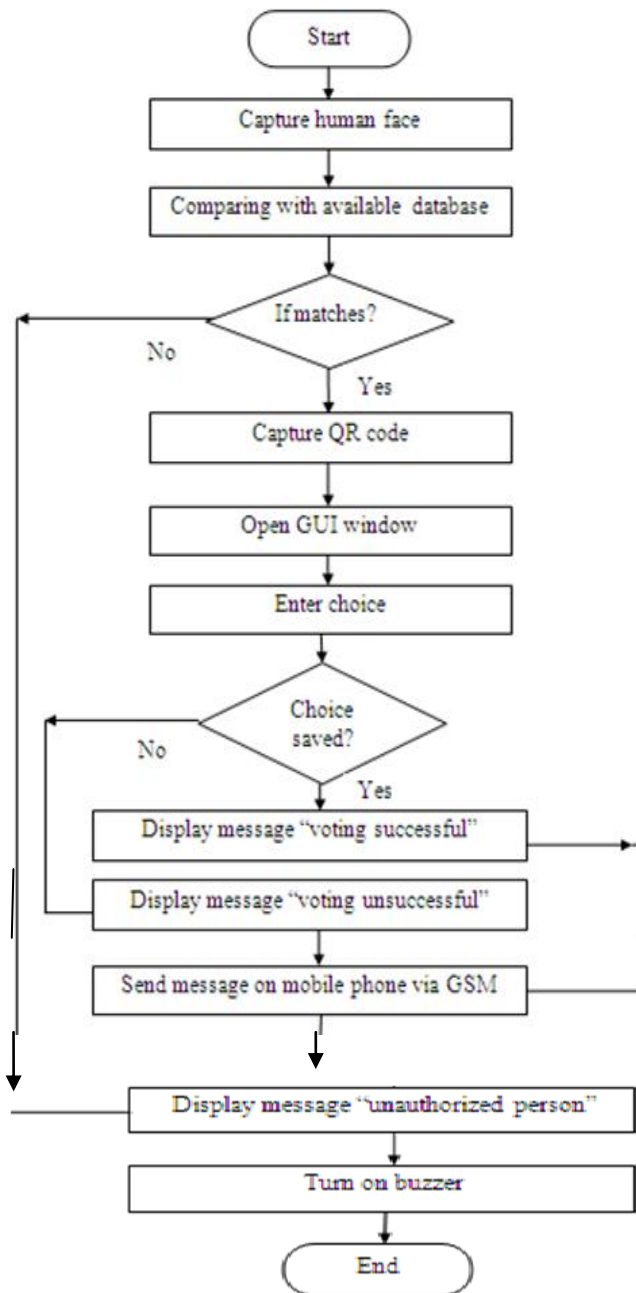


Fig. 4 Flow of system

VIII. FUTURE SCOPE

An interesting future study might involve simulating voting method at different gateway. Our future work is to interlink all the polling booths within a state with proper internet security so that voter can vote from any booth belonging to the same state. Hence, the design implemented in the present work provides portability, flexibility and the data transmission is also done with low power consumption. This system is fast and more secure than the existing system and also reduces the manpower. Thus we can conclude that this e- voting system has several advantages over the traditional way of voting.

IX. REFERENCES

- ❖ Mr. A. Jagan, AP, Akila. P, and Nasrin. N., "QR Code Based E-voting System Using an Android Smart Phones", Volume 13, Issue 2 – MARCH 2015.
- ❖ D. Krishna, T. Hemalatha, G. Dhana Mani Shankar, K. Bala Krishna and V. Bala Subhramanyam, "Aadhar Based Electronic Voting System and Providing Authentication" Volume-4, Issue-2, Mar-Apr 2014.
- ❖ Prasad Dimple, Sangale Shradha, Shinde Sandhya, "e-voting system using QR code and Mobile OTP based on Android platform for modern individuals", International Journal of Scientific & Engineering Research, Volume 5, Issue 10, October-2014.
- ❖ Alaguvel. R, Gnanavel. G, Jagadhambal. K, "Biometrics using Electronic Voting System with Embedded Security", International Journal of Advanced Research in Computer Engineering & Technology Volume 2, Issue 3, March 2013.
- ❖ Jagriti Kumari, Sabi Pal, Arthi R, Prawin Angel Michael, "ELECTRONIC VOTING

MACHINE USING ZIGBEE”, International Journal of Research in Engineering and Technology Volume: 03 Special Issue: 07 | May-2014.

- ❖ Dr. Aree Ali Mohammed Ramyar Abdolrahman Timour, “ Efficient E-voting Android Based System”, International Journal of Advanced Research in Computer Science and

Software Engineering Volume 3, Issue 11, November 2013.

- ❖ Kausal Malladi, Srivatsan Sridharan, L. T. Jay Prakash, “Architecting A Large-Scale Ubiquitous E-voting Solution for Conducting Government Elections”, International Conference on Advances in Electronics, Computers and Communications 2014.

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