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E-Voting with Aadhar

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Abstract: ***This project proposes a secure E-voting system that uses UIDAI or Aadhar database as its backend. The system ensures authentication of an individual by matching fingerprints and eligibility is checked by calculating the age of the voter thus making the existing voting cards redundant. The system can handle voting at different government sector such as parliamentary, Municipality, State legislative assembly, etc. simultaneously. The project will bring transparency in the voting process by assuring the voters that their votes will be in favour of the candidates of their choice. Besides electronic recording and counting of votes will be faster, more accurate and less labour intensive. The design of this system will make voting process more convenient and may therefore lead to improve the turnout.***
Keywords: Fingerprint, Mobile applications, m-commerce, Wireless Communication.

I. INTRODUCTION

Previously voting was done through ballot box and was later on replaced by EVM (Electronic voting machine) system. Even though the system is changed, people still face a lot of difficulties while casting their vote. One of the main problem is the amount of time they have to spend while standing in the queue to cast vote.

Government faces difficulty in making the voting system more secure and also in authenticating the identity of a user. There are many cases of duplicate voting and vote forging. Also, people residing away from their home town don't have the option to cast their votes. Henceforth, many people don't even appear for voting.

The existing system of voting is highly manual. In this system voter has to go to the poll booth and have to stand in queue to cast their vote.

After the vote has been casted the EVM has to be brought to a central hub where counting of the vote's takes place in which lots of time is wasted and sometimes it can lead to vote forging.

The online voting system was developed to aid and to take care of the chores of the current system to offer voters a secure and authenticated system to vote.

II. MATHEMATICAL MODULE

Mathematical Model for Proposed System

Let S be a system that describes voter details. S={..}

Identify input as I S={I,..}Let I ={i}The input will be voter fingerprint.

Identify output as O S = I,O, O= The receiver will receive the Voter all details like Name, Address, Mobile No, Age etc.

dentify the processes as P S={I,O,P,..} P={E,D} E={parameter, Voter Details.}D=parameter, Availability, Fingerprint}

Identify failure cases as F S={I,O,P,F,. F=Failure occurs when the data is accessed by an unauthorized user.

Identify success as s. S={I,O,P,F,s,} s=When data is accessed by authorized user.

Identify the initial condition as Ic S={I,O,P,F,s,Ic,}Ic=Fingerprint access.

A. Architecture

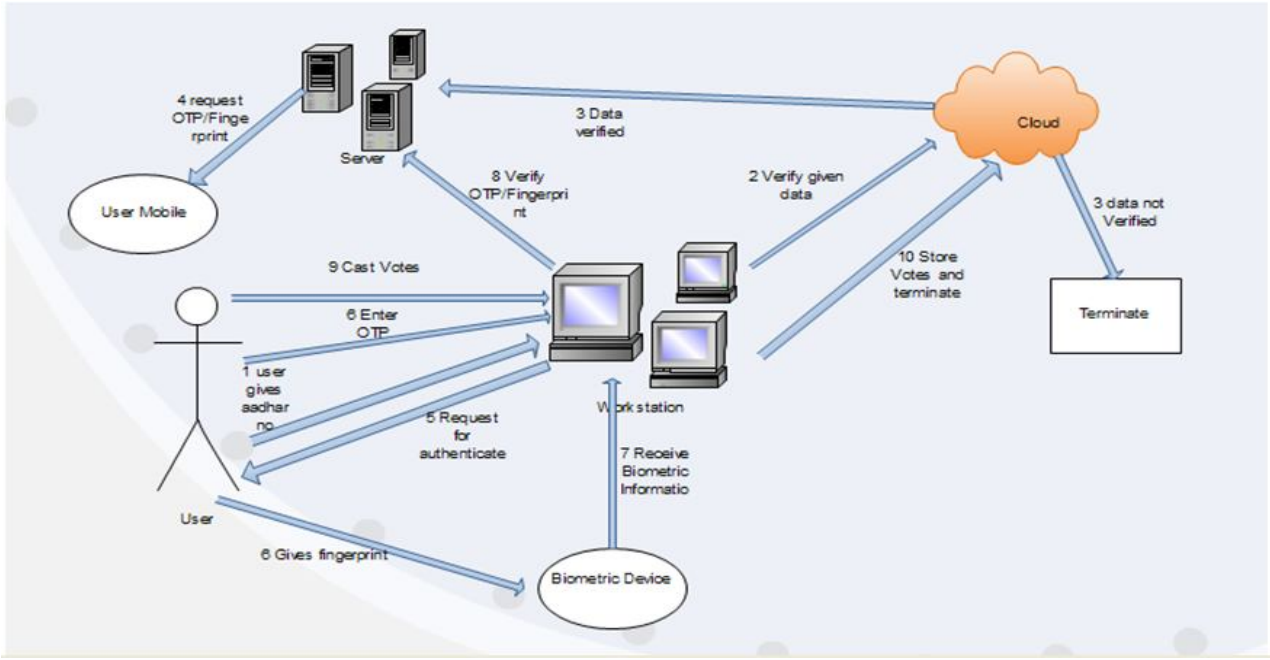


Fig. Architecture of E-Voting

B. Module Wise Explanation

1) Administrator module: Functionalities provided:

a) Create usernames and passwords

b) See voting details

2) User Module: Functionalities provided:

a) Register/ Login

b) voting

3) Algorithm

C. AES Algorithm

AES is a symmetric block cipher that it uses the same key for both encryption and decryption. The AES standard states that the algorithm can only accept a block size of 128 bit. The whole data block is processed in parallel during each round using substitutions and permutations. The input is a single 128 bit block both for decryption and encryption and is known as the in matrix.

Inner Working Rounds:-

Add round key stage took after by 9 rounds of four stages and a tenth round of 3 stages. This applies for both encryption and decryption with the exception that each stage of a round the decryption algorithm is the inverse of its counterpart in the encryption algorithm. The four stages are Substitute bytes, Shift Rows, Mix Columns, and last one is Add Round Key. The tenth round simply leaves out the Mix Columns stage. The first nine rounds of the decryption algorithm consist of the following:

1) Inverse Shift rows

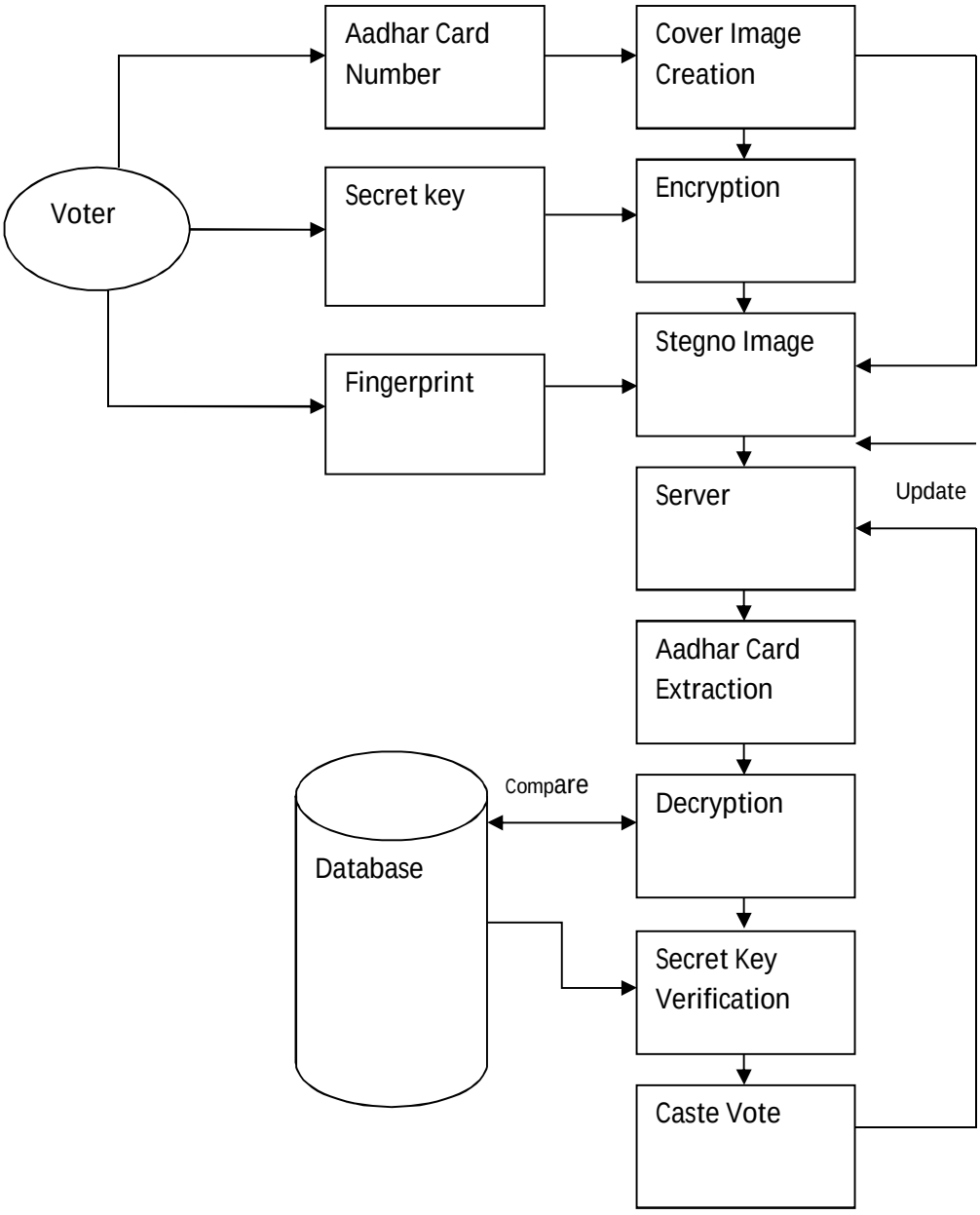
2) Inverse Substitute bytes

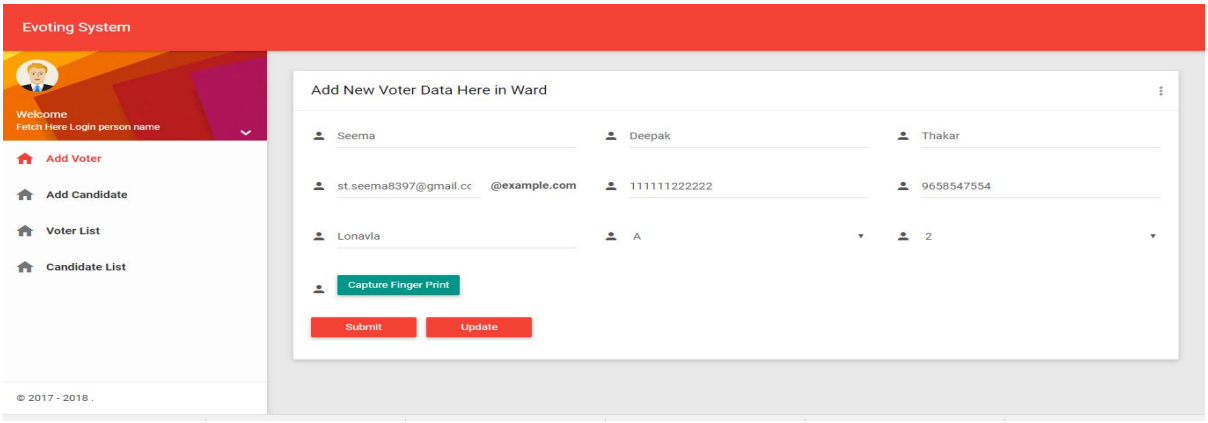
3) Inverse Add Round Key

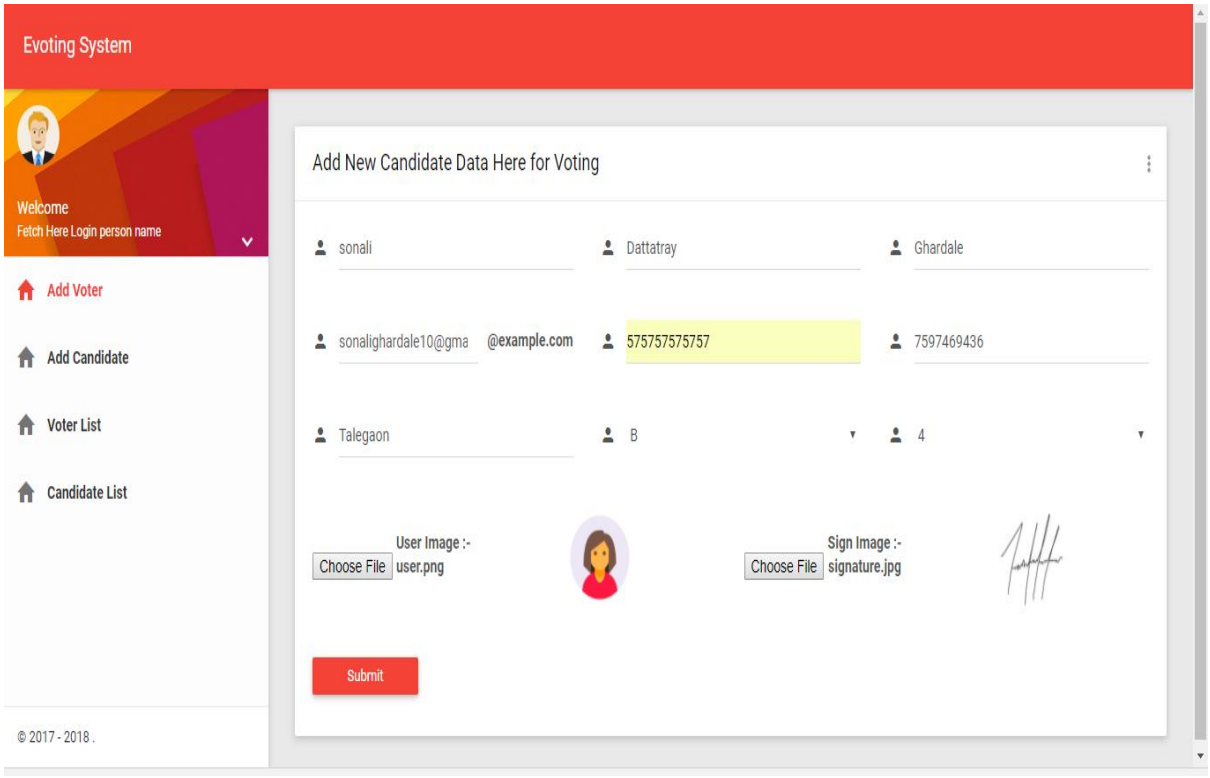
4) Inverse Mix Columns.

D. Implementation

In this system we are taking input from user as Aadhar card number and fingerprint. This information is stored in encrypted format for security. When user comes for voting then this information is matched with user input information. If Aadhar card number and fingerprint is matched then only user can allowed for voting otherwise system ask to user for correct information. If information is matched then voter able to see the candidate list and user can vote. Once user votes one time then he/she cannot vote again. If voter try to give duplicate vote then system gives message to voter. So this system gives us accurate and non-duplicate vote.







III. CONCLUSION

This project can be used for voting since it overcome all the drawbacks of ordinary voting machine also provide additional security. Its main advantage is that since fingerprint of every person is unique and hence this system completely reduces the chance of invalid votes.

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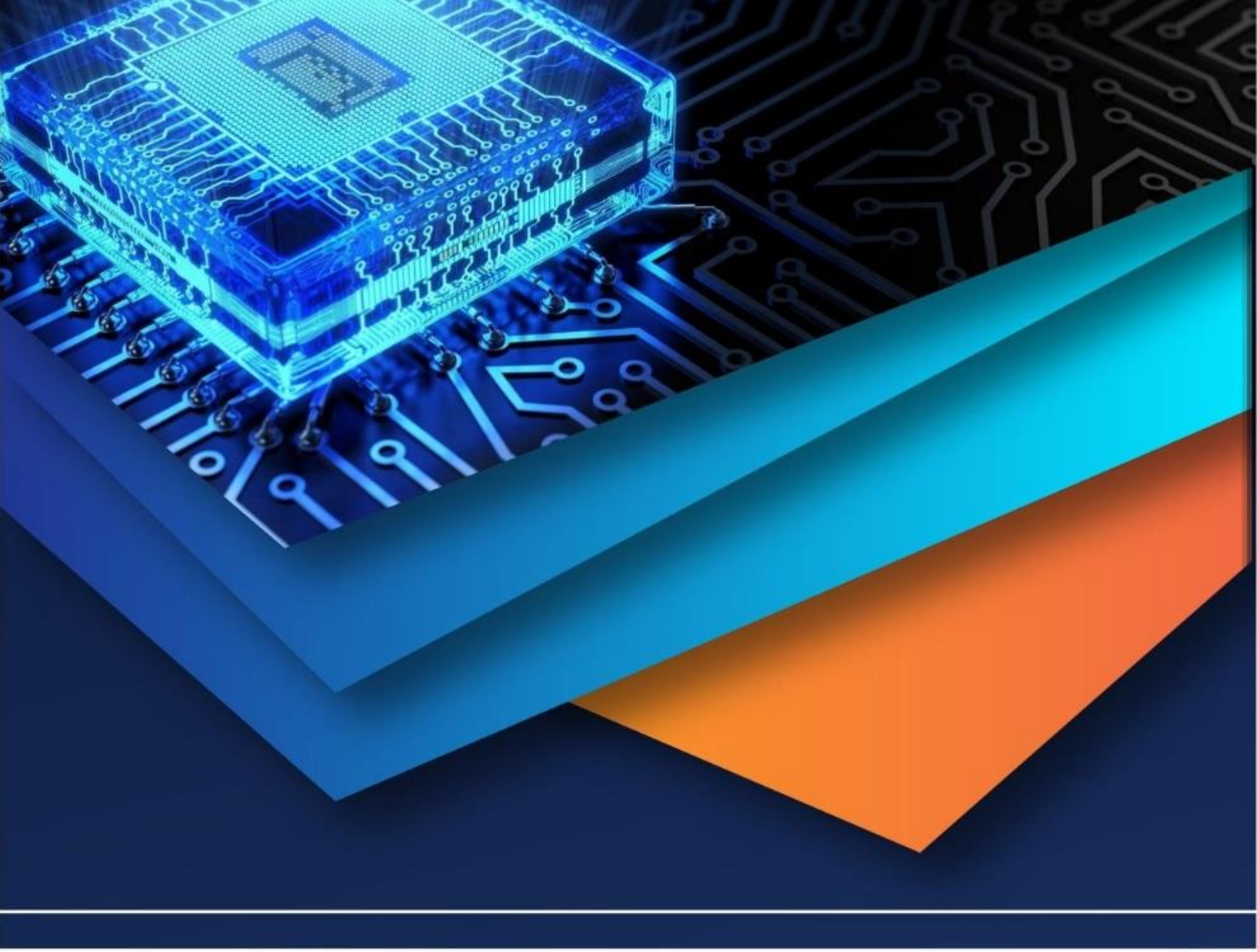

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