

## Secure Mobile Based E-Voting System

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**Abstract**— The E-Voting means the voting process in election by using electronic device. In this proposed system described how the android mobile phones are efficient and can be used for voting. The android platform is used to develop an application. Our system support simultaneous voting due to the distributed nature of the database. During election electronic device is used for voting process. A voter may only need to register only once for a particular election and that does all, voter need to cast his /her vote without actually have to present at the voting cell. The registration process must be done at Booth application for once then voter is been given a facility to vote from his/her Android mobile phone irrespective of his/her location. This proposed system suppose to propose a new e-voting system, which ensures voter confidentiality and voting accuracy, thus providing an important framework that based on unique identification ADHAAR ID (U-ID) number. An online solution is very useful as the information about the voters and the election committee is also made available to the people in this system.

**Keywords**— *Android, E-voting system, Open sources, Web services, Election Committee.*

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### I. INTRODUCTION

Nowadays voting for any social issue is essential for modern democratic societies. So it is becoming very important to make the voting process more easy and efficient. Also the rapid development in operating system of the mobile phones gives rise to the application development on the large scale. The main reason behind the tremendous development in android application development is that the android is an open source operating system. It means that the software developers can have customization rights. As well as the software development kit provides tools to build and run android applications. Almost 90% of the people around the globe are aware of the technology and use it in their daily life. Mobile phone is the only device which is carried and useful during time of political elections. Keeping this point in mind, the idea of developing this application has been emerged to provide to improve the security and accuracy of Electronic Voting related help.

In our propose system design android application for E-voting (electronic voting). So, the abundance of security threats in e-voting systems and their increasing popularity make a strong case for the need to propose new designs, protocols, techniques and tools for their design, development as well as their security assessment.

### II. LITERATURE SURVEY

In earlier method, voter has to cast their vote by putting the stamp in front of their favourite candidate name [2]. And then by folding that ballot paper, it is inserted into the ballot box. This is very time consuming. So during the next election,

Election Commission of India, has introduced a new method of polling i.e., EVM (Electronic Voting Machine). The Electronic Voting Machines (EVM) consists of 2 components:

1. Control Unit. 2. Ballot Unit.

Control unit stores and assembles votes. And the Ballot Unit is used by Voter and it is placed at the election booth. These both units are connected via a five meter cable [2]. The system is powered by a battery pack inside the control unit. It is a six volt alkaline battery, which means they can easily be used in rural areas where there is no electricity. A voter has to simply press a button in front of his favorite candidate to cast his/her vote [2]. Only six votes in a minute can be accepted by the machine, and after each vote, machine locks itself and can be unlocked using a new ballot number. The polling booth is always presided by a government officer who is in charge of the controlling unit of the EVM. To accept another ballot the machine is unlocked by the in charge officer. This system is tamper-proof and a person won't be able to cast more than one vote. One machine is able to accept up to 3,840 votes, and cater to 16 candidates each.

Using Blind signature by D. Chaum, it mainly lies on simplifying the algorithm used in the voting process and it can secure voting data during the transmission. When In this proposed system use blind signature in the election, its untraceability is the major issue as voters might not be able to track their votes [5].

DRE-Direct Recording Electronic voting system by S. Hashimi, S. Komatineni, and D. MacLean[6], it records votes by means of an electronic display provided with mechanical or electro-optical components that can be activated by the voter, that processes voter selections by means of a computer program, and that records that processed voting data in memory components. It produces a tabulation of the voting data that is stored in a removable memory component. The system may further provide a means for transmitting the processed vote data to a central location in individual or accumulated forms for consolidating and reporting results from precincts at a central location. DRE systems additionally can produce a paper ballot printout that can be verified by the voter before they cast their ballot.

### III. PROPOSED SYSTEM

In our propose system we design android application for E-voting (electronic voting). So, the abundance of security threats in e-voting systems and their increasing popularity make a strong case for the need to propose new designs, protocols, techniques and tools for their design, development as well as their security assessment.

The new implemented voting protocol has two main sections: The voter and administrator sections. The voter(which can be found at home, in a working station, in a special polling station or any other device have the function of performing the Authentication and voting).The administrator performs the function of voter and candidate registration, authorization and validation of voter, database and counting and the result. Administrator can't see the voting results according to vote options.

In this proposed system initially the voters should have to provide their Aadhar number to authenticate themselves and establish their user-ids. This constraint is imposed to ensure that only the genuine person is allowed to vote in the elections. On the voter's side in this proposed system have demo image of fingerprint scanner for an enhanced security. Our main focus is on the session OTP that is provided to the voter during the process of casting a vote. The OTP is nothing but a One-Time Password that is required to continue with the process of voting and this makes the system secure and free from misuse by an external party.

After that voters get verified according to the OTP. Voter directly login to the system to perform voting operation.

Working:

1. Citizens can register online via the android application. The voter's credentials will be verified by the Election committee.
2. After the citizen's application gets approved, he will receive a secret unique key on his e-mail id, on the voting date.
3. On voting day, registered citizens will be able to login to their account, and vote online. For additional verification, an secret key through email will be sent to their registered mail id, which has to be entered during registration.
4. Election committee or administrator can authenticate and validate the voter as well as candidate.
5. Voter will caste his/her vote to the appropriate candidate according to their background information provided through the registered account.
6. Election committee then count the region wise total votes per candidate.
7. Result will be displayed on the prescribed date and time.

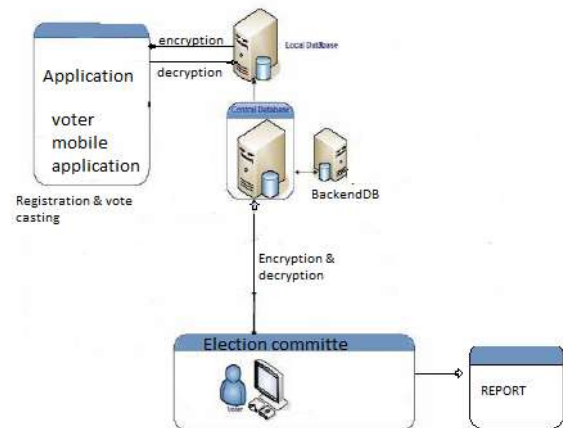


Fig 1: Design & Implementation

### IV. SYSTEM ARCHITECTURE

In the proposed system there are two types of users were defined. Set of participants who try to access the E-voting application and set of eligible voters which use the application available on smart phones. For the implementation of the application on the smart phones, it was assumed that every device is associated to its owner, through a validation database.

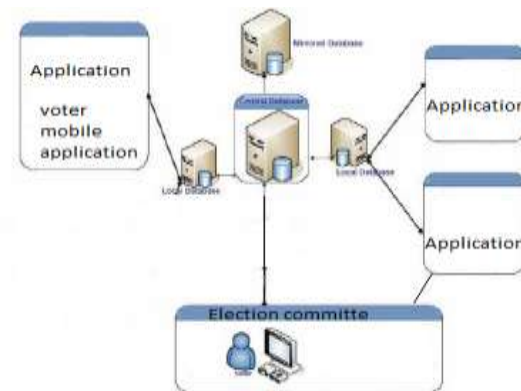


Fig. 2: Architecture of E-Voting application using Android smartphone

### V. MODULES

**Registration Activity:** Administrator is responsible for storing the information of the new voter modify any voter's information, updating and also some operations related to candidate information. EC is the election committee that will generate the report and also declare the voting results.



Fig 3: Registration form

**Candidate List:** Web Services with Apache Tomcat Server is used that stores application programs and data files accessed by

the clients in the network. Database is maintained in server computer and all the main codes related to our project is stored in this server computer. For storing database, MySQL database is used. Both Android system and the server are linked to the same MySQL database in order to the voter can vote through only one time and if he/she tries to vote again the system will deny him/her.



Fig 4: Candidate List

**Login Activity:** Client is the voter having an android app on his/her smart phone. Count of the particular candidate is updated in the server. The results of voting generated by server will get displayed to client on their android app.

VI. DATASETS

Data information of aadhar card from the administration, with their information about age eligibility, address, etc. Dataset of 100 students utilized in gathering the information about new voters and experiment were performed on that dataset.

VII. RESULT

Information provided by administration about voters system successfully utilized in voting. Portable facility will be the key factor of this system. Our system has increased accuracy and consistency.



Fig 5: Admin Panel



Fig 6: Vote Counting Result

VIII. DISCUSSION

From our carried out experiments the accuracy of the system is increased and efficiency also increased. It will help to improve the vote percentage. Security factor is handled neatly with this portable and more secure voting android app.

IX. CONCLUSION

This paper focused on the analysis of development of E-voting application on an android platform. The usability of this system is very high if it will used in real life election process. It will definitely helpful for the users who wish to vote and the voting process will be made very easy by using this application.

X. FUTURE WORK

In future we tend to add additional functionality of image validation for the security constraint and uniqueness which will provide very strong security for the confidential information about vote. Fingerprint scanning which is also present in individuals aadhar card database can be added for voters authentication process.

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