

Electronic Online Voting via Smart Phone App

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Abstract: Election is the basic need of every country so as to elect the candidate who represent the nation and its small parts like state, district, town, city and ward. So for this prime program execution, need system that must be reliable, easy, and mobile and require no manual calculation of result. This Electronic online voting via smart phone app have this factors, in this system user is verified three time for casting vote. Authorize user only allow to cast the vote and no redundancy in vote casting as registration occur one time with the help of Aadhar card id. As Aadhar id is unique for every citizen of nation, there is no need to go anywhere for not only casting vote but also for doing registration and making any changes in personal details and for seeing result too. Authentication process include credential verification, Verification of fetched data which is scanned from QR code of Aadhar card and by entering address in term of state, city and ward and OTP. User can cast vote any time. Valid user is able to cast vote where valid user define 18 year above age user and registered user having Aadhar card. For this system Aadhar card is most important. User has to do registration, this phase is mandatory after getting notification about voting he has to login, this system is easy to use for all users because for those users who are unable to use android can also cast vote by taking help of government agent. As the vote cast by voter to their favorable candidate, they get message of successful voting and result displayed at the end of voting time in same day itself. No need of any other electronic device other than smart phone, and in cards only Aadhar card is required.

Keywords: Smart phone, e-voting, QR code Scanning, OTP.

I. INTRODUCTION

Elections are the essential part of every democratic society and organization. Hence it is very important to hold up as many elections as possible. Unfortunately, elections come with big administrative efforts and costs.

In order to circumvent the drawbacks of conventional “physical elections”, a lot of people suggested the use of cheaper online voting systems. Today a lot of alternative e-voting systems have been proposed. Some of them are already used. Unfortunately most of them do not even fulfil the most basic security requirements, whereas other systems are provably secure, but completely impractical. Furthermore a few e-voting scandals destroyed the peoples trust into these voting schemes. As a result, we have the need for a new easy to use, practical, secure and transparent online voting scheme that can not only convince experts but also citizen, lawyers machine for voting also not giving correct result because party member used to do something wrong in EVM machine that leads to cause trouble to Nation. Therefore it is very much important to maximize the voting count by the young generation of Nation. And in every system voter has to go to their native place so as to cast vote, which require Election card. User has to stand in queue for casting vote in booth, due to which some people avoid to go there and some are having multiple election card

so they cast vote twice or send some other person instead of himself as they got voting mark in finger.

Increasing voting count by youth, Automatic result calculation, no need of Election card, No need to go to native place so as to cast vote, No need of ballot paper, no need to press button on EVM machine this factors are lacking in existing system but for getting fair result of election a System much have this factors. Thus this factors motivate to develop a system called Secured E voting application via smart phone. This system require only Aadhar card of voter and smart phone which everyone have in today's world. As everyone carry mobile phone with them, it become easy for voter to cast vote especially for youth, NRI's and married one. No chance to cast multiple vote. This system provide facility for those users who are unable to operate Android phones by appointing government agent.

This system ensure the user not to go to native place for casting vote as mobile is along with every person. This system require smart phone and Aadhar card to cast vote so it is reliable to use and in today's world most of the persons have smart phone means they know how to operate it, user has to only download this app and do registration and all. This system also ensure that there will be no redundancy in vote and no multiple registration of user as everyone having single Aadhar card.

II. LITERATURE SURVEY

Voting can be done by several voting system namely manual voting system, Ballot paper voting system, electronic voting system and internet voting system all are having some issues. There are various types of internet voting system. Following are the types of voting system:

Raise Your Hand or Raise Your Voice or Put Stick in box- Earlier day's election was held by raising hands or shouting out, Aye" or "Nay". A method of voting in which the members raise their hand to show their vote. This method is best used only in small groups where everyone can see each other, or the results may be in question. Put it to Use: "Those in favor of the motion please raise your hand." [Pause] "Those opposed please raise your hand." RISING VOTE – STAND AND MAYBE COUNT OFF: If a voice vote has a questionable result, the Rising Vote may be used to see the result easily. It can be easier than a show of hands to determine the results as well since sometimes it is hard to see a series of hands clearly within a room. If the result of the vote is not obvious by having delegates stand, you may count the result by having the standing members count off. After they shout out their number, they then sit down so an accurate count can be taken. Put it to Use: "Those in favor of the motion, please stand." [Pause] "Please be seated." [Pause] "Those opposed to the motion, please stand." [Pause] "Please be seated" [1].

An electronic voting system is also another type of voting system which makes the use of electronic ballot that would allow voters to cast secret vote ballot to election officials by using the internet [2]. With the increasing demand of internet over the years, for making the Election process more convenient so as to rise the voting count Inventers start to make the use of electronic voting system. From now on, engineers have repeatedly created new technology to improve the feasibility of electronic voting system [3].

Implementation of Authenticated and Secure Online Voting System having two login one for the poll administrator and other the Chief Election Officer where the poll administrator control start and stop of the election and assisting the process of configuration before to the election and during the process of the result declaration under the control of the Chief Election Officer. Addressing the issue of election by common man is the main influence of this implemented system by means of authenticity which leads to reduce the cost as it is a one-time installation expense and complete eradication of malpractices from this sensitive process of democracy. Reduction in work arises due to automated mechanism like Election counting process, user's authentication, Franchise exercising process by an individual multiple voter prevention process, Timer set for the election process and the demonstration of the Election Commission [4].

The countries like USA, Canada for electing Government representative they make the use of Internet Voting System where the citizen's information stored in the database. First step is registration so user has to registered himself through that user get user id and password and at the time of login user has to entered the user id and password which they got while registration process. System authenticates the user after entering user id and password and when authentication process complete user is able to cast his vote to his favorable candidate. [5].

Casted vote as well as voter's information can be stored in the database that can be used at the time of result calculation and also used to check whether information entered by the voters are valid or fake if valid then can proceed forward otherwise discarded. Voter asked for the type of vote which they are going to cast for. Because of this level of Election can be differentiated and face recognition technology can be used for authentication purpose but this has one issue that user has to go Net café to cast vote or one should have internet facility at their own home. [6].

In Mexican voting system, they try to find out any human error by means of the whole voting system. Mexican voting system make use of public networks with the DRE Temporary installation of electronic ballots at various places that are connected to the central system. The votes are transferred from the temporary ballots to the central system over a public network, that is server client system. The votes may be transferred as batch of votes from local ballots to central in complete Election Day or may be only at the end. The central counting system should have the registration of all the local temporary ballots. They are using the cellular network data and the security used is public key system. The main features of their system are:-

- Privacy
- Receipt freeness
- Correctness
- Robustness
- Democracy
- Fairness

Though it is handling empty and void ballots but this system has the one common problem that it does not support remote voting. The voter not present at its native place or not at electoral booth will not be able to cast their vote from remote location and not able to maximize the voting count [7].

III. PROBLEM DEFINITION

1. In paper voting system, Electronic Voting system both having remote area issue as mobilized citizen unable to cast their vote and this issued solved by internet voting system but need to go Net café for vote casting even having data in

smart phone or one should have internet facility at their convenience.

2. Voting system like paper and electronic voting system required lots of paper and Ballots respectively and also voting card. Number of user having multiple voter card due to which wrong result declared instead of fare one.

3. As concern to India's population voting count not meeting that point. Vote casting can be done mainly through illiterate citizen rather than young one due to remote location problem which leads to minimize the voting count.

IV. PROPOSED SYSTEM

The initialization start by home page, when the user is new means not registered he can view only about-us and opinion menu but not login menu. User has to register himself first for login and performing further process. Registration is one time process. After registration user can login. There are three possible situation at the time of login for the user 1) user forgot the password, 2) Invalid credential and 3) valid credential. When user forgot password he has to click on forgot password then system send password to user's registered mail id, and when invalid credential appear user has to again login. And when credentials are valid user is allow to process forward.

Vote form appear to user, he has to choose Android user or Login as Camp administrator. Android known user select the Android user option after that he has to put Aadhar card in front of the mobile camera for scanning. Those user who are unable to operate android phone has to click on Login as Camp Administrator. Login form appear there government agent has to login then scanning the QR code of Aadhar card of the user. Fetching the user details, if the data is received and list of all candidates are appear and from that user can view the selected candidate details, but when the details of the user not fetched user get the message that scan data not received.

When user click on view button to know the details of selected candidate he can vote that candidate too. User has to enter the state name city name and the ward name same as that of registered one because verification also perform on this address, after that user has to enter OTP from mobile number as OTP send to the user's registered mobile number. User is unable to process further until entered OTP is correct. If the entered OTP is wrong then it get message about wrong OTP so he has to perform the same process again. Once entered OTP is valid user cast vote to his favorable candidate. After casting vote he get the message of successful voting by system. At the end of the day or end of voting time result is declared, result contains the list of all candidates who are stand for election along with the number of votes they secured.

This E voting system via smart phone app having following steps to cast vote.

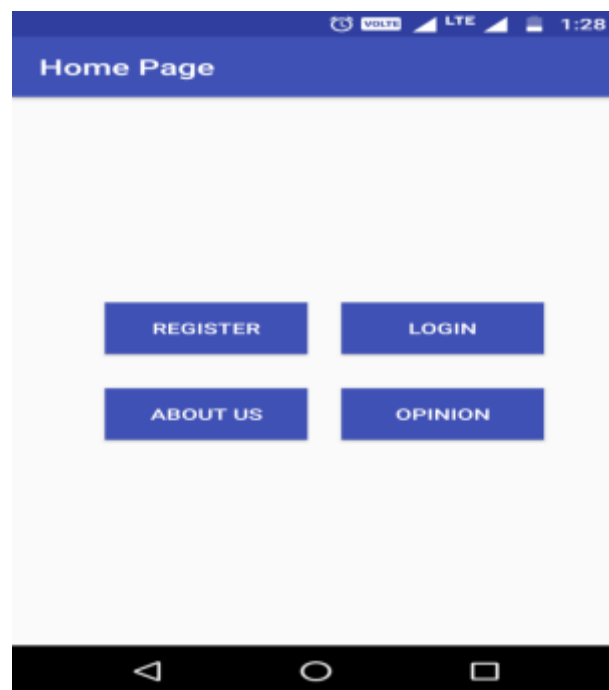
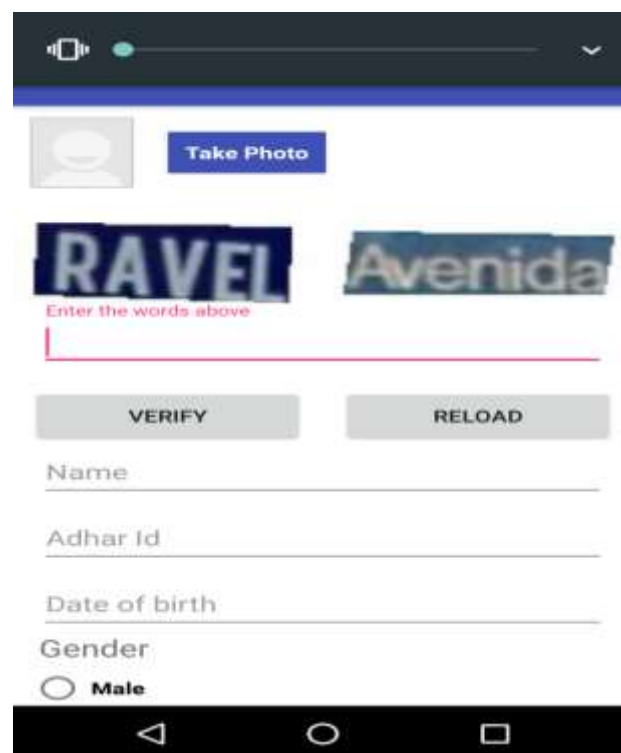


Fig. 7.1: Home page

This Fig. 7.1 shows the home page of E voting system in smart phone that show four menu namely Register ,Login, About Us, Opinion.

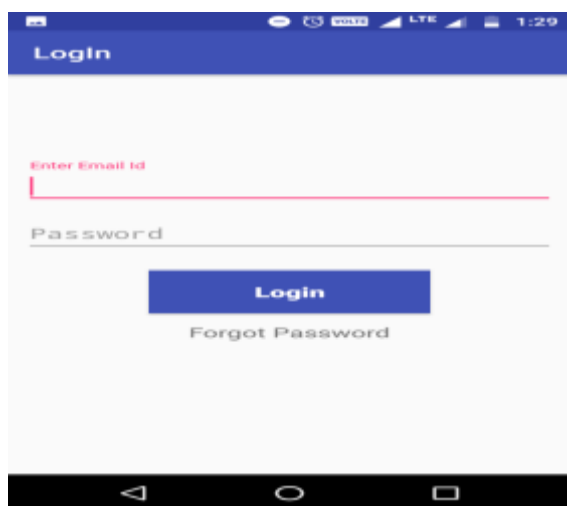




The screenshot shows a mobile application interface for a registration page. At the top, there is a blue header bar with a back arrow and the text 'Registration'. Below the header, there are two radio buttons for 'Male' and 'Female'. Below these are several text input fields: 'Address', 'Mobile No.', 'Select City' (highlighted in green), 'Select State' (highlighted in green), 'Ward', 'Email id', and 'Password'. At the bottom of the form is a blue button labeled 'Register'. The bottom of the screen shows the standard Android navigation bar.

Fig. 7.2: Registration page

User has to first register himself so as to cast vote to his favorable candidates. Registration form include user name, Aadhar Id, mobile no, email id, password, Address in terms of state, city and ward and user also has to upload photo and entered Captcha. Re-Captcha is used to identify the human being. Aadhar id is used to check whether the user is already registered or not, as the details of user store in data base from that redundancy get reduced. As OTP send to users mobile and he has to enter that OTP for further procedure of voting so, during registration user has to mandatorily enter working mobile number. Whenever, user forget his password he can click on forget password and get his credential on his registered email. Proper address of user is essential at the time of voting user address get verified then he is allowed to caste vote. After entering each and every details of a user, he has to submit it then his details get stored on online server.



The screenshot shows a mobile application interface for a login page. At the top, there is a blue header bar with the text 'Login'. Below the header, there are two text input fields: 'Enter Email id' and 'Password'. Below these fields is a blue button labeled 'Login'. Below the 'Login' button is a link that says 'Forgot Password'. The bottom of the screen shows the standard Android navigation bar.

Fig. 7.3: Login page

For casting vote to favorable candidate, user has to login by the registered credential when he get notification of election. When user get login authentication process is carried out. In authentication process entered user id and password is compared with that of registered one. When user get authenticated he can proceed further.



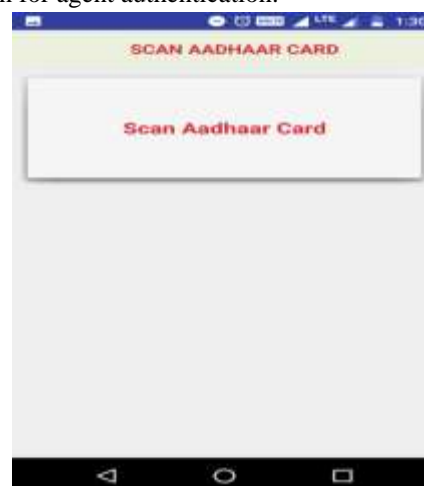
The screenshot shows a mobile application interface for a 'Vote Form' page. At the top, there is a blue header bar with a back arrow and the text 'Vote Form'. The bottom of the screen shows the standard Android navigation bar.



The screenshot shows a mobile application interface for a 'Vote way selection' page. At the top, there is a blue header bar with the text 'Android User'. Below the header, there is a blue button labeled 'PROCEED'. Below this button, there is a text label 'Login as Camp Administrator'. Below the text label, there is another blue button labeled 'PROCEED'. The bottom of the screen shows the standard Android navigation bar.

Fig. 7.4: Vote way selection page

Login user is allowed to view vote form here, there are two ways to caste vote, and one is ANDROID USER for those who are using androids and another LOGIN AS CAMP ADMINISTRATOR which is for those who are unable to operate androids as well as for those who don't have android. By clicking on android user menu user himself caste vote without taking help of any government agent and directly get the scan Aadhar card form. And when user unable to operate android he has to click on LOGIN AS CAMP ADMINISTRATOR menu for taking help of government agent to caste vote and after that he gets login page again for agent authentication.



The screenshot shows a mobile application interface for an 'Aadhar card scanner' page. At the top, there is a blue header bar with the text 'SCAN AADHAAR CARD'. Below the header, there is a large white rectangular area with a red border and the text 'Scan Aadhaar Card' in red. The bottom of the screen shows the standard Android navigation bar.

Fig. 7.5: Aadhar card scanner

User has to put Aadhar card in front of mobile camera. Scanner scan QR code and fetch the details and check the fetch details for that of stored one.



Fig. 7.6: Scanning QR code

When the details are matched with that of the stored one in the online database. User is able to see the Candidates details who are stand for election. But when the details are not matched then user cannot proceed to cast vote to his favorable candidate.



Fig. 7.7: Candidates list

Authenticated user is able to view the details of representative so as to cat vote. Figure7 shows the details of

number of candidates who are stand for election. Details include symbol of representatives, their names, gender and age also. Voter has rights to know details of the representative, so he can click on the View button to get the detail information of the particular representative.



Fig. 7.8: Selected candidate details

When voter click on the View button he get the details of that particular candidate. After reading and knowing the details about the candidate to whom voter going to cast vote, voter has to click on Vote button.



Fig. 7.9: Voter details



Fig. 7.10: Entered voters details

When voter want to cast vote to his favorable candidates, he has to click on the Vote button. When voter click on Vote button, pop-up appear which contain three fields namely STATE, CITY and WARD. Voter has to enter the address in respective manner, entered address gets checked from that address which was already entered at the time of registration and stored in online server. But when address doesn't matched vote cannot cast vote. At the same time after clicking on Vote button OTP is send to registered mobile number.



Fig. 7.11: Entered OTP

When entered address get matched voter has to type OTP which is send to his registered mobile number. And he has

to submit it, entered OTP also get verified and then can process next step means finally voter cast his vote. Like all step here also if enter OTP doesn't matched voter cannot cast his vote and get the message 'Entered OTP is wrong'. If voter mood get change or does not want to vote to that displayed candidate then has right to go back and vote to his finally decided one. When OTP is verified successfully means voter cast his vote successfully and voting count of that particular candidate incremented.



Fig. 7.12: Result declaration

Fig. 7.12 show the Result declaration, Voting result is declared after completion voting process by the voters. Means at the end of the day result is declared. Winner is displayed at the top along with number of vote he got. Result of not only winner but also of each and every representatives who are for stand for election declared along with the number of vote.

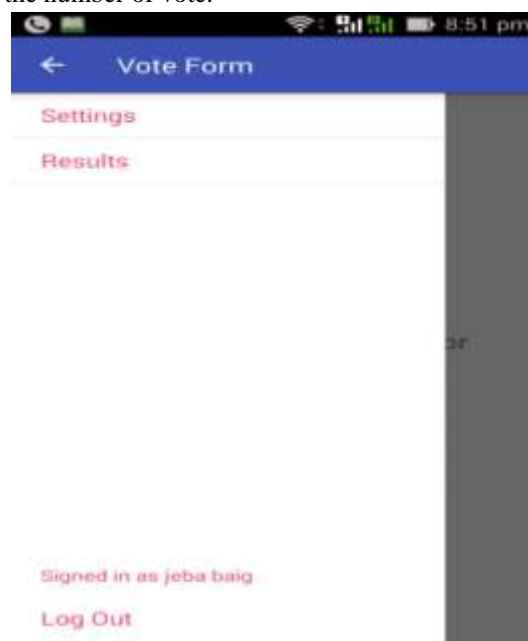


Fig. 7.13: Vote form

Figure13 show the Vote Form which state the setting menu, whenever user to change his details like address, mobile number and also surname after marriage he can changes but Users do not have rights to change Aadhar Id. Via Setting menu updating made be possible . Result

menu show the result of the Election. After casting user has to log out himself for self-vote security.



Fig. 7.14: Setting

Setting menu allow user to make changes in his details which he entered during registration time. But user doesn't change the Aadhar Id as Aadhar Id is unique id for each and every citizen of India. This Setting option solves the multiple votes casting issue. And also leads to maximize the voting count by the youth specially who are away from native place for the purpose of higher studies and job and some other, can also able to cast vote.

V. CONCLUSION

This Secured E Voting system via smart phone app helps to overcome the issue of less voting count by youth, NRI's and the persons who are unable to come to their Native place for casting vote to their favorable candidate due to some problem. This App is easy to use as each and every instruction is provided about App in About Us menu in home page. Voting by single person in multiple place is strictly avoided, multiple registration is also avoided. Valid person is authorize to cast vote.

8.2 Future Work:

In future, this smart phone app can be developed by using hybrid technology because the smart phones do not have drivers for detection and recognition purpose. But by using hybrid technology it become possible to perform detection and recognition in smart phone too.

In future, this system can be developed by using the concepts of distributed database. As this system comprise of centralized database which has more chance of data lost if any problem arise in the system or due to system failure.

In Future Encryption and decryption can be used for security purpose by using various algorithms such as SHA, MD5, DES, AES etc.

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