An Implementation of Secure Online Voting System

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Abstract –In view of traditional voting environment, voting process is quite troublesome because of disinclination of voters to visit booth. Huge transformation in computer technology has implored us to propagate an online voting system which is much more accessible, favorable and adequate. In this paper, a new way of voting cracks the limitation of traditional voting and focuses on the security and performability of the voting, so that it can reach to "Each and Every" voter of "Each and Every Class", which will be a leading stride towards heading India a developed country from developing country. It is a twofold system containing SMS voting system and website voting system.

Keywords – CAPTCHA, Encryption and Decryption, iris verification, One Time password, t-pin, IVR system, Short Message Service (SMS), Web services

INTRODUCTION

Voting system is the pillar of every democracy in which voters choose their leaders to show their presence for the way that they will be supervised. Voting scheme have grown from counting hands in previous days to system that include papers, punch card, optical scan machine and mechanical lever i.e. to the electronic voting system. This traditional voting system is the time consuming process therefore maximum of urban population is not able to vote because of their busy schedule.

The fundamental idea behind secure online voting system to conquer inability of the conventional voting system as it suffers from various drawbacks such as it consumes huge volume of paper work, time, there is no personal role of higher officers, damage of electronic machines due to lack of attention. Secure online voting system is the system through which any voter can vote from anywhere in country.

Our main goal is to implement a system which will animate maximum number of voters to cast their vote remotely which will reduce time consumption and hence there will be increase in voting. This system is twofold system incorporating website voting system which ensures much more transparency and security.

Scope of Study

The ambit of the project is that it will use the user ID and tpin generated as password to register him/her in the online voting system, from this all the details of voter and candidate will be saved in database. For the main security purpose email address of voter and candidate will be cross verified with already existing database as the registration details will be sent to that email address.

Online voting system can also send any error messages or any fraud to registered email.

LITERATURE SURVEY

BACKGROUND:

It has always been a backbreaking task for election commission to conduct secure and transparent polls in India. Corers of rupees have been spent by election commission on voting to make sure that the elections are violence free. The traditional voting system which is also knows as electronic voting system using 'EVM (Electronic Voting Machine)' requires huge investment of time because of which people neglect voting.

Author of [1] has proposed an architecture in which voting is done by making use of cards, these cards are designed similar to smart cards which have entire details related to the voter embedded in them. Hence, the proposed architecture in [1] ensures assurability, security, verifiability and transparency in the voting system.

Author of [2] Ralf K¨usters has proposed main idea behind clash attacks i.e. voting machine sometimes provide same receipt to the different voters because of this election get manipulated without being detected.

Implementation of e-voting on an Android System has been explained by Kirti Autade in [4], the proposed architecture in the paper cannot be used over large scale especially in a country like India which is one of the developing country and whose major percentage of voters comes out from a rural background. But still the system is very much beneficial for small scale setup such as for College elections or confidential recruitment.

As explained by Ankit Anand [7], in order to overcome the drawback of electronic voting system websites can be introduced which will help voters to remotely cast their votes. This system has capability of reducing human errors and will provide better scalability for large elections. But this system was not capable of reducing the conflicts due to fake identity and was even not feasible for rural people who do not have access to internet.

To overcome this Aree Ali Mohammed [3] proposed two way systems which came out as much enhanced and efficient alternative system. Twofold system comprises of SMS voting system and Website voting system. The undesirable characteristic of above mentioned system is lack of verifiability of voter identity, accuracy and transparency.

As per Gina Gallegos-Garcia [5] encryption, decryption and cryptography can be used as one of security measure while data transmission. Even Author [6] Jagdish B.chakole and P.R.Pardhi has propounded a design of secure online voting system by making use of asymmetric and symmetric keys for encryption and decryption of messages that are used for casting votes. It was designed to ensure accuracy, democracy simplicity, verifiability, consistency, privacy, security.

Author of [10] Niranjan Malwade has propounded the idea of smart voting system with face recognition where user can vote by using android application which can be downloaded over internet. The authentication will be done using SMS confirmation and face recognition.

The implementation of highly secured online voting system over network by R. Udayakumar [11], proposed architecture of the internet voting where user can participate using their information stored in database while creating the voter ID and all the information need to be updated at a period of less than 6-months.The major drawback of this system is that it need high speed internet connection.

Author of [12] has proposed an online voting system with secure user authentication by providing biometric and password security to voter account, basically merging secret key with the cover image on the basis of core image.

PROPOSED SYSTEM

Our proposed system is the two-fold system one is voting through website and other is through mobile phones. The voter can use either of the two ways as per his convenience. For first fold the software is being developed for the use of everyone with a simple and self-descriptive GUI which needs strong internet connection. On the other fold interactive voice response (IVR) is used to let voters vote from normal mobile phones.

All the voters and candidates must register first and then they can vote to choose their leader after login to online voting system using user ID, system generated password and by scanning and verifying their iris. This online voting system is a system by which any Voter can use his/her voting rights from anywhere in country. The online voting system contains:

1) Voter's details in database.
2) Candidate's details in database.
3) Voters and candidate's ID and password.
4) Collection of total number of votes.

The intended online voting system can be defined using four phases:

1) Registration phase.
2) Authentication phase.
3) Voting phase.

Counting phase

EXPERIMENTAL RESULT

The online voting system software is developed to be used by everyone with very simple and self-explanatory GUI (graphical user interface). All the information which user will enter will get stored in database.

At the time of registration voter has to enter all the information like name, voter id and adhaar card number etc. to verify himself. If the adhaar card number and voter Id is matching then only voter can proceed further and can enter register. Some of the experimental results of online voting system is as shown in below.

HOME

This is the first page i.e. welcome page of the system. User can login or can view some voting tips and even register to the system just by one click in home page.

DESIGN AND IMPLEMENTATION

The secured online voting system is the two way voting system. The first way is internet voting which include OTP generation for user identity, 10 digit system generated password which will be sent to user or voter on their email address, etc. Two step verification increase assurability and transparency in the user login to the system where user get OTP (one time password) message to his/her registered phone number. To increase the security of online voting system to another extent which is quite important thus we have implemented iris scanning and verification of human eye. The second way is voting through IVR(interactive voice response) system

where user have to call to the online voting system then system ask him/her for voter ID, password and verify them and let them vote to the party of their choice.

The focus of this design is to elaborate an interchangeable and collective online voting system with which user can register and get user ID and password and can vote for the candidate of their choice after login to the system. The total implementation overview of secured online voting system is as shown in figure 1. And first fold of system i.e. internet voting workflow is as shown in figure 2.
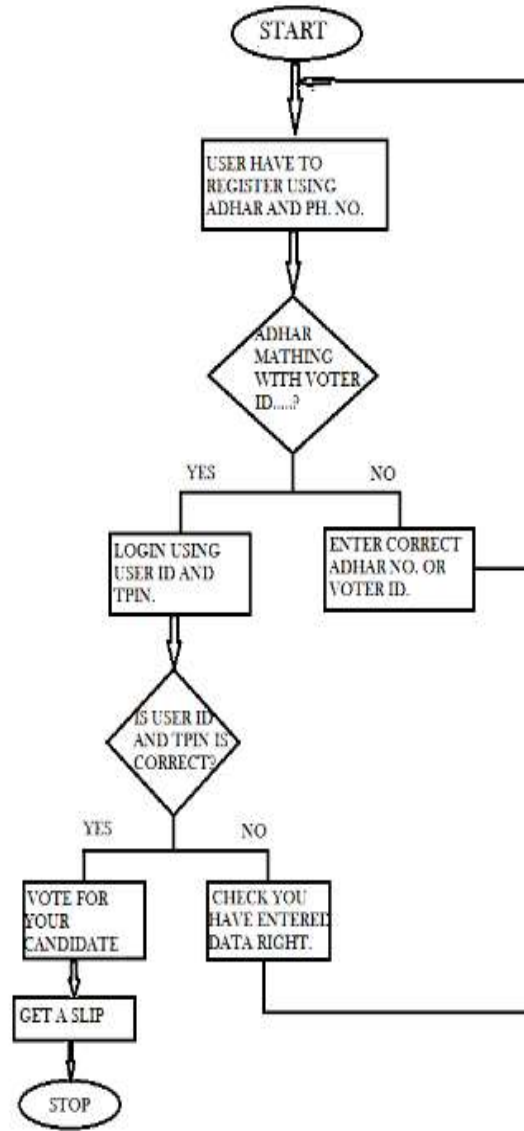
Fig2. Internet Voting

The second fold of system i.e. voting through normal mobile phones for which we have implemented IVR (interactive voice response) system. The normal workflow of voting through IVR is as shown in figure 3.
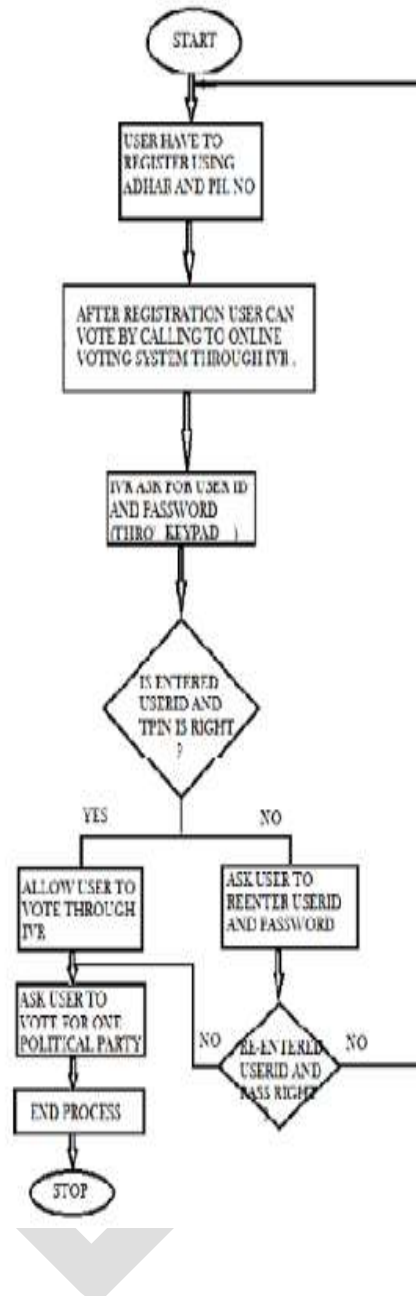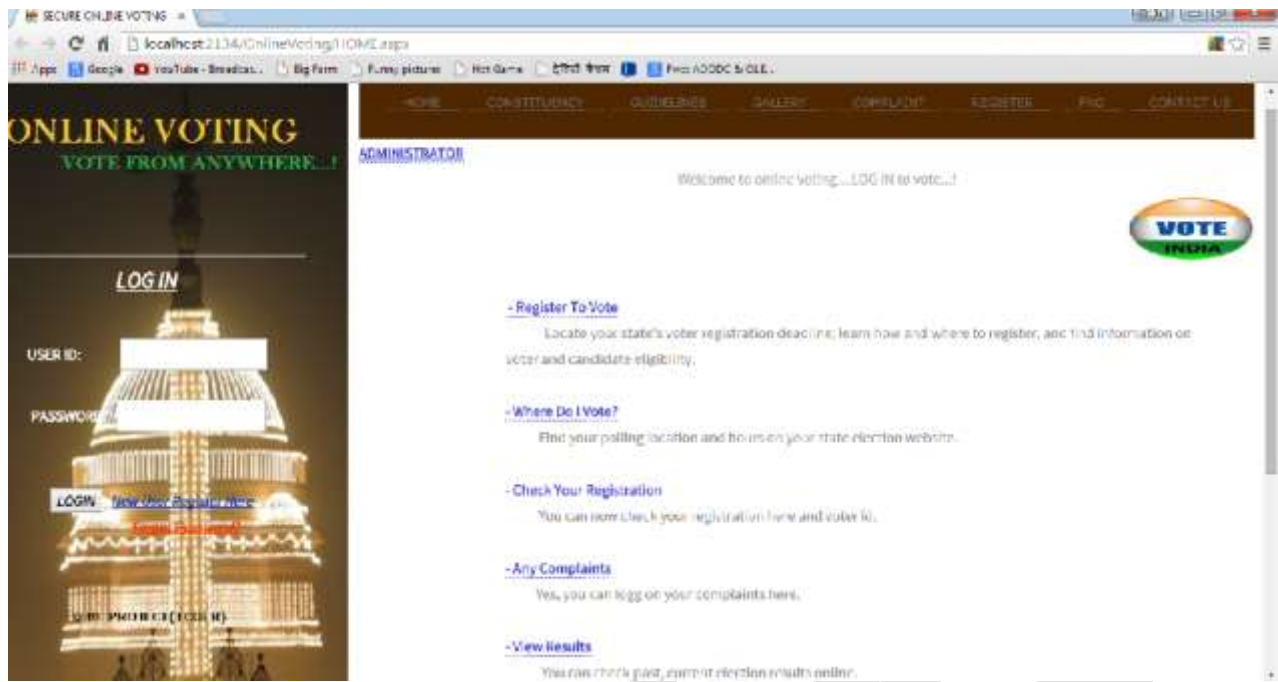
Fig3. IVR votin

Fig4. Home page

CHECK YOUR REGISTERATION

This is the page where user can check his/her registration details just by entering birth date and voter ID. If person is not registered then system tells them to register first.
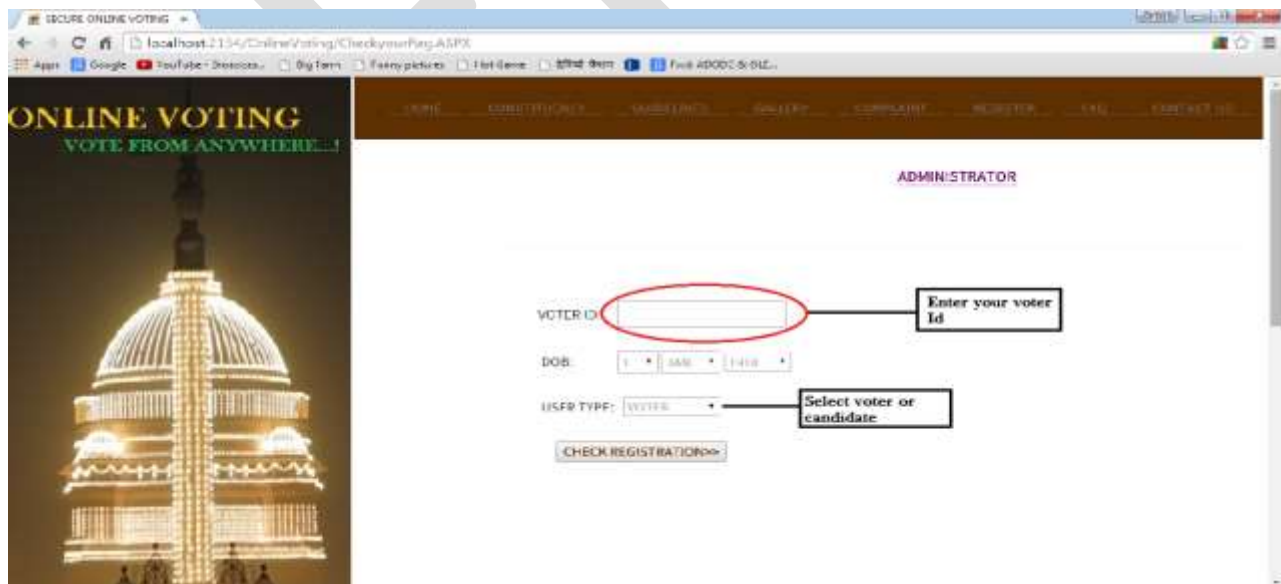

Fig5. Check Registration

TWO STEP VARIFICATION

This page appears after user login into system to vote. In this, system sends OTP message to user's phone number which had given at the time of registration. This increase the security level of system.

Fig6. 2-step verification

REGISTER VOTER

This is voter registration page where voter have submit all there details to get registered in system and to vote in coming elections.
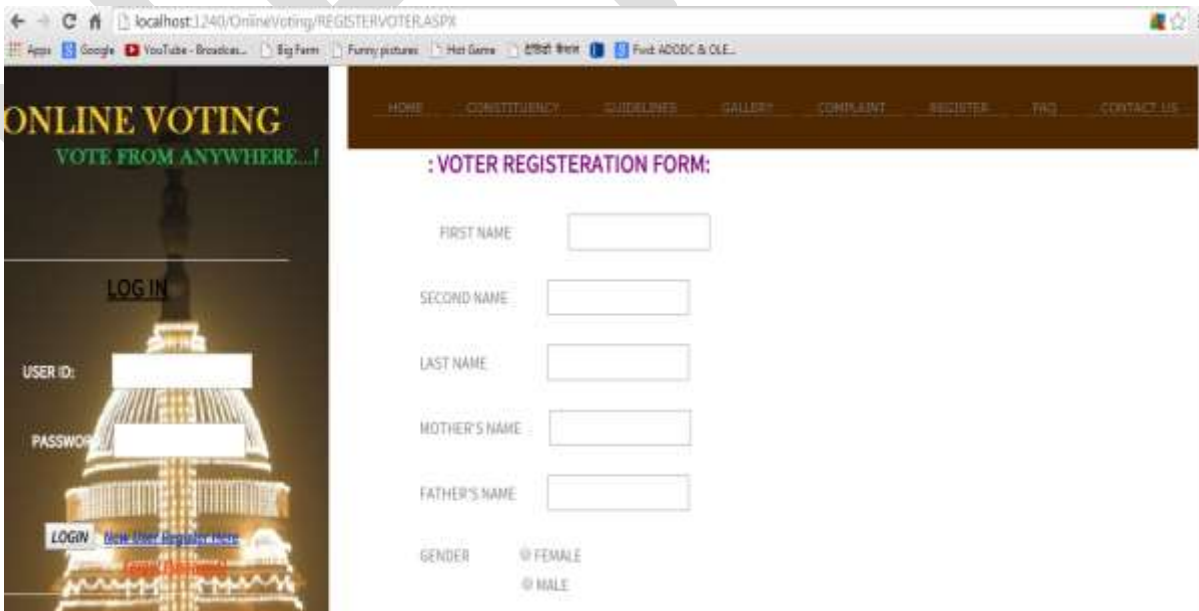

Fig7. Registration page

IVR SYSTEM

This is the second phase of online voting system where user can vote using normal handsets. This is mainly implemented for the people who live in rural area. The working IVR system is as shown in figure 8.
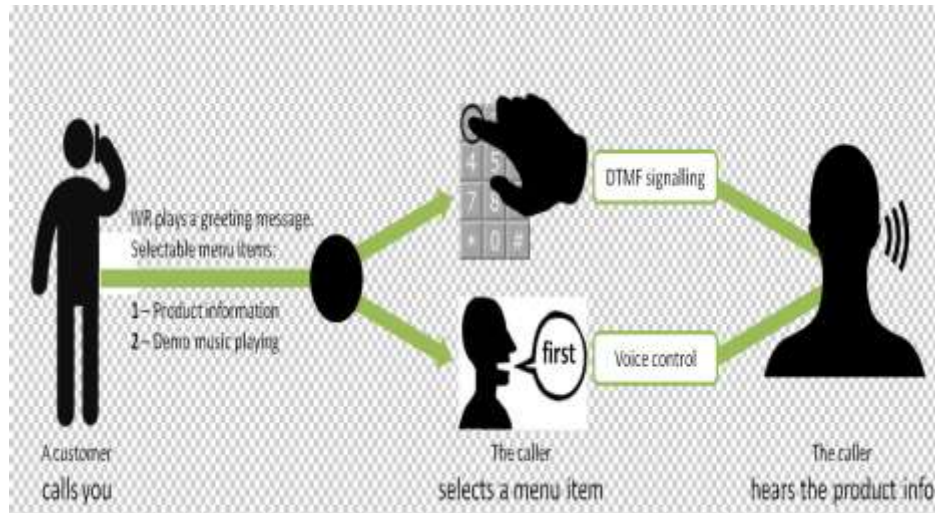

Fig8. IVR system working

FUTURE SCOPE:

The practicable future scope of the project includes the improvement in the security level of the system. In annexation to that it would be interesting to meet some other confidential primitives to improve the security level of online voting system.

The future improvement can also be done for voice verification in IVR, system crash and power failure so that the voters can vote with more assurance.

CONCLUSION:

Our proposal allow a voter to cast his/her voter through internet and also through normal handsets, therefore voter does not have to go to voting booths to vote they can vote from anywhere in India. To make our system highly secured we also have enforced the method for iris scanning and verification.

Our system also provides high transparency of voter's details at the time of registration only i.e. when voter is registering to the system then his voter Id and Aadhar number should match. The user validation process of our system is enhanced by adding iris matching, security key and one time password. This system will exclude the customary action like rigging. Consequently, the member of state or country can believe that they alone can choose their leaders and this system allows them to vote from anywhere.

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