

Aadhaar Based Voting System Using Android Application

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Abstract - The main objective of our project is to introduce a new voting system which uses fingerprint for verification of a voter with the help of Aadhaar card details. Existing ballot papers can be replaced with the Aadhaar card. Our proposed system can be used to conduct elections at different levels such as that of the Parliament, Panchayath and so on, on the same day which will reduce the cost of conducting elections on different dates. Since voting can be done from any booth, it will speed up the voting process for the voters as well as government as a result the security in voting can be ensured by preventing fake votes. Our system will provide a more convenient way for voting for people.

Keywords— Aadhaar, Voting System, Fingerprint, JSP, Android

1. INTRODUCTION

Now the growth in technology has progressed in such a way that Android Applications are widely used. This paper is about an Android Application that facilitates Aadhaar based voting system. The key features of this application involves reduction in costs of conducting elections and decrease in the number of fake votes. The finger print verification is the uniqueness of this application which allows the casting of vote only once by an individual. This application is particularly targeted at the easiness in the conducting of an election. At present for the election duty a number of officers are to be appointed for different voting booths which increases the cost, with help of this application only a single officer is required. He will have a login in the system through which the fingerprint system will prompt for the voters.

As it is a centralized voting system, a state can conduct the parliament election and the panchayath elections on the same day. The problems of casting a vote only in one's own constituency can be avoided through this system since a person can cast his vote from any constituency and the person once voted from any part can't cast his vote again.

2. LITERATURE REVIEW

We are not having an effective method to stop the fake votes that's being casted and in current election system more amount of work are being allotted to the election officers and other staffs in order that the election to be taken place effectively. Fingerprint recognition can be an effective mode to prevent fake vote [14].

Likewise if a person is out of his constituency he is not able to cast his vote. So we proposed a system where we are able to help the people in any constituencies to cast their respective votes in any of the booths it would help in increasing the number of voters. The difference as compared with other references is that all kind of elections can be conducted on the same day.

When smart systems are implemented effectively in our election system that will facilitate the voters to believe in the system that they are using. A transparent and easy way to express their views.

3. PROBLEM STATEMENT

a) Existing Voting System

While considering the existing voting system in India, we can see that the expense for conducting a single election is really high. The remuneration for the officers, other arrangements will cause this expense. Other issues like fake votes that are being casting on the day of election is increasing. This will negatively affect the result declaration and people will get a negative impact about our election system. Also when an election conducted we need to wait so long for the result declaration and it is really hard to calculate the results without an effective mechanisms. There will also be too much paper works required for an election to get successfully completed.

b) Proposed System

Aadhaar based voting system is an android based application which provides the voting system with two key features; they are reduction of costs in conducting elections and avoiding fake votes.

This application is particularly targeted at the easiness of conducting an election. The uniqueness of this system is the use of biometrics that helps in determining whether the person is a valid voter to reduce fake voting to a large extent. An individual can cast his vote not only from his own constituency but also from other constituencies with the help of Aadhaar based verification. The number of officers appointed for conducting the elections can be reduced as the process of voting is made simple and easier through this application. As it is a centralized system the parliament and panchayath elections can be conducted on the same day.

4. DESIGN DETAILS

In this system there are mainly two modules Admin & Officer.

I. Admin

Admin has the sole authority to control the election. He can add and modify election, Candidates as well as election. We provided admin platform as a webpage. Fingerprint is added and verified by a desktop application using R305 fingerprint module.

II. Officer

Every booth has a voting device. This device can be accessed through the officer's username and password. If the officer logged in, then only the voters are able to cast their votes. Officer login is made in Android device. After login the Finger print of the voters are waiting. When a voter places his fingerprint it's verified and checked whether that person has already casted their votes.

User/Voter

The important privilege the user has is that he can cast his votes from anywhere in the Country/ State as the kind of election is. The time and travel saving behaviour of the system makes it user-friendly as the voter can vote from anywhere.

Fig.1 shows the Use case diagram of Aadhaar based voting system using android application which contains the following scenarios:

- Login to the webpage
- Add officers and users
- Declare election
- Publish results
- Login to android application
- Starts the election
- Verify the fingerprint
- Allow users to vote
- Stops the election
- Reset the election
- Give fingerprint
- Cast vote

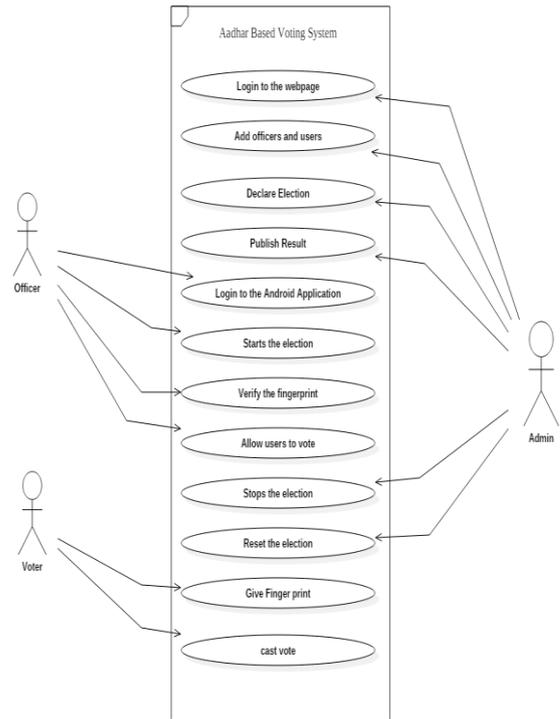


Fig. 1 Use case diagram of Aadhaar based voting system using android application

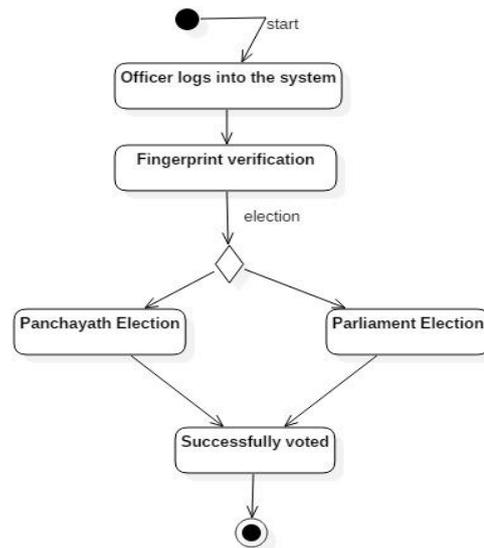


Fig. 2 UML diagram of Aadhaar based voting system using android application

5. EXPERIMENTAL RESULTS

We had Hardware's such as Android device which help to cast the votes and R305 Finger print module. R305 module will take the fingerprint details and stores in it. This fingerprint can be assigned to an user that is being registering for the election. Since fingerprint is an unique identification mark we choose fingerprint for the verification.

While coming to the software requirement part, we used Android Studio for developing the application for election. An android application that can be installed in an android device will help cast the vote easily. Adobe Dreamweaver is used for designing the webpages. SQLyog is used as database. NetBeans IDE is used for coding webpages in JSP.

We used JSP, SQL, Java and HTML for developing the system.

A. Advantages

- A person can cast his vote only once
- Can cast their vote anywhere from the respective state
- Fake votes can be eliminated
- Accurate result declarations can be made
- Lots of money for conducting the election can be reduced
- Time can be saved

B. Screenshots

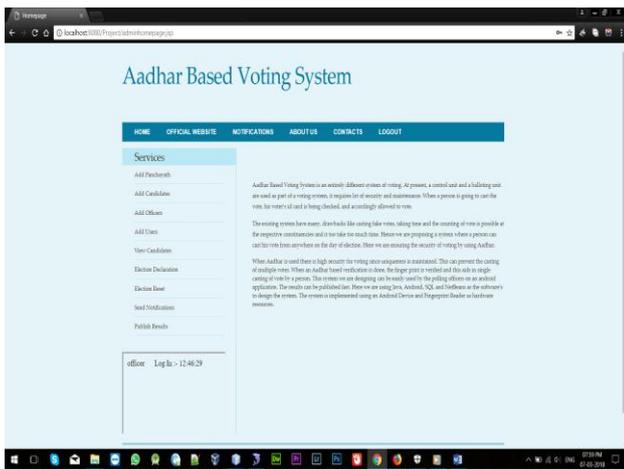


Fig. 3 Admin Homepage

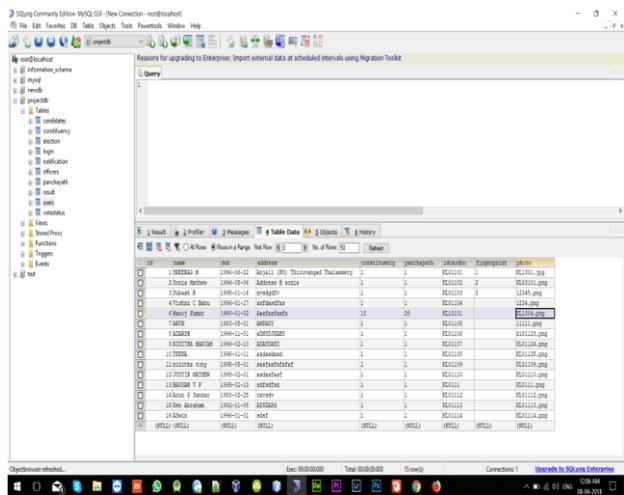


Fig 4 SQL Database

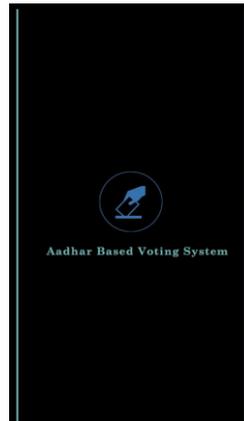


Fig 5 Android Application

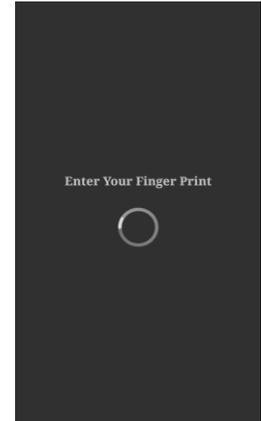


Fig. 6 Waiting For Fingerprint

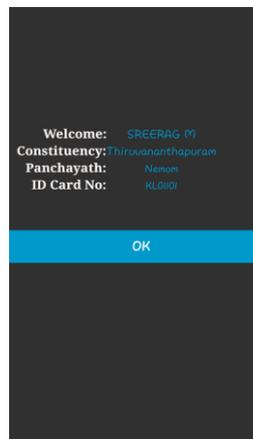


Fig. 7 Voter Details



Fig. 8 Election selection

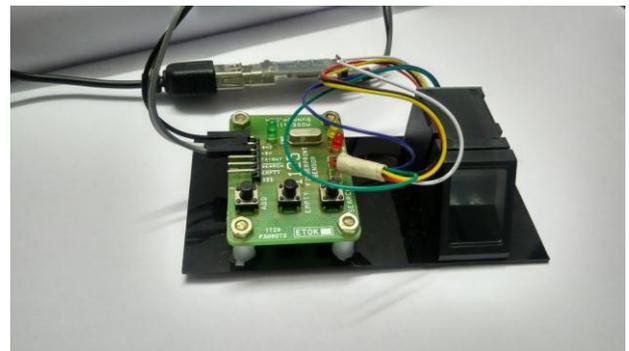


Fig. 9 R305 Fingerprint Module

6. WORKING

When it comes to the technical part, we are using JSP as the software development platform. SQLyog was used as the GUI tool for the RDBMS MySQL. Dreamweaver was used to combine HTML and CSS for the design of the web page. JSP does the internet side of this project and Admin part. Android Studio was used for the development of the Application. Java was separately used since there are MySQL, JSP and JDBC ODBC connectors.

As mentioned, there are two modules in this system the Admin and the Officer. Admin can declare election as well as can add the candidates, allocation of officers to each booth, publish the candidate list, Add voters list, publish the result etc. That means the sole responsibility of successful completion of the election is vested with admin. Admin uses a web platform for the control the election. We also used a desktop platform for adding the voters fingerprint through R305 Fingerprint Module. No fingerprints can be added multiple times. Since we are implementing a system to demonstrate Aadhaar based voting system, we all know that all fingers of a person is added to the database. So that a person can be identified with any of his fingerprints. But here as an experimental model we are not able to add all fingers for a voter. So that here a person is identified using a single finger print only. While implementing we can use every finger for identifying a person.

While coming to the second module Officer, Here the election is taking place. Each booth will be allocated with an officer who will have a username and password. This username and password is used to login to the device. Only after verifying the officer credentials the voting page will appear. After the officer has logged in to the device the device will start waiting for the voters fingerprint. When a voter place their finger print initially it will check for the vote status table for analysing whether he/she has voted before. If there is no entry in the vote status table the system will confirm that it's the voters first voting for that election. Then he is allowed to vote. After the verification the android device will display the details of the voter whose fingerprint is placed. After verifying the details by the voter he/she can accept. Next step is the selection of election type. There will be one or more election that can be done on the same day. Depends on the voter's constituency the list will appear. They can click a type then the candidate page will appear. Voter can see the name of the candidate as well as the party symbol there. So it's easy to cast their vote. If there are more than one election on the same day after voting the first one it will be redirected for the next voting. After the completion of voting the success page will appear. Again the initial page which prompts for the fingerprint will appear.

7. CONCLUSIONS

Aadhaar based voting system has many advantages compared to the existing voting system. The advantages are less human error, less cost, quick publication of result and so on. An ideal e-voting system should provide high security. In future we focus on building a system which is much more secure and provides privacy for the voters and can include large databases.

In this paper, we are provided with the advantages of having our system over the traditional voting system. Illegal voting are the main problem faced by the existing system, with our system illegal voting's can be removed completely. Our system also prevents multiple votes by the same person and checks the eligibility of the voter. A person

can vote from anywhere provided they should be above age 18.

8. FUTURE SCOPE

As the technology has advanced a lot, the possibility of attack by hackers is a threat to our system. The most secured Aadhaar details should be kept secure. To ensure this we can make use of cryptography such that encryption can be used to secure the database and the integrity of the data. In future, databases that can accommodate large data can be incorporated.

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