Online Voting System using Biometrics

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Abstract

Democracy has given people a powerful right, i.e to VOTE. Voting is the fundamental basis of the "Of people, for the people and the people's slogan" of democracy. voting is personally expensive. On on election day, you may have to quit your job, queue up or trudge in bad weather, all the while knowing that the chances of your individual vote making the difference between the thousands or millions of people cast are virtually nil. Online voting may be the key to providing a better means of using the browser. You can access the website using your voter card Id from any point in the Country. For verification process, voters Biometrical will be associated with your voter Id..

Keywords: *Voting, Democracy, Election, fingerprint recognition*

1. Introduction

Voting is one of the basic rights of every citizen of a democratic country. According In the current system, voters can be counted manually, so errors such as duplicate count and completely missed count are sometimes generated.. Various Leaders of Political parties try to do unlawful things such as corruption which may affect the result. For confidentiality, In the online voting system, Biometrics is useful. This device can be useful for easy handling because it is user friendly.[1]. The fingerprint voting system is an electronic voting machine using the human biometric system. It's reduce personnel and voting time for the paper voting system. So there will be less chance of corruption in the online voting system. An Electronic Voting Machine is a basic electronic machine that can be used to store the votes using a Database. This process can be done using fingerprints using sensing at the time of voting.[2]. The The goal of this project is to design a system that asks the user / candidate to show their Fingerprint as proof of identity.[3]. The The final grade is then displayed and counted using Database.This the search was implemented using the Biometric USB scanner.[4]. The system The reads the data brought by the module Fingerprint to verify the data with the data already stored and perform the next action.[5].

2.Problem Statement
A. Problem Identification
The Current Voting System is Somewhat Secure and most time-consuming. People have to go Voting Centers to vote, most of the time people do not vote because of this reason. A lot of Government officials are required to carry out voting via voting centers. It is very time consuming, requiring a lot of physical work. A lot of times, people do not get their voting ID due to various reasons. Sometimes the information given in the voting card is

not correct ,leading to the person not being able to vote as the credentials do not match with the Information provided to the Government official of the voting center.

B.Problem Definition

To provide security, it is an opportunity for every candidate to vote in a secure way. As Technology has been Digitalized, Online Voting is an essential requirement. Recognizing fingerprints has become the infallible task for Confidentiality.

3.   Literature Survey

Table No.1

Sr No	Title	Author	Year	Advantage	Limitation
1	**Biometrics using Electronic Voting System with Embedded Security[10]**	Alaguvel.R, Gnanavel.G ; Jagadhambal.K.	2013	Complete explanation of biometrics which is very useful also they attaches the screenshots of their designed website.	Mostly focused on biometric device and iris detection and they doesnt focus on the current problems.
2	**Design of Highly Secured Biometric Voting system[11]**	N. Narayanan, Ch. Surya Pradeep, Piyush Gulati, G. Raj Bharath, S.Nivash	2019	This project is totally focuses on the OTP Verification using Electronics device.	They Doesn't Provide proper flowchart and algorithm for their otp verification project.
3	**Study on Security of Online Voting System Using Biometrics and Steganography[12]**	Neha Gandhi	2014	The Concept of Steganography and explanation about it is perfect and useful.	They have not given the proper model and explanation about it.

| 4 | **Secure E-Voting With Blind Signature[13]** | Subariah Ibrahim, Maznah Kamat, Mazleena Salleh, | 2003 | Proper Explanation of Blind Signature, Confidentiality and Authentication. | Lacking in giving implementation of Methodology. |

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5	**Face Recognition for Secure Voting System.[14]**	V.Priyanka, P.Jagadeesh	2020	Proper Summary of Survey Report.	Laking in an idea about implementation of the model.
6	**An Online Voting System Using Biometric Fingerprint and Aadhaar Card.[15].**	Rakesh S Raj, Raghavendra A , Madhushree K R , Bhargavi D	2014	Proper Explanation of Methodology.	They have not conduct any survey and literature review.
7	**ONLINE VOTING SYSTEM USING FINGERPRINT SCANNER[16].**	Umesh A. Wakpanjar, Ashish A. Shamkule , Rohan J. Tiwari , Shubhangi C. Sagane, Akshay P. Khawale, Nikhil V. Raut	2018	Properly Explained the mechanism of model.	Not focused on how voting is secured.

As Shown in Table 1, Alaguvel.R, Gnanavel.G; Jagadhambal.K , in **Biometrics using Electronic Voting System with Embedded Security,** Complete explanation of biometrics which is very useful also they attaches the screenshots of their designed website.[10]. N. Narayanan, Ch. Surya Pradeep, Piyush Gulati, G. Raj Bharath, S.Nivash in **Design of Highly Secured Biometric Voting system,** This project focuses on the OTP Verification using Electronics device.[11]. Neha Gandhi in **Study on Security of Online Voting System Using Biometrics and Steganography**, The Concept of Steganography and explanation about it is perfect and useful.They have not given the proper model and explanation about it[12]. Subariah Ibrahim, Maznah Kamat, Mazleena Salleh, Shah Rizan Abdul Aziz in **Secure E-Voting With Blind Signature**, Proper Explanation of Blind Signature.[13]. V.Priyanka, P.Jagadeesh in **Face Recognition for Secure Voting System**, Proper Summary of Survey Report.Laking in an idea about implementation of the model.[14]. Rakesh S Raj, Raghavendra A , Madhushree K R , Bhargavi D in **An Online Voting System Using Biometric Fingerprint and Aadhaar Card** , Proper Explanation of Methodology.They have not conduct any survey and literature review[15]. Umesh A. Wakpanjar, Ashish A. Shamkule , Rohan J. Tiwari , Shubhangi C. Sagane, Akshay P. Khawale, Nikhil V. Raut in **ONLINE VOTING SYSTEM USING FINGERPRINT SCANNER** , Properly Explained the mechanism of model.[16].

4.Existing System

The Existing voting system includes the voting machine, the punch card, the Optical voting machine, etc. Time and money are wasted due to several reasons, such as the non-existent online voting system. There is no such application used for an automated system for voting. [6].According to the system followed by the Government, a lot of government officials are required to perform tasks like the Boothing agent, Ballot Checking Officer, Police staff, and other coordinators.[7]. The the step-by-step procedure is followed by Government officials according to the work assigned by ECI. So, it requires a lot of physical work as well as mental stress is increased. This may lead to the wrong entry of data mistakenly,as it may affect the final result of the voting system. Though the current voting system is inefficient and insecure. The current system is not web-based. [8].After voting is done there is a chance of losing data because it is a pen paper-based work. If we used online voting then data is always in the database, Hence the online voting system is essential. [9].

5. Proposed Methodology

The Proposed Online Voting System with Biometric authentication is an electronic voting system that uses Uniqueness of Human fingerprints to improve Confidentiality and Trust.[3]. So,In this System I have divided the process into the two parts:-
1.Registration process
2.Voting day process

1.Registration process
- In the Registration process, the user has to fill all the details required for registration like Name,Email,Address,Contact no,Voter Id no,etc...
- The Details that the user entered will be verified by the Organization.
- After that it allows you to scan the Fingerprint and this fingerprint will get stored in their database.They will verify your fingerprint using Aadhar card's fingerprint.[5].If it matches Then you will get the message on the screen that your registration Done. If it Doesn't match it means that this is not a Valid person's fingerprint. In This completes the Registration process.

Algorithm of Registration Process is as follows:- Step
1:-start
Step 2:-fill all required fields Step
3:-verification
        if yes
            Allow further   registration.

      else
            Invalid credentials.
Step 4:-Allows you to scan fingerprints.
Step 5:-Check
 if matches with Aadhar card
 Valid
Else Invalid
Step 6:- End

Hence,Registration will get complete using this process. The main function of fingerprint in the registration process is to verify that a valid person is registering or not.So this flowchart will be helpful for future Online voting.
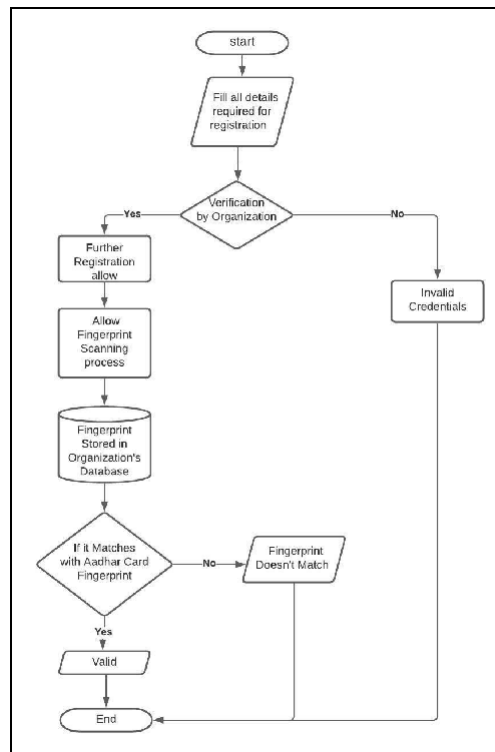
Flowchart:-

Figure 1. Registration Process

2. Voting day process
- Voter has to sign in first,if login has been successful then its a voter's responsibility to go through with the details that he/she entered during Registration.
- If a voter forgot his password then he/she can reset it using Email.
- Organizer will verify your Email address,and then only you will be able to reset the password.
- If the voter's details are correct,then it allows the voter to scan his/her Fingerprint using a USB Scanner.For this you have to install Rd service and complete the registration process.
- After that,this fingerprint will get verified by an Aadhar card fingerprint which is already stored in the database.
- If Fingerprint matches ,then the voter can cast the vote otherwise the process will End.

Algorithm on the process of voting day:- Step
1:-start
Step 2:- sign in using Voter ID no and password.
Step 3:-If you forget the password then go to step 5 and then 6 . Step 4:-
Check info
If correct
　Go to the voting section,Scan fingerprint If it

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matches

Cast the vote Else
Invalid
Else
end
Step 5:-If forgot password
Reset using Email.
Step 6:-If Email is verified
Valid email
Else
Invalid
Step 7:-End

So,In this way Voting day process will be complete.The Voter's fingerprint will be stored in the Organization's database.The final voting counting will be done by the Organizer's Government Official Staff.
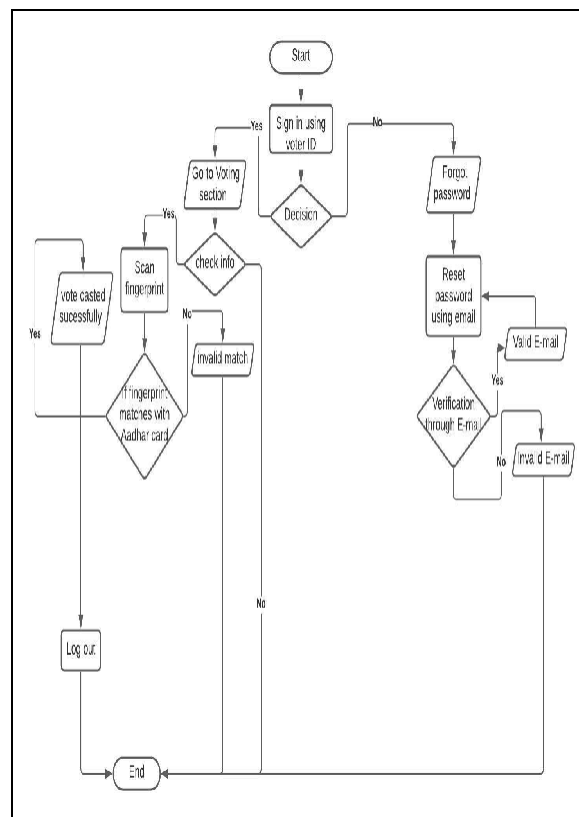
Flowchart :-

Figure 2. Voting day Process

Usb Fingerprint Scanner:-
- It is a Thumb Scanner of Morpho.[4].This Biometric device is used to capture the Fingerprint and also signatures.In general It is a USB Scanner that is used to capture the various Patterns of a finger. Just plug this usb cable into the Laptop or pc's port 2.0 or 3.0.
- Install Rd service and complete the registration process.

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Figure 3.Biometric Morpho Scanner

● Everyone has different Fingerprint pattern ridges so it's a better option to verify fingerprints in the online voting system using Biometrics.
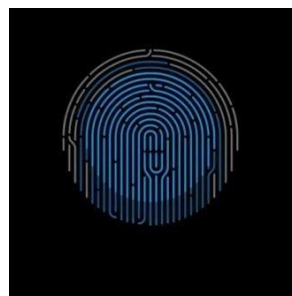

Figure 4.Fingerprint Pattern ridges

● By the Fingerprint Scanning process,the Organization of the Online voting system can verify the person by the Aadhar card's fingerprint.So it is a secure way to cast the vote Online.

6. Feedback Survey

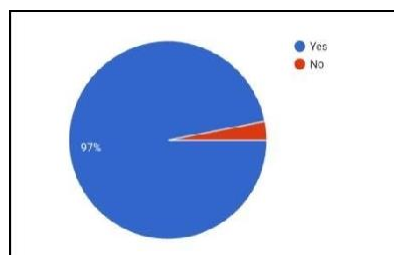**Is there a need for an Online Voting System?**

Figure 5.Pie chart showing preference of need for online voting.

I took the Feedback survey from 35 people.Out of 35 people 97% Responded that there is a need for an Online Voting System and the remaining i.e. 3% of people from the survey responded that there is no need for an Online Voting System.

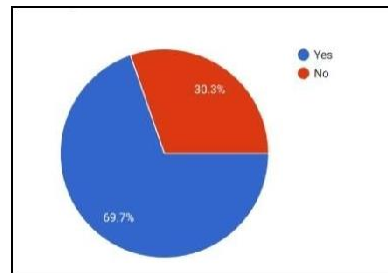**Have you ever used a USB fingerprint scanner?**

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Figure 6.-Pie chart showing preference of using USB scanner.

In this survey,69.7% people replied for the above question as they used a USB fingerprint scanner while the remaining i.e. 30.3% people responded as they don't use a scanner yet.

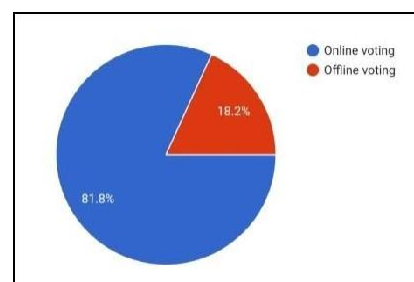**Which System you will prefer for the future?**

Figure 7. -Pie chart showing preference of Online and Offline Voting.

The main question in this survey that i have asked people is will you prefer Online voting in future.The response i have got for this question is 81.8% people think that there is a need of online voting in future. Whether remaining responded as an Offline voting system.

7. Conclusion

The Proposed System will provide the Voter's to easily Register online. Once the registration get's completed the organizer will know that a valid person registered because in this model I have added the Fingerprint scanning step.So no duplicate or illegal registration will happen here. Also who has a valid Aadhar card and Valid voter ID no,only those people can register and Cast the vote Successfully.The Device that is required for Scanning the fingerprint is Morpho Biometric Scanner, which is easily available in the market.This Biometric Scanner is affordable so everyone can buy it.This model can be modified to be used in the future online voting system.

8.Acknowledgement

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