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Biometric Based Voter Identification

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ABSTRACT: The propose biometric voting system with biometric authentication is an time consuming voting system which seeks to make use of the uniqueness of the minutiae of the human fingerprint to further enhance the level of trust and confidentiality of the voters in the system as well as making the actual process as universally accessible as possible which would be achieved through the deployment on the Internet. For the voter registration and authentication processes which are performed on the desktop module, the voter is expected to have his or her fingerprints captured and the minutiae extracted that is stored on the database. The project was able to achieve a high success rate in the use for conducting elections as it was able to stamp multiple registrations by voters through the combined use of both the unique voter identification number and their unique fingerprints.

KEYWORDS: Biometric fingerprint, SQL lite, Aadhar card, android studio.

I. INTRODUCTION

In a democratic system of governance, election is very crucial and the integrity of the electoral process is sacrosanct. Election is a repetitive operation that occurs every specified period of time. Adding to that is the fact that there are different types of elections and/or different scopes of elections and the need to support multiple elections. Democracy thus encourages individual freedom according to the rule of law, so that people may behave and express themselves as they choose. This not only gives people a chance to choose their leaders, but also to freely express their views on issues. Voting through an election forms an important part of democracy and for democracy to be sustainable, the voter's participation is a key consideration. Apart from voters being encouraged to exercise this democratic right, the election that facilitates the function must be credible, watertight and free of bias. In addition to providing for the orderly transfer of power, it also cements the citizen's trust and confidence in an organization or government when it operates efficiently. Society is becoming more and more web / collaboration oriented, and citizens, used to the high degree of flexibility in the services provided by the private sector and in the Internet in particular, are now beginning to set demanding standards for the delivery of services by governments using modern electronic delivery methods. The key concerns of elections an d essence of a voting system is Transparency: ordinary voters should be able to understand and observe the vote casting and counting process, even with relatively nominal education as well as Trust.

II. RELATED WORK

All security passwords of voters is ratified with the main database of E-voting Commission of India then after Authentication of the voter he/she will able to vote to the elector. This paper depicts the new model of E-voting system using cloud in Indian Scenario. The preferred model is more secure and efficient than the Conventional voting system. The E-voting system avoids the delay of result it is capable to count all votes within few times. A unique AADHAAR identification number is the base point of this model. This model easily verifies to the voter and elector.[2] In this proposed model using a finger print as the security which is considered as the high security password for casting the vote and the confirmation ID to login and cast the vote online using internet connected devices. This avoids the duplication of voters (i.e. one person can vote only once). The finger print proves as a unique identity of the voter. This model actually gives importance to people who actually want to cast their vote, but can't return to their native places to just cast vote.[3] In this traditional voting system is used with cloud computing. In this voter verified by the voter database present in the server. After verification voter can cast the vote. The result display after the election. By using advanced verification system like biometric scanner and retina scanner. The circuit is designed to work efficiently and reliably.[4]All security passwords of voters is ratified with the main database of E-voting Commission of India then after Authentication of the voter he/she will able to vote to the elector. This paper depicts the new model of E-voting system using cloud in Indian Scenario. The preferred model is more secure and efficient than the Conventional voting system. The E-voting system avoids the delay of result it is capable to count all votes within few times. A unique AADHAAR identification number is the base point of this model. This model easily verifies to the voter and elector.[2] In this proposed model using a finger print as the security

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III. PROPOSED ALGORITHM

The proposed work will be carried out with following steps.
- Perform login polling officer
- Enter the EPIC No.
- Polling officer manually verify voter using any of 14 proof.
- Capture fingerprint and store in the local aadhar database.
- Verifies the identity of the voter at login time by comparing the fingerprint that has been pre stored in the database with the fingerprint being supplied at login.
- Provides an interface for the user name match with EPIC ID.
- Allow for voting.

IV. THEORETICAL BACKGROUND

A. *BIOMETRICS :*

The term "Biometrics" originally comes from the two Greek words: bios and metrikos, meaning life and metric (measure) respectively (Bolle et al., 2003). Biometrics is the science and technology of measuring and analyzing biological data of human body, extracting a feature set from the acquired data, and comparing this set against to the template set in the database. A biometric is a physical or behavioural feature or trait that can be measured. It is often used as a means of proving an individual's identity, assign certain rights as well as validating people's identities. Authors in (A. F. Thompson, et al, 2010) as well, define biometric as the most secure and convenient authentication tool that relies on the automated identification or verification of an individual. It cannot be borrowed, stolen, or forgotten and forging one is practically impossible. Biometrics measure individual's unique physical (physiological characteristics refer to inherited traits that are formed in the early embryonic stages of human development) or behavioural characteristics (not inherited, but learned) to recognize or authenticate their identity.

Biometric systems can be categorized into two.
I. Unimodal Biometric Systems Unimodal biometric system uses only a single biometric characteristic. This system is usually more cost-efficient than a multimodal biometric system. However, it may not always be applicable in a given domain because of unacceptable performance and inability to operate on a large user population. Examples are: face recognition, fingerprint matching, Hand Geometry, Palm Prints.
II. Multimodal Biometric Systems Multimodal Biometric system combines multiple sources of biometric traits. This can be accomplished by fusing multiple traits of an individual or multiple feature extraction and matching algorithms operating on the same biometric. These multimodal systems, can improve the matching accuracy of a biometric system while increasing population coverage and deterring spoof attacks. (A. F. Thompson, et al, 2010)

Biometric Features Biometric features are properties that are common to all human beings and can be used for the authentication and validation. Biometric features are broadly classified into;

1. Physiological (e.g. Face, Fingerprint, Iris, Retina, Hand Geometry, Ear etc.)

2. Behavioral (e.g. Voice, Dynamic Signature) As a primary advantage, biometric features are typically unique and therefore cannot be misplaced or forgotten since there are inherently associated with human beings. A brief description is given about some of the biometric features mentioned above:
- FINGERPRINT: It looks at the friction ridges or the pores in the skin of the ridges that cover the fingertips and classify patterns of minutiae, such as branches and end points of the ridges.
- IRIS: The iris pattern contains a large amount of randomness, and appears to have many times the number of degrees of freedom of a fingerprint. It is formed between the third and eighth month of gestation, and (like the

fingerprint pattern) is phenotypic in that there appears to be limited genetic influence; the mechanisms that form it appear to be chaotic. So the patterns are different even for identical twins (and for the two eyes of a 22 single individual), and they appear to be stable throughout life.

- RETINAL SCANNING: This method of personal authentication uses the vascular patterns of the retina of the eye. In healthy individuals, the vascular pattern in the retina does not change over the course of an individual's life. The patterns are scanned using a low-intensity (e.g., nearinfrared) light source. It requires the user to look into a device and focus on a given point. The image acquisition involves cooperation of the subject, entails contact with the eyepiece.
- FACE: The human face is also a feature that can be used by biometric systems by analyzing the size and position of different facial features is being pushed for use at several airports to increase security. Another possible approach is to make infrared recordings and analyze the resulting facial thermo gram.
- EAR: It has been suggested that the shape of the ear and the structure of the cartilaginous tissue of the pinna are distinctive. The ear recognition approaches are based on matching the distance of salient points on the pinna from a landmark location on the ear. The features of an ear are not expected to be very distinctive in establishing the identity of an individual.
- VOICE: A more behavioural individual aspect of humans are their voices. Everybody has a special mode and tone while speaking. Voice recognition tries to analyze these features and use them to identify a person.
- SIGNATURE: Another behavioural aspect of a person usable by biometrical analyses is the signature. Not only the form but also the dynamic aspects can be seen as a set of unique features of a person. Other possible movable biometric input could be the rhythm and pattern of a person's walk.

B. *PROCESS OF ELECTION INSIDE THE POLLING BOOTH*

I. Duties of First Polling Officer: On entering the polling station , a voter will proceed direct to 1st Polling Officer, in-charge of marked copy of Electoral Roll and ballot paper of Gram Panchayat Constituency,. ... If there is a challenge to the identity, he will turn the voter to the Presiding Officer.
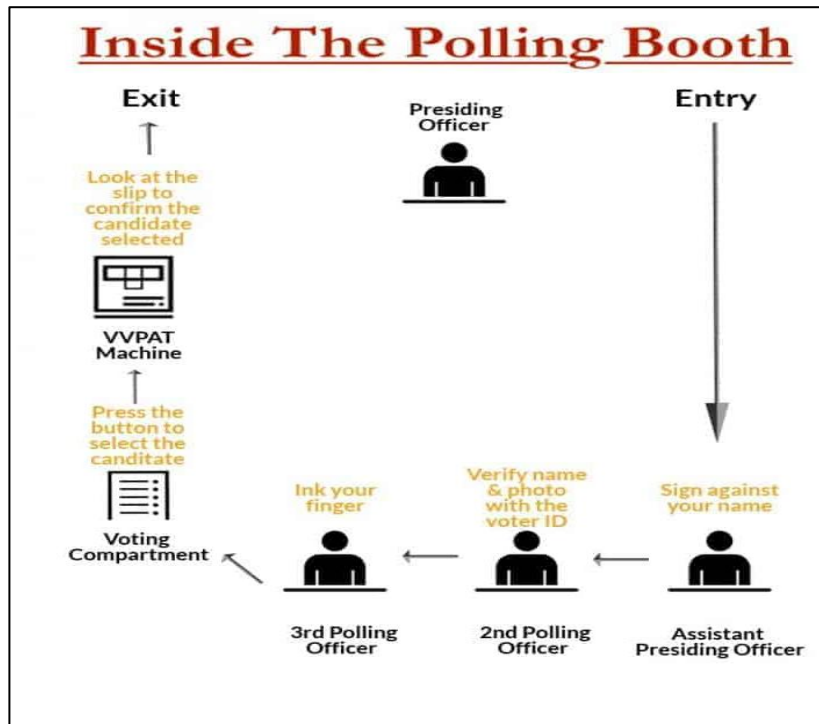

Fig. 1: process inside the polling booth

II. The second polling officer and third polling officer: it will be in charge of indelible ink. ... The Second Polling Officer will also be in-charge of the register of voters in Form 17A. He will be responsible for maintaining in that register the proper account of electors whose identity has been established and who vote at the polling station. Our app is work on this stage of verification.

III. Voting compartment: in this compartment voter can go when voter is identified by the polling officer.

IV. VVPAT machine: voter is eligible then the voter can vote using press the button of the machine. Then the voter can exit from compartment.

V. WORKING

We are designing this system for voting online by increasing the security as well as assuring that the same person is casting his vote. The information of each voter will be uploaded in the main database of the election commission of India /state which provides a matter of confidentiality among the voter and administrator. The details of the voter are provided to the administration during the registration process. The proposed system provides the voter to cast their vote in the secured manner without any fear. The government of India has provided a compulsion of aadhaar card as an id proof. The fingerprints act as the main role of security in the proposed system of online voting. This also guarantees the voters that their vote casted will not be leaked to others.

SYSTEM ARCHITECTURE

The University of Ibadan Online Voting System's architectural design is a diagram that defines the relationship between major structural elements of the software, the design patterns that can be used to achieve the requirements defined for the system and the constraints that affect the way in which architectural design patterns can be applied.
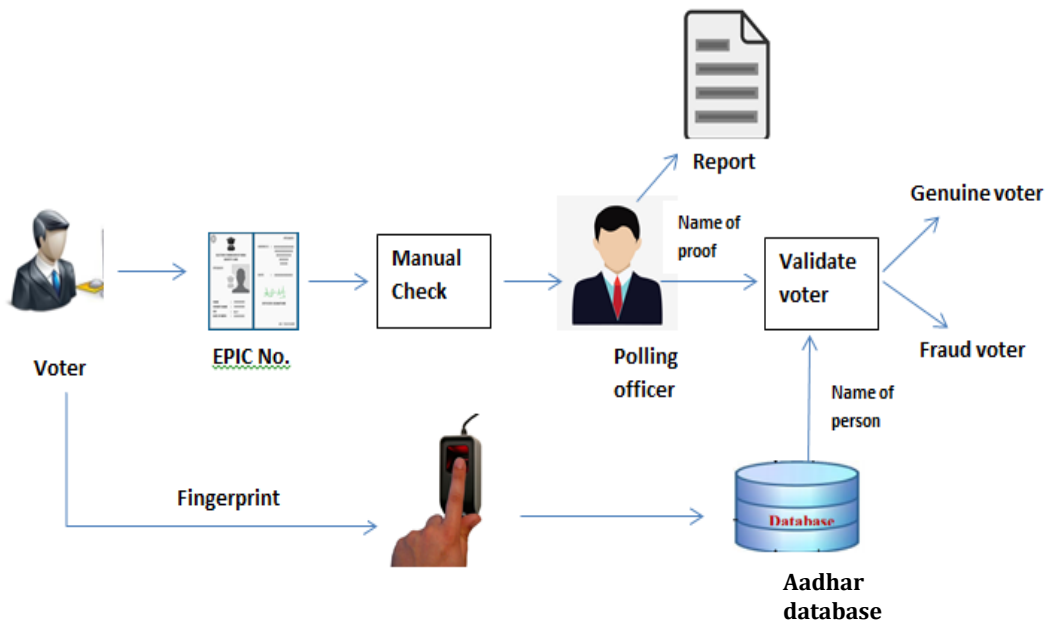

Fig.2 : system architecture for biometric based voter identification

MODULES

i. Login Module:
   The login module is made for the authorized person of the organization. The authorized person has ability to handle the every function of the voter

ii. Local Aadhaar Database:

As we are not getting to the legal aadhar database, the local database is developed. This database will be working somewhat similar to the actual database. There will be all necessary fields such as name, date-of-birth, address, mobile number, etc. and we are dealing with fingureprint authentication there will be only fingerprint field.

iii.   Android Application

a) Voter Identification: Fingerprint verification is the process of comparing the fingerprint data to the fingerprint template produced at enrollment and deciding if the two match. The following procedure describes typical fingerprint verification.

b) The Fingerprint Module: This module is used to capture the fingerprints of users. There are different types of fingerprint readers with their corresponding Software Development Kits, provided by several vendors. The fingerprint reader that would be used in the proposed new system is the Digital Persona U.are.U 5000 reader.

VI. RESULT

We have developing the project for election process for India. This project will prove to be ulmost useful in election process. The system validates whether the voter is authorized or not. If the voter is genuine then the system grant permission else if the voter is not genuine it reject the voter for voting

VII.   CONCLUSION AND FUTURE SCOPE

The project is prepared for a better design of voting system in India. The functional and other requirements of the system are described and the needs of the users, system architecture, workflow of fingerprint identification and data representations are stated in this report. The Portal has been developed using Java and MySQL, HTML database. The complete system is thoroughly tested with the availability of data and throughput reports which are prepared manually. Design Procedure and output reports are presented in this project report. The design is easy to understand so that any new module can be incorporated easily.

The Admin i.e. Election authority has fully access to the system; he is responsible for maintaining the voter details. He can now generate the reports based on the voter information status. The generated report will be useful for the government for arranging polling booths for voting in elections. The Election authority will take the VOTER information by scanning his/her fingerprint using Biometric device. It will overcome two major drawbacks of current manual system i.e. lots of paperwork and fake details of Voter

VIII.FUTURE SCOPE

- In future it can be designed and implemented for state, and national level Elections in India.
- At present our system support Microsoft IE 8.0 and above, in future it can support all browser for fingerprint authentication (Mozilla Firefox, Opera, Google, Crome etc.)
- Future improvement in developed system will pay closer attention to the more efficiency & high security of the system.
- System will provide two step authentication to the user.

REFERENCES

1.   Sanjai   Munusami,"An   Efficient   And   Securable   Online   Voting   System", https://www.researchgate.net/publication/323512441_AN_EFFICIENT_AND_SECURABLE_ONLINE_VOTING_SYSTEM,2018
2.   Pankaj Kumar Malviya, "Aadhaar Identity Based Electronic Voting Machine With Instant Result Announcement",https://doi.org/10.26634/jes.4.3.4896",2014
3.   Mukesh Kumar, Vidhya S, Sonika Somaiah, Spandana N.V," A Secure Approach Using Fingerprint for Online Voting"www.ijetae.com (ISSN 2250-2459 (Online),
4.   [2015] Bhargavi Jadav, Ms.Aneri Desai, Mr.Fenil Patel,"Cloud Computing E-Voting: A Technical Review", E-ISSN: 2349-7610
5.   [2015] O.F.W Onifade, "ONLINE VOTING SYSTEM WITH BIOMETRIC AUTHENTICATION FOR UI ELECTIONS"

6.   [2015] Rudrappa B. Gujanatti, Shivaram N. Tolanur, Murughendra S. Nemagoud, Shanta S. Reddy, Sangameshwar Neelagund," A Finger Print based Voting System" ISSN: 2278-0181
7.   [2018] tej kumar," Fingerprint based Voting system"https://www.skyfilabs.com/project-ideas/fingerprint-based-voting-system
8.   Roger S. Pressman, "Software Engineering: A Practitioner's Approach", Fifth Ed., MGH, ISBN 0-07-365578-3
9.   Mall, Rajib, "Fundamentals of Software Engineering", Fourth Edition, ISBN: 978-81-203-4898-1
10.   Silberschatz, Korth, Sudarshan, "Database System Concepts", Fourth Edition, The McGraw−Hill Companies, 2001, ISBN 0-07-255481-9
11.   Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language User Guide", Publisher: Addison Wesley, First Edition October 20, 1998, ISBN: 0-201-57168-4, 512 pages
12.   2017,"fingerprint based biometric voating machine", https://circuitdigest.com/microcontroller-projects/page_author.html
13.   "Selenuim: Building Test Cases", http://seleniumhq.org/docs/02_selenium_ide.jsp#building-test-cases
14.   [2017] V. Kiruthika Priya ; V. Vimaladevi ; B. Pandimeenal ; T. Dhivya," Arduino based smart electronic voting machine",https://ieeexplore.ieee.org/document/8300781
15.   "Detailed COCOMO-Cost Driver", http://softstarsystems.com/cdtable.htm

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