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DiGiVoter: An Online Voting System

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Abstract: To design a system 1. Allows the voters to login with aadhaar no, which is then matched with an already saved within a database that is retrieved from aadhaar card database of the government. 2. The voting system is managed in a simpler way as all the users must login by aadhaar card number and One Time password and click on his/her favourable candidates to cast the vote. 3. Increase the voting percentage in India and reduces the cost of voting process. By using unique identification no it provides enough security which reduces the false votes.

Keywords: Online voting system, Face recognition, OTP

I. INTRODUCTION

The voting system currently being used in India is a very time-consuming and lengthy paper-based system. Voter must wait for vote polling station to vote for a right candidate.

The election officers then have to check their Voter's Id present in voters list of booths, and if the information is present then the voter can cast their vote in that booth. All this work is done manually, so there are very high possibilities of engaging in malpractices and the conduction of a free and fair unbiased election becomes extremely difficult. The primary aim of our project is to develop an Online Voting System that seeks to use various stages of security authentication to enhance the election process and enables all eligible voters to vote from any location.

II. LITERATURE SURVEY

1) Elections (Definition, Types and History)

An election is a formal decision-making process by which a population or society chooses an individual to hold a political office. Elections have been the usual mechanism by which modern representative democracy operates that predates to as early as the 17th Century.

Elections are conducted both by public entities such as the government as well as private and business organizations, for example, choosing representatives for the Board of Directors of a company, professional club leadership and even, used in voluntary associations.

2) Voting Systems

- Traditional or Paper – Ballot Voting Systems
- Electronic Voting Systems

A. Paper-Ballot Voting Systems

The paper-based voting system can be described as the traditional means of voting that has been in used over the ages. It is also the default method of conducting elections in Nigeria as well as other countries around the world. It operates by issuing paper ballots to eligible voters who present themselves at the polling unit on the day of the election. The voter is authenticated by searching for and ticking his or her name on the voters register for that particular polling unit. Indelible ink is used to mark an authenticated voter by dropping the ink on the voter's left thumb fingernail.

The voter is then expected to proceed to a secret booth to vote a candidate by pressing his right thumb into an ink stamp and placing the inked fingerprint in front of the chosen candidate on the ballot paper given and subsequently required to drop the ballot paper into a ballot box placed in an open place within the polling unit.

After the close of polls or voting for the election, the election ballot box for the polling unit is opened by the polling officer, the ballots are counted by the various election judges such as election agents and election officials and the total vote results are reported and entered onto the election results sheet which is also required to be signed by all election judges as well as observers present thus giving authenticity to the declared results.

Challenges of Paper-based Voting Systems

- 1) LOW RELIABILITY
- 2) POOR SECURITY
- 3) HIGH COSTS
- 4) VOTER INTIMIDATION
- 5) QUEUEING

B. Electronic Voting Systems

The Council of Europe recommendations defined electronic voting (e-Voting) as “the use of electronic means in at least the casting of the vote” (Krimmer, et al., 2007). Electronic voting is a term encompassing several different types of voting, embracing both electronic means of casting a vote and electronic means of counting votes.

It is a fundamental demand of countries to enhance their election system. Now due to rapid emergence of technologies in computer and telecommunication world e-Voting based systems are to be introduced that lessens all the traditional manual election systems' problems.

With the introduction of e-Voting systems our elections processes and social lives are going to be easy, efficient and low-cost. Now in this system voters can cast their votes from anywhere in world. E-voting system must meet security requirements such as confidentiality, integrity, fairness, forgery attack, verifiability and so on.

This is because E-voting system is more vulnerable than traditional voting due to the nature of digital processing of election data which can be easily manipulated, hence may result in widespread fraud and corruption. Voting is getting to be seen a next generation approach of election in almost all countries. The ultimate aim of e-Voting is to provide voters a good environment so that voters can cast their votes with minimum cost and efforts on the internet.

There are two types of e-voting systems: On-Line and Offline. On-line, e.g. via Internet, and offline, by using a voting machine or an electronic polling booth.

C. Internet Voting System

Internet voting is defined as an election system that utilizes the internet to ensure access to a website or domain which makes use of electronic ballots. In this regard, the electronic ballots allow voters to transmit their voted ballot to election officials over the Internet.

- 1) Iris Detection in Voting System In this paper, the author focuses on the Iris Detection of the voters. Voter's Iris is detected and once it matches, the system confirms the voter to be the eligible individual to vote by checking his/her Aadhar details. Once confirmed the voter will be allowed to cast the vote. As the existing Aadhar database contains all the information about voter's Iris, fingerprints and other details like address, blood-group voter can be easily tracked and checked. This approach requires less manpower and highly secure.
- 2) Voting System using Fingerprint Recognition The author focuses on biometric data of the voters to recognize the authentic voters. Once the biometric image is read the information will be sent to the web application through the microcontroller's serial port. After matching the biometric image with the existing image in the database the server sends the message and displays it on the LCD confirming the owner's identity. If not confirmed, it displays the same as not eligible through LCD.
- 3) Smart Voting The proposed system in the paper has 3 security phases. Information of individuals above age 18 will be taken from the Aadhar database. In the first phase, the voters will be given an Id and password through the registered e-mail Id before the voting process. The second phase is validating the voter using fingerprints data and once confirmed voter will be allowed to cast the vote. After casting, as a part of the third phase, the voter id will be deleted leaving no second chance to vote again. Aadhar details that were used by the voter will be locked to track the voter for further access. The count will be updated parallel.
- 4) Location-free Voting System with the help of IoT Technology In the paper voting process is done through the smart- phone using its fingerprint sensor. The fingerprint sensor of the phone will be linked to an application in the Smartphone to validate the voter and voter will be allowed to vote only on the day of the scheduled process. The voter can vote from anywhere and will be allowed to vote only once.

D. Existing System

Currently, voting systems are Electronic Voting Machines (EVM) and Secret Ballot Voting which require man-power and are time-consuming processes. Individuals above age 18 are eligible to vote. Voter’s Id and others details are validated manually and only after confirmation he/she will be allowed to vote. The EVMs have to checked and transported to different parts of the country wherever the election is taking place. It also needs manual power and security. The counting of the votes casted in EVMs also needs manpower and takes an entire day and ballot voting is entirely manual. So, there are a lot of ways the counting and the voting to not be clean. Hence the current system can be made a lot better, more accessible and more efficient.

III. OBJECTIVES OF SYSTEM

The objectives of the proposed system would be as follows –

- 1) Identify intended voter using aadhaar card number.
- 2) To create a secured online voting platform where authenticity of votes and voters are ensured using face recognition
- 3) To improve the voter’s identification process through biometric (facial) recognition since biometric and facial features cannot be shared
- 4) To ease the problem of queuing and crowding during voting period on elections
- 5) This is a voting system by which any voter can use his/her Voting rights from anywhere in the country. Voter can cast their votes from anyplace in the country, in highly secured way.

IV. IMPLEMENTATION DETAILS OF MODULE

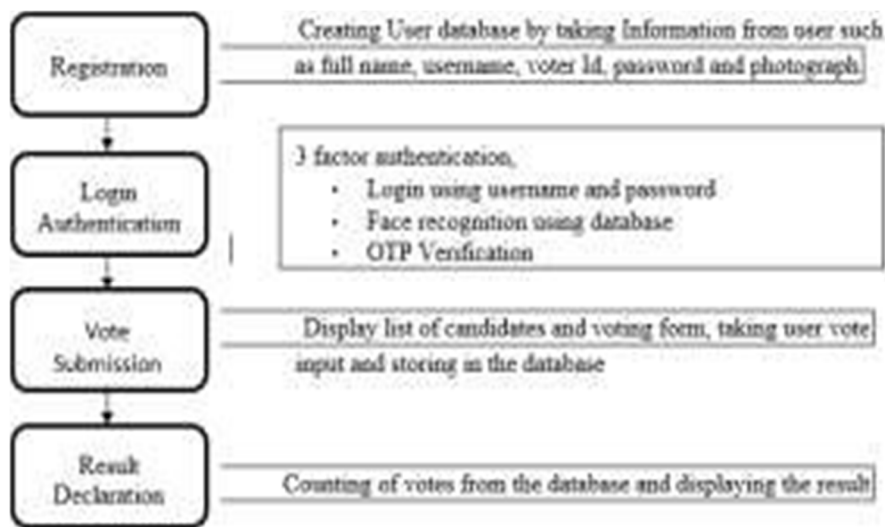


Figure : Module description

A. Module 1: 1) Registration

Initially, voters will have to register using voter id and email address and other details

B. Module 2: Login Authentication

Two factor authentications with Login Id and Password as well as Face Recognition

C. Module 3: Vote Submission

Voter can cast their vote to the respective candidate using their login credentials

D. Module 4: Result Declaration

After the time slot is over, votes will be counted and result will be declared accordingly.

V. RESULT



Figure 1: Dashboard

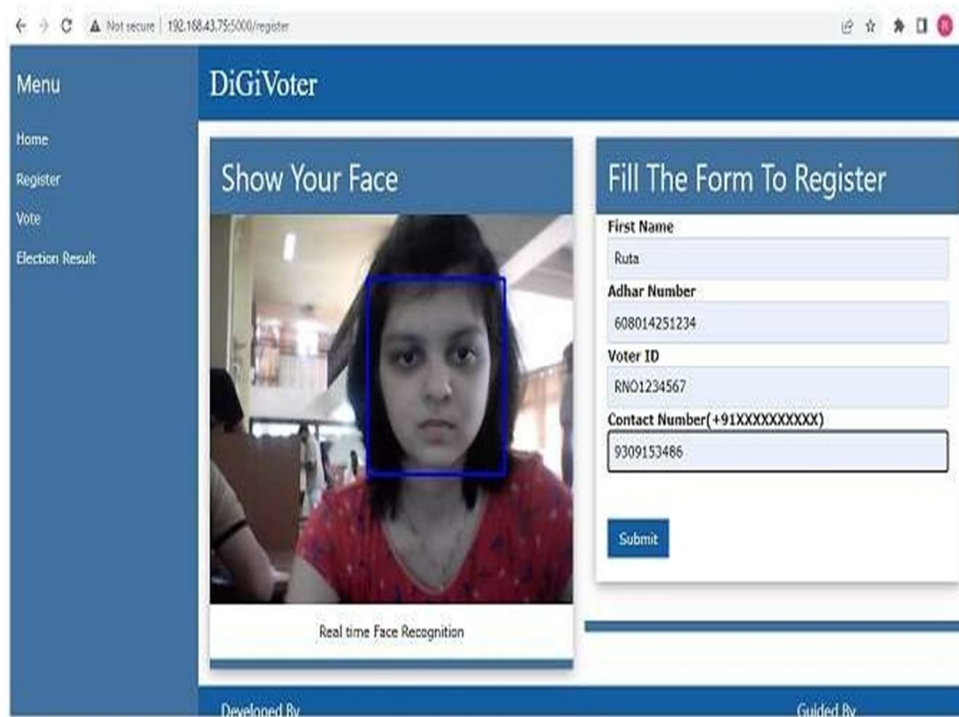


Figure 2: signup/register

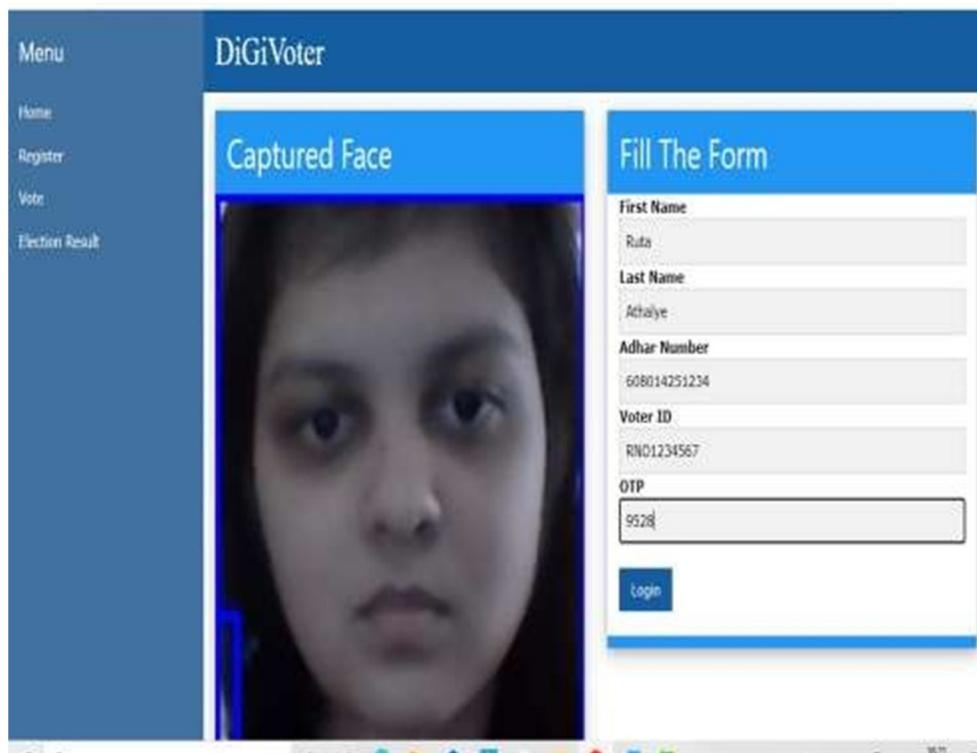


Figure 3: otp verification

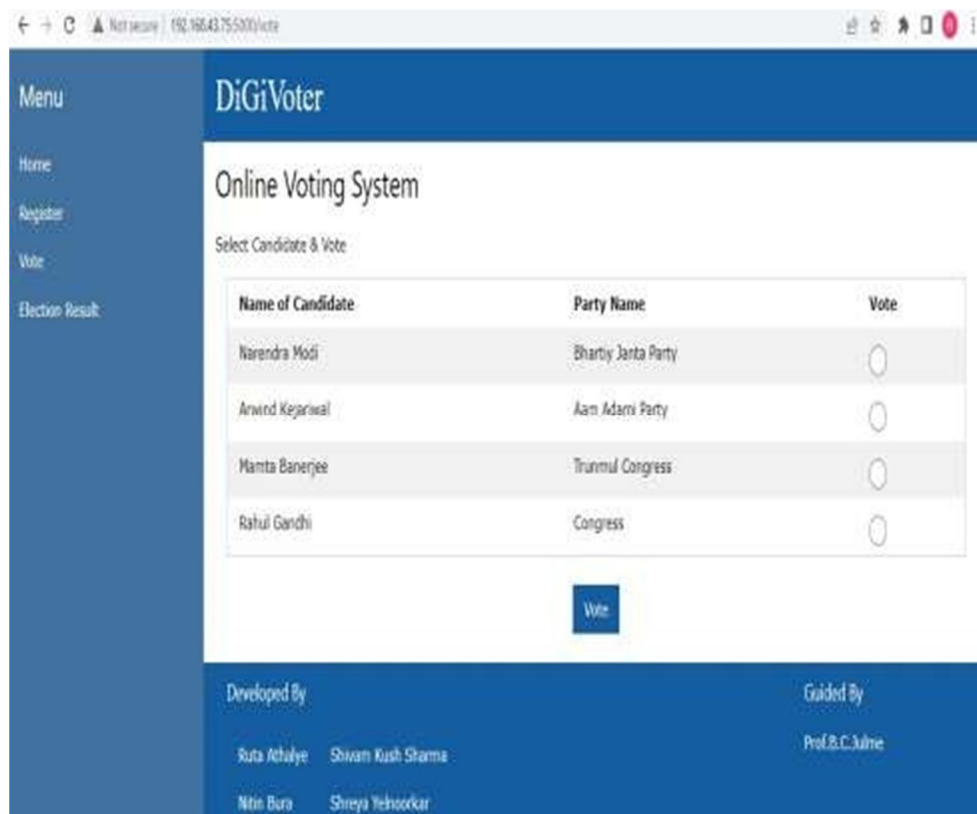


Figure 4: voting page

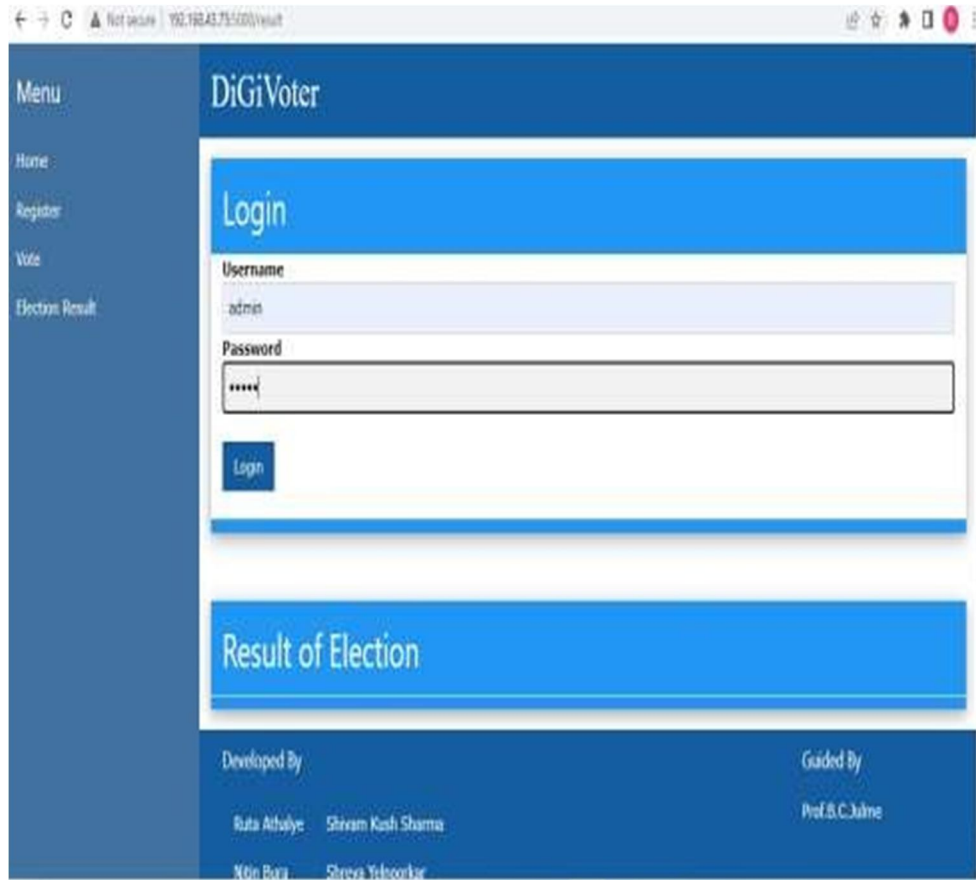


Figure 5: admin login

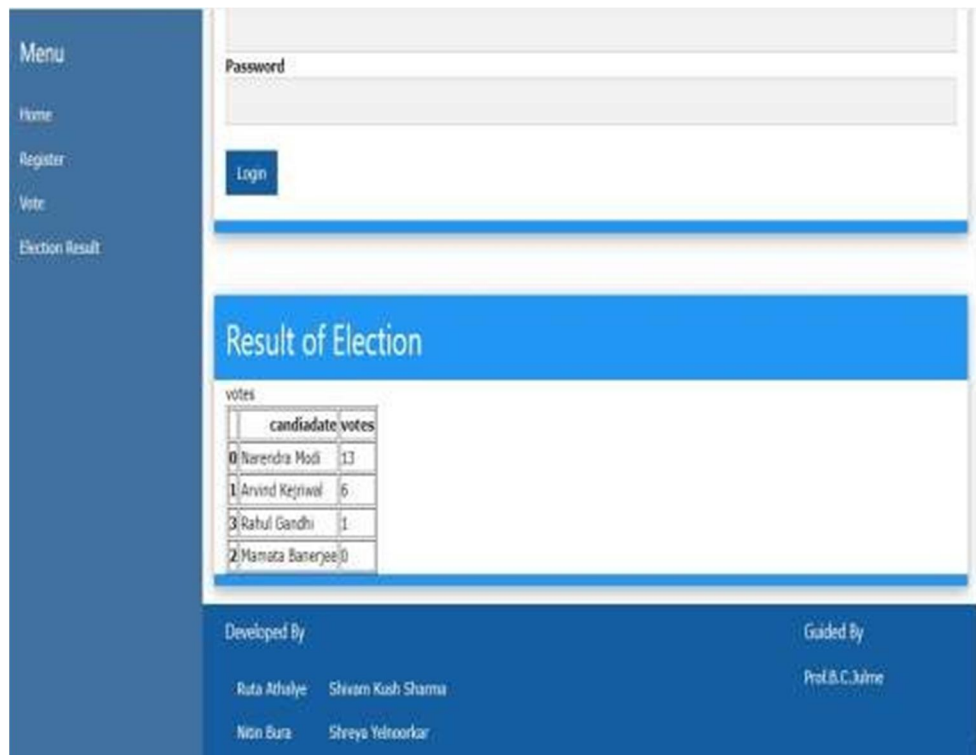


Figure 6: result



VI. CONCLUSION

This idea is more accessible, secure and efficient than the existing system which has many defects such as lengthy process, time taking, not being secure enough, bogus voting. Unique features like the distance between the eyes and eyebrows never change regardless of aging. The designed system

is also less time-consuming, inexpensive and a hassle-free way of conducting the election process, making smart voting a better way to vote.

The integration of biometric authentication within the system will provide an efficient way to cast votes, free of fraud, and make the system more trustable, economic and fast as well as enabling the voters to cast their votes from any location as a result of the online voting module which can be accessed from any device with internet connectivity. The use of face recognition deepens the process of ensuring that the voting mantra – one man, one vote is fully enforced.

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