SMART VOTING SYSTEM

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Abstract—India is a constitutional democracy with a parliamentary system of governance. All Indian citizens of and over the age of eighteen years and ordinarily resident in the country are eligible to vote. India is a federal set up, the union and state Legislatures having their own domain.. India possesses the biggest democracy in the world and the most powerful weapon the Indian people have; is their power to Vote. Other elections are carried out by the State Election Commission. The democratic set up and all state and Territories except the State of Jammu and Kashmir is governed by the constitution of India. The state of Jammu & Kashmir has its own constitution. The seats are also reserved in the State Legislative Assemblies for the members of Scheduled Castes and Tribes. The number of seats have been reserved considering their proportion in the population. The Commission instead of traditional ballot boxes now uses the Electronic Voting Machines for elections. In General Elections 2004,EVMs were used for the first time throughout the country - making the elections fully electronic. In this system any person can enter into the polling booth and caste their vote. In the proposed system biometric system using finger print detection along with RFID technology. In This proposed system completely reduce the chance of illegal voting.

Keywords: Bio-metric, Electronic Voting Machine, Fingerprint, RFID Communication technology

I. INTRODUCTION

Article 324 of Indian Constitution envisages setting up of an independent Election Commission for holding free and fair elections. The Election Commission of India was set up in accordance with the provisions of the Constitutionon25January, 1950.Initially it was single member Commission consisting of only the Chief Election Commissioner. Later, in 1989 and once again in 1993, the Commission was made a three member Commission. At present Commission consists of the Chief Election Commissioner and two Election commissioner. The Commission decides most of the matters by consensus but in case of difference of opinion the view of the majority prevails. It is the duty of the Election Commission of India under the Constitution to hold free and fair elections, to both the houses of the Parliament, State Legislatures and the Offices of the President and Vice-President of India.

The Election Commission, an independent constitutional authority plays a fundamental and critical role in providing level playing field to various political parties. The President of India appoints the Chief Election Commissioner and Election Commissioners. The elected members of the State Legislative Assemblies and both the Houses of Parliament elect the President for a period of five years. The President can stand for re-election. keep the federal structure of the country in view, the Constitution makers provided for parity between the States as a whole and the Union in the matter of votes at a Presidential election. A formula linked to the population of state determines the value of vote for each elected member of Parliament, both of Lok Sabha and Rajya Sabha. This formula is linked to the total value of votes of all the members of all the State Legislative Assemblies. India possesses the biggest democracy in the world and the most powerful weapon the Indian people have; is their power to Vote. Election in India is the righteous time to make the best use of this power. Other elections are carried out by the State Election Commission. The Constitution of India has set the eligibility of the person who can vote. Any person who is 18 years old and a citizen of India is eligible to cast the vote. Voting is a fundamental right and the heart of the

democracy. The accomplishment of democracy and the establishment of a responsible government directly relies upon the voting power of the citizens of the country. Abraham Lincoln defined democracy as the "government of the people, by the people and for the people". That clearly states that the government is here to serve us and not us, who serve the government. It is our right and power to choose; that who would represent us in the government and how do we want to be represents.

In the traditional system of voting, votes are cast by means of the ballot paper. On entering the polling station, the elector is checked against the Electoral Roll, and allocated a ballot paper[3]. The elector marking on the ballot paper near the symbol of the candidate of choice inside the polling station. The voter put the ballot paper into the ballot box.

Any elector can put a case in court if elections are conducted in unfairly. RFID Tags are used to identify individuals and verify their identity. The RFID tags are used to recognize and track the tags using EM fields.

There are two types of tag, one of them Passive tags gather information in terms radio waves which is nearby RFID readers. Active tags have must be a power source such as a dry battery and may operate at several meters from the RFID reader. For tracking of the object, the tag needs to be within the line of sight of the reader which is barcode[1]. RFID is one way for Automatic Identification and Data Capture (AIDC)[2].

RFID reader module, are also referred to as interrogators.RFID structures use many exceptional frequencies, but the most common and broadly used & supported by means of 125 KHz[1]. The range of RFID is so short that if any hacker device comes in the vicinity, it will be clearly recognized. Once the user is verified, the person can proceed to the next level of biometric authentication. To make the system more stringent and robust, another layer of

security is reinforced through the use of biometric fingerprint identification as every individual has unique fingerprints. Biometrics is the science and technology that deals with analyzing the biological information or data. Biometric logistics operates by procuring fingerprints from an individual, then decoction of a feature set from the acquired data, and comparing this feature set with reference to the template set stored in the data base[6]. Using fingerprint matching is very reliable and popular biometric technique in personal identification process as it generates solemnity while stressing on building or cultivating voter confidence. Common challenges during capturing of unreadable fingerprints are False Acceptance Rates (FAR), where an invalid fingerprint is accepted because of subterfuge or error and another exception is False Rejection Ratio (FRR) where a valid fingerprint gets rejected. So this should be mediated in order to make it more accurate[6]. To maintain the transparency of the system, in the third tier of security level -each time a user casts his vote, a tweet will be generated that the specified user has submitted his/her vote and the total no of vote count increases to prevent from illegal voting (rigging). The proposed design VOT-EL looks into the multiple dimensions to endure the expectations of the voter's for a secured, reliable and efficacious voting system.

II.   **RELATED WORK**

Your one vote plays many big roles therefore it must not be taken carelessly. Vote confirms our rights as the citizens to elect the prolific leaders of our government and to take part in democracy. A Vote is the Voice of the citizen and voting is the most effective way to make that voice heard. But this voice is heard through the right way and is it actually being heard, that's the very important concern. Voting is based upon a trust factor that the

votes of the people are actually recorded and counted with accuracy and un biasness. The whole electoral process demands a proper security and strictness. This article discusses complete review about voting devices, Issues and comparison among the voting methods and biometric EVM. NOTAwasintroducedinIndiafollowingthe2013SupremeCourtdirectiveeinthe People's Union for Civil Liberties v. Union of India judgment[2].

III.   HURDLESOFTREDITIONALAND EXISTING VOTING SYSTEM:

Electronic Voting in India: The traditional electoral process counting of votes are vey difficult and also time consuming is more[3]. Instead using the paper ballots we are using EVMs we are the millions of trees from being cut. EVMs were developed by the two companies there are Electronics and corporation of India and another one is Bharat Electronics Limited. EVM consists of two parts one is control unit and another one is ballot unit. The two units are joined by the 5meters of cable. Ballot unit consists of blue buttons candidate name along with party symbol while the control unit control the ballot unit and counting the votes. EVMs are powered by 6 volt alkaline battery manufactured by the Bharat Electronics Limited (BEL).EVMs can record maximum of 3840 votes and maximum of 64 candidates.16 candidates in a single ballot unit if more than 16 candidates maximum of 4 ballot units are connected parallel. Battery is required only in the activation of EVM at the polling time and counting time. By using EVMs 10.000 tonnes of ballot paper is saved. EVMs are easy to transport and when compare to ballot boxes. In 1980 M.B Haneefa invented the first Indian voting machine. In this any person can enter in the polling booth and cast the their vote. EVMs were first used in 1982 in kerala for limited number of polling stations. EVMs are used among

25 countries out of 120 democratic countries are used countries are used the EVMs. The counties are Australia, Belgium, Brazil, Canada, Finland, France, Germany, India, Ireland, Italy, Kazakhstan, Lithuania, Namibia, Netherlands, Norway, Philippines, Romania, Scotland, South Korea, Spain, Switzerland, U.K. United States of America, Venezuela, United Arab Emirates.
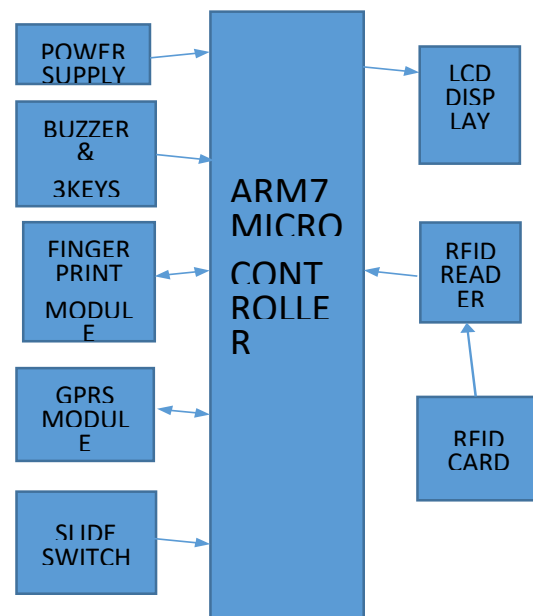
IV.   ARCHITECTURE OF THE PROPOSED SYSTEM

Fig: Block- diagram of the proposed system Brief Description of the system:

Each user will have a RFID voter id card which consists of the tag; all the baseline information like name, age, gender, location will be stored. The RFID cards come with a unique number for the identification purpose of each vote. Once the card id is held within the vicinity of the controller, through the use of serial monitor, the data or the baseline information contained becomes valid. When the user comes in the proximity range of the RFID reader, it retrieves the data from the tag and passes the information to the microcontroller.

If the user is genuine, the id matches with the stored data in the database, he will be allowed to move to the next level of authentication, otherwise a message will be shown in the display that the person is not an authorized user. Only registered users may process further to cast their vote once they have places their card within the vicinity of the RFID reader. Then the card is acknowledged by the reader, it checks for the unique identification number is present in the database, when this is done the voter is signaled to move to the next stage.

Once the voter cast his vote, he won't be allowed to vote again and if multiple votes are tried by the same person this will be reported to the screen. The fingerprint of the voter will be taken by the scanner and is being sent to the microcontroller. The processed image of the fingerprint is transferred to match with the sample templates in the database. If the person's identity matches, he can cast his vote in real time only once, choosing the candidate as per choice and if invalid user, then the buzzer will be raised and a message will be displayed as unauthorized user.

The option which is entered by the voter is being sent to the server which keeps on updating through internet every instant. Once voted, it automatically gets incremented with respect to the voting. The server retrieves the data and starts the validation process. Finally, the in-charge of election commission or the authorized admin has the complete control on the application and is fully-responsible for governing important functionalities. The admin can ensure that the elections are conducted in an unprejudiced and fair manner. He can search the database to verify a person has not voted under two different names. And also the voting details of a person is available, he can also track down a vote in case of any irregularities. Finally after the vote submission phase is over, the results

can be displayed through internet within fraction of time. Considering the above points, the design proposal can handle all security related issues.

Power Supply: This section is meant for supplying Power to all the sections mentioned above.It basically consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc.

Microcontroller: Microcontroller plays vital role in the project.

MAX 232: In order to communicate the Microcontroller with either GSM modem or PC, a mismatch between the Logic levels occurs. In order to avoid this mismatch a Serial driver is used. And MAX 232 is a Serial Line Driver used to establish communication between microcontroller and PC (or GSM).

LCD Display: This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display prompt for necessary information.

Buzzer Section: This section consists of a Buzzer. The buzzer is used to alert / indicate the completion of process. It is sometimes used to indicate the start of the embedded system by alerting during start-up.

Finger Print Recognition: Finger print recognition will be done in module i.e. in module users finger print images are enrolled and even unnecessary finger prints can be deleted also so it has more accessibility in adding new users also.

GPRS: This section consists of a GPRS modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global Packet Radio Service is a TDMA based digital wireless network technology that is used for

connecting directly to internet. GPRS module will help us to post data in the web page directly.

RFID   Reader (Radio Frequency Identification):
Radio Frequency Identification (RFID) is a generic term for non-contacting technologies that use radio waves to automatically identify people or objects. The combined antenna and microchip are called an "RFID transponder" or "RFID tag" and work in combination with an "RFID reader". Radio Frequency Identification (RFID) is the latest technology that is being adopted to track and trace materials, including books
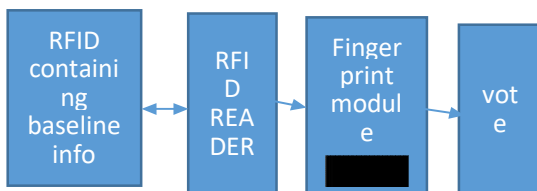
Schematic System Flow Diagram:

Fig: Schematic system flow diagram

Advantages and Future Applications:

1) The voters during voting cannot perform any sort of tampering as he/she is not authorized to scroll any other screen.

2) The voter cannot be indulged in any bogus voting as his fingerprint should match with the stored template in the database. .

3) The proposed design provides additional security due to reinforcement of RFID tags.   4)The main advantage is that fingerprints of every person are unique and hence the design completely diminishes the chance of illegal voting

5) The proposed design is economically viable and cheap.

This can be further used for online ticketing system for buses and trains, vehicle tracking system, automation of parking lot.

V.   CONCLUSION

The best solution to diminish corruption is to augment voting machines with a proper auditing trail. Auditing is one of ways to discover patch security holes to uncover specific vulnerabilities. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented. This model satisfies the democracy, anonymity (privacy), reliability, accuracy and usability criterion. This model completely reduce the chance of illegal voting.

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