

Aadhar and Biometric Based Electronic Voting Machine

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Abstract- *The purpose of this proposed project is to improve the security performance in the voting machine as well as to provide easy access to cast the vote by using fingerprint. Fingerprint is one of the unique identities of a human being which is being used in the Aadhar system. The voting system is managed in a easier way as well as the user should login by Aadhar card number and click on his/her favourable candidates to cast the vote. This features a larger security in the sense that voter high security password is confirmed before the vote is accepted in the main database of ECI. The extra feature of the model is that the voter will ensure if his/her vote has gone to correct candidate/party. The voters are going to be done automatically, therefore saving an enormous time and facultative ECI to announce the result at intervals in a very short period.*

Keywords: *Aadhar card; Finger Print Module; Electronic Voting Machine; GSM Modem.*

I. INTRODUCTION

India is the largest democracy in the world. Elections are the Fundamental blocks of democracy. Fake voting, illegal voting affects integrity of voting system. To maintain transparency in the electoral processes and shield the integrity of voting system we are spending a lot of money & effort. Even though government has provided unique voter ID, the illegal voting rate have not yet been decreased considerably. Here we are going to implement a voting system which uses the biometric identification and unique Aadhar ID which can eradicate fake voting.

Elections are the fundamental defining characteristics of any democracy that upholds the very meaning of a system that is being governed by the people expressing their choices or articulate opinions in the form of voting. The traditional electoral process vacillates around tallying manually, which is time consuming and complicated and more erroneous and prone to fraudulency.

Biometrics is the science and technology of measuring and analyzing biological data. In information technology, biometrics refers to technologies that measure and analyze human body characteristics, such as DNA, fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measurements, for authentication purposes. During this paper used thumb impression for the purpose of voter identification or authentication. As

the thumb impression of each individual is exclusive, it helps in maximizing the accuracy.

Aadhar database is created containing the thumb impressions of all the voters in the constituency. Illegal votes and repetition of votes is checked for in this system. Hence if this system is utilized the elections would be truthful and free from rigging.

II. METHODOLOGY

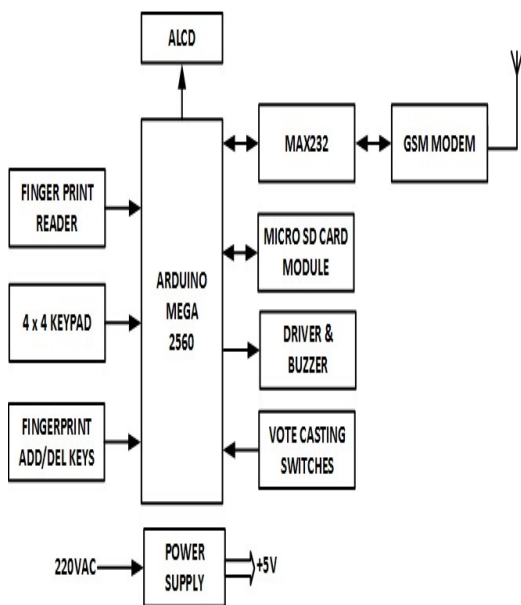
The project aims in designing a voting machine which has a data base of all the voters along with their biometric details. According to a recent world Biometric Market Outlook, it has been predicted that the average annual growth rate of the global biometric market is more than 28%, where in the fingerprint technology by 60%, facial & iris by 13%, keystroke by 0.5% & digital signature scans by 2.5%. Here the physical fingerprint is required during the time of casting vote & also the unique Aadhar-ID which should match with the pre-stored details in the database.

It keeps an eagle eye view on the privacy constraint which directly conflicts with the capability to audit the data aptly. 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 controller. The processed image of the fingerprint is transferred to match with sample templates in the database. If the person identity matches, he can cast his vote in real time only once, and if invalid user, then 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 w.r.t voting. The server retrieves the data and starts the validation process.

Finally, the in-charge of election commission or the authorized admin as the complete control on the application and his fully responsible for governing important functionalities. The admin can ensure that the elections are conducted in an unprejudiced fair manner. He can also track down a vote in case of any irregularities.

III. BLOCK DIAGRAM



IV. FINGERPRINT DETECTOR

Fingerprint includes two parts: Fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1:N). When enrolling, user needs to enter the finger two times. The system will process the two time finger images, generate a template of the finger based on processing results unstore the template. When matching, user enters the finger through optical sensor and system will generate a template of the finger and compare it with templates of the finger library, For 1:1 matching, system will compare the live finger with specific template designated in the module; for 1:N matching, or searching, system will search the whole finger library for the matching finger. In the both circumstances, system will return the matching result, success or failure.



Fig 1. Fingerprint Module

V. AADHAR ID LINK

Aadhar card is the personal identity of an Indian citizen. It carries an individual's biometric and eyes

impression and his/her complete detail including address. Aadhar is a 12-digit unique identity number issued to all Indian residence based on their biometric and demographic data. The data is collected by the Unique Identification authority of India (UIDAI).

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Fig 2. Aadhar ID Card

VI. ARDUINO MICROCONTROLLER ATMEGA 2560

It has advanced RISC architecture with 135 powerful instructions and 32x8 general purpose registers. Arduino is a tool for making computers that can sense and control more of the physical world than your desktop computer. It's an open-source physical computing platform based on a simple microcontroller board, and a development environment for writing software for the board. Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino projects can be stand-alone, or they can be communicating with software running on your computer (e.g. Flash, Processing, and MaxMSP.) The boards can be assembled by hand or purchased preassembled; the open-source IDE can be downloaded for free.



Fig 3. Arduino Board

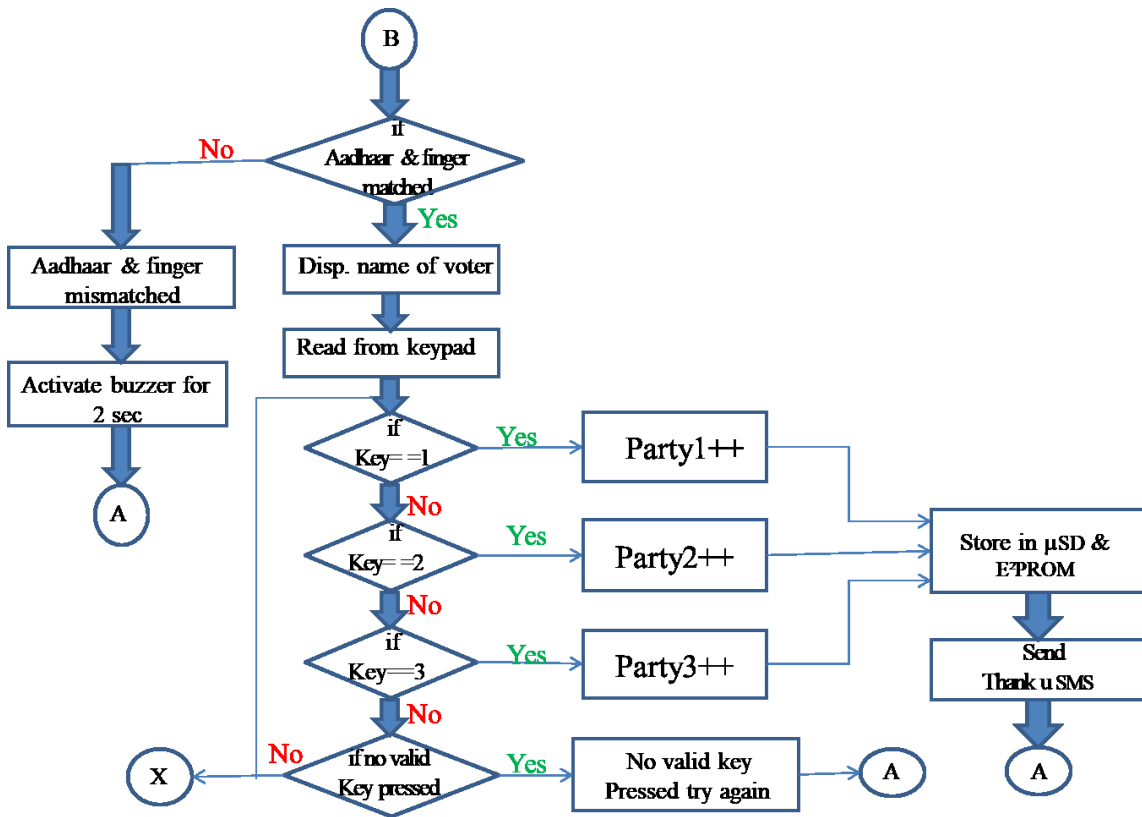
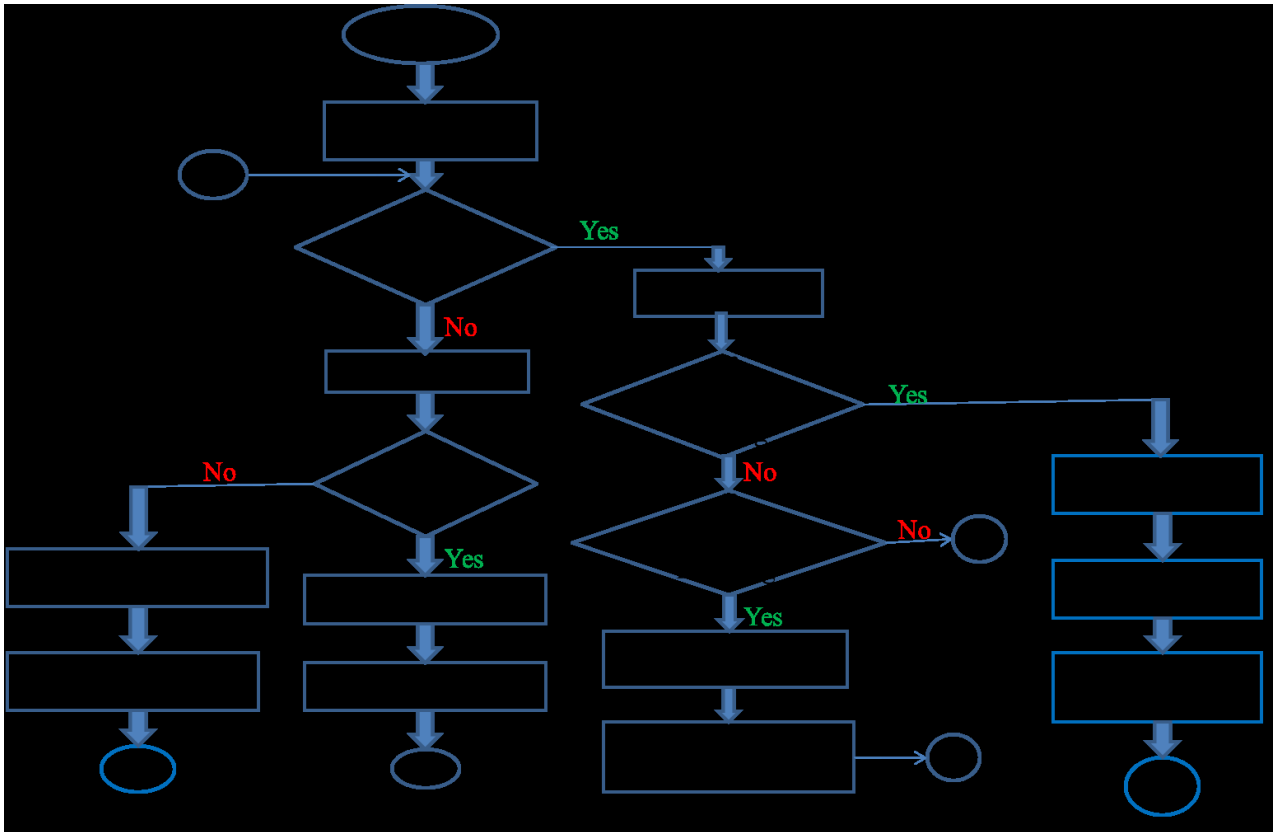


Fig 4. Flow diagram

VII. GSM MODEM- SIM 800A

SIM800A is a Quad-band GSM/GPRS Modem that works on frequencies 850MHz, 900 MHz, 1800 MHz and 1900 MHz. SIM800A can fit almost all the space requirement in your application, such as Smart phone, PDA phone and other mobile device. The physical interface to the mobile application is made through a 60 pins board-to-board connector, which provides all hardware interfaces between the module and customers' boards except the RF antenna interface. The SIM800A is designed with power saving technique, the current consumption to as low as 2.5mA in SLEEP mode.

The SIM800A is integrated with the TCP/IP protocol, Extended TCP/IP AT commands are developed for customers to use the TCP/IP protocol easily, which is very useful for those data transfer applications.



Fig 5. SIM 800A- GSM Modem

VIII. ADVANTAGES

1. It is economical.
2. Less man power required.
3. Time conscious, as less time required for voting & counting.
4. Avoids invalid voting, coercion, intimidation & ballot selling.
5. Saves transportation cost due to its compact size.
6. Convenient on the part of voting.

IX. APPLICATIONS

1. It is used in all kind of elections like M.L.A, M.P....etc.
2. In Business organizations, Clubs , Voluntary associations, Corporations.
3. In School, College & Graduate elections.

X. CONCLUSION

This paper describes the proposed model for electronic voting system for India. The proposed system is much secure and efficient than the traditional voting system. Manipulation of votes and delay of results can be

avoided easily. A unique AADHAAR identity is the centre point of our proposed model. It leads to the easier verification of both voters and candidates.

This paper suggest that the EVM system has to be further studied and innovated to reach all level of community, so that the voter confidence will increase and election officials will make more involvement in purchasing the innovated EVM's for conduct smooth, secure, tamper- resistant Elections. This concludes that the Aadhar based EVM will useful

- To avoid Rigging
- To avoid time consumption
- To keep the voter's information more secured.

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