



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

IOT BASED SECURE EVM SYSTEM

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ABSTRACT

Every citizen or name of India is allowed to exercise their right to express their choices regarding specific issues, pieces of legislation, citizen enterprise, indigenous emendations, recalls and/ or to choose their government and political representative's through casting their votes. To allow the exercise of this right, nearly all advancing systems include the following way name identification and authentication, voting and recording of votes cast, vote counting, publication of election results. Voter identification is needed during electoral process. Security is a heart of-voting process. thus the necessity of designing a secure-voting process is veritably important. A secured electronic voting machine using unique identification number i.e. AADHAR number has been developed. numerous conditions need to be checked to insure these factors. Checking if all these conditions manually are a veritably complicated and exhausting task with numerous chances of mortal error. To avoid this, we then propose a point grounded voting system design. therefore, our system provides for a completely automated voting system with RFID label (Aadhar label) and cutlet print grounded authentication. We use a RFID label and point module connived with microcontroller and an TV screen in this system. The RFID anthology is used to reviews the citizen's RFID label (Aadhar card) and TV display displays the Aadhar number and also point module is used to smell fingerprints and give to microcontroller for farther processing. The system has list of eligible choosers in database, the voting system tallies the honoured cutlet print against the bones stored in database. If match is set up that person is allowed to bounce. Once a vote is

casted by that person his id is rolled out for that voting process. This avoids double vote casting. The cutlet print detector is used to authenticate people's profile's and checks the status of the people. If it matches it'll allow to bounce. We can bounce the appointees with the help of advancing keypad. All the voting machines are connected in a network, through which data transfer takes place to the main host. The result is immediate and counting is done eventually at the main host itself. The overall cost for conducting choices gets reduced and so does the conservation cost of the systems.

Keywords: Voting Keypad, Scanning, Identification number and Election database

1. INTRODUCTION

There are around 167 Popular countries in the world. But only around 20 countries were using Electronic Voting Machine for conducting the Election. Some of the developed countries in the world similar as England, France, Germany. United countries don't use the EVMS. The supreme court of Germany has stated that advancing through this technology is unconstitutional. India is one among the largest popular country in the world and there are around 911 million people. India is also one of the largest populated voting country. The maximum quantum of votes polled are around just 67 which is considered to be veritably less taking into the account of population in India. One of the Greatest contestation is fake votes. There have been several reports that fake choosers have been casted for the choosers who were absent on the voting. This incase have proved to be real when celebrities like Shivaji Ganesen, Sivakarhikeyan etc. have been reported

that their vote has been casted by fake person. So numerous citizens have complained about this issue hype to media during Assembly election, 2019. There has been a rule that those who complain that their vote has been taken by another person still the selector must to given authorization to cast vote according to section 49-P. But this isn't the case happened in 2019 Assembly choices. numerous people who lost their vote haven't handed any other chance. Our present work we've developed a prototype and tested successfully an Arduino Uno Based Aadhar based Voting Machine recycling a Two- league point security.

The republic of any nation lies in VOTE the people cast to handpick their leaders. But this system despite high security is still suffering from colourful issues substantially during verification process and the force demand during that process is large. There are chances of intervention of political parties and mortal crimes in this process but yet there are no stylish results to overcome this problem. If this problem isn't overcome also it might lead the nation into wrong hands. The security and force demand during the verification process can be overcome by the system used in this paper. Throughout the history different styles and ways of voting have been espoused. The design parameters of voting system should be chosen in such a way that all concerned parties acting as campaigners as well as choosers that are polling the votes must be satisfied with the advertisement of results after choices have been conducted. terrain of voting and conducting choices principally depends upon the artistic values as well as political programs. Election is a point of popular government in which people govern themselves and are suitable to express their choices regarding colourful issues, similar as indigenous emendations, piece of legislation or choosing the right person as their leader. An electoral system is present to layout the rules of the election. Biometrics is the wisdom and technology of measuring and assaying natural data. Biometrics refers to technologies that measure and dissect mortal body characteristics, similar as DNA, fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measures, for authentication purposes. The field of biometrics was formed and has since expanded on to numerous types of physical identification. In this design, two step verification goes on, in 1st step, RFID label is vindicated to check whether the person belongs to that particular polling cell or not. In 2nd step, Cutlet print scanner is used to check whether the name is original or not. If these two way are successful also

Arduino Uno (ATMEGA 328) microcontroller enables switches to cast vote to particular political party. RFID label contains its own ID. When we place this RFID label near RFID anthology, it reads the Label ID. It'll be checked with the database of Arduino Uno microcontroller. However, also the information affiliated person (name of the person, AADHAAR Number, if that Label ID persists in the database of microcontroller. In our design, for enrolling purpose, enroll button is provided. However, Vote won't be casted, if name isn't enrolling his Vote on the database of microcontroller. After casting votes, results will be blazoned through TV display. TV display is an educator for citizens of India to follow step by step procedure. Our proposed system will descry alcoholic person who tries to enter into polling cell. Alcoholic person does not have tolerance. He does not know what's going on around him while he was in drunk state. He can produce nuisance at polling cell. To avoid this kind of nuisance alcoholic detector is used.

2. PROBLEM IDENTIFICATION

Every nation around the world with popular legislative elects its autocrats using their separate voting systems. Different types of mechanisms are employed for advancing ranging from ballots to electronic voting machines. With ever adding corruption each around us, specifically in the third world countries there's a critical need to employ secure strategies to make the procedure of voting during choices free from any kind of apparel or other illegal interventions. numerous attempts have been made by several people in the academic field to develop systems which promote secure means of voting. A country with lower voting chance will struggle to develop their country by choosing the right leader. This is substantially due to the failure of the security position in the present voting system.

Voting is the right of each citizen to cast the vote and elect their leader. India is a popular country and each citizen has the right to bounce and show their option. People also have the right to change the ruling party in forthcoming election by advancing for the seeker. Voting isn't done to handpick the government leaders, but also conducted to handpick the leaders in seminaries, sodalities, banks, society, etc. Biometrics is a way used to fete a person grounded on his physical nature. The point, iris, face, voice, etc. are the substantially used biometrics to fete a person. There are two crucial functions for

biometrics, first is one to one matching and other is one to numerous matchings. In one to numerous matching the biometric sample is compared with the formerly stored samples. In one to one matching, it compares with the preliminarily stored sample. Biometric system results in a briskly security, and more accessible system for stoner verification. Biometric system is better than word security. point is unique for each existent so it can be used as a mark of hand, verification and authentication. point is the biometric which is used in this design. Cutlet-print will be different for each existent. In this design, point is used for the authentication of the stoner and allows him to cast vote grounded on his point image. Cutlet- print matching can be divided into three types correlation based matching, ramifications- grounded matching, pattern-grounded (or image- grounded) matching. In correlation based matching, two point images are superimposed and thus the correlation between corresponding pixels is reckoned for colourful alignments. In ramifications- grounded matching, ramifications from the two fingerprints are uprooted and stored in a two- dimensional aeroplane as a set. This matching system consists of chancing the alignment between the template and the input ramifications sets that result in the maximum number of ramifications pairings. In pattern-grounded (or image- grounded) matching system it compares with stored template and the seeker's point. This requires that the images to be aligned within the same exposure. To do this, the algorithm finds a central point within the point image and centres there on. In a pattern- grounded algorithm, the template contains the kind, size, and exposure of patterns within the aligned point image. nearly all the sectors are storing data digitally. To produce digital India, utmost of the tasks is made through on-line. When the voting is made on- line, it helps the choosers to bounce from anywhere in the world. Thing speak is one of the ways which helps in making voting on- line. carrying online result makes the system briskly. Traditionally voting was done by marking with stamp casting vote for the corresponding seeker and also dropping the paper to a ballot box. To calculate the number of vote each vote must be calculated in each ballot box and also add all the votes for each seeker and seeker who secured largest vote will be named as the winner.

All this process was done manually and it'll take further time to declare the tagged person. After advancing each name will be marked with essay in

their cutlet in- order to help voting again. This system continued till the invention of electronic voting machine. Voting is one of the rights of all the citizens of country like India. In Indian citizens has the right to elect the person who needs to rule them or the coming many times. If the citizens aren't satisfied with that leader also during coming election citizens can change the leader. But their numerous malpractices being which won't affect in the correct result. In the being system it consumes further time and it isn't important secure. In order to bounce the name must bounce in corresponding centre. The postal voting is also not important secure. In this design, applicable ways are taken advantage of to fulfil the end of the exploration, which eventually is to develop a system which prevents the malpractices being during election. point of each seeker eligible for voting is enrolled and saved in the system. point is used as the biometric identification. The stored point and the Aadhar number are matched with the stored database. It provides verification of the name. It also checks whether that name has suggested further than one time for the same election. The result will be also store in the pall. Since voting is done using pall, it allows the name to bounce from anywhere in the world. If the vindicated name it trying to bounce for further than one time also an alert will be produced. Then we're using a buzzer sound to know that a malpractice has passed.

3. CONVENTIONAL METHOD

Electronic voting machine is used currently for polling vote. Electronic voting machine consists of two corridors one is control unit and other is balloting unit. The control unit is controlled by the presiding officer and after the verification; name will be allowed to poll his vote. The balloting unit is inside the voting cube. When the verification is completed by the presiding officer, he presses the ballot button also the name can cast his vote. Voter use the button against name of seeker which he wants to bounce. In the being system name needs to carry his ID card for verification. The presiding officer will check with the list and ID card for vindicating of the name. This is time consuming. At the end of advancing all the EVM will collected and submitted to counting centre and the named government workers will count the vote and eventually publish the result



FIGURE1. 1 ELECTRONIC VOTING MACHINE

There are some problems with this being system. One problem is neither authority nor anyone differently can link any ballot to the name. Another problem is one can change the program installed in the EVM (security problems). Another problem is (verifiability) singly verification of that all votes have been counted rightly. Vacuity is another problem the system works duly as long as the bean stands and any name can have access to it from the morning to the end of the bean. One seeker casts the votes of all the members or many quantities of members in the electoral list immorally is also one of the problems in being system.

4. OBJECTIVE

Aim of this design is to make voting secure using point verification and also to reduce malpractices. The device which we use for the voting process is an electronic voting machine with largely secured way similar as having unique number Aadhar card, biometric of face recognition with IOT. This design safeguards the citizen's right to bounce and guarantee fair election.

5. LITERATURE SURVEY

S. N. Kavitha, " Interfacing of Online and Offline Voting System with an E-Voting Website",2022.

In this being system, at present, the average polling rate in all types of choices has not reached a bare seventy percent. The ECI is unfit to achieve its target due to people migrating from state to state and abroad for employment. The main ideal of uniting online and offline advancing systems are to give openings for migrated people to complete vote during choices in their separate constituencies. In

this regard, an online website is u.

Asha Joseph., " A P2P Digital Voting System for Elections in India ",2022

This paper analyses the excrescencies in the current EVM- grounded voting system and suggests a system of voting that uses a peer- to- peer network that's less vulnerable to hacking and manipulation while also being significantly more effective. The proposed result is divided into 3 phases and the entire process is transparent and tamper evidence. The perpetration costs are low, and the votes can be counted in real time.

Md Jobair Hossain Faruk, " Bie Vote: A Biometric Identification Enabled Block chain-Based Secure and Transparent Voting Framework ",2022

They've purpose to introduce a biometric-enabled and hyper ledger fabric- grounded architectural frame fore-Voting operations to automate identity verification that shall address the being concern. In our extension work, we're aiming to give a high- position architectural frame and apply the system in a real- world script.

Ikechi Saviour Igboanus, " Pure Voting (PV): An Offline Voting Algorithm ",2022

This work proposes the use of block chain for offline advancing. Using the Smart contract point of the Ethereum block chain network. The name's enrolment is made. An offline token is generated which is used for offline advancing. The offline token and the voting information are transferred to the vote counters Smart contract. This is where the votes are counted and results uprooted. still if a name can partake the cast vote to another name who'll shoot the new commemorative to the vote counters.

Annar Shankar P at el "Migrant Voting System- Solution to Gain the Lost Votes"-IEEE 2021

Also there's a rule in election commission that the advancing person has to be physically present during the time of voting. This paper proposes an alternate result for settlers to cast their vote. The proposed exploration work has designed the My Vote App for druggies to register themselves

as settlers. On the Election Day, settlers can cast their votes in migrated position polling cells through My Vote Web.

6. SYSTEM DESIGN

6.1 EXISTING SYSTEM

A biometric scanner functions in two different stages. originally, the fingerprints of the choosers are captured and stored in the database against their separate name identity card figures. The fingerprints are stored in the form of a law in the database sluice. The scanner doesn't overlook the total of the cutlet but a part of the cutlet formerly it gets the asked information. Once the data is saved, at the time of voting, once the name provides his fingerprints on the scanner, the scanner only compares with stored fingerprints in the database system. Only when the point matches with any of the fingerprints in the database system, the name is allowed to cast his vote, access is granted. The unique patterns of a person's retina are counterplotted using retinal reviews. The blood vessels in the retinal area can be fluently linked with proper lighting as they absorb further light than the girding apkins in the retina. originally, it's done by casting an unrecognized low- energy infrared light as the person sees through the eyepiece of the retinal scanner. It moves along an invariant path along the retina. On landing the retinal image, a special software compiles the exclusive features of this network of retinal blood vessels into a short pattern. The algorithms need high- quality imaging and doesn't let a stoner enroll or corroborate until an image of sufficient quality is captured. The template produced is generally one of the lowest of any other standard biometric technology. The advantage of this technology is that, it's largely accurate and is relatively delicate to fake, considering identification.

6.2 PROPOSED SYSTEM

The proposed smart voting system using an Arduino microcontroller, RFID, point, TV, IoT, and keypad can be designed to enhance the security and effectiveness of the voting process. The system will work as follows; Authentication Choosers will be needed to authenticate their identity using either their RFID card or point. This will insure that only authorized choosers are allowed to cast their votes. TV Display The system will have an TV display that will show the campaigners' names and party symbols, along with the voting status. This will help

choosers make an informed decision. Keypad The keypad will allow choosers to elect their preferred seeker. They will have the option to cast a vote or change their selection before submitting the final vote. IoT The system will be connected to the internet of effects(IoT) to enable real- time data transfer and monitoring of the voting process. The IoT module will shoot voting data to a central garçon, which will collect and dissect the results. Security The system will insure the security of the voting process by vindicating the name's identity, precluding multiple voting, and guarding against playing and tampering. Overall, the proposed smart voting system using an Arduino microcontroller, RFID, point, TV, IoT, and keypad will give a dependable and effective system for conducting secure and transparent choices.

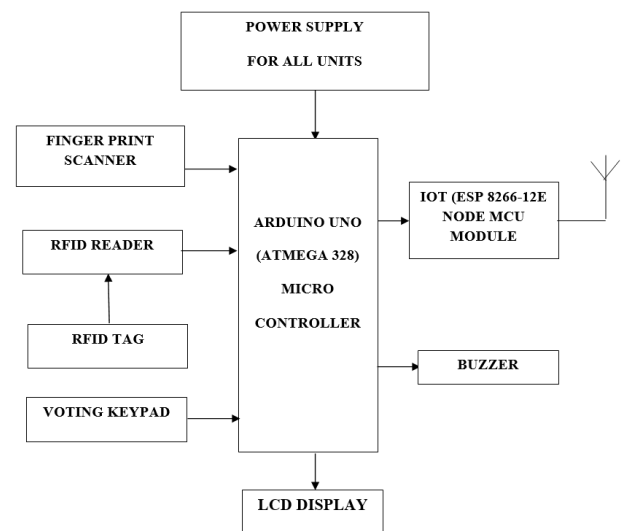


FIG : 2 ARCHITECTURE DIAGRAM

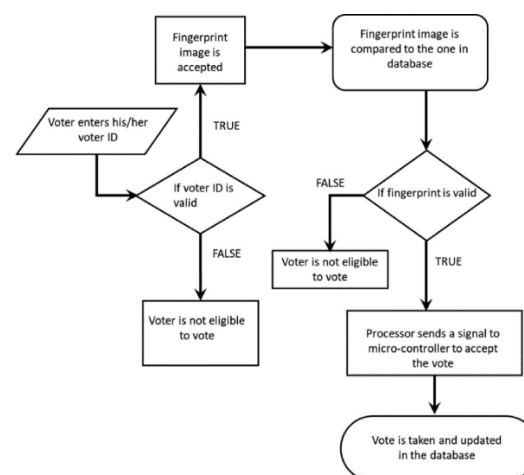


FIG: 3 DATA FLOW DIAGRAM

7. RESULTS AND DISCUSSION

Political race and Voting is a standard piece of our lives. In current popular frame an individual not in his advancing public cannot cast a ballot. This paper evacuates this confinement by keeping up an incorporated database of choosers as per their thickness. A unique UI gives rundown of aspirants as per the advancing public of choosers. His favored name can hereafter choose aspirant. The unified database can likewise be refreshed online by having each surveying station keep up their near database and modernize the brought together database after fulfilment of political race process. This paper likewise intends to give RFID and biometric security. A RFID card will be given to every name. RFID card has a remarkable 12-byte law which can be pored by RFID peruser. By that we get the data about that existent. After that RFID grounded check process. Unique mark of that existent is checked to offer blessing to cast a ballot. On the off chance that the unique mark of that existent and outlet print is put down in database was coordinating just he get the approval. After that lone existent is permit to get to the popular artful cotillion if the individual completed is casting a ballot procedure mean it was inferred by drove fluttering. utmost of the methodologies mentioned over provides the safety, security and transparent to the voting process. But we're proposing system that gives the provision to bounce from anywhere in India so the name no need to come to his constituency if he's in any other place on the day of voting. We're using a Aadhar database where the person's information like name, age, address, biometric identity, iris information, phone figures are stored. For the security purpose we're using a biometric authentication at the original stage of the voting process and we also vindicating the age of the name too. Vote casted by the name will modernize on the name's constituency database and we can also fluently advertise the results without any homemade error. So we're hoping that may our country's voting chance will increase in future using this system.



FIG: 4 EXPERIMENTAL SETUP

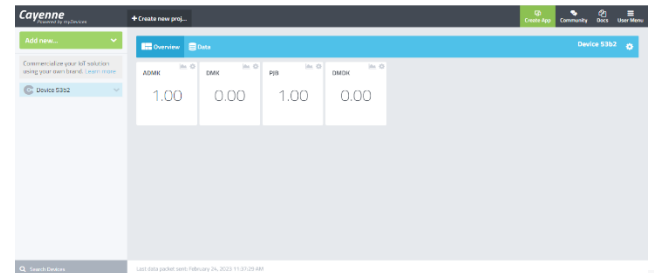


FIG: 5 OVER ALL CANDIDATES POLLING RESULT.

8. CONCLUSION

In conclusion, a smart voting system using Arduino microcontroller, RFID, point scanner, TV, IoT, and keypad is a feasible result for enhancing the delicacy and effectiveness of the voting process. By integrating colorful technologies, the system can insure that only eligible choosers can cast their votes and help fraudulent conditioning similar as double voting or impersonation. The RFID and point scanner can authenticate the identity of the name, while the keypad and TV give an intuitive and stoner-friendly interface for casting votes. With the integration of IoT, the voting data can be transmitted to a centralized database for real-time monitoring and analysis, allowing for quick and accurate reporting of the election results. Overall, a smart voting system can help to streamline the voting process, reduce crimes and enhance translucency and responsibility in the election process. still, it's pivotal to insure that the system is secure, dependable, and robust to help any implicit pitfalls or attacks on the integrity of the voting system.

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