

# Convenient and Secured Voting System using RFID and GSM Technology

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**Abstract**— An autonomous country like India needs a high immune system of election to choose the leader for the society. With this rapid growth in technical world, there is a need of making the voting system more secure, to keep the election fair and non-vulnerable. There are several methods that being used by the government to protect the integrity and confidentiality of voting. The main aim of this paper is to design the Secured voting machine. This machine is developed with some additional features such as voting from any place for any candidate, adding more features to avoid malpractice to a greater extent, and the overall percentage can be increased.

**Key words:** EVM, Radio Frequency Identification [RFID], GSM, Vote from Anywhere

## I. INTRODUCTION

The phrase vote intends to select from the record or to choose. The most important aim of voting is to arrive with leaders of voter's selection. Numerous nations are utilizing innovation to adequately direct decisions and to smoothen the procedure. Though the election commission took extreme care during the election process, here and there some malpractices were reported. It is additionally troublesome errand for the surveying authorities to identify the genuineness of the voter and to anticipate acts of neglect. If an advanced electronic recognition method is created to detect the voter, then the acts of neglect can be halted and it will encourage the surveying authorities in their work. In that course for helpful voting this project is proposed and Radio-Frequency Identification (RFID) based native ID is used. Voting apparatus are the aggregate mix up of the mechanical, hardware, or electromechanical together with software and records required to control the program which is utilized to characterize votes; to cast and count votes; to report or show election outcomes and to keep up and deliver any review trail data. The principal of voting machines were mechanical yet it is progressively more regular to utilize EVMs. Voting structure incorporates the mechanism and related citations used to recognize structure parts and forms of such segments; to check the structure amid its improvement and upkeep; to keep up report of structure blunders or deserts; to decide particular changes made after beginning accreditation; and to make accessible any materials to the voter, (for example, sees, directions or structures). Generally, voting mechanisms have been characterized by the instrument the framework uses to give votes and additionally sorted by the area where the framework organizes the votes. Voting apparatus have distinctive levels of ease of use, security, productivity and precision. Certain frameworks might be pretty much open to all voters, or not available to those voters with certain sorts of handicaps. They can likewise affect people in general's capacity to regulate elections. At present some individual makes the fake voter IDs and to evade making such IDs, RFID tag is used as voter ID card which enhances the security execution and keeps away from fake voting. RFID reader

sends the information to the P89V51RD2 micro controller. The P89V51RD2 microcontroller is given the information of each and every person. Subsequent to RFID reader sending the ID to the microcontroller, it tries to match up the ID with its information base. On the off chance that the ID is matched it permits the individual to vote. If it is incorrect, 16\*2 LCD interfaced with a microcontroller will display "FAKE CARD". At the end the controller program will calculate the total voting. After that by using GSM technology the total voting information is sent to Taluk office data base or central station and then it will be displayed on the PC at the central station.

## II. LITERATURE SURVEY

Jhani Bhasha Shaik, Mazhar Hussian Shaik proposed a voter identification and detection system [1]. The system was designed to improve the election process and to avoid rigging using RFID and GSM technologies and it used One Time Password [OTP] for the security. It had a future scope of face detection technology to identify the voters.

B. Madan Mohan Reddy, D. Srihari proposed Radio Frequency Identification [RFID] based Biometric voting Machine [2]. The system was linked to Aadhaar for safe and secure voting also used alcoholic sensors to detect the alcoholic persons at the pooling station and finger print technology was used for voter's identification. It had a future scope of face recognition based retinal scan method.

Ashok Nalluri, B. Bhanu Teja, A. Balakrishna proposed RFID and Finger Print Recognition Based Electronic Voting System [3]. The Electronic Voting System was designed for real time applications. RFID and Finger print technology was used to caste vote and to identify the voter's identification. It had a future scope of Touch Screen System.

Vaibhav Bhatia, Rahul Gupta Designed a GSM based Electronic Voting Machine with voter tracking [4]. GSM technology was used to send all the votes that are polled at the polling station to the monitoring station. It had a future scope to improve power consumption on using advanced VLSI applications.

Kashif Hussain Memon, Dileep Kumar, Syed Muhammad Usman proposed Next Generation a secure e-voting system [5]. The Biometric Finger print method was used to identify the voter's identification and to caste vote at polling station. System tried to solve many problems like less participation rate, vacant ballot and cheating. It had a future scope of introducing GSM and RFID technology.

### III. PROPOSED MODULE

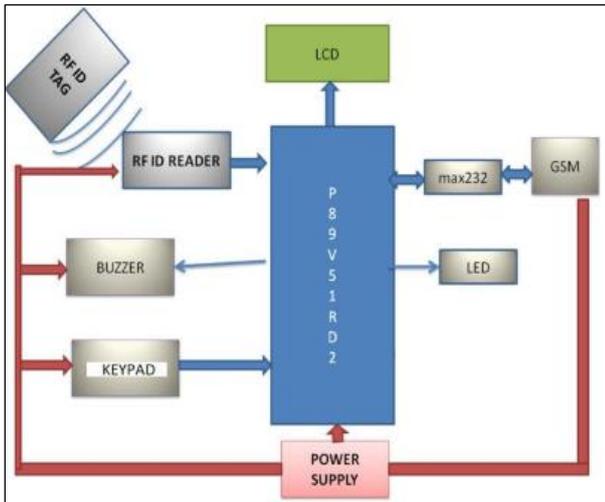


Fig. 1: Voting Station 1

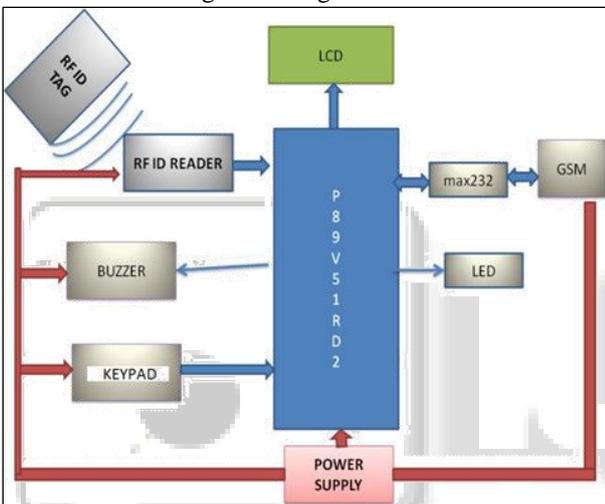


Fig. 2: Voting Station 2

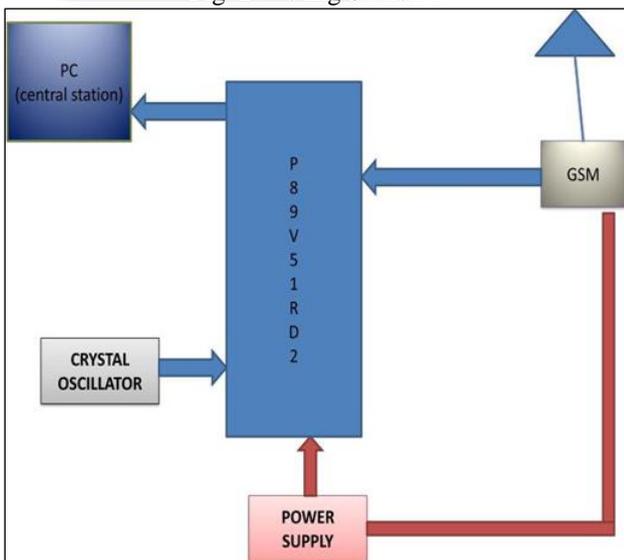


Fig. 3: Central Station

### IV. METHODOLOGY

- 1) In this project 16\*2 LCD is an output module which has been controlled by a microcontroller.

- 2) When voter places RFID tag near RFID reader, the reader will read ID and sends the details to the controller.
- 3) The microcontroller has details of each and every voter microcontroller receives the details from RFID reader, which it tries to compare these details with its stored information base.
- 4) If the details match it allows the person to vote. If it is incorrect, LCD interfaced with the microcontroller displays "FAKE CARD" with a buzzer sound.
- 5) Keys are used for selecting the voting preferences after selecting voting preferences LED will turn ON for the particular key pressed.
- 6) The program is written using Embedded C Language. This program is executed using Keil arm and it is dumped into the microcontroller using Flash Magic Tool.
- 7) At the end of the day the controller program will calculate the total voting. After that by using GSM technology the total voting details are sent to the central station and these details are displayed on a computer.

### V. HARDWARE REQUIREMENTS

#### A. Microcontroller

A Microcontroller is a small computer on a single integrated circuit. In modern terminology, it is similar to, but less sophisticated than, a system on a chip or SoC, as a SoC may include a microcontroller as one of its components.

#### B. GSM

GSM can be referred to as a cellular structure, utilized to transmit versatile voice and also information administration. GSM System works in 4 diverse recurrence ranges. A large portion of the GSM system works in the 900/1800MHz groups.

#### C. RF Communication

RF Communication is a Mechanism that generates electromagnetic effect at a starting place and having the capability to receive this electromagnetic influence at the specific target. Electromagnetic waves go through air at near the rate of light.

#### D. MAX 232

The Max 232 is a dual driver or receiver that generates TIA/EIA-232-F from a supply of 5v. TTL/CMOS of 5v is produced from TIA/EIA-232-F using a receiver. These recipients have a 1.3v of regular limit and also have an input of 30v. TIA/EIA-232-F is obtained from TTL/CMOS using each driver.

#### E. Relay Driver

An electromagnetic switch that can be used whenever a circuit with low voltage is required to toggle a light bulb ON/OFF that is associated with 220v main supply is called a relay driver.

#### F. LCD Display

LCD display is an Electronic Display Module and finds a wide range of application. An LCD display is a very basic module and is very commonly used in various devices and circuits. These modules are preferred over seven segments and other multi-segment LED's.

### G. Power Supply

A power supply is an electrical device that supplies electric power to an electrical load. The primary function of a power supply is to convert electric current from a source to the correct voltage, current, and frequency to power the load. As a result, power supplies are sometimes referred to as electric power converters.

### H. Buzzer

A buzzer or beeper is an audio signaling device, which may be Mechanical, Electromechanical or Piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke.

## VI. SOFTWARE USED

- 1) Keil Micro vision-5 IDE for developing and editing the source code.
- 2) Flash magic for burning the hex code on to the development board.
- 3) Programming Language used is Embedded C.

## VII. ADVANTAGES, DISADVANTAGES AND APPLICATION

### A. Advantages

- 1) Since the RFID tag which is having a unique ID is provided to the voters to cast their vote, it avoids making of duplicate IDs and thus fake voting can be avoided.
- 2) RFID tag is linked with Aadhaar card so that it will help the polling officials to identify the voter and also it decreases the trouble of the surveying authorities.
- 3) This system is more convenient to use because RFID is used for the purpose of identification and GSM is used to transfer the informations which avoids human interference.

### B. Disadvantages

- 1) Here the microcontroller is used to store details of the every voter which requires large storage space so that it is difficult to store database at every stations
- 2) If the network failure occurs then it is not possible to transfer data through GSM.

### C. Application

The detail of every voter is stored in all microcontrollers at every station so that person can vote from any voting station. Since this system is convenient to use it can be used in all type of elections.

## VIII. CONCLUSION AND FUTURE SCOPE

Proposed system shows promising results, since active RFID technology used for the purpose of identification, it contains voter's details. Microcontroller is used which contains special features like ISP & IAP. This system is designed with some of the advantages that voter can vote from any station to respective constituency. So that 100% voting can be achieved, human interference is less and also chance of re-election is less. The data centralization is used i.e., after voting all the voting details are sent to respective server. So it avoids human interference. The GSM technology is used for transmitting the details of voting. This system avoids fake

voting, it can easily identify that who are all voted and also not voted.

This system security can be improved using fingerprint reader, eye-ray scanner, and touch screen systems in future. For creating large database the server based system can be used. Battery can be used instead of AC supply because battery is a good option in case of power failure while voting.

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