

LAN BASED SECURED E-VOTING USING BIOMETRICS TECHNIQUES

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Abstract: The objective of this work is to develop E-Voting using Biometric technique. Democracy is based on elections, but it is not possible for citizens every time to go to polling stations to vote during election days. Option is to provide e-voting via the Internet where voter can vote from own computer or mobile device, but it is susceptible to common attacks, which affects the election results. The user can access cast his vote from home PC, internet cafe, office PC. We proposed to use the PC with the voting server via Local Area Network (LAN). The user has to log on to the voting server via his PC. He will be asked for the authentication of identity. The user can then authenticate his id using either Voice recognition or Fingerprint recognition or both. The voter is enabled to vote without actually going there. Moreover to stop forged voting, voter is given identification hardware which will prevent any hacker from giving false votes.

Keywords- E-voting, LAN, Voice Recognition, Fingerprint recognition

I. INTRODUCTION

Election is soul of democracy. With increased population, scale of voting has increased and is a huge process across different countries of the world. At the same time, there are many possibilities to improve the current implementation, and in the process solutions can be given to many of its loopholes. E-voting is hardly accepted as it lacks in offering

reliable solution to in offering reliable solutions to common problems like bribery, fraud. Voting truly represents people's opinion if all voters participate. According to present situation in India voter can vote only if he belongs to constituency to which he belongs. It is not possible every time to be present there. So he cannot cast his vote. Moreover voter has to stand in a ques. We proposed to provide e-voting via the Internet where voter can vote from own computer or mobile device, but it is susceptible to common attacks, which affects the election results. In this work we develop a voting system where voter can connect to voting server from PC. We are connecting the user with the voting server via Local Area network (LAN). In this work the proposed system will asked for identity verification. Voters either fingerprint or voice or both will be stored in the server database. Voice recognition is done through Mel Frequency Cepstral Component (MFCC). After verification of voter's identity voter will get the list of candidates contesting for the election. Then he can choose

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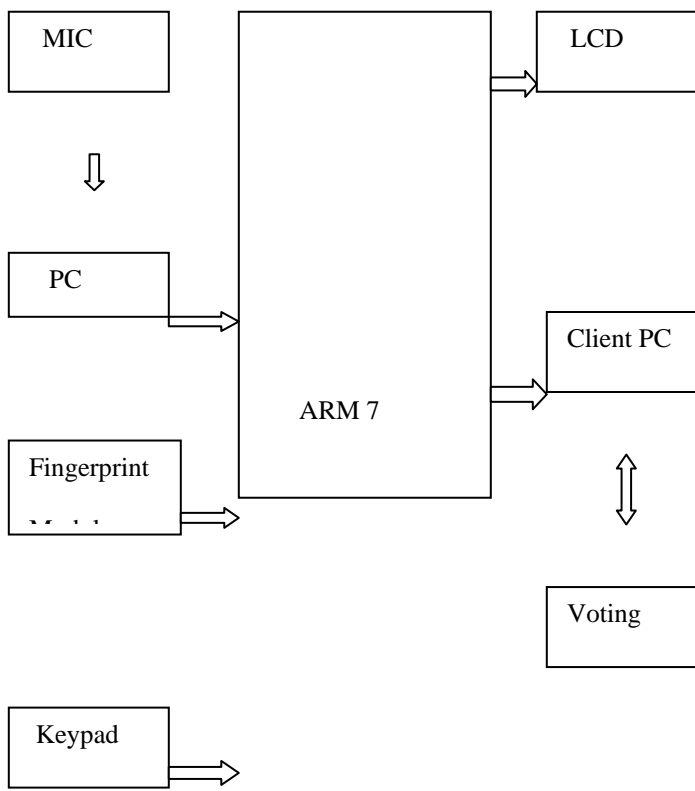
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any one of them to cast his vote. In this way problem of voter to present at the constituency or voting centre is solved. The aim is to enable voter to vote without going to constituency and guarantee secured voting.

II. METHODOLOGY



rows, is used. So,16 characters can be written in each line. So we can display total 32 characters on 16x2 LCD. Thus LCD plays a vital role in a project to see the output. It is used to debug the system module wise, which helps in order to rectify the problems in system failure.

C. Finger Print Module

This Unit is used for scanning the Fingers of the different Users. They can be used for large scale use and support thousands of scans per day. Support for chip based sensors is also available if required. It is interfaced with the microcontroller. This module is used to identify the finger prints of human being. The finger print module uses a sensor which identifies the finger and store the data in the form of 32 bit data frame. Figure print module is interfaced with the microcontroller via RS232 standard. Standard commands are used in order to program it. Using these standard figure print module commands we can register the user, check (compare) and delete the user from this module.

D. Keypad

Fig.1. Block Diagram

A. ARM 7

The ARM7 TDMI-S is a 32-bit microprocessor, which offers high-performance. It provides low power consumption. The ARM architecture is based on Reduced Instruction Set Computer (RISC) principles, and the instruction set. It has advantage of decode mechanism which is simpler than those of micro programmed Complex Instruction Set Computers (CISC). It provides high instruction throughput. It also provides real-time interrupt response. Due to pipeline techniques, all parts of the processing and memory systems can operate simultaneously.

B. LCD

The LCD display is used to display the messages to users. LCD is used in a project to visualize the output of the application. 16x2 LCD, which means 16 columns and 2



Fig.2. Keypad

4x4 keypad which has 8 pin connector is used. The 4x4 keypad has the layout like the table shown below. BK is backspace while entering the password. For enter function EN is used to enable/disable menu item or enable the system. Keyboards are widely used as input device of the controller. At the lowest level, keyboards are arranged in matrix form of rows and columns. Both rows and columns are accessed by CPU through ports. When a key is pressed,

a row and a column make a contact: otherwise, there is no connection between them.

III. FINGERPRINT RECOGNITION SYSTEM

A. Administrator:

Every voter needs to be get registered with his fingerprint. The administrator does this fingerprint registration. In order to check if false person does not do entry, he will be asked to enter the password. After password verification, he will get two options either to register use or delete user. While deleting voter entry administrator is asked to enter voter ID and the corresponding entry will be deleted.

Steps involved in User Registration:

Voter is asked to enter voter ID. There are 6 steps involved in voter's registration.

1. Collect fingerprint.
2. Generate file.
3. Again collect fingerprint.
4. Generate file.
5. Generate template.
6. Store template.

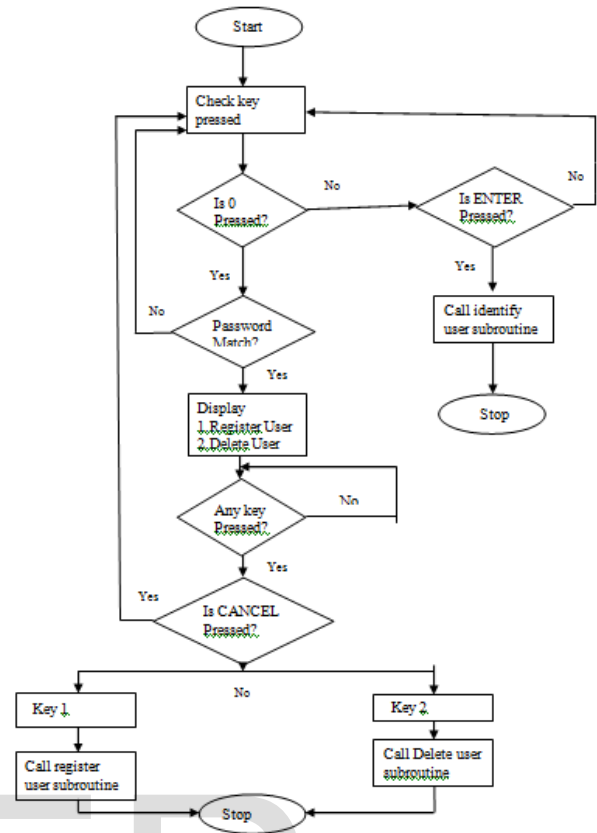


Fig.3. Flowchart

B. Voter:

At the identify stage voter will place his finger. Fingerprint module will collect fingerprint, generate file and high speed search with the existing database. Now after comparison he will get voter ID. That voter ID is automatically communicated to the client PC. At the client PC for further security purpose voter will enter password. After password verification screen with candidate list will appear and he will be allowed to vote.

IV. SPEECH RECOGNITION SYSTEM

A. Mel Frequency Cepstral Coefficients

MFCC have been dominant feature used for speech recognition. It represents the speech amplitude spectrum in a

compact form. Figure shows the process of creating MFCC feature. In first step the speech signal is divided into frames, usually by applying a windowing function at fixed intervals. The aim is to model small sections of signal that are statistically stationary. The windowing function, typically Hamming window, removes edge effects. We generate a cepstral feature vector for each frame. Then only logarithm of the amplitude spectrum is retained because the perceived loudness of a signal has been found to be approximately logarithmic.

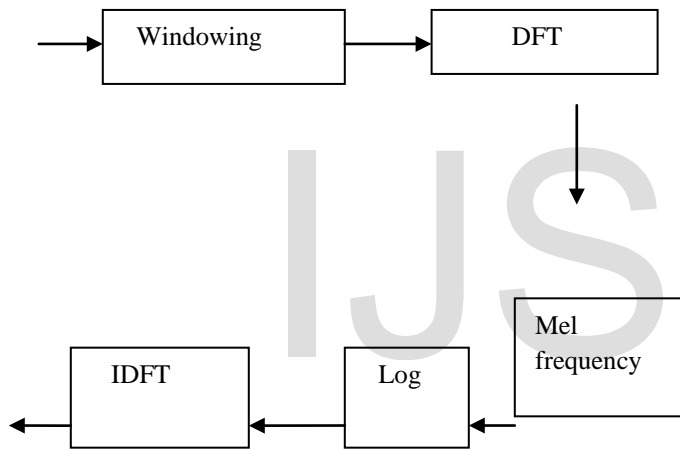


Fig.4. Calculation of Mel Frequency Cepstrum

Here the bank filter is used for warping the Mel frequency. To do Mel frequency-warping use of filter is easier, with filters centered according to Mel frequency. The width of the triangular filters vary according to the Mel frequency and so the log total energy in a critical band around the center frequency is included.

V. RESULTS

The hardware of proposed system is in fig. 5, 6& 7. Fig 5 shows finger print module. Fig 6 shows two user modes either register user or delete user. Fig.7 shows the hardware implementation of project. It includes circuit in running mode.



Fig .5. Finger Print Module



Fig.6. LCD Display

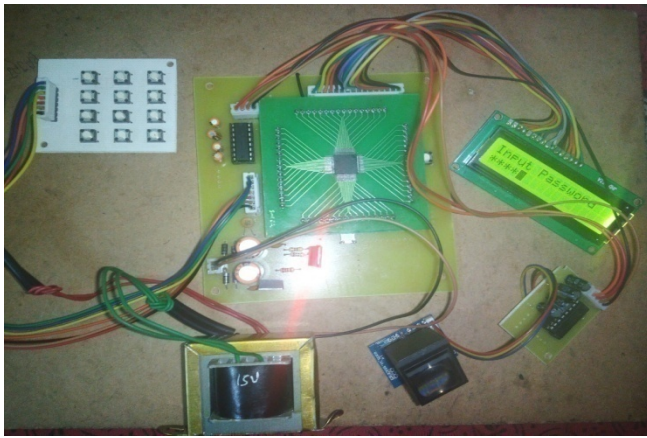


Fig.7. Hardware Implementation

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VI. CONCLUSION

Development of E-voting using biometric involves development of LAN based E-voting. We are connecting the user PC with the voting server via Local Area Network (LAN).The user has to log on to the voting server via his own PC. For authentication purpose we are using finger print recognition and voice recognition. But the primary requirement is voting server should have database of the voter. In voice recognition user voice is recognized and tested .In the next stage extracted features are compared with stored one. If both matches user is authenticated with the identity.

ACKNOWLEDGEMENTS

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