Integrated Intelligent Research (IIR)
International Journal of Web Technology
Volume: 05, Issue: 02, December 2016, Page No.123-125
ISSN: 2278-2389

Indian Election System constructed with Embedded Web Server Based on Internet Connected Biometric Voting Machine

V.Ellappan[1], M.Gautham[2]
[1]Associate Professor, Department of Electronics and Communication Engineering
Mahendra Engineering College (Autonomous), Namakkal, Tamilnadu, India
[2]Assistant Professor, Department of Electronics and Communication Engineering
Mahendra Engineering College (Autonomous), Namakkal, Tamilnadu, India

Abstract - This paper proposes an innovative concept that aims to construct an electronic mechanical device with net affiliation capability that will modify voters to forged their vote from anyplace on the world, a method known as remote choice method. The device has biometric sensing element to verify the voters integrity that ends up in a far additional secured native choice method than the present one. Additionally to the present, the device comes with electrical phenomenon keys and mp3 quality audio to assist visually impaired or illiterate folks to forged their vote severally.

Keywords: Biometric, Sensor, mp3, LPC1313 and STM32F429.

I. INTRODUCTION

India's general elections with 814 million eligible voters expand the vision of all conducting cheap elections, neutralizing the malicious tendencies [1]. results of thanks to attributable to a result of uncontrolled corruption during this exercise, the folks are raising dubious eye brows concerning it and therefore the general expression has prevailed that the democratic system has well-tried to be a boon solely to a hand breadth of individuals having capital [2-3]. The success of elections extremely depends upon liberal lots, careful voters. The committee has taken measures through condition mappings to endeavour swish elections. Throughout the polls, many paramilitary forces area unit used across Asian country, observation cameras area unit placed at polling place [4]. Throughout 2014 General Elections in Asian country, there have been reports allegedly indulged in booth-capturing, proxy choice, missing names from the voters list, vote to be bigger than 100%.

II. EXISTING DOWNSIDE

The voter's turnout in the recently held elections in Tamilnadu and Kerala was less than the last assembly elections in 2011, according to the election commission. Tamilnadu recorded a turnout of 73.7 % as against 78.1 % in the last assembly [5]. At the dawn of IoT, during this extremely connected world, wherever a product may be purchased at the press of a button, folks aren't promptly willing to travel long distances only for the sake of a number of second process choice [6]. Though Electronic mechanical device has modernised the choice method from the previous paper-based methodology, it's not nonetheless sufficient to attain a 100% vote. Now, this can be a significant issue as a result of, those 25% citizens WHO aren't coming up will amendment the results of the polls and therefore the country's fate [7-8]. We tend to see a requirement to modernize the Indian election method as we all know it.

III. PROPOSED METHODOLOGY

This project proposes an innovative idea that aims to construct an electronic voting machine with internet connection capability that would enable voters to cast their vote from anywhere on the planet, a process called remote voting process. The device has biometric sensor to verify the voter's integrity that leads to a much more secured local voting process than the existing one. In addition to this, the device comes with capacitive touch keys and mp3 quality audio to aid visually impaired or illiterate people to cast their vote independently. Figure 1 represents the hardware module.

The project is using ST Microelectronics STM32F429 microcontroller that serves the web pages using which the voter does remote voting. The user must enter a unique ID and password before accessing the remote voting web page. Web server is responsible for serving the web pages, servicing the client request and for maintaining the TCP/IP connection until the voting process gets completed. Web pages are constructed with HTML language. The device uses the LwIP open source TCP/IP protocol stack for its internet connectivity and HTTP protocol at the application layer. The machine has an integrated Fingerprint sensor module to verify the voter's identity. Capacitive touch keys replace the traditional mechanical buttons and a Cap-Touch controller is used to sense user press events on these keys. A Graphics display shows the menu with different party names and symbols and helps the user to select the preferred candidate.

Visually impaired people get the feedback through an audible voice. An MP3 audio codec chip is used to play the stored audio files on the memory card. A FAT-32 formatted microSD card (2GB) is used to store the audio tracks in MP3 format. The audio playback is controlled by LPC1313, a separate microcontroller dedicated for that process. Both the microcontrollers communicate via an onboard serial link based on UART.A real time operating system is necessary to handle the timely events and other multitasking requirements of the project. Free RTOS provides this multitasking ability for our project. It is chosen because; Free RTOS is the number one real time operating system in the world.

In theory, any device with a web browser can be used to cast the vote. In that case, there is low degree of control and least amount of security. Hence we suggest that the remote voting

International Journal of Web Technology
Volume: 05, Issue: 02, December 2016, Page No.123-125
ISSN: 2278-2389

can be carried out on a secured polling booth with an internet connected kiosk terminal in which a voter will be allowed only after verified by an authorized election commission personnel. Having said this, by adding end-to-end security in the mobile app, and on the machine, remote voting is possible and can be done at the comfort zone of the voter, from any internet connected computers or mobile devices.

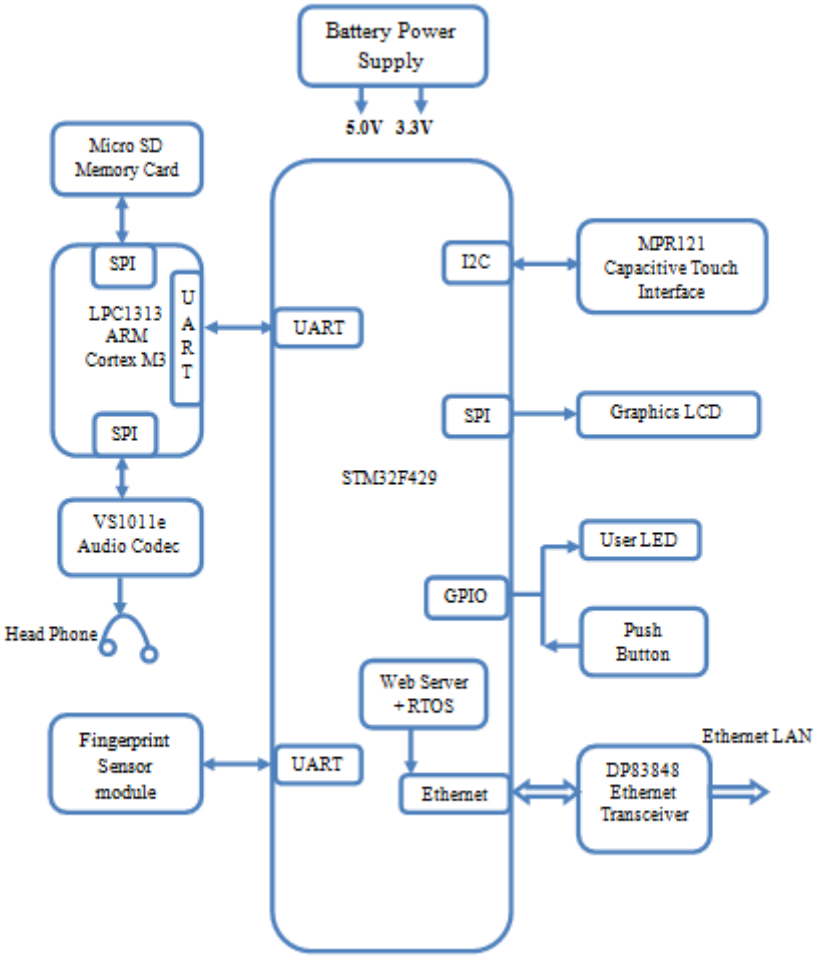

Figure 1: Hardware Module

IV. RESULTS AND DISCUSSION

The working of system is explained as

1. Recording mode
2. Identification and vote casting mode
3. Results

- When the power of ballot unit is turned on the ballot unit awaits a ready signal from controller.
- After getting ready signal ballot unit display its message on GLCD indicating that the machine is ready and waits for user input.
- The mode of operation depends on command given by the user from the PC.
- The PC is utilized to gather and store the database of the people groups before voting. The STM32F429 ARM cortex processor is associated with a PC through the PC interface to get to the database which is put away in the PC.

A Graphics display shows the menu with different party names and symbols and helps the user to select the preferred candidate. An optical unique mark module is utilized to filter the unique mark of the voters. The unique finger impression scanner sends the examined sign to the processor for the check. Figure 2 and 3 represents the implementation of the project.

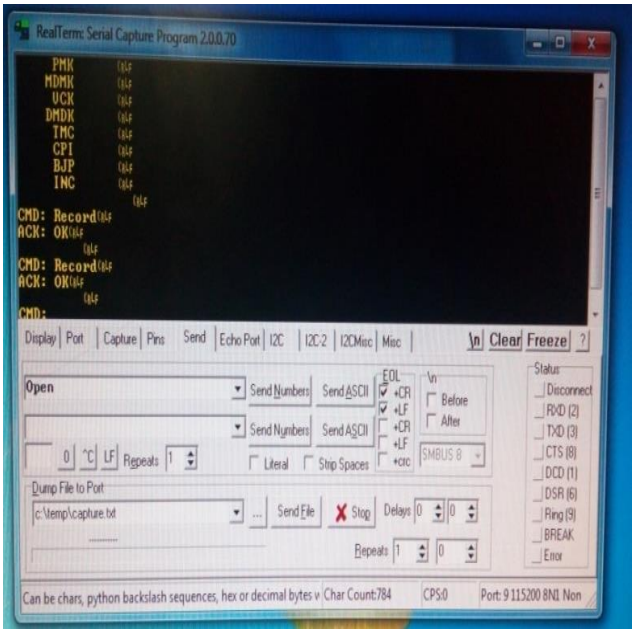

Figure 2: Polling method through UART

International Journal of Web Technology
Volume: 05, Issue: 02, December 2016, Page No.123-125
ISSN: 2278-2389

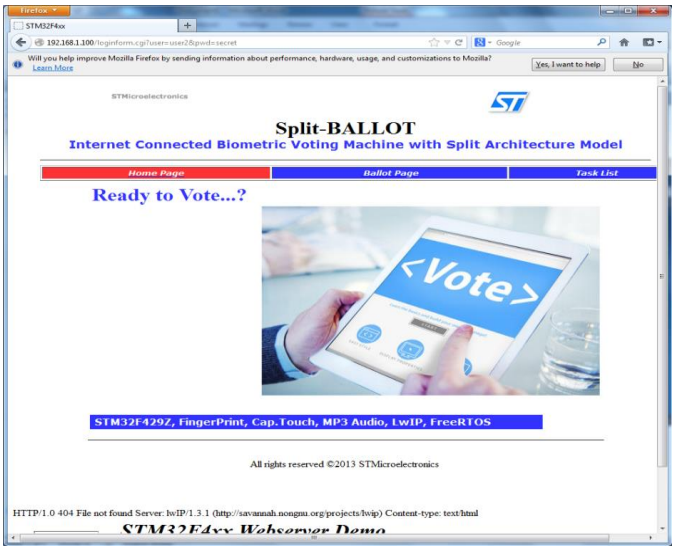

Figure 3: Polling method through internet server

- The processor confirms the unique mark with the database which is put away in the PC.
- A Capacitive touch sensor is utilized to give the data to the processor to choose the applicant. A buzzer is utilized to deliver the sound after the choice of the hopeful.
- Visually impaired people get the feedback through an audible voice.
- An MP3 audio codec chip is used to play the stored audio files on the memory card.
- A FAT-32 formatted microSD card (2GB) is used to store the audio tracks in MP3 format.

The audio playback is controlled by LPC1313, a separate microcontroller dedicated for that process. Both the microcontrollers communicate via an onboard serial link based on UART. The advantages of our project are

- It modernizes the election process using Internet technology
- Reduces travel expenses of people
- Can be used even by visually impaired or illiterates.
- Biometric security prohibits illegal voting
- Improved user interface using cap-touch technology
- Facilitates quick and accurate counting
- Lowers the operating expense
- User friendly and simple to operate

V. CONCLUSION

This paper presents the planning and development of a secured polling supported IoT and bio-metrics, attenuation the probabilities of racket and elector deception. The encryption methodology diminishes the protection loop holes and adorns the system to be additional forceful, correct and effective. To construct an electronic voting machine with internet connection capability that would enable voters to cast their vote from anywhere on the planet, a process called remote voting process. The device has biometric sensor to verify the voter's integrity that leads to a much more secured local voting process than the existing one. In addition to this, the device comes with capacitive touch keys and mp3 quality audio to aid visually impaired or illiterate people to cast their vote independently.

References

[1] Boram, R.J., RF SHOUP CORP, 1987. Electronic voting machine and system. U.S. Patent 4,641,240.

[2] Davis III, J.M. and Thomas, S., ILT Corp and Election Products Inc, 1996. Direct recording electronic voting machine and voting process. U.S. Patent 5,583,329.

[3] Molnar, D., Kohno, T., Sastry, N. and Wagner, D., 2006, May. Tamper-evident, history-independent, subliminal-free data structures on PROM storage-or-How to store ballots on a voting machine. In Security and Privacy, 2006 IEEE Symposium on (pp. 6-pp). IEEE.

[4] Paul, N. and Tanenbaum, A.S., 2009. Trustworthy voting: from machine to system. Computer, 42(5).

[5] Barmettler, J.W., Currans, K.G. and Kaneshiro, S., Hewlett-Packard Development Co LP, 2005. Voting ballot, voting machine, and associated methods. U.S. Patent 6,942,142.

[6] Sturton, C., Jha, S., Seshia, S.A. and Wagner, D., 2009, November. On voting machine design for verification and testability. In Proceedings of the 16th ACM conference on Computer and communications security (pp. 463-476). ACM.

[7] Nichols, S.M. and Strizek, G.A., 1995. Electronic voting machines and ballot roll-off. American Politics Quarterly, 23(3), pp.300-318.

[8] Bohli, J.M., Müller-Quade, J. and Röhrich, S., 2007, October. Bingo voting: Secure and coercion-free voting using a trusted random number generator. In International Conference on E-Voting and Identity (pp. 111-124). Springer, Berlin, Heidelberg.