Electronic Voting Machine Using Arm9 Micro-Controller

Tayyab Jahngir Patel
*Student Department of Electrical
Engineering,Bharati Vidhyapeeth (Deemed to be University) College of Engineering Pune,India.*

Shripad Desai
Assistant Prof. Department of Electrical Engineering,Bharati Vidhyapeeth(deemed to be university) college of engineering pune,india

---

ABSTRACT:
This paper focues on simple,low cost fingerprint based electronic voting machine using ARM9 Microcontroller.an electronic voting system is a voting system in which the voters and voting data is recorded,stored processed digitally.
KEYWORDS: *ARM9 microcontroller,finger print sensor*

I.   INTRODUCTION:

Fundamental right to vote or voting in elections forms the basis for the democracy. Elections allow the people to choose their representatives and express their preferences for how they are governed. In all earlier elections of India, such as state or central elections, a voter casts his/her vote by marking with stamp against their chosen candidate and then folding the ballot paper as per a prescribed method, before dropping it in the ballot box. This is a time-consuming and very much prone to errors. The same method was continued till the electronic voting machines were introduced in the election process. Because of the EVMs, all the condensed materials like the ballot papers, ballot boxes and stamping are completely replaced into a simple box called ballot unit. EVMs retain all the characteristics of voting by ballot papers, while making polling a lot more expedient.

CONSTRUCTION:

An EVM consists of two units namely Control Unit and Balloting Unit .The two units are joined by a five-meter cable.

❖   Control unit and ballot unit

The Control Unit is with the Presiding Officer or a Polling Officer and the Ballot Unit is placed inside the voting compartment. Instead of issuing a ballot paper, the Polling Officer in-charge of the Control Unit will press the Ballot Button. This will enable the voter to cast his/her vote by pressing the blue button on the Ballot Unit against the candidate and symbol of his/her choice.

❖   Biometric system

Biometrics is a method of recognizing a person based on physical or behavioral characteristics. Examples of biometric information used to identify people include fingerprint, voice, face, iris, handwriting, and hand geometry. There are two key functions offered by a biometric system. One method is identification, a "one-to-many" matching process in which a biometric sample is compared sequentially to a set of stored samples to determine the closest match. The other is verification, a "one-to-one" matching process in which the biometric system checks previously enrolled data for a specific user. The verification method provides the best combination of speed and security.

Fingerprint Biometric :

It is an active research area nowadays. An important component in fingerprint recognition systems is the fingerprint matching algorithm. According to the problem domain, fingerprint matching algorithms are classified in two categories: fingerprint verification algorithms and fingerprint identification algorithms. The aim of fingerprint verification algorithms is to determine whether two fingerprints come from the same finger or not.

Straightforward matching of the to-be-identified fingerprint pattern against many already known fingerprint patterns would not serve well, due to the high sensitivity to errors in capturing fingerprints (e.g. due to rough fingers, damaged fingerprint areas or the way a finger is placed on different areas of a fingerprint scanner window that can result in different orientation or deformation of the fingerprint during the scanning procedure).
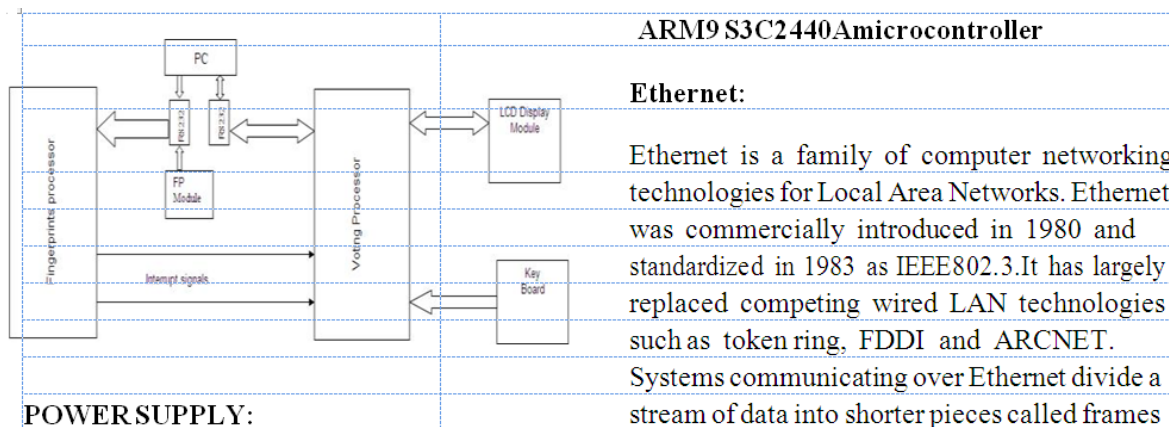
A more advanced solution to this problem is to extract features of so called minutiae points (points where the tiny ridges and capillary lines in a fingerprint have branches or ends) from the fingerprint image and check matching between these sets of very specific fingerprint features.
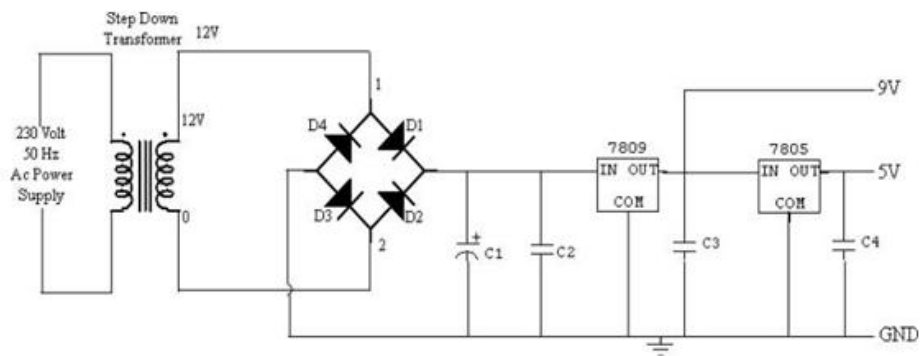
ARM9 Microcontroller:

It is low power, simple, elegant and fully static design is particularly suitable for cost- and power sensitive applications. It adopts a new bus architecture known as "Advanced Microcontroller Bus Architecture". This processor offers outstanding features with it's CPU core. It is a 16/32-bit ARM920 RISC processor designed by Advanced RISC Machines Ltd. harvard cache architecture with separate 16KB instructions and 16KB data caches, each with an 8-word line-length.

	ARM9 S3C2440A microcontroller
	Ethernet: Ethernet is a family of computer networking technologies for Local Area Networks. Ethernet was commercially introduced in 1980 and standardized in 1983 as IEEE802.3.It has largely replaced competing wired LAN technologies such as token ring, FDDI and ARCNET. Systems communicating over Ethernet divide a
POWER SUPPLY:	stream of data into shorter pieces called frames

.Each frame contains source and destination addresses and error-checking data so that damaged data can be detected and retransmitted.
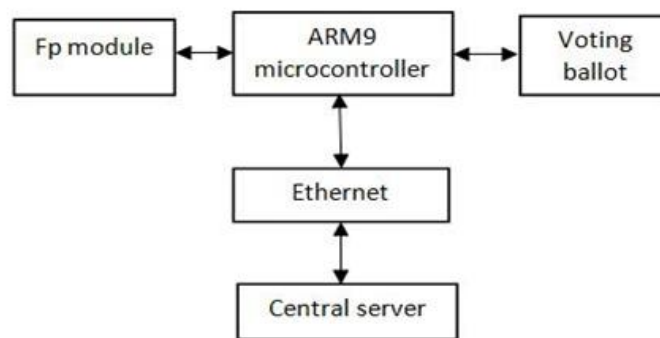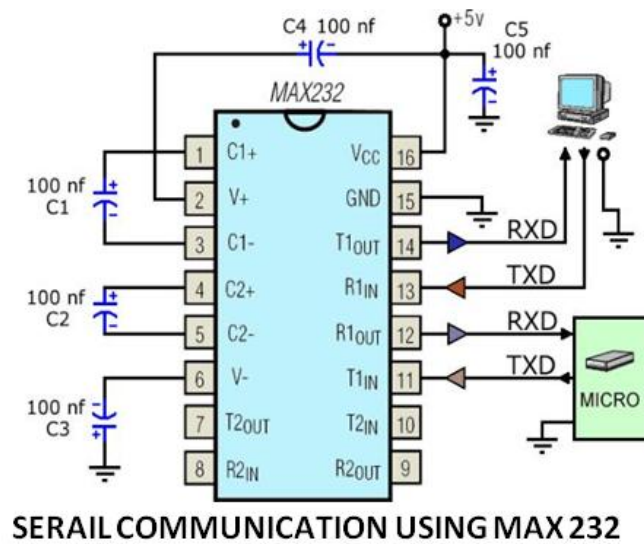

Proposed system :

In the proposed system, finger-print based authentication is used to enhance security to EVM. During enrollment phase ,the fingerprints and details of the candidate(photo, name , constituency ,voter i. d)are taken and stored in the remote server. During the voting process ,the voter places the finger on finger print module. Then the fingerprint is matched with that of the data base and checks its authenticity.

A second check is carried out to verify whether the voter has already voted. If the fingerprint is not validated or if the voter has already voted, then he/she is not allowed to vote .Hence, through these authentication checks, unauthorized voters and second time voting is eliminated and thus the security is ensured. If the voter is voting for the first time and has registered, then the list of parties is displayed on ARM LCD through which he can cast his vote. The final polling result can be viewed at central server by an authorized person using an IP address and password.

The MAX232 IC converts signals from an RS-232 serial port to signals suitable for use in TTL compatible digital logic circuits. The MAX232 is a dual driver/receiver signals. The drivers provide RS-232 voltage level outputs (approx. ± 7.5 V) from a single + 5 V supply via on-chip charge pumps and external capacitors. This makes it useful for implementing RS-232 in devices that otherwise do not need any voltages outside the 0 V to + 5 V range.

SERAIL COMMUNICATION USING MAX 232

Block diagram of proposed system
Implementation And Results:

(a) Mini 2440

(b) Interfacing between ARM9 and FP module

Conclusion And Future Scope :

This paper is used to enhance security by eliminating bogus voting and vote repetition using finger-print based authentication. As an additional security measure photo and details of the voter are displayed on ARM9 LCD from remote server and results are viewed at central server by an authorized person. In future, security of FP-EVM can still be enhanced if finger-print data can be stored and accessed from central server,

voting ballot unit is separately placed from control unit and photo and details of the voter be displayed on PC rather than on ARM9 LCD as in the present project.

ACKNOWLEDGEMENT:

REFERENCES:

[1]. Ming-jin Xu, Xin-hong Wu, "Application of FPS200 based on DSP embedded system", Journal of Chongqing University, no.6, 2006,pp.23-25.
[2]. E. Jovanov, D. Raskovic,J. Price, A. Moore, J.Chapman,and A.Krishnamurthy, "Patient Monitoring Using Personal Area Networks ofWireless Intelligent Sensors", Biomedical Science Instrumentation, vol.37, 2001,pp.373-378.
[3]. C. G. Xie, "ARM-Based Automatic Fingerprint Identification System", Microcomputer Information,Vol. 25, No.1-4, 2009,pp.292-294
[4]. L. Zhang, "Based on DSP and RF Card Embedded Fingerprint Identification System Design and Implementation of [D]", University of Electronic Science and Technology of China, Chengdu,2009.
[5]. H.Guo,Y. S. Guo and Y. Chen, "The implementation of Remote Meter Reading System"
[6]. S3C2440A 32-BIT CMOS MICROCONTROLLER USER's MANUAL Revision1.
[7]. FRIENDLY ARM Mini 2440 user manual.
[8]. Secugen fingerprint reader guide
[9]. IJCSI international journal of computer issues.vol.10,Issue4,No1,july2013ISSN(print) 1694-0814