BIG DATA PROLOGUE LINKING CLOUD COMPUTING TO ASCERTAIN THE SMART POLLING

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Abstract

The fair utilization of the data analytics suffocates due to the unavailable resource for data storage and data security options. Democracy relies on the unbiased mentality of the citizens, so elections were conducted to earn a good status quo amongst people. Elections form the backbone wherein the people elect their political representatives and decide the composition of the government. Holding free and fair elections in a country in a highly secured and smart way is really a challenging task to Election commission. In today's existing voting system polling takes place on one day and all the EVM's will be sealed and collected from the polling booths to a secured place. After few days each EVM's seal will be opened and number of votes casted for each party will be counted under the supervision of Chief Electoral Officer. This makes the vote counting process tedious. This paper comes up with an alternate solution for counting. Here each and every EVM's placed in the polling booth will be linked to a web page via cloud (IOT). All EVM's will be interconnected and their count for each party will be incremented and added together via ZIGBEE module. The updated results will be made available in an excel sheet using LABVIEW. But all these details should be kept secured. For this purpose multiple images are chosen as passwords. By this way of authentication only the authorized person knows the correct image password and its tolerance level fixed. Hence he/she alone can view the end results. If this system is implemented then it makes today's EVS efficient and secure.

Keywords: EVM-Electronic voting machine; EVS- Electronic voting system; Tolerance; LABVIEW; ZIGBEE.

I. INTRODUCTION

EVM or Electronic Voting Machines are used to cast vote without revealing your identity. It is used in Indian General and State Elections. It has replaced paper ballots in local, state and general (parliamentary) elections in India. Nevertheless, efforts are still made to introduce e-voting in countries that use. By using digital technology voting systems where the election data is recorded, stored and processed totally as digital information as with security. In the past usually this information security was used mostly in defence and government sector. But now need for this type of security is growing in everyday digital data processing and usage. In computing e-services and information security it is necessary to protect that data like communications or documents (digital or physical) are more secure. Advances and data security algorithm allow pretty good privacy on smart e-voting systems. Security is a heart of smart e-voting process. Therefore design and implement secure and trusted smart e-voting system is very important.

II. EXISTING SYSTEM

A. Electronic Voting Machine (EVM)

Electronic voting machines are praised for their simple design, ease of use and reliability. The EVMs are now manufactured by the above two undertakings. An EVM consists of two units, i) Control Unit ii) Balloting Unit. The two units are joined by a five-meter cable. The Control Unit is with the Presiding Officer or a Polling Officer and the Balloting Unit is placed inside the voting compartment. Balloting unit facilitates voting

by voter via labelled buttons while control unit controls the ballot units, stores voting counts and displays the results on 7 segment LED displays. The controller used in EVMs has its operating program etched permanently in silicon at the time of manufacturing by the manufacturer.

Fig. 1 Control Unit and Balloting Unit

B. Limitations of the Existing System

EVMs are purposely designed as stand-alone units to prevent any intrusion during electronic transmission of results. Instead, the EVMs are collected in counting booths and tallied on the assigned counting day(s) in the presence of polling agents of the candidates.

In today's existing voting system polling takes place on one day and all the EVM's will be sealed and collected from the polling booths to a secured place. After few days each EVM's seal will be opened and number of votes casted for each party will be counted under the supervision of Chief Electoral Officer. This makes the vote counting process tedious. This paper comes up with an alternate solution for counting. Here each and every EVM's placed in the polling booth will be linked to a web page via cloud (IOT). All EVM's will be interconnected and their count for each party will be incremented and added together via ZIGBEE module. The updated results will be made available in an excel sheet using LabVIEW. But all these details should be kept secured. For this purpose multiple images are chosen as passwords. By this way of authentication only the authorized person knows the correct image password and its tolerance level fixed. Hence he/she alone can view the end results. If this system is implemented then it makes today's EVS efficient and secure.

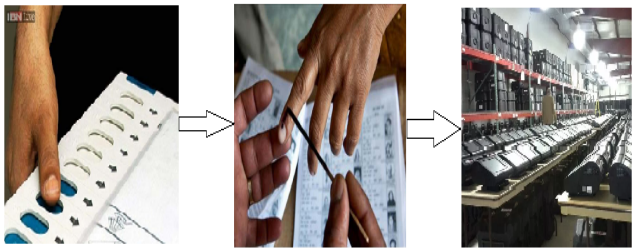

Fig. 2 EXISTING METHOD – Polling, Storing, Counting and Announcing Results

Since a particular EVM unit can only hold a record number of votes, a candidate can easily know about the number of people that voted for him from a particular polling station. This may initiate different reactions from the winning party to different areas.

The results acquired by an EVM's control unit are not transmitted electronically. They are instead tallied on the day of counting votes on counting booths.

III. SMART POLLING THROUGH CLOUD COMPUTING

A. Security

Most common security threat in any computer system oriented programming is a spyware and threat from usage by unauthorized people. To overcome such attacks and threats from such unauthenticated people, definitely certain different and secured methods must be followed. For this purpose this paper provides a new approach of security measures based on using different images as passwords using LabVIEW. This protects and prevents the information from access by a third party. Spywares usage has increased rapidly for collection of passwords. Protection of passwords from spyware attacks continues to be a setback.

B. Block Diagram and Hardware Design

In hardware construction of electronic voting machine PIC MICROCONTROLLER is used. The connections are made as per the figure shown below and separate voting machines are made ready which is then connected to two separate GSM modules to upload the results obtained from different EVM's.

The detailed specifications of different components used for designing EVM's are explained below. Whenever the polling initiated the data/information updated into CLOUD (FTP) using LabVIEW.

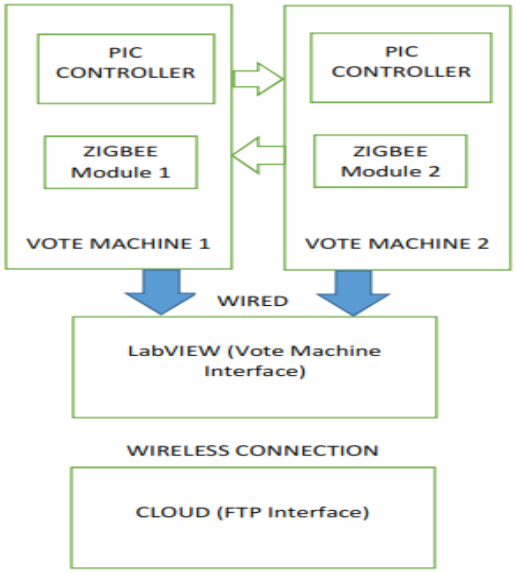

Fig. 3 PROPOSED METHOD – BLOCK DIAGRAM

HARDWARE COMPONENTS USED:

i. PIC 16F877A
ii. LabVIEW
iii. ZIGBEE MODULE

PIC 16F877A is a single-chip microcontroller created by MICROCHIP. The microcontroller used in this paper is 16F Series. The PIC board is connected to a 16*2 LCD and to five different push buttons. Each button corresponds to different political parties or any other parties. For example if this system is implemented in school, then it can be used for conducting School pupil leader elections. If it is used in colleges then it can be used for conducting elections or voting among different departments.

Fig. 4 PROPOSED METHOD – ELECTRONIC SETUP

C. *Software Design*

We made the project modular with three sections, as any system:

Fig 5 Use of LabVIEW

LabVIEW is a software package widely used in a variety of applications involving monitoring, measuring, testing and/or controlling of systems and processes

LabVIEW is a graphical programming language.

LabVIEW is a drag-and-drop style interface.

It is an easy way for programmer and engineers to make their own programs to operate their equipment.

It can be easy to get intimidated after looking at some of the top tier applications, but this is a scalable utility

LabVIEW programs are only as complex and complicated as you make them.

Before getting started there are a few important terms we should introduce and briefly define as they will be brought up repeatedly and they are integral to LabVIEW.

Short for Virtual Instrument, this term is used to refer to LabVIEW programs. This is also the file format extension designating LabVIEW programs.

Front Panel: The portion of a LabVIEW VI that the user interacts with while running the program. This is analogous to the face of a stereo or the front of an oscilloscope; here is where the user will see all the knobs, buttons, visual displays, etc.

Block Diagram: The portion of a LabVIEW VI that generally contains all of the functional programming. Continuing the stereo and oscilloscope analogies, this would be the circuit boards, vacuum tubes, wires and other guts usually contained within the case; this is where the majority of tinkering, programming and debugging will generally occur.

D. *PIC Microcontroller*

This project is around PIC® Microcontroller 16F877A to develop a simple autonomous Line

Follower which can be used to understand the necessary workflow of any Microcontrollers.

The development tools are available for the PIC controllers under the GPL or other free software or open sources licenses.

Free RTOS is a mini real time kernel ported to PIC16 PIC32 architectures.

GPUTILS is free and available from the GPUTILS website. GPSIM is an Open Source simulator for the PIC microcontrollers featuring hardware modules that simulate specific devices that might be connected to them, like LCDs.

SDCC supports 8-bit PIC micro controllers (PIC16, PIC18). Currently, throughout the SDCC website, the words, "Work is in progress", are frequently used to describe the status of SDCC's support for PICs.

KTechlab, a OpenSource microcontroller IDE written in c++ and qt. Ktechlab supports the programming of microcontrollers using C, Assembly, Microbe (a BASIC-like language) and using flowcode a graphical programming language similar to Flowcode

Ktechlab is a free IDE for programming PIC Microcontroller. It allows one to write the program in C, Assembly, Microbe (a BASIC-like language) and using FlowChart Method.

PiKdev runs on Linux and is a simple graphic IDE for the development of PIC-based applications. It currently supports assembly language. Non Open Source C language is also supported for PIC 18 devices. PiKdev is developed in C++ under Linux and is based on the KDE environment.

Piklab is a forked version of PiKdev and is managed as SourceForge Project. Piklab adds to Pikdev by providing support for programmers and debuggers. Currently, Piklab supports the JDM, PIC Elmer, K8048, HOODMICRO, ICD1, ICD2, PICkit1, PICKkit2, and PicStart+ as programming devices and has debugging support for ICD2 in addition to using the simulator, GPSim.

JAL stands for Just Another Language. It is a Pascal-like language that is easily mastered. The compiler supports a few Microchip (16c84, 16f84, 12c508, 12c509, 16F877) and SX microcontrollers. The resulting assembly language can then be viewed, modified and further processed as if you were programming directly in assembler.

PMP (Pic Micro Pascal) is a free Pascal language compiler and IDE. It is intended to work with Microchip MPLAB that it uses device definition files, assembler and linker. It supports PIC10 to PIC18 devices.

The GNU Compiler Collection and the GNU Binutils have been ported to the PIC24, dsPIC30F and dsPIC33F in the form of Microchip's MPLAB C30 compiler and MPLAB ASM30 Assembler.

IV. RESULTS AND DISCUSSIONS

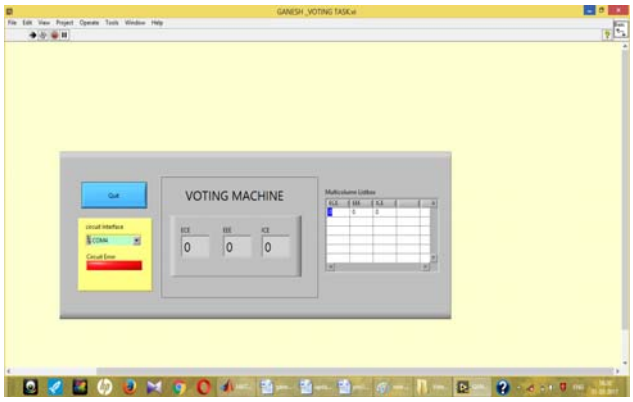

Fig 6 LabVIEW Output Window Front Panel

Once the authorized person has chosen the correct pictures in the correct tolerance area fixed, then the user will be directed to the page containing the updated information. (i.e the end results of polling) shown in the following figure. In this paper different parties votes are counted simultaneously and are updated in an excel sheet. After the person is verified using image authentication mechanism, the excel sheet available in the server will be displayed. As a next step of this project these details can be updated and made available in the web itself. For this purpose along with MATLAB image processing C shop technology should be merged. Otherwise for integration of MATLAB with internet Dot net technology can also be used.

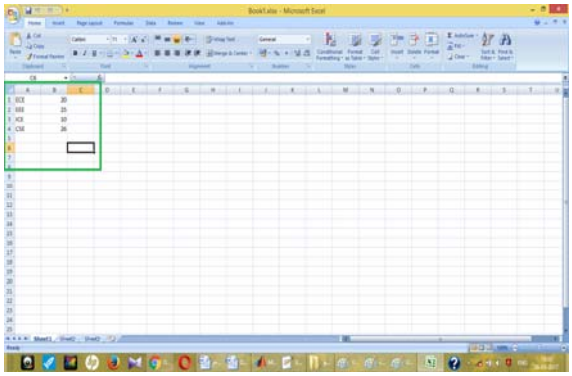

Fig 7 Excel Generated from CLOUD using FTP

V. CONCLUSION AND FUTURE WORK

The main limitations of the existing system vote systems are next day or other day counting which results in more security related problems and need more manpower to secure it. This proposed approach simplifies the voting process and reduces the manpower needed. Here all the EVMs are connected to a webpage through cloud. Updated count or results can be declared through the excel sheet generated from LabVIEW. Only an authenticated person/Chief Electoral Officer can able to generate the result. Those authorized person only knows the image passwords and the position points on the multiple images to select. Thus more secured cloud based polling system is implemented where polling, counting and result declaration can be completed on the same day. Next to this step, security level can be enhanced by adding more technology aspects.

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