CHUKA UNIVERSITY

Bsc. COMPUTER SCIENCE

Cosc 4: PERSONAL PROJECT PROPASAL

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PROJECT TITLE:ELECTRONIC VOTERS REGISTRATION SYSTEM

CHAPTER ONE

1.1 INTRODUCTION

Democratic public opinion is the most important determinant for setting up a government and voting is the process in which people show their opinion and help to set up a democratic government. So voting system must be reliable, accurate

and it must be transparent.

The registration of voters for an election that exists now in paper-based and manual which takes a lot of time and the electoral body should cover the budget spending for this purpose. Sometimes people ruin their votes by stamping on two or more signs mistakenly. This is also a drawback of voting system based on paper. During the registration process, voters can register as many times that an officer cannot know who have already registered to vote. So there is a chance for casting illegal votes. Again these votes are counted manually so the process becomes a gradual one which may be inaccurate as well.

To overcome this problem, this project is designed for electronic registration of voters machine by using the fingerprint identification method. Here voters thumb impressions are used for identifying the

voters during registration and during polls. During registration when the voter keeps their thumb in the scanner, the system will check whether it matches with pre stored impressions in the database. If it matches then system will allow the voter to register again as a voter and otherwise will prevent the voter from polling more than once. All these problems together made people think about inventing a new system that will reduce corruption, increase accuracy and fast paced. The concept of electronic voting registration system comes from this necessity

1.2 PROBLEM STATEMENT

The problems of the existing manual system of registration of voters include among others the following

I. Authority: May be corrupted and can

allow some fake voters to particıpate.

II. Expensive and Time consuming: The process of collecting data and entering this data into the database takes too much time and is expensive to conduct, for example, time and money is spent in printing data capture forms, in preparing registration stations together with human resources, and there after advertising the days set for registration process including sensitizing voters on the need for

registration, as well as time spent on entering this data to the database.

III. Too much paper: The process involves too much paper and paper storage

which is difficult as papers become bulky with the population size.

IV, Errors during data entry and loss of

registration forms: Errors are part of all manual registration

1.3 RESEARCH OBJECTIVE

The project requires the voter to submit their Fingerprint at the registration place. The Fingerprint technology will be used in this project to create the system.

The primary goal of the project is:

I . To develop an accurate Biometric technique into Voting System to prevent an unauthorized person to vote.

II. To save cost and time consuming because all the process organized by the system and it makes the procedure of registration of voters faster than the traditional system.

III. To implement paperless concept.

IV. To prevent human careless during data entry and storing the data at Voter registration centres

1.4 RESEARCH SCOPE

In order to ensure that the objectives of this project are on the right track, this study will focus on these areas as follows:

1. Preserves voting secrecy.

2. Remedies for illegal voting.

3. To reduce election expenses.

4. Use Microsoft Visual Basic as voting system interface.

CHAPTER2

LITERATURE REVIEW

2.1 INTRODUCTION

An election is a formal decision-making process by which a population or society chooses an individual to hold a political office. Elections have been the usual mechanism by which modern representative democracy operates that predates to as early as the 17th Century. Elections are conducted both by public entities such as the government as well as private and business organizations, for example choosing representatives for the Board of Directors of a company, professional club leadership and even used in voluntary associations.

2.2 VOTING REGISTRATION SYSTEMS

There are two (2) categories under which voting systems can be classified, namely:

I. Traditional or Paper - Ballot Voter registration Systems

II. Electronic Voter Registration Systems

2.3 PAPER-BALLOT VOTER REGISTRATION SYSTEMS

The design of a good voter registration system, whether electronic or using traditional paper ballots or mechanical devices must satisfy a number of sometimes competing criteria. Electronic voter registration system is an electronic system which uses electronic register that would allow voters to transmit their secure and secret information to election officials over the computer (Coker,

Ogundeinde, & Coker, 2013).The paper-based voter registration system can be described as the traditional means of voting that has been in used over the ages. It is also the default method of conducting elections in Kenya as well as other countries around the world. It operates by issuing paper ballots to eligible voters who present themselves at the registration centres on the day of registration ofvoters.During elections the voter is authenticated by searching for and ticking his or her name on the voters register for that particular polling unit. Indelible ink is used to mark an authenticated voter by dropping the ink on the voter's left thumb fingernail. The voter is then expected to proceed to a secret booth to vote a candidate by pressing his right thumb into an ink stamp and placing the inked fingerprint in front of the chosen candidate on the

ballot paper given and subsequently required to drop the ballot paper into a ballot box placed in an open place within the polling unit(Raila, Ruto, & Wajackoyah, 2022).

After the close of polls or voting for the election, the election ballot box for the polling unit is opened by the polling office, the ballots are counted by the various election officials such as election agents and election officials and the total vote results are reported and entered onto the election results sheet which is also required to be signed by all election officials as well as observers present thus giving authenticity to the declared results.

2.4 ELECTRONIC VOTING REGISTRATION SYSTEMS

An electronic voting registration system (on-line voter registration, internet voter registration) is an election system which uses electronic ballot that would allow voters to transmit their secure and secret information to election officials over the internet to be registered as a voter. The Council of Europe recommendations defined electronic voter registration (e-Voter registration). Electronic voter registration is a term encompassing several different types of voter registration, embracing both electronic means of registering a voter and electronic means of voting and counting votes.

Electronic voter registration systems are complex distributed systems, whose components range from general-purpose personal computers to optical scanners and touch-screen devices, each running some combination of commercial off-the-shelf components, proprietary firmware,

or full-fledged operating systems. It is a fundamental demand of countries to enhance their election registration system. Now due to rapid emergence of technologies in computer and telecommunication world e-Voter registration based systems are to be introduced that lessens all the traditional manual election registration systems' problems. With the introduction of e-Voter registration systems our elections processes and social lives are going to be easy, efficient and low- cost. Now in this system voters can register as a voter from anywhere in world. E-voter registration system must meet security requirements such as confidentiality, integrity, fairness, forgery attack, verifiability and so on. This is because E-voter registration system is more vulnerable than traditional voter registration due to the nature of digital processing of election

data which can be easily manipulated, hence may result in widespread fraud and corruption. Voting is getting to be seen a next generation approach of election in almost all countries. The ultimate aim of e-Voter registration is to proVIde voters a good environment so that voters can be registered to vote with minimum cost and efforts on the internet (Oluwatosin Adesua, 2015).

2.5 BIOMETRIC

Biometrics is mechanized methods for recognizing a man or verifying the personality of a man taking into account a physiological or behavioral characteristic has the capacity to dependably recognize an approved individual and a fraud (Kumar & Walia, 2011). Biometrics refers to technologies that measure and analyze human body characteristics, such as DNA,

fingerprints, eye retinas and irises, voice patterns, facial patterns and hand measurements, for authentication purposes. The field of biometrics was formed and has since expanded on to many types of physical identification. Among the several human fingerprints remain very common identifier and the biometric method of choice among law enforcement. These concepts of human identification have lead to the development of fingerprint scanners that serve to quickly identify individuals and assign access privileges. The basic point of these devices is also to examine the fingerprint data of an individual and compare it to a database of other fingerprints (Gujanatti & Reddy, 2015).In our project we have used fingerprint for the purpose of voter identification or authentication. As the thumb impression of every individual is

unique, it helps in minimizing the error. A database is ereated containing the fingerprint images of all the voters as required. Illegal votes and repetition of voter registration is checked for in this system with accurate coding. Hence with the application of this fingerprint based fingerprint voting system elections could be made fair and free from rigging. Further that the elections would are no longer a tedious and expensive job.

Biometric Electronic voter registration would be cheaper for the long term than the present paper based arrangement (Kaur & Singh, 2013). An electronic voter registration system defines rules for valid voting and gives an efficient method of counting votes, which are aggregated to yield a final result. Moreover, electronic voter registration systems can improve voter identification process by utilizing

biometric recognition. Biometrics is becoming an essential component of personal identification solutions, since biometric identifiers cannot be shared or misplaced and they represent an individual's identity. Biometric recognition refers to the use of iris, fingerprint, face, palm and speech characteristics, called biometric identifiers. Fingerprint matching is a significant part of this process. It is an extremely difficult problem, due to variations in different impressions of the same finger. Fingerprints are unique to each individual and they do not change over time (Hazzaa & Kadry, 2012; Kaur & Singh, 2013) . Elections are necessary for the establishment of a functional democracy but elections can also result in flash-points and catalysts for further violence, particularly when fraud occurs or is believed to have occurred. Pre-

mature victory claims and non-acceptance of election losses even when the results are affirmed or verified by neutral third-party, missions and the exacerbation of pre-election tensions.

2.6 AUTHENTICATION

Biometrics is a general term used to describe either a characteristics or a process. As a characteristic, it is a measurable anatomical and behavioral feature to be explored for automatic recognition systems. As a process, it encompasses automated methods to recognize a person based on biological and behavioral features. During the verification task, biometric system attempts to confirm the identity of a person by matching a submitted sample to previously stored templates, In identification process, biometric system searches the entire database for

matching the input biometric pattern.

CHAPTER3

METHODOLOGY

3.1 INTRODUCTION

The System Development Life Cycle (SDLC) is common methodology for developing voter registration system and database. The System Development Life Cycle is very formal approach to system development that sometimes because of its can hinder the progress. There are five phases to The System Development Life Cycle. They are system initiation and planning, system analysis, system design, system implementation and system maintenance.

Planning

I.Define the problem and constraints about manual voter registration system II. Define the objective fingerprint voter registration system

III. Define the scope of fingerprint voter registration system

V. Define the software and hardware requirement for development

system

Analysis

I. Analyses the concept of fingerprint voter registration system and brief information about biometrics.

II. Analyses of several journal of voter registration system.

III. The types of voter registration system.

IV.Techniques to be used. Fingerprint voter registration system Overview

Design

I.Design databases

II.Using Context Diagram and DFD to design the flow fingerprint | voting system III.Design Flowchart

Implementation

I.Construct system of fingerprint voter registration system .Create database using Microsoft Access 2013

Maintenance

I.Monitor system performance

II.Do testing after system finish successfully

3.2 SYSTEM PLANNING

System planning is very important level in developing the Fingerprint Voter Registration System. This phase is used to establish the basic project structure,

evaluate feasibility and risks associated with project, and describe appropriate management and technical approaches. In this phase, it determine the objective and scope of Fingerprint Voter Registration System. There are several planning that should be made such as schedule planning. This describes the plan that had been made in developing the systems from start until finished. Besides that, there is also feasibility planning that is on cost and time planned for the system. In planning system, the time and sources required will be fixed for carrying out the work. By using this method, the cost of development system could be fixed and the system could be orderly and adjust develop. A specific plan for the project that has been proposed will be done and the plan should be fully used throughout the development system.

Planning phase is general overview of

Fingerprint Voter registration System. There are two indicates to be focused that are the initial assessment and feasibility study. Initial assessment needs evaluation the manual system to change the new system (Fingerprint Voter registration System.

For the feasibility study, it shows the hardware and software needed in developing the system. Hardware include is memory storage, input device, output devices and software development.

3.3 SYSTEM ANALYSIS

System analysis aims to learn how the existing system operates and function and then determines the business requirement. The requirement modelling is done to define and deseribe management process involved in order to

manipulating the information system. The planning phase is continued with requirement modelling that involve a range of fact, finding techniques like survey, observation, sampling and research. The system must all above element collected

The new system makes use of a biometric feature (fingerprint) to authenticate users of the system. Fingerprint recognition hardware is integrated with the system so as to solve the problem of the existing system.

The new system operates in an identification mode and performs the following:

I. Captures fingerprints, extracts the features and stores it in the database.

II. Verifies the identity of the voter at login time by comparing the fingerprint that has been pre stored in the database with the fingerprint being supplied at registration.

III. Provides an interface for the user to cast votes if a match is found. Provides an interface for viewing the results of the election.

3.1.1 REcoGNITION AND AUTHENTICATION

Every human in the world has a unique Fingerprint so it is impossible to steal or lose so there is no need to remember fingerprints like if individual passwords or personal identification numbers (PINs) in card technology to keep systems secure. Besides, every finger has distinctive characteristics because fingerprints of every finger of a person are different (Altun A.A. et al, 2008). Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. Fingerprints are one of

many forms of biometrics used to identify individuals and verify their identity. A fingerprint looks at the patterns found on a fingertip. There are a variety of approaches to fingerprint verification. Some emulate the traditional police method of matching pattern, others use straight minutiae matching devices and still others are a bit more unique, including things like moiré fringe patterns and ultrasonic. A greater variety of fingerprint devices are available than for any other biometric. Fingerprint verification may be a good choice for in e-voter registration systems, where you can give users adequate explanation and training, and where the system operates in a controlled environment (Alaguvel R et al., 2013). It is not surprising that the work-station access application area seems to be based almost exclusively on fingerprints, due to the relatively low

cost, small size, and ease of integration of fingerprint authentication devices that will be implemented.

The model might compose of various type of diagrams for example Context Diagram, Diagram 0 and lower-Lever Diagrams. The diagrams are relied on methodology to be used. Finally the system requirements document of management and user, admin alternative plan and cost are recommended by system analyst.

In System Analysis Phases the diagram that is used in Fingerprint Voter Registration System are Data Flow Diagram (DFD). DFD also show how data moves through an information system but does not show program logic. DFD also provide a logical model that shows what the system does and not how it does it. The distinction is important because focusing on implantation issues at this

point would restrict search for the most effective system design.

To create DFD, three main task will perform which is step to draw a context diagram then need to draw a diagram 0 and the last step is draw the lower-level diagram. A context diagram provides the most general view of an information system and contains a single process symbol which is like a black box.

4.4 SYSTEM TESTING

Testing of the software is necessary in order to check the existence of fault in the software so as to make changes that will remove the faults. Testing is necessary prevent system failure.

The major testing done include

Unit testing: breaks down the software into components and verifies the functionalities of each individually within

the programming environment. Also known as component testing, it tests if each component works as it is supposed to, why it gets the required input and returns the required output.

Integration Testing: this was done after successfully testing each module of software. lesting is done by creating interfaces between components and making sure that they communicate efficiently and that necessary input and output is transferred for the overall efficient functioning of the system.

Acceptance Testing: Acceptance testing was done after the implementation of the system. The acceptance testing will check if the system works correctly in the user environment and if all user specified functionalities are present. It also tests if the system adheres to the policies and qualities standard.

5.0 IMPLEMENTATION

In order to have the expected result from this research, the right implementation of the software and hardware must be done according to the proposed method. Thus, the researchers have done the testing in order to gather the information as well as making a conclusion based on the findings. The result gathered will then be documented for future research. From the research, the result will collect by using survey question. The survey question will be given to the student at least 15 Hepa Staff and 20 student to get the information about Augmented Reality in education

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6.2 Implementation Objective

I. To develop a Voter Registration System done is complete and provide 2-Way authentication mechanism used to avoid possibility of any kind of fake voting. On

the day of election, voter ID and thumb impression is validated to authenticate a voter before enabling him/her to cast the vote.

II. Accurate Biometric technique into Voting System to prevent an unauthorized person to vote.

III. To save cost and time consuming because all the process organized by the system and it makes the| procedure of counting the votes faster than the| traditional system.

IV. There is no paper usage since all the data stored in the database.

V. To prevent human careless during data entry and| storing the data.