

# Voting System Using Face Recognition

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**Abstract-** In this paper a new authentication technique in voting system using facial recognition of the voter is used. In India, currently there are two types of voting system in practice. They are secret Ballet paper and Electronic Voting Machines (EVM), but both of the process have some limitation or demerits. In India voting has not been yet implemented. The current voting system is not safe and secure too. The voters need to go to distributed places like polling booths and stand in a long queue to cast their vote, because of these reasons most of the people misses their chance of voting. The voter who is not eligible can also cast its vote by fake means which may leads to many problems. That's why in this project we have to propose a system or way for voting which is very effective or useful in voting. In our approach we have three level of security in voting process. The first level is the verification of unique id number (UID), second level is the verification of election id number (EID) and third level is face recognition or face matching. The security level of our system is greatly improved by the new application method for each voter. The user authentication process of the system is improved by adding face recognition in an application which will identify whether the particular user is authenticated user or not.

## I. INTRODUCTION

Voting is a patriotic right where voters choose their representatives, which allows them to express their opinions . Elections and voting practices are of very much importance to all countries that practice democracy . A trustworthy voting system is crucial to a population's consent, as democracies are built on this consent. The base of democracy is to allow people vote freely, so the election result is accepted by voters' committee . In most countries, like Uganda, the fundamental right of choosing a leader is done mainly in manual form which makes it prone to various electoral problems such as double voting, wrong count, impersonation, lost ballot, spoilt ballot, declining turnout of voters, difficulty of auditing after voting, poor documentation . Electronic voting schemes must provide the same security protocols as traditional voting. The security requirements of such protocols among others include integrity and voter authentication since it is easy to eavesdrop on connections or tamper with protocols by connecting extra devices wirelessly, therefore integrity and authentication are the most important requirements for voter authentication

protocol . There are several cryptographic primitives that allow one to create secure evoting schemes thus the designed system applies a type of this technology known as the RSA (Rivest-Shamir-Adleman) public key encryption standard in the voter authentication phase. The RSA public-key encryption protocol describes three steps for electronic voting system by using the Public-key Voting protocol. These steps are: the system access control process that is to authenticate the voter on the election server, the voting process, and collecting data process. The access control process involves the identification and authentication phases for the eligible voters. In public-key authentication, there are two pair soft keys involved. The first pair is maintained by each user who is trying to authenticate to the server. The private Key for each user is maintained on the user's personal workstation or other client system, not the Server to which the connection is being made. The public key of each user is maintained in that user's "authorized keys" file and not in a central repository. Thus, there is no equivalent of the password/shadow file existing on the server for an attacker to steal. The second pair is maintained by the server itself, and is for authenticating the server to the user. While the private key of this pair is maintained on the server, it is irrelevant because it does not provide authentication of the user on the server. Rather, it is an extra step guaranteeing (when configured correctly) that the user is making connection to the same server they last Connected to by that name or address (or else lots of alarm bells go off). Put together, this means an attacker would have to hack into each client system to gain access to the server for that user, rather than hacking into the server directly. It is a lot more work than hacking the server side. However, the client system will be fortified against attack by requiring the private key on the client to itself be encrypted with a pass phrase, which is only feasible where the user in question is an individual person and not a mechanized account or "bot". There are also "hardened" or "locked-down" systems where it is impossible to remove keys from the server-the keys need to be generated & stored elsewhere, and the server only allows a small whitelist of programs to use them after it imports them. Even if one does obtain the key, they should also be password-protected, and obtaining that password would be difficult to guess / brute force if done properly. The paper-based voting system introduced in Uganda during the first general elections has resulted in a number of issues and problems that include majorly time - consuming factor as (i) voters leaving without

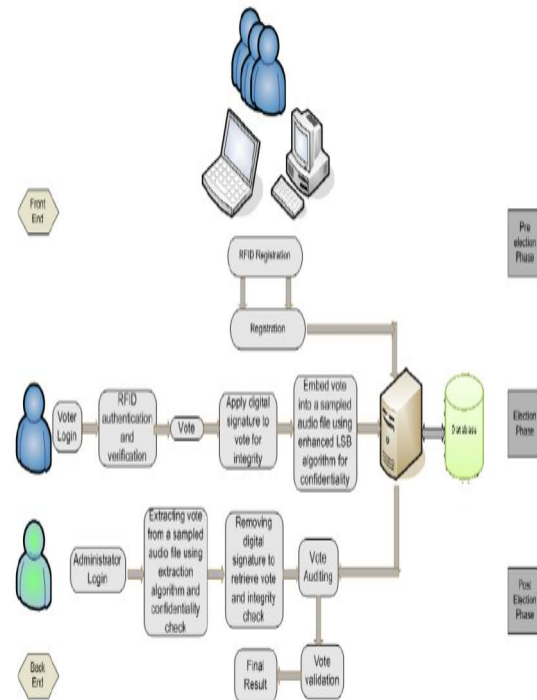
voting because of long queues, (ii) a very high intolerable percentage of lost, stolen, or miscounted ballots, (iii) high number of unclear or invalid ballot, (iv) limited or no accommodation for people with disabilities (PWDs), (v) bad weather causes people to avoid walking long distances to stations to cast their votes, (vi) intimidation of voters by agents . As the case for Uganda, Voting has not been administered; there is still enormous dwell on the traditional system even though there was an increase in the telephone usage . According to , presidential elections in Uganda, invalid votes accounted for 4% of the votes. This makes the issue of invalid votes in manual voting systems a big problem. Different methods, like the secret ballot method or the punch card systems have been used to carry on electoral processes, proving effective ways of casting votes. Due to fast evolution of Information Technology, electronic voting systems have emerged, which allow a voter to be part of an automated process . These modern voting systems and equipment evolved through the years with technology advances from traditional paper-based voting system to paper punching machines to the latest Internet voting system, i-voting . Most voting systems are based on the concept of majority rule or plurality. For example, in an election, a candidate with a plurality receives more votes than any other candidate, but does not necessarily receive the majority of the total votes cast . Voting systems have the potential to improve traditional paper-based voting procedures by providing convenience and flexibility to the voter. Due to the numerous benefits of voting systems, several countries have since introduced voting solutions either as a pilot system or in its entirety. Countries that have found voting satisfactory include Brazil, Belgium, United States, Canada, UK, India, Ireland, Geneva Venezuela, and Estonia. Voting is being piloted in a number of African countries like Kenya, Ghana and Nigeria . Recently, mobile technological revolutions have become one of the most important ICT trends with an effect to human lives . The problems associated with traditional electoral process include pre-ticked ballots, irreconcilable tallies of votes in polling stations, ghost voters, delays in the commencement of voting and ballot stuffing. Voting has problems resulting from human unreliability in cryptographic protocols, and denial of service . Therefore, this raises need for a reliable Voting System with a secure authentication protocol, which will ensure voting convenience.

## II. EXISTING SYSTEM

In the current voting system, the ballot machines where used in which the symbols of various political parties are displayed. When we press the button with the respective party's (political party) symbol the voting is done. The chance of fake person casting their vote is

more in the existing system. The voting person may use the fake voting card and cast his vote, this may cause problem. In the existing system, the person has to travel long places to his constituency to cast his vote. Therefore, we need an effective method to identify the fake voters during voting. So, the process is used for detecting the right person and also making the system to work in online, which will help the voters to cast their vote from their place itself.

## III. SYSTEM ARCHITECTURE



## IV. LANGUAGE SPECIFICATRION

### PYTHON

#### Python Language Introduction

Python is a widely used general-purpose, high level programming language. It was initially designed by Guido van Rossum in 1991 and developed by Python Software Foundation. It was mainly developed for emphasis on code readability, and its syntax allows programmers to express concepts in fewer lines of code.

Python is a programming language that lets you work quickly and integrate systems more efficiently.

Python is a high-level, interpreted, interactive and object-oriented scripting language. Python is designed to be highly readable. It uses English keywords frequently where as

other languages use punctuation, and it has fewer syntactical constructions than other languages.

- **Python is Interpreted** – Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.
- **Python is Interactive** – You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.
- **Python is Object-Oriented** – Python supports Object-Oriented style or technique of programming that encapsulates code within objects.
- **Python is a Beginner's Language** – Python is a great language for the beginner-level programmers and supports the development of a wide range of applications from simple text processing to WWW browsers to games.

### Python Features

Python's features include –

- **Easy-to-learn** – Python has few keywords, simple structure, and a clearly defined syntax. This allows the student to pick up the language quickly.
- **Easy-to-read** – Python code is more clearly defined and visible to the eyes.
- **Easy-to-maintain** – Python's source code is fairly easy-to-maintain.
- **A broad standard library** – Python's bulk of the library is very portable and cross-platform compatible on UNIX, Windows, and Macintosh.
- **Interactive Mode** – Python has support for an interactive mode which allows interactive testing and debugging of snippets of code.
- **Portable** – Python can run on a wide variety of hardware platforms and has the same interface on all platforms.
- **Extendable** – You can add low-level modules to the Python interpreter. These modules enable programmers to add to or customize their tools to be more efficient.
- **Databases** – Python provides interfaces to all major commercial databases.
- **GUI Programming** – Python supports GUI applications that can be created and ported to many system calls, libraries and windows systems, such as Windows MFC, Macintosh, and the X Window system of Unix.
- **Scalable** – Python provides a better structure and support for large programs than shell scripting.

Apart from the above-mentioned features, Python has a big list of good features, few are listed below .

### Python graphical user interfaces (GUIs)

- **Tkinter** – Tkinter is the Python interface to the Tk GUI toolkit shipped with Python. We would look this option in this chapter.
- **wxPython** – This is an open-source Python interface for wxWindows <http://wxpython.org>.
- **JPython** – JPython is a Python port for Java which gives Python scripts seamless access to Java class libraries on the local machine <http://www.jython.org>.

### V. ENGINEERING STANDARD REQUIREMENTS

This standard replaces IEEE 830-1998, IEEE 1233-1998, IEEE 1362-1998. ISO/IEC/IEEE 29148:2011 contains provisions for the processes and products related to the engineering of requirements for systems and software products and services throughout the life cycle. It defines the construct of a good requirement, provides attributes and characteristics of requirements, and discusses the iterative and recursive application of requirements processes throughout the life cycle. ISO/IEC/IEEE 29148:2011 provides additional guidance in the application of requirements engineering and management processes for requirements-related activities in ISO/IEC 12207 and ISO/IEC 15288.

### VI. CONCLUSION

This research aimed at improving speed, ease and transparency of the electoral process. There is need to guarantee improved quality of service, reduced election malpractices, increased efficiency in tallying, increased voter participation, decreased invalid votes and voting errors; prevent digital divide, and allow for better voter registration management. The research offered greater knowledge and helped the researchers to identify the advantages of using the new Public Key Cryptography OVS as opposed to manual voting system. According to the current Information Technology evolutions and advancements, electronic voting can provide reliable, convenient, and effective voting platforms that create a remarkable paradigm shift from the highly flawed traditional voting systems once all the Copyright © 2018 The authors [www.IST-Africa.org/Conference2018](http://www.IST-Africa.org/Conference2018) Page 8 of 9 important issues pertaining to the harmonious functioning of the system in question are clearly and fully addressed. Especially issues to do with security of the system in question. The OVS has fully satisfied all these questionable areas. The OVS system needs

to be adopted because it will help to guarantee improved quality of service, reduced election malpractices, increased efficiency in tallying, increased voter participation, decreased invalid votes and voting errors; prevent a digital divide, and allow for better voter registration management. The research offered greater knowledge and helped the researchers to identify the advantages of using the new Public Key Cryptography OVS as opposed to manual voting system. The system application showed success of the research conducted. The researchers recommend that the system be officially used by the electoral bodies such as Makerere University Guild Election Commission, and later on be adopted by the Electoral Commission of Uganda and other countries because the system can administer the election processes fairly, effectively and efficiently. These kind of projects needs exhaustive and meaningful research in order to implement a system that fully addresses the issues surrounding that topic such as; issues to do with the reliability and authentication of system, voting security, ease of use, among others. It is crucial to involve users in the development of the project. More research should be conducted to improve the system's functionality, high responsiveness, accessibility, ease of use by the end user and security. More research is needed in the security of the system because new threats occur as technology evolves. The project was initially done to address the challenges of the electoral body of Makerere University, as a starting point that will lead to greater research on how to use the system for general elections. For future developments and improvements, the researchers intend to improve the system to incorporate much more robust and sophisticated security technologies like biometric features. In conclusion, the research offered greater knowledge and helped the researchers to know the advantages of using the new Public Key Cryptography OVS as opposed to manual voting system. The system application showed success of the research conducted. The researchers recommend that the system be used by the electoral bodies such as Makerere University Guild Election Commission, the Electoral Commission of Uganda because the system can administer the election processes fairly, effectively and efficiently. In future we intend to improve the system to incorporate a biometric feature.

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