TRUSTWORTHY ELECTRONIC VOTING SYSTEM

Synopsis for Major project

SRINIVAS BHAGAVAN N K

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Under The Guidance Of

Dr. Mahesha D.M., MCA.,PhD

DEPARTMENT OF COMPUTER SCIENCE

KARNATAKA STATE OPEN UNIVERSITY

MUKTHAGANGOTHRI MYSORE - 570006

ABSTRACT

Election Polling is a complex system as well as costly system. A vote is considered as one of the most important legal rights a citizen can practice in a democratic country. Here we are presenting a novel Secure, Privacy Preserving and cost effective election polling concept which uses Internet Connectivity, Cloud Data Storage and Homomorpic encryption. This project aims at making the voting process easy in any type of elections.

Election officer will act as a admin user and he has to do the setting and configuration setting for election polling. Booth Managers are the area manages those who are responsible to add the voters details into the system and has retrieval system by which they can able to view the voted candidate details and sum of the votes.

INTRODUCTION

Will of the people is a well-respected phenomenon for representation of opinion in formation of electoral bodies. These electoral bodies vary from the college unions to the parliaments. Over the years, `vote' has emerged as a tool for representing the will of the people when a selection is to be made among the available choices. The voting tool has helped improving the trust of people over the selection they make by a vote of majority. This has certainly helped in democratization of the voting process and the value of voting system to elect the parliaments and governments. In 2018, there are 167 counties out of little over 200 who have some kind of democracy; full, awed, or hybrid etc. Since the trust of people is increasing in democracies it is important that they don't lose their trust on vote and voting system. By virtue of the emerging trust on the democratic institutions, the voting system emerged as a platform to help people to elect their representatives, who consequently form the government. The power of representation empowers the people with a trust that the government shall take care of the national security, national issues like health and education policies, international relations, and taxation for the benefit of the people.

In every democracy, the security of an election is a matter of national security. The computer security field has for a decade studied the possibilities of electronic voting systems, with the goal of minimizing the cost of having a national election, while fulfilling and increasing the security conditions of an election. From the dawn of democratically electing candidates, the voting system has been based on pen and paper. Replacing the traditional pen and paper scheme with a new election system is critical to limit fraud and having the voting process traceable and verifiable.

Problem Statement

The present technique requires an aggressor connect specifically with the casting a ballot procedure to disturb it. On the other end, Internet is harder to control and deal with the security as Network and web related assaults are harder to follow.

EXISTING SYSTEM

Electronic voting (also known as e-voting) refers to voting using electronic means to either aid or take care of the chores of casting and counting votes.

Depending on the particular implementation, e-voting may use standalone electronic voting machines (also called EVM) or computers connected to the Internet. It may encompass a range of Internet services, from basic transmission of tabulated results to full-function online voting through common connectable household devices. The degree of automation may be limited to marking a paper ballot, or may be a comprehensive system of vote input, vote recording, data encryption and transmission to servers, and consolidation and tabulation of election results.

A worthy e-voting system must perform most of these tasks while complying with a set of standards established by regulatory bodies, and must also be capable to deal successfully with strong requirements associated with security, accuracy, integrity, swiftness, privacy, audit ability, accessibility, cost-effectiveness, scalability and ecological sustainability.

The vast majority of the ongoing work discusses security, exactness, respectability, quickness, protection, and review capacity however existing frameworks are powerless for assaults at some degree.

Disadvantages:

- Centralized architecture.
- Attack prone.
- Non-transparent vote casting process.
- If elections are conducted in existing system model in the pandemic time, then there is sure spread of disease like COVID, which happened in the recent elections in India.
- It is difficult to maintain important information in books.
- More manual hours are needed for counting of votes.
- It is tedious to manage historical data which needs much space to keep all the information regarding the voters and the candidates.
- Voters have to wait in long queues for voting they have to travel long distances.

PROPOSED SYSTEM

Election Polling is a complex system as well as costly system. Here we are presenting a novel Secure, Privacy Preserving and cost effective election polling concept which uses Web Technology, Cloud Data Storage and Homomorpic encryption.

This system has two types of users one is Election Officer & another is Booth Manager, Booth Manager System developed with voter's functionality where voters are going to poll.

Election officer will act as an admin user and he has to do the setting and configuration setting for election polling. Booth Managers are the area manages those who are responsible to add the voters details into the system and has retrieval system by which they can able to view the voted candidate details and sum of the votes. Voters have to go the Booth where the Booth manager verify the voter and allow him to poll on the Booth's Laptop where the voting system is running.

This proposed system has a method to execute operations on encrypted data without decrypting them which will provide us with the same results after calculations as if we have worked directly on the raw data.

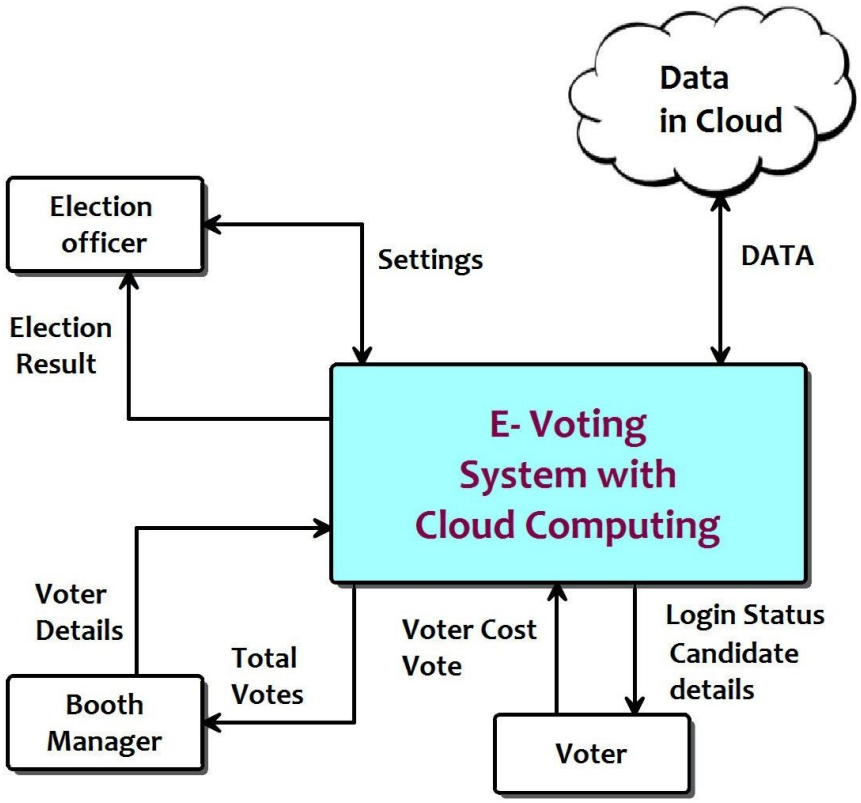
Advantages:

- Decentralized architecture.
- Transparent vote casting process.
- Manipulations of votes are nearly impossible.
- Votes are recorded accurately, permanently, securely, and transparently.
- The objective of the voting software is to provide better information for the users of this system easily they can vote from anywhere without facing any difficulty.

- The proposed system does not require any physical presence during vote polling or counting. So it is very easy to conduct elections even during the pandemic situations without any spread of disease or human live losses.
- The proposed system has good authentication so only authorized person can able to vote and also cannot vote multiple types.
- Vote Counting can be made very quickly and results will be displayed in few minutes.

SYSTEM ARCHITECTURE

System architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.



Proposed System Architecture

MODULES

Electoral dist Maintenance

- Election officer has the authority to add, delete or edit the election district list. Candidate details like name, age, party, district can checked, edited, added or deleted. Likewise even the booth details like the reference number, district and the booth manager in-charge can be seen or edited. Mainly the election officer has the authority and the secret key to decrypt the individual votes of each candidate from different booth and announce the winner of election district wise.

Booth Maintenance

- Booth manager will have information about his booth regarding booth reference number, booth location, number of candidates contesting for election and total number of voters destined to vote in his booth. He has the authority to see the voter details who belong to his booth. He can add or delete any voter from the list. Voter is allowed to vote provided his voter-id is valid and cast his vote. This happens under the booth manager assistance. After voting, Booth manager can view the total number of votes, indirectly representing the total number of voters polled but individual votes per candidate can be viewed in the encrypted format.

Voter Details

- Voter details have to display as per the booth.

Voting Process

- In this module the process of voting is carried out. The voter's identity is to be validated, whether he belongs to his assigned booth and whether is has polled or not. Provided he hasn't already voted, he can cast his vote. This

vote will be encrypted and added to the particular candidate to whom he/she has voted and this data is stored.

Homomorphic Encryption

- Homomorphic encryption on data, a small module is developed which shows addition, subtraction and multiplication operations on encrypted data which uses the RNS(Residue Number System) algorithm . It is easier and also it is robust and more efficient.

Election Report in graph

- As per the election, result has to display in the graph.

SYSTEM REQUIREMENTS

Hardware Requirements:

- System : Intel I3 Core I3 2.4 GHz.
- Hard Disk : 500 GB.
- Ram : 4 GB
- *Any desktop / Laptop system with above configuration or higher level*

Software Requirements:

- Operating system : Windows OS
- Coding Language : Java
- Technologies : Servlet, JSP, JDBC
- Web Server : Tomcat
- IDE : Eclipse
- Database Server : MySQL
- UGI for DB : SQLyog
- JDBC Driver : Type 4

Applications:

- Assembly Election
- Parliament Election
- Corporate Election

RESULTS AND DISCUSSION

The idea of adapting digital voting systems to make the public electoral process cheaper, faster and easier, is a compelling one in modern society. Making the electoral process cheap and quick, normalizes it in the eyes of the voters, removes a certain power barrier between the voter and the elected official and puts a certain amount of pressure on the elected official. It also opens the door for a more direct form of democracy, allowing voters to express their will on individual bills and propositions. Our election scheme allows individual voters to vote at a voting district of their choosing while guaranteeing that each individual voters vote is counted from the correct district, which could potentially increase voter turnout.

The government will also be able to reduce the cost of the voting system in terms of setting up election booths supported by a huge security system. They only need to create awareness about how to use this new voting system and some mobile voting centers for guiding the voters if any inconvenience occurs.

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