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Electronic Voting Machine Using Internet

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Abstract

Electronic voting system is an important tool which allows voters to vote over the Internet without the geographical restrictions with considers important criteria in evaluating electronic voting schemes such as the mobility, democracy, and privacy. There are a number of voting systems adopted all over the world with each of them having its peculiar problems. The main task of this paper is to introduce the idea of the internet voting systems and it describes the design of a voting machine counter through the internet. This system using fingerprint in order to provide a high performance with high security to the voting system also we use web technology to make the voting system more practical. It used to displays the database of the user. After receiving the instruction from the polling officer, the user can use the touch screen to poll his/her vote. In the touch screen the name and the symbol of the candidate is displayed. Touch screen is connected to the client system and client systems are connected to the server. The entire booth's counting results are updated in the server. Encryption and description method using to prevent from the hackers.

Keywords: voting, finger print identification, web based voting, e-voting, encryption and description, counting.

Introduction

Electronic voting has been attracting considerable attention during the last years. The interest in e-voting is based on one hand upon interest and attention devoted to e-government, e-democracy, e-governance, etc. On the other hand, interest in e-voting is founded in problems with conventional election systems. The term e-voting is being used from casting the vote by electronic means to asking the internet community for an opinion on a political issue, as well as from tabulating the votes by electronic means to integrated electronic systems from voters and candidates registration to the publication of election results [1]. Other terms, like e.g. e-elections and i-voting have been introduced in order to clarify the specific contents of e-voting. The term e-voting should encompass only political elections and referenda, not initiatives or opinion polls or selective citizens' participation between elections or referenda (e-consultations)[1].

In general, two main types of e-voting can be identified: e-voting supervised by the physical presence of representatives of governmental or independent electoral authorities, e.g. electronic voting machines at poll sites popularly known as Direct Recording Electronics (DRE); and e-voting within the voter's sole influence (remote e-voting), not physically supervised by representatives of governmental authorities, e.g. voting from one's own or another person's computer via the internet, by mobile phones (including Short Message Service, SMS), or via digital television [3]. By this summary categorisation, advance voting of some Nordic countries at postal offices, or kiosk voting at municipal offices can fall, according to specific circumstances, in both of the above cases.

Exhaustive studies have shown that electronic voting, if carefully designed, enhances polling and votes' security, confidentiality, sincerity and increased cost savings on reduced manpower, logistical materials and tools; and above all instant analysis and reporting. Electronic voting further enhances accuracy of all valid votes and final out come; permit voting once for only eligible voters; allow independent verification of all voters; it can also improve voters' turnaround as it flexibly allows a voter to login and vote from any workstation [2]. Therefore, electronic based voting technologies would expand the reach and range of potential voting population. When designing an electronic voting system, it is essential to consider ways in which the voting tasks can be performed electronically without sacrificing voter privacy or introducing opportunities for fraud. An electronic voting system defines rules for valid voting and gives an efficient method of counting votes, which are aggregated to yield a final result.

The E-Voting Description

Electronic elections gain more and more public interest. Some countries offer their citizens to participate in elections using electronic channels. The E-voting is an advanced voting technique which decreases the human effort and also increases the accuracy. Basically this E-voting is completely electronic voting process, without the use of paper and ballot boxes. The term electronic voting and also known as e-voting is a term inclusive of many systems and methods of voting, Voting mail includes stalls closed to vote equipped with electronic devices, software, peripherals, processing systems, equipment, tools and screens, networks and means of communication ... etc., and sometimes includes systems, smart cards containing an electronic chip data by the voter, or biometric cognitive systems which is a standard vital systems that rely on measuring the physical properties that are unique to each person is different from the other by such as fingerprint and retina and fingerprint DNA fingerprint.

In most election processes, the voting system is always a relatively small part of the whole election process. Generally, an e-voting system consists of six main phases which includes:

1.Voters' registration is a phase to define voters for the e-voting system and give

them authentication data to log into the e-voting system.
2.The authentication is a phase to verify that the voters have access rights and franchise.
3.The voting and vote's saving is a phase where eligible voters cast votes and e-voting system saves the received votes from voters.
4.The votes' managing is a phase in which votes are managed, sorted and prepared for counting.
5.The votes' counting is the phase to decrypt and count the votes and to output the final tally.
6.The auditing is a phase to check that eligible voters were capable to vote and their votes participate in the computation of final tally.

Web-Based Voting

In recent days, the web based voting gained a lot of research interest due to its unique characteristics. A lot of countries approved principle of voter voting from anywhere in the world with the Internet, and be either using a PIN code up to the voter by registered mail or using an identity card intelligent containing slice electronic data with the rest of the voter, where their contents are read through card reader connected to your computer. Internet use in the voting process is very important because it easier for people to participate without any hesitation or effort. We can improve web-based voting by increase the security level of this system.

AFIS

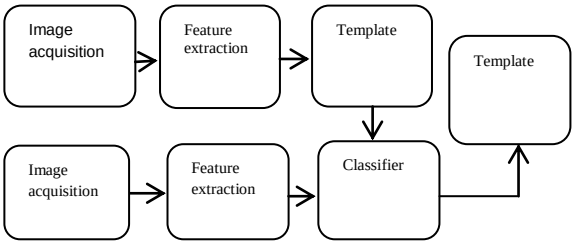
Among all the biometric techniques, fingerprint-based identification[4] is the oldest method which has been successfully used in numerous applications, because of their uniqueness and reliability. Usually, the fingerprint image data captured during enrolment is stored/ transmitted for 1:1(verification) and 1: N (identification) in an e-Governance application life cycle. Fingerprint recognition [5] is really just a type of associative memory with similarity measure. Probe fingerprint on input is compared with every candidate fingerprint stored in the associative memory, candidates are sorted by result of the similarity measure function, and the closest match is returned. Generic associative memory is parameterized by two fingerprint-specific functions: extraction and similarity measure. Extraction or abstraction improves signal-to-noise ratio in input fingerprint before storing its template in associative memory. Similarity measure function computes single value (similarity score) that represents degree of similarity between two templates. For efficiency reasons, probe template is first indexed into relatively large probe index containing multiple lookup tables for faster matching. Matcher then compares candidate templates against probe index instead of probe template itself. Extraction, indexing, and matching algorithms can be efficiently split into multi-stage pipeline to control algorithm complexity and allow easy extension. Template extraction algorithm constructs extraction models of the fingerprint by removing unimportant information thus improving signal-to-noise ratio.

A. AFIS Automated fingerprint identification

AFIS Automated fingerprint identification is the process of automatically matching one or many unknown fingerprint against a database of known and unknown prints. Automated fingerprint identification systems are primarily used by law enforcement agencies for criminal identification initiatives, the most important of which include identifying a person suspected of committing a crime or linking a suspect to other unsolved crimes.

B. Automated fingerprint verification

Automated fingerprint verification is a closely related technique used in applications such as attendance and access control systems. On a technical level, verification systems verify a claimed identity (a user might claim to be John by presenting his PIN or ID card and verify his identity using his fingerprint), whereas identification systems determine identity based solely on fingerprints [6]. A large number of computer algorithms have been developed to automatically process digital fingerprint images. These algorithms have greatly improved the operational productivity. Minutiae filter and Gabor filter are a part of these algorithms; all these algorithms use the following steps in the figure below to do the automated fingerprint identification.



Accuracy

"A system is accurate if 1). It is not possible for a vote to be altered, 2). It is not possible for a validated vote to be eliminated from the final tally, 3). It is not possible for an invalid vote to be counted in the final tally [7]". Accuracy is one of the most important factors to any system. If the input is not correct, then the result will not be correct. Not only should the system be accurate in counting votes and maintaining the integrity of cast ballots, the system should be accurate in identifying voters.

Privacy

Privacy is one of the most important properties of an information system must satisfy, in which systems the need to share information among different, not trusted entities [8]. "A system is private if 1). Neither election authorities nor anyone else can link any ballot to the voter who cast it and 2). No voter can prove that he or she voted in a particular way [7]". Privacy is a concern to all users of a voting system. While it is important to have an audit trail available to verify the system, aggregate data should be accessible as opposed to an individual's vote. "The second privacy factor is important for the prevention of vote buying and extortion.

Mobility

"A system is mobile if there are no restrictions (other than logistical ones) on the location from which a voter can cast a vote [7]". Mobility in the system could allow voters the capability of voting anywhere internet is available. This characteristic is better suited for an online E-voting system. However, the designs of the physical machines need to be small enough to accommodate various polling locations where space could be an issue.

Consistency

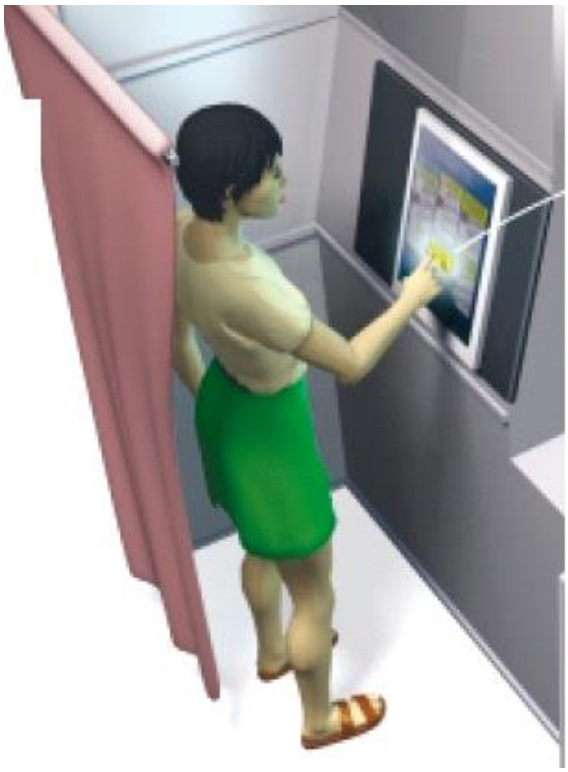
A system is consistent if it operates efficiently at each location, in each situation, and the functions perform exactly as designed [9]. Each voting machine must be an exact duplicate of the other to ensure consistency and quality control. This also, increases usability as the voting process does not vary between locations, especially important for our mobile society.

Social Acceptance

A system has social acceptance if it has favourable reception and is perceived as being an effective system by the voting population [10]. It can be easy to overlook the users involved in a system. Even if the system is sound, users are what make or break the system. Perception is crucial. Currently, society views the majority of E-voting as inaccurate, unusable, and not private.

Proposed System

In the proposed system, if the user database is matched then the user allow to cast the vote. Here finger print identification is used. It is unique identification to each user. The user need not use any paper or pen. The voting screen is connected to the personal computer. Then the users have multiple options. At the time of voting the user have two choices that are vote and cancel. If the users wrongly choose, then use the cancel option to go back. The user press the vote option, the vote will be stored in the server. In this way multiple pc's are connected to one centralized server. Now a days 60 to 70 percent votes are only registered because of individual problems like the user in some other location.



Counting process

In that, many systems are connected through the network. One is consider as a server. The votes are stored in the server. Then easily count the vote from server. The result will be delivered on the same day itself after election. This is used to reduce the man power, time and also cost.

Advantages

- Counting of votes could be done at the same time while voting.
- The misuse of voting could be reduced**.**
- Checking whether the voter has voted or not.
- The time taken to cast vote is less
- Cost is low, since the people working are less in the system.

CONCLUSIONS

Our proposal enables a voter to cast his/her vote through internet without going to voting booth and proxy vote or double voting is not possible, fast to access, highly secure, easy to maintain all information of voting, highly efficient and flexible. Hence, by this voting percentage will increase drastically. The using of online voting has the capability to reduce or remove unwanted human errors. In addition to its reliability, online voting can handle multiple modalities, and provide better scalability for large elections. Online voting is also an excellent mechanism that does not require geographical proximity of the voters. For example, soldiers

abroad can participate in elections by voting online. The result will be delivered on the same day itself after election.

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