

# Research Paper On The Use Of Biometrics In Electronic Voting Machines

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## Abstract

In the biometric system the recognition of fingerprints has been studied for a long time it showed the most promising future in the real application. However, due to complex distortions among the various impressions of the same finger in real life, the recognition of fingerprints remains a difficult problem. The coincidence of two fingerprints to be same can not be successful for several reasons and also depends on the method used to be suitable. The Electronic Voting Machine (EVM) is a simple electronic device used to record votes instead of the ballot papers and ballot boxes used so far in the conventional electoral system. Because of biometric, the identifiers can not be lost, corrupted or easily shared, they are considered more reliable for detecting people, traditional ways or knowledge-based methods. In this article, we are interested in comparing three algorithms to match fingerprints by making the election with the new EVM. Based on the election result in terms of the accuracy of the correspondence, the time required for the correspondence and the best algorithm are determined for the new EVM. The three techniques are direct matching, deep matching and pairing for distance reasons. We realize that the evaluation of the FVC-1200 data sets and the results were observed by selection using these matching techniques and the best pairing technique are found for the new EVM.

**Index terms:** biometrics, fingerprint, matching, vote, EVM.

## I.Introduction

Fingerprint detection suddenly generalizes forensic and civil applications. Compared to other biometric features, fingerprint biometrics is the most proven technology and has the largest market share. In terms of applications, there are two types of fingerprints. Recognition systems: verification and identification. A fingerprint is the pattern of ridges and valleys in the Surface of a finger The last points and the waypoints. Burrs are called minutiae. The minutiae end and the forks are shown in Figure 1. An upper end is defined as the vertex where a crest ends abruptly. The fork is defined as the vertex where a comb is located divided into two ridges. It is a widely accepted Assume that the minute pattern of each finger is unique and does not change in the course of life. when Fingerprint experts determine if there are two fingerprints If the fingers are the same, the corresponding grade is in the middle and the two minute chart is one of the most important factors. Thanks to the similarity of the way the human fingerprint experts and the compactness of the models, the basis of trifles. The correspondence method is the best studied pairing process. The algorithms compared in this article they belong to the method of coincidence based on the minutiae. A fingerprint recognition system works well in Verification mode or identification mode. In Review, The entry is a request

for fingerprint and identity (ID). The system checks if the ID matches the ID Fingerprint. The output is a yes or no answer in identification, the entry is only a fingerprint request and the system tries to answer the question: are there any? Fingerprints in the database that look like the query Fingerprint? The result is a brief list of fingerprints in this document we discuss the problem of verification. Although fingerprint detection was investigated by many years and many advances have been made the performance of the mate, even at the forefront of technology, remains very high below people's expectations and theory estimate [1]. Therefore, much remains to be done it improves both performance and fingerprint speed of the recognition systems. The matching algorithm plays a key role in a fingerprint recognition system. Votes are a method for a group, for example. For example, a meeting or a meeting. Elected to make a decision or express an opinion, often after discussions, debates or electoral campaigns. It is often in democracies and republics. Electronic Voting (also known as e-voting) is integral.



figure 1.

Different types of voting, which include electronic voting and electronic voting instruments count the votes. A study to improve fingerprints. Minute electronic voting creates a user interface this use as a new alternative to paper correspondence. Enhanced fingerprints are also used to provide secure information. Ambience during the election process as permissible voters with fingerprint recognition can vote. then, The objective of this study is to improve the existing system and election process on campus. Usually, there are two algorithms for fingerprint recognition.

Steps: (1) Align the fingerprints and

(2) Find the matches between two fingerprints. focus proposed by Jain et al. [2] can compensate some of the nonlinear deformations and find the coincidences However, because the burrs associated with it The alignment is estimated with the minutiae. Parameters, the size of the models should be large, what it takes a lot of memory and calculation, otherwise the orientation is inaccurate. Some graph-based algorithms [3,4,5] are the same, perform operations based on graphical principles. the algorithm [6] by Nalini K. Ratha et al. Two-minute connection tables, one for the base and the input image, in which the vertices of the graph represent the minutia of the set of corresponding minutiae. dot Pattern matching problems [7,8] are also used in Find matching fingerprints, even though it's math. dear [9] proposes a solution for the fingerprint Combine ideas with points models of corresponding problems. Werner Olz and Walter Kropatsch has proposed an algorithm [10] that the all first topology considered. Every burr is an icon that matches your style and contains the following Final comb, fork comb etc. These symbols are considered as nodes / vertices of a graph and two as Graphene derived from the whole Grattopologie of The base and input images are compared to obtain a result. In [11], a new term called K-Plet may be introduced either "K" refers to the nearest neighbors a little or all Neighbors in a circle radius, etc. A neighborhood. For each K-Plet a diagram is drawn the first coupled amplitude search algorithm (CBFS) is used for this Cross the nodes of the graphs to create a corresponding score. Sanjay Kumar et al. [12] analyze the different electronics vote used throughout the country. There were several Studies on the use of computer technologies for improvement in elections [3,13,14,15,16]. These studies warn

against it The risk of acting too fast to accept electronic voting System, due to software engineering problems, Internal threats, vulnerabilities and challenges of the network review. In this article we compare three matching algorithms in to use this for EVM. The suitable algorithms are:

Correspondence per minute, direct correspondence and share of relationship distance comparison. Fortuitously Two-fingerprint technique as a template and query Fingerprints are compared and compared directly the results are observed. A minutiae based on the coincidence of [17] Features include Ridge Ending and Ridge Bifurcation extracted and stored with the x-axis, the y-axis. Alignment The same procedure is performed on the query imageand the correspondence is via the functions Chandrasekaran et al. [18] submit a fingerprint Match algorithm that identifies the candidate first common unique points (minutiae) at the base and in the Enter the images via the relative distance report Comparison function. Then a tree-shaped structure is drawn Connect the common Minutiae points from bottom to top both in basic and in input pictures. The corresponding score is obtained by comparing the similarity of the two trees Structures based on a threshold. The suggestion The algorithm does not require explicit alignment of the two Compared fingerprint images and tolerated distortions caused by wrong minute points. These three algorithms are compared and the best algorithms found in terms of accuracy and playing time. The best algorithm is used for the new EVM.

## II. Algorithms

In this paper, we compared three techniques of fingerprint matching.

### 2.1. Direct Matching:

In this, the input is read, and the matching is performed by comparing the two images pixel wise.

### 2.2. Minutiae Based Matching:

Let T and Q be the characteristic vectors that represent Minutiae points, form the model and print the query, they are Every element of these characteristic vectors is a minutiae points that can be described by several attributes such as location, orientation, type, quality of District, etc.

### 2.3. Relationship ratio adjustment ratio

The method preserves common minutiae set of points (minutiae points existing in both the base and the input image). The main objective of this phase is to make the number of common minutiae points in some fingerprint images.

## III. Electronic voting system.

At the heart of this section is the design of a new SRM. based on the tiny fingerprint function and the best coupling technique.

### 3.1. Electronic voting based on biometrics:

Because biometric identifiers can not be easily misled, fake or shared are considered more reliable for the recognition of the person using the traditional sign or knowledge-based methods. The goals of biometrics recognition is the convenience of the

user (for example, the withdrawal of money no credit card or PIN), better security (for example, difficult Forge access) and higher efficiency (eg reduction Overhead to maintain the computer password). the Great success in fingerprint recognition Technology in law enforcement, waning cost of fingerprint recognition devices, increasing availability economic computing power and growing identity Fraud / theft, everything marks the beginning of an era of Applications for recognition of persons in the commercial, civil and civil sectors. and finance areas. So the electronic voting system It is supposed to be improved on the basis of current technologies biometric system the Novel EVM is structured in two phases [17]. Registration and vote. Upon registration, the The fingerprint is captured with the fingerprint scanner, and the captured image is improved with the Techniques that are applied to paper as soon as the image is improved, Functions called minutiae are extracted (end, fork) with the tiny feature extraction technique and the extracted features are stored in the database verification. In the verification process, the person who arrives the vote registers your fingerprint on the Control phase, once the picture is taken, it is improved and stored the function for future comparisons. To check whether the voter is an authenticated voter, the The input image is compared with the database. We call it Authentication process When printing is not stored in the directory Database will beep a single beep so the person can not vote or if the same person retunes, the system should: a Double beep for safety to be alerted. If that The image is in the database so that the person is authorized Voting in the voting phase. In the voting phase there are is the number of fingerprint scanners with the symbols corresponds to the number of candidates. The authorized person In the control phase, you can represent your thumb print on the scanner for what I like to vote. Once captured, the identification process it is transported between the control and voting phase in to identify that the person who went through the The verification process is the person who voted. Yes there is no blocking condition (ie) and the search image matches your voice registered for a suitable candidate.

#### IV. Conclusion

For more than a decade, fingerprints have been part of the most commonly used methods to detect people. Automated biometric systems were previously available only in the last few years This work is done successfully on a PC Electronic voting system based on Matlab 7.5. they The results obtained were significant and comparable. the shows the fact that improving the image of the fingerprint This step will definitely improve the verification performance fingerprint recognition system. The report of The pilot study for an election showed greater accuracy and the best match is obtained with this reconciliation check on PC The algorithm is safe in terms of time and memory because fingerprints are widespread with the public, the police and the medical examiner scientific community, will continue to be used with Many systems have been inherited from governments and are u ed in Germany

new systems for developing applications that reliable biometric Then we go in the near future Biometric technology device that can be used as if Indian electronic voting machine.

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