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Fingerprint based Biometric ATM Authentication System using Enhancement Algorithm

Prof. Pradnya S.Moon[1], Pallavi Hiwarkar[2], Priti Kontamwar[3], Farheen Sheikh[4], Mayuri Bhagat[5]
[1]*Assistant Professor, KDKCE, Nagpur, India*
[2, 3, 4, 5]*4th year, B.E., Computer Technology, KDKCE, Nagpur, India,*

Abstract: ***The main objective of this system is to develop an system, which is used for ATM security applications. In these systems, Bankers will collect the customer finger prints. Now-a-days, in the self-service banking system hasgot extensive popularization with the characteristic offering high-quality 24 hours service for customer. In this paper, Enhancement algorithm for fingerprint pattern recognition and matching is proposed. A critical step in automatic fingerprint matching is to automatically and reliably exact matching from the input fingerprint***

A fingerprint image enhancement algorithm receives an input fingerprint image, applies a set of intermediate steps on the input image, and finally output the enhanced image.

Keywords: Biometrics, fingerprints, PIN, security, Bifurcation, Enhancement algorithm.

I. INTRODUCTION

Biometrics are automated methods of recognizing a person based on a physiological or behavioral characteristic. Biometric-based solutions are able to provide for confidential financial transactions and personal data privacy.[1]

Various types of biometric system are being used for real time identification most popular are based on fingerprint matching

Most of the ATM in the past have been using id cards to identify users but now with the help of biometrics we can very easily identify the real user. Biometric

ATM are use for wide range of applications like for banking. biometric ATM offer ATM type interface along with at least one biometrics capture device like fingerprint scanner.

In this paper, we are used enhancement algorithm and scanning process for verifying fingerprint. Biometric fingerprint is most important method for security.

A. Enhancement Algorithm

A fingerprint image enhancement algorithm receives an input fingerprint image, applies a set of intermediate steps on the input image, and finally output the enhanced image.[2] The enhancement algorithm is very important for matching the input fingerprint.

A critical step in automatic fingerprint matching is to automatically and reliably exact matching from the input fingerprint, the Enhancement algorithm using the goodness index of extracted minutiae and the accuracy of an input fingerprint verification. The Enhancement algorithm is verification technique for verify the input fingerprint.

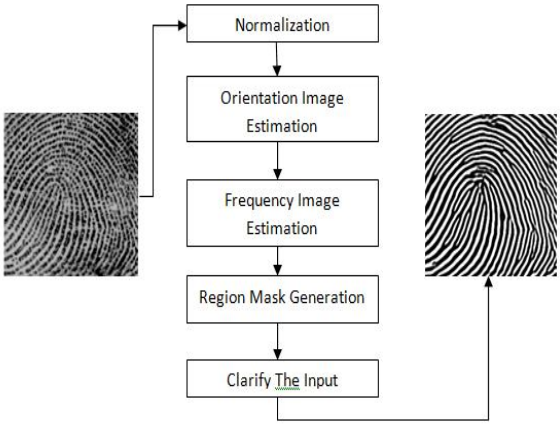

Fig1.1:- flowchart of fingerprint Enhancement Algorithm

1) Normalization:-In enhancement algorithm, Normalization is used for avoid duplication.

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2) *Orientation Image Estimation:*-When the normalization process is completed then the orientation image is estimated
3) *Frequency Image Estimation:*- When both previous process is done then the frequency is computed
4) *Region Mask Generation:*-The region mask is classifying each block in the normalized input fingerprint image into recoverable block
5) *Clarify The Input:*-It is the last process of this algorithm ,it filter the thumb lines and it also generate output .

B. Work Flow

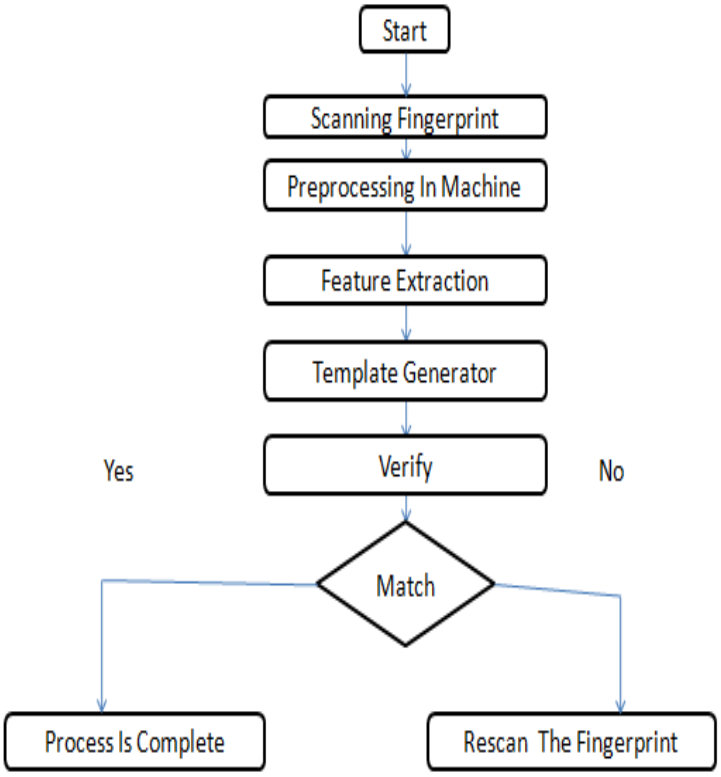

Fig 1.2:-scanning process

II. OBJECTIVE

The main reason for biometric system is to increase overall security. While a criminal might be able to obtain a password illegally, getting a user's fingerprint would be much more complicated. In such cases there is possibility of hacking passwords and personal information is more and some time it is difficult to remember the PIN number.

III. LITERATURE SURVEY

A. Fingerprint Based Biometric ATM Authentication System[1].

With the help of this paper we can refer fingerprint scan technology. In Finger scan technology most commonly deployed biometric technology used in a broad range of physical access and logical access applications. All fingerprints have unique characteristics and patterns. A normal fingerprint is made up of lines, spaces. This lines are called as ridges while the spaces between the ridges are called valleys.

B. Fingerprint Image Enhancement: Algorithm and Performance Evaluation[2].

The goal of enhancement algorithm is to improve the clarity of ridge structure of fingerprint images in recoverable regions and to remove the unrecoverable regions. A fingerprint enhancement algorithm should not result in any fictitious ridge structures.

IV. COMPARATIVE STUDY

SR.NO	TITLE	AUTHOR	METHOD
1	Fingerprint Based Biometric ATM Authentication System[1]	i]DhirajSunehra.	Fingerprint scan technology.
2	Fingerprint Image Enhancement :Algorithm and Performance Evaluation.	i]Lin Hong. ii]Yifei Wan. ii]Anil Jain.	Enhancement algorithm.

V. CONCLUSION

We have developed a fast fingerprint enhancement algorithm which can adaptively improve the clarify of ridge and furrow structures based on the local ridge orientation and ridge frequency estimated from the inputted images. Fingerprint readers are being used by bank for ATM authorization and are becoming more common at grocery stores where they are utilized to automatically recognize a register customer and bill their credit card or debit account. the Enhancement algorithm using the goodness index of extracted minutiae and the accuracy of an input fingerprint verification. The Enhancement algorithm is verification technique for verify the input fingerprint. The algorithm also identifies the unrecoverable corrupted regions in the fingerprint and removes them from further processing.

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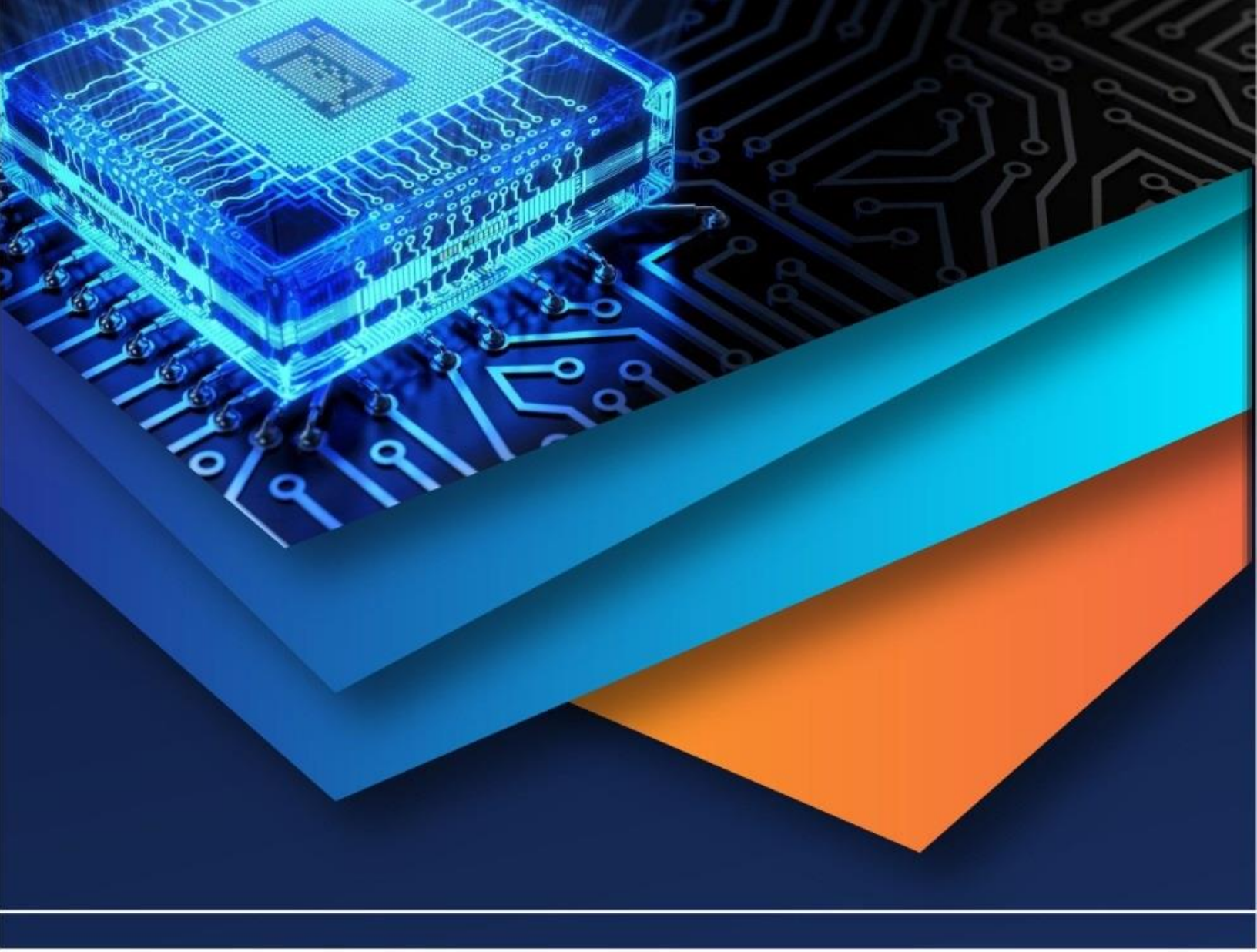
[1] DhirajSunehra, “Fingerprint Based Biometric ATM Authentication System”,2014.
[2] Lin Hong, Yifei Wan, Anil Jain,“Fingerprint Image Enhancement :Algorithm and Performance Evaluation”,2013.



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