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Image Processing Segmentation Based Verification of Secured Fingerprint Using Computational Geometry Algorithms

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Abstract: In Our Project Presents fusion of three biometric traits, i.e., iris, palm print and fingerprint, at matching score level architecture using weighted sum of score technique. The features are extracted from the pre-processed images of iris, palm print and fingerprint. These features of a query image are compared with those of a database image to obtain matching scores. The individual scores generated after matching are passed to the fusion module. This module consists of three major steps i.e., normalization, generation of similarity score and fusion of weighted scores. The final score is then used to declare the person as Authenticate or Un-Authenticate with Secret Key Analysis.

Keywords: Multimodal, multi-resolution, curvelet tranform, ridgelet transform, score combination, weighted similarity.

I. INTRODUCTION

Biometrics means life measurement, but the term is an automated method of recognizing a person based on either physiological or behavioural characteristics. The different modality of an individual fingerprint is used for personal identification. These modalities are definitely having advantages over the non-biometric methods such as personal identification number (PIN), and identification (ID) cards. The applications which most people associate with biometrics are surveillance systems, national security systems, border security and many more applications. Nowadays, due to the increase in the transaction fraud and security breaches, there is a need for highly secure systems. Some of the problems faced in the unimodal biometric authentication system are the enrolment problems because of non-universality, vulnerable to some level of spoofing, insufficient accuracy during data acquisition. To overcome these problems, multimodal biometric system is preferred. Multimodal biometrics refers to the use of combining two or more biometric modalities in a single identification system. A multimodal system can operate in either serial or parallel or hierarchical mode.

II. OBJECTIVE

The Human fingerprints are rich in details which is known as minutiae, which can be used as identification marks for fingerprint verification. Our term project is to study on fingerprint recognition system based on minutia based matching which is quiet frequently used in various fingerprint algorithms and techniques. The approach of this project involves how the minutia points are extracted from the fingerprint images and after that between two fingerprints we are performing the fingerprint matching. Image enhancement, image segmentation, minutia extraction and minutia matching these stages are the main themes of our project. A Multi Model Biometric System of finger print based on Curve let Packet Analysis is described using in Secured Key Process.

A. Problem Definition

The division of the subtraction results in y-axis operation will also reduce the difference between two adjacent pixels. So we can't get accurate edges (lines) Security is Very less.

Existing System

Fingerprint Classification on Wavelet let Transform and Gray Level Co-occurrence Matrix Fingerprint spoofing, spoof detection, Presentation (Preprocessing), Statistical learning, open set recognition.

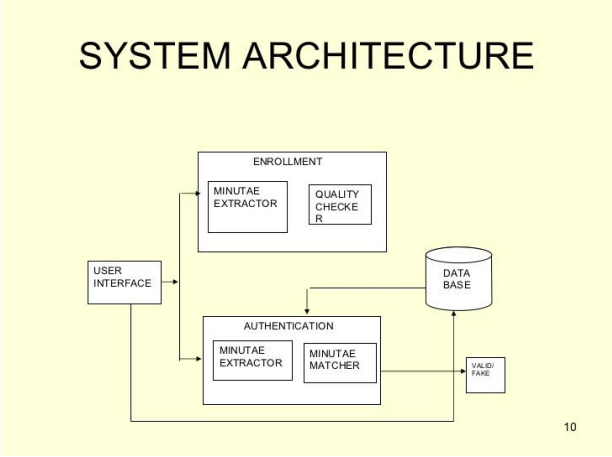

Fig 1: Existing System Architecture

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The method that is used for here is based on a traditional finger scanning technique, minutiae. Other existing systems analyse tiny sweat pores on the finger that, in the same way as minutiae, are uniquely positioned. Finger scanning is not immune to environmental disturbance. when the finger is touching the scanner device, the image is captured.

I) Dis-Advantage
- Does not support efficient data dynamics.
- Suffers from security vulnerabilities when involving dynamic data operations.
- Less reliability and low performance.

B. Proposed System
- Input Finger Print Image
- RGB2gray Image
- Discrete Curve-let Transform
- GLCM Features (Contrast , Correlation , Homogeneity and Entropy)
- Recognition on AUTHENTICATE / UN-AUTHENTICATE

In this system, fingerprint segmentation for verification purposes is investigated. Biometry, as the science of studying mathematical or statistical properties in physiological and behavioral human characteristics, is widely used in forensic and non forensic applications in security field such as remote computer access, access control to physical sites, transaction authorization.

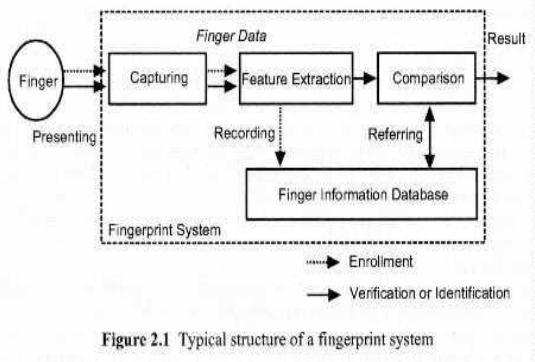

Fig 2: Proposed System Architecture

I) Advantage
- High Accuracy
- Recognition we can get perfect

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III. FEASIBILTY STUDY

The feasibility of the project is analysed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are
- Economical Feasibility
- Technical Feasibility
- Social Feasibility

1) Economical Feasibility

This study is carried out to check the economic impact that the system will have on the organization. The amount of fund that the company can pour into the research and development of the system is limited. The expenditures must be justified. Thus the developed system as well within the budget and this was achieved because most of the technologies used are freely available. Only the customized products had to be purchased.

2) Technical Feasibility

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes are required for implementing this system.

3) Social Feasibility

The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

IV. MODULES

I) Pre-processing stage:

The input image is made suitable for further processing by image enhancement techniques.

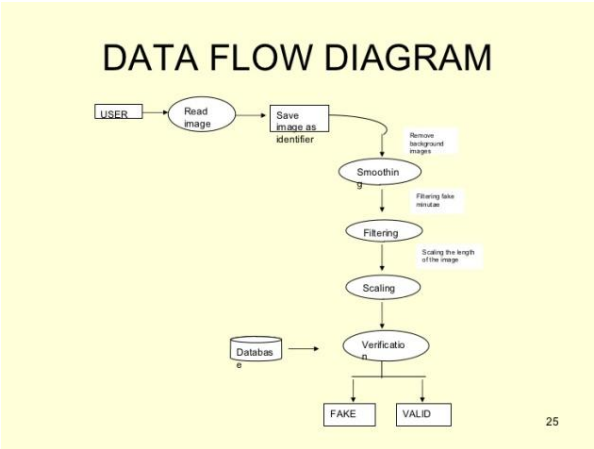

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Fig 4: Data Flow Diagram for Proposed System

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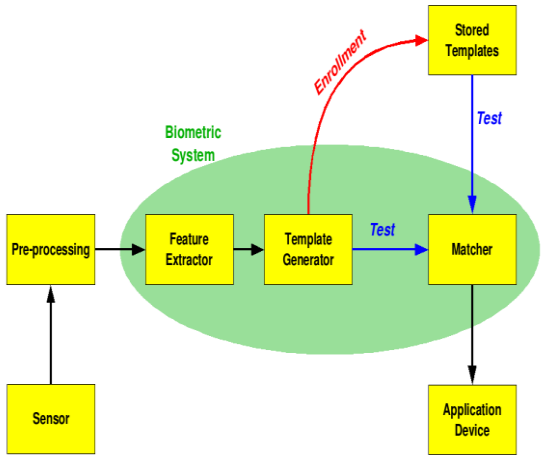

Fig 3: ER – Diagram for Proposed System

II) Processing stage:

The data, which comes from above step ,is submitted to specific segmentation (data sets) using computational geometry algorithms. Thus, onion layers (convex polygons) are created from these data sets.

III) Meta-processing stage:

The smallest layer (convex polygon) of the constructed onion layers is isolated from the fingerprint in any form. This is supposed to be stored in a reference database, for subsequent verification.

IV) Verification stage:

The referenced polygon that has been extracted during registration stage is intersected with the onion layers and the system decides whether the tested vector identifies the onion layers correctly or not.

V. CONCLUSION

At last this project concludes a new dynamic proof of retrievability scheme for coded cloud storage systems. To reduce the overload on server by using dynamic proof and this project is implementing captcha for reducing overload. This project is implementing recovery process for data by content matching.

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