High Security System Provided By Steganographic Technique Using Palm and Iris Scan

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Abstract: *The project proposes to implement the biometric security system based on combination of iris and palm print with steganographic technique for authentication purpose. Here the data hiding approach involves to conceal secret personal informatics within their biometric for still enhance the privacy protection.*

Keywords - Wavelet Packet Transform (WPT), Palm print, Iris print , Biometric, Steganographic.

1. Introduction

DIGITAL IMAGE PROCESSING :-

The identification of objects in an image would probably start with image processing techniques such as noise removal, followed by (low-level) feature extraction to locate lines, regions and possibly areas with certain textures.

The clever bit is to interpret collections of these shapes as single objects, e.g. cars on a road, boxes on a conveyor belt or cancerous cells on a microscope slide. One reason this is an AI problem is that an object can appear very different when viewed from different angles or under different lighting. Another problem is deciding what features belong to what object and which are background or shadows etc. The human visual system performs these tasks mostly unconsciously but a computer requires skillful programming and lots of processing power to approach human performance. Manipulating data in the form of an image through several possible techniques. An image is usually interpreted as a two-dimensional array of brightness values, and is most familiarly represented by such patterns as those of a photographic print, slide, television screen, or movie screen. An image can be processed optically or digitally with a computer.

To digitally process an image, it is first necessary to reduce the image to a series of numbers that can be manipulated by the computer. Each number representing the brightness value of the image at a particular location is called a picture element, or pixel. A typical digitized image may have $512 \times$

512 or roughly 250,000 pixels, although much larger images are becoming common. Once the image has been digitized, there are three basic operations that can be performed on it in the computer. For a point operation, a pixel value in the output image depends on a single pixel value in the input image. For local operations, several neighboring pixels in the input image determine the value of an output image pixel. In a global operation, all of the input image pixels contribute to an output image pixel value.

These operations, taken singly or in combination, are the means by which the image is enhanced, restored, or compressed. An image is enhanced when it is modified so that the information it contains is more clearly evident, but enhancement can also include making the image more visually appealing.

2. New Approaches

The word iris is generally used to denote the colored portion of the eye. It is a complex structure comprising muscle, connective tissues and blood vessels. The image of a human iris thus constitutes a plausible biometric signature for establishing or confirming personal identity. Further properties of the iris that makes it superior to finger prints for automatic identification systems include, among others, the difficulty of surgically modifying its texture without risk, its inherent protection and isolation from the physical environment, and it's

easily monitored physiological response to light. Additional technical advantages over fingerprints for automatic recognition systems include the ease of registering the iris optically without physical contact. Besides the above fact, the process of feature extraction is easier due to its intrinsic polar geometry.

Palm is the inner surface of a hand between the wrist and the fingers. Palmprint is referred to principal lines, wrinkles and ridges on the palm. The principle lines are formed between the 3rd and 5th months of pregnancy and superficial lines appear after we born. Although the principle lines are genetically dependent, most of the other creases are not so. Even identical twins have different palm prints.

A generic biometric system has 4 main modules namely a) Sensor module, b) Feature extraction module, c) Matching module, d) Decision module. In a multimodal biometric system, information reconciliation can occur in any of the previously mentioned modules as a) Fusion at the sensor level where the combination of raw biometric data takes place b) Fusion at data or feature level, (data/features) where combination of different feature vectors are obtained.

The need of personal identification has Increase a lot during recent times. As biometric technique, iris recognition is getting preference over other methods and has drawn great attention of scientists because of uniqueness, non-invasiveness and stability of human iris patterns. So many commercial systems have been developed to treat the eye images and perform identification or verification procedures, since the first automatic iris recognition system was proposed by 1. G. Daugman in 1993. Daugman's and Wildes' approaches linger the most significant and distinguished among most of the recognized iris recognition systems. The use of different image acquisition and iris segmentation methods provides it some advantages in some aspects over Daugman's system. Almost all other techniques that have been proposed since were developed using the basic steps outlined in the pioneering work of Daugman and Wildes.

3. Specifications of Digital Image

There are 3 types of images used in Digital Image Processing. They are

A. *Binary Image* :

A binary image is a digital image that has only two possible values for each pixel. Typically the two colors used for a binary image are black and white though any two colors can be used. The color used for the object(s) in the image is the foreground color while the rest of the image is the background color.

B. *Gray Scale Image* :

A grayscale Image is digital image is an image in which the value of each pixel is a single sample, that is, it carries only intensity information. Images of this sort, also known as black-and-white, are composed exclusively of shades of gray(0-255), varying from black(0) at the weakest intensity to white(255) at the strongest.

C. *Color Image* :

A (digital) color image is a digital image that includes color information for each pixel. Each pixel has a particular value which determines its appearing color. This value is qualified by three numbers giving the decomposition of the color in the three primary colors Red, Green and Blue. Any color visible to human eye can be represented this way. The decomposition of a color in the three primary colors is quantified by a number between 0 and 255. For example, white will be coded as R = 255, G = 255, B = 255; black will be known as (R,G,B) = (0,0,0); and say, bright pink will be : (255,0,255).

4. Comparision:

	Iris Pattern Recognition UsingWavelet Packet Transform	High security system provided by steganographic technique using palm and iris scan
Definition	Iris recognition system based on Wavelet Packet Transform (WPT) for iris texture analysis and recognition.	The project proposes to implement the biometric security system based on combination of iris and palm print with stenography technique for authentication purpose.
Technology	Wavelet Packet Transform (WPT)	stenography technique

features	The signature of the new iris pattern is compared against the stored pattern after computing the signature of new iris pattern and identification is performed.	The features of palm print and iris are fused then compared with database image feature vectors and its recognized using Euclidean or Hamming distance. If this module is completed successfully then person information which contains person authentication number with four digits key will be matched with extracted data from already hidden image for second level security.
Advantage	- It recognizes only iris texture - It uses wavelet packet transform - Provide single level security	- It recognizes iris and palm print for authentication purpose. - It uses stenography technique. - Provide double level security

implemented system provides better accuracy and high level security in the field of banking, military and research Centre.

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5. Future Work

This project presented the biometric security system for person authentication based on the combination of iris and palm print with steganographic technique for verification. We can provide more security by the combination palm, iris, DNA, face scan and voice recognition system.

6. Result And Conclusion

For fast development high security system is required. So that we can give strong protection on very secrete project. Recently gabor wavelet based iris recognition system and wavelet packet based system is used for authentication. Multimodal biometrics were used to increase the recognition accuracy to verify the persons since it provides the wide features for matching rather than single biometrics. In this system, the texture descriptors such as weber's local descriptors and wavelet packet based energy features were used effectively to characterize the palm and iris texture pattern. In order to improve the authentication level, passcode has four digits+16 digit PAN key used for person verification after the biometrics recognition. Finally, the