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# IRIS Biometric Recognition for Person Identification and Security

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## ABSTRACT

Todays e-security are in critical need of finding accurate, secure and cost effective alternatives to passwords and personal identification numbers (PIN) as financial losses increase dramatically year over year from computer-based fraud such as computer hacking and theft Biometric solutions address these fundamental problems, because an individual's biometric data is unique and cannot be transferred. The security is an important aspect in our daily life whichever the system we consider security plays vital role. The biometric person identification technique based on the pattern of the human iris is well suited to be applied to access control and provides strong e-security..The security is an important aspect in our daily life whichever the system we consider security plays vital role. The biometric person identification technique based on the pattern of the human iris is well suited to be applied to access control and provides strong e-security. Security systems having realized the value of biometrics for two basic purposes: to verify or idification users. The security is an important aspect in our daily life whichever the system we consider security plays vital role. The biometric person identification technique based on the pattern of the human iris is well suited to be applied to access control and provides strong e-security. Security systems having realized the value of biometrics for two basic purposes: to verify or idification users. In this paper we focus on an efficient methodology identification and verification for iris detection, even when the images have obstructions, visual noise and different levels of illuminations and we use the iris database it will also work for Iris database which has images captured from distance while moving a person .Efficiency is acquired from iris detection and recognition when its performance evaluation.

**Keywords:** Biometrics, Iris Identification, Occluded Images, UBIRIS Iris Database

## I. INTRODUCTION

### Hamming Distance

The Hamming Distance is a number used to denote the difference between two binary strings. It is a small portion of a broader set of formulas used in information analysis. Specifically, Hamming's formulas allow computers to detect and correct error on their own.

Hamming distance used for In information theory, the Hamming distance between two strings of equal length is the number of positions at which the corresponding symbols are different. A major application is in coding theory, more specifically to block codes, in which the equal-length strings are vectors over a finite field.

### Objective

The main goal of the work is to create a security purpose of system features for users. The execution is much humming distance algorithm based developed by iris recognition.

## II. LITERATURE SURVEY

### Facial Recognition:

Vanaja Roseline E ph. D Facial recognition records the spatial geometry of distinguishing features of the face. Different vendors use different methods of facial recognition, however, all focus on measures of key features of the face. Facial recognition has been used in

projects to identify card counters or other undesirables in casinos, shoplifters in stores, criminals and terrorists in urban areas. This biometric system can easily spoof by the criminals or malicious intruders to fool recognition system or program. Iris cannot be spoofed easily.

**Palm Print:**

Palm print verification is a slightly modified form of fingerprint technology. Palm print scanning uses an optical reader very similar to that used for fingerprint scanning; however, its size is much bigger, which is a limiting factor for use in workstations or mobile devices.

**i) Signature Verification**

Dr. L. M. Waghmare It is an automated method of examining an individual's signature. This technology is dynamic such as speed, direction and pressure of writing, the time that the stylus is in and out of contact with the Signature verification templates are typically 50 to 300 bytes. Disadvantages include problems with long-term reliability, lack of accuracy and cost.

**Fingerprint**

A fingerprint as in Figure1 recognition system constitutes of fingerprint acquiring device, minutia extractor and minutia matcher. As it is more common biometric recognition used in banking, military etc., but it has a maximum limitation that it can be spoofed easily. Other limitations are caused by particular usage factors such as wearing gloves, using cleaning fluids and general user difficulty in scanning.

**ii) Iris Matching using Cyclic Redundancy Check**

Shanmugam Selvamuthukumaran The CRC code is calculated using the generator polynomial. The selection of the generator polynomial is the most important part of implementing the CRC algorithm.
CRC32 is a type of function that takes as input a data word of any length, and produces as output a value of a certain space, commonly a 32 bit integer. CRC computation is a long division operation in which the quotient is discarded, and the remainder becomes the result with the significant difference that the arithmetic used is the carry/less arithmetic of a finite field. The length of the remainder is always less than or equal to the length of the divisor, which thus determines how long the result can be. The CRC method calculates a fixed/length binary sequence, which is called the CRC code for the data code. Bits of the iris code are read and manipulated. It is applied on the input as well as the database object. If the new is not matched with the one in the database, then this method reports a mismatch. The CRC method is based on the addition of a series of check bits to code words. It is a polynomial method, all the n/bit CRC's have n+1 bits.

**iii) RGB Color**

**Sr. Sagaya Mary James**

Department of Computer Science Color image of eye is to be converted into grayscale image. The grayscale is a range of monochromatic shades from black to white. Therefore, a grayscale image contains only shades and no color .Gray scale is a range of shades of gray without apparent color. The darkest possible shade is black, which is the total absence of transmitted or reflected light, many image editing programs allow to convert a color image to black and white or grayscale since digital image displayed using a combination of red, blue, green.

Since digital images are displayed using a combination of red, green, and blue (RGB) colors, each pixel has three separate luminance values. Therefore, these three values must be combined into a single value when removing color from an image. Edge detection, pixel accuracy, intensity calculations are more accurate than color image. Because of these reasons images are converted into gray scale. shows how the colored iris is converted into grayscale iris.

**iv) Binary Code**

E. R. Chirch, Asst. Professor, CSE Dept, MBES COE. The strength of this binary method is that it does not based on the above stated assumptions which seldom true but it uses a very practical approach which is based on the comparison of two iris images at different light intensities to detect the change in the size of pupil. Iris recognition is considered to be the most reliable and accurate biometric identification system available. Iris recognition system captures an image of an individual's eye, the iris in the image is then meant for the further segmentation and normalization for extracting its feature. The performance of iris recognition systems depends on the process of segmentation. Segmentation is used for the localization of the correct iris region in the particular portion of an eye and it should be done accurately and correctly to remove the eyelids, eyelashes, reflection and pupil noises present in iris recognition

**v) The process of iris :**

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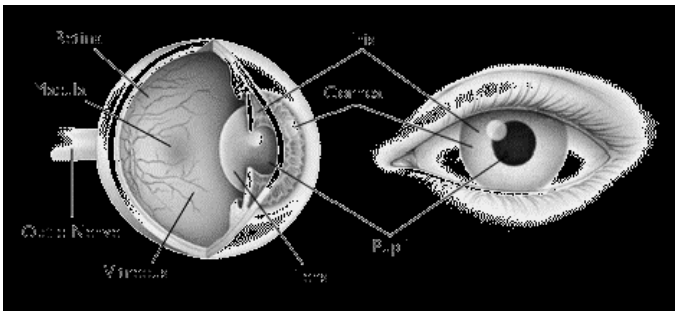
Iris recognition system consists of the following five parts, and the identification of iris image acquisition and image quality detection, iris location, iris image preprocessing, iris feature extraction, matching.

The use of image acquisition equipment shooting iris image and determines the quality of iris image, if qualified, to locate the iris, the annular iris image is converted to rectangular and normalized processing and image enhancement, then the iris texture feature extraction using certain algorithm, to obtain feature coding, finally use the classifier for iris matching, output the classification result (whether it belongs to the same.

This paper describes the whole process of iris recognition algorithm and implementation steps. Mainly includes the positioning of iris image, iris segmentation, normalization and enhancement, feature extraction and matching. In the classical learning algorithm of iris recognition at the same time, also made some improvement, improve the efficiency of the algorithm, experiments show the effectiveness of the proposed algorithm. Iris localization will directly affect the recognition effect. At the edge of the positioning, a positioning has bias conditions, using four point comparison mechanism which select the location result more reasonable. At the same time, the boundary detection template to improve, enhance the gray contrast

**Iris Scan**

Iris as shown in Figure2 is a biometric feature, found to be reliable and accurate for authentication process comparative to other biometric feature available today which is as shown Table1 (a) (b).As a result, the iris patterns in the left and right eyes are different, and so scan be used quickly for both identification and verification applications because of its large number of degree s of freedom. Iris as in Figure 2 is like a diaphragm between the pupil and the sclera and its function is to control the amount of light entering through the pupil. Iris is composed of elastic connective tissue such as trabecular meshwork. The agglomeration of pigment is formed during the first year of life ,and pigmentation of the stroma occurs in the first few years.



## III. EXISTING SYSTEM

- ✓ Facial recognition
- ✓ Signature verification
- ✓ Fingerprinting
- ✓ Palm printing
- ✓ Binary code
- ✓ RGB color
- ✓ Hamming code
- ✓ CRC method
- ✓ Bilinear algorithm

## IV. PROPOSED WORK

Iris recognition is the most powerful biometric technology and security system to prevent unauthorized user or personal form accessing.

**Matching Using Hamming Distance**

The Hamming distance (HDs) between input images and images in each class are calculated, then the two different classifiers are being applied as follows [1][4][14].

In the first classifier, the minimum HD between input iris code and codes of each class is computed.

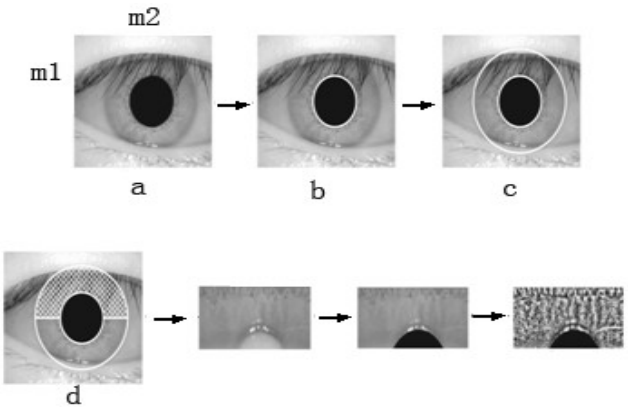
In the second classifier, the harmonic mean of the n HDs that have been recorded yet is assigned to the class as in (5)[4].

**Identification and Verification**

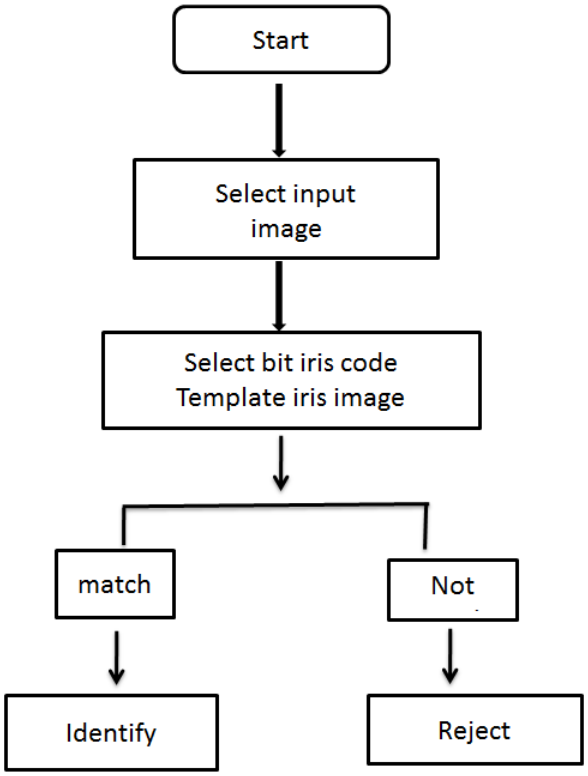
Identification and verification modes are two main goals of Every security system based on the needs of the environment. In the verification stage, the system checks if the user data that was entered is correct or not (e.g., username and password) but in the identification stage, the system tries to discover who the subject is without any input information. Hence, verification is a one-to one search but identification is a one-to-many comparison

Original Image

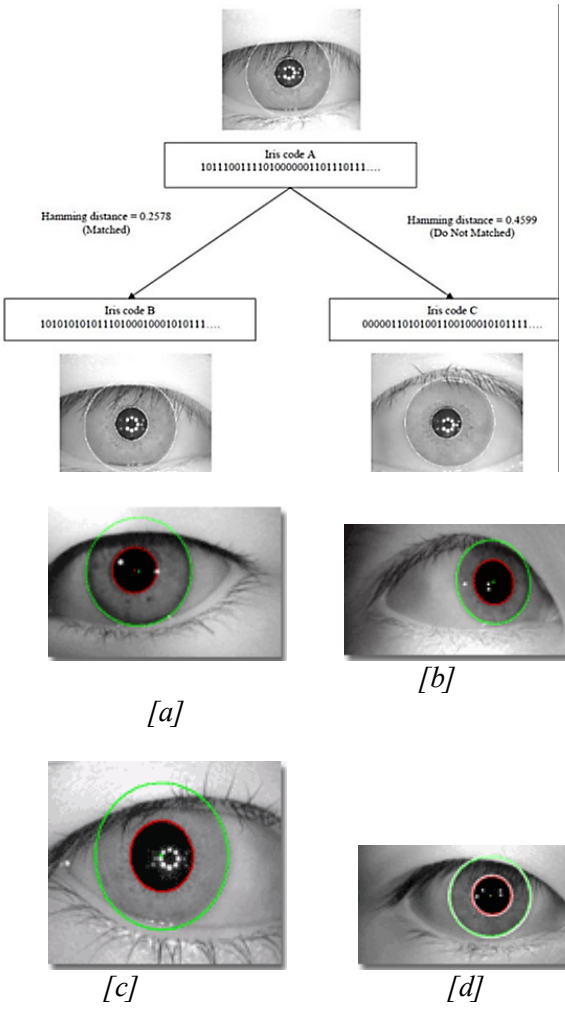
(b) Detected inner boundary.
(c) Detected outer boundary.
(d) Lower half of the iris region for matching was shown in figure




**System Design**




## V. RESULT



## VI. CONCLUSION AND FUTURE WORK

A proposed research work is to enhance the algorithm for efficient person identification for other area of applications by increasing FRR more than 0.33% as the Very Eye algorithm results with FRR 0.32% and FAR 0.001%. Wavelets iris recognition algorithm is suitable for reliable, fast and secure person identification. Wavelet, Gabor filter and the range of hamming distance for Hear wavelet is less i.e., 0.2866 to 0.5111, for robust and fast matching for healthcare application for patient identification. Proposed algorithm focus on the algorithm for rapid and accurate iris identification even if the images areocclude further algorithm will also focus on robust iris recognition, even with gazing-away eyes or narrowed eye lidswhich solves all the security related problems.

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## VIII. REFERENCES

[1]. Shaoping Zhu and Yongliang Xiao, Intelligent Detection of Facial Expression based on Image, International Journal on Smart Sensing and Intelligent Systems, 8(1):581 – 601, 2015.

[2]. Christel- loïc TISSE1, Lionel MARTIN1, Lionel TORRES 2, Michel ROBERT ―Person identification technique using human iris recognition‖.

[3]. Dong Shiwei, Wang Wei Xiang, Ting and Linming Zhang Hong-cai," Android 2 SDK introduction and application development" Sung gang Asset Management Corp. Limited 2010

[4]. J. Daugman, "How Iris Recognition Works," IEEETransactions on Circuits and Systems for Video Technology, 14, pp. 21–30, January 2004

[5]. Nicola Ivan Giannoccaro, Luigi Spedicato, Aime, Lay-Ekuakille, A robotic arm to sort different types of ball bearings from the knowledge discovered by size measurements of image regions and rfid support, International Journal on Smart Sensing and Intelligent Systems, 7(2):674 – 700, 2014.