Contrast Enhanced Iris Detection Techniques using Expansionless (2,2) Secret sharing scheme-Review

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Abstract

This paper introduces the secret sharing scheme(2,2) for iris detection technique.It provides secured authentication with the help of secret sharing scheme.Visual cryptography is a secret sharing scheme that uses human visual system. In secret sharing, random looking shares when brought together recreate the secret. As (2,2) divides the secret information into shares.As it is more secured and this technique is used for authentication.

Keywords:Secret sharing,Visual cryptography

I.Introduction

Authentication is the most important issue to provide security. Authentication are of different types such as password authentication,device authentication and biometric authentication. Iris recognition achieved more accuracy.In India, large database has been developed for Aadhar. There are around 150 biometric scheme and its value is also increase. This is the unique ID."Conventional biometric are those that we carry and biometric system are those that we are."Secret sharing schemes such as (2,2) is used to provide authentication. The applications of this schemes such as remote voting.

Iris texture posses high degree of randomness and complexity which is the key to uniqueness. Iris is the external organ which is externally visible. Formation of iris texture starts at third month of born baby and its texture gets completed at the eight month of its born.This structure is unique throughout the life of that person.Also iris texture of two eyes of same person are not unique.Hamming distance is such a technique that is used to calculate whether iris texture of two person are same or not.Eyeglasses and contact lenses present no problems to the quality of the image and the iris-scan systems test for a live eye by checking for the normal continuous fluctuation in pupil size.Sclera is the white part of the eye,it contains elastic fibres. It is located on the outer layer of eye it protects the eye from getting damaged by dust. Iris is

the colored ring of tissue around the pupil through which light enters into the interior eye.The pupil region appears darker than eye.Ciliary portion is a smooth muscle in the eye middle layer that controls the accommodation of the viewing the object. Collarette is the thickest region of the iris separating the pupillary portion from the eye.
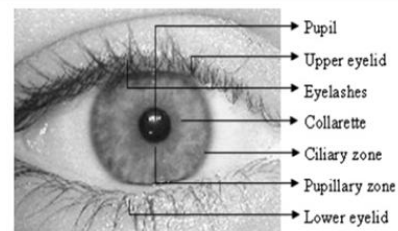

Fig1.Eye image

1.1Secret Sharing Scheme

There are different secret sharing schemes among only few of them are given below.

i]2 out of 2 secret sharing scheme:-

In this scheme ,the secret image is divided into exactly two shares. The major application of this scheme is the remote voting system. It is mainly used for authentication purpose.

ii]K out of N secret sharing scheme:-

This scheme is used to divide the secret into k number of shares. The major problem associated with this scheme is that user has to maintain the large no. of shares which may result in the loss of shares. As the shares increase it leads to the more memory consumption.
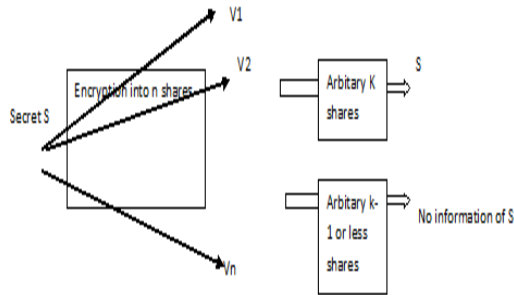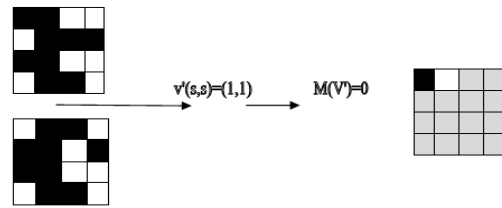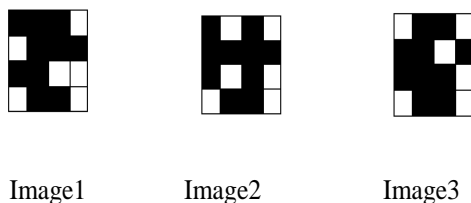

Fig.3 (k,n) secret sharing scheme

iii]K out of K secret sharing scheme:-

Secret is divided into k number of shares and for reconstruction of shares all k shares are necessary. Managing k numbers of shares is difficult task and it increase the time complexity.

iv]T out of N secret sharing scheme:-

A fair(t,n) secret sharing scheme is used for security and fairness against three different attacks such as Non-cooperative attack,Collusion attack with synchronisation and Collusion attack with asynchronisation. The fairness is the central objective of rational secret sharing scheme.In this scheme t players should be able to recover the secret. We would like to recover the secret image of (2,3) threshold. i.e t=2 and n=3.

Image1   Image2   Image3

(b)The recovered process(Stacking two shadow images)
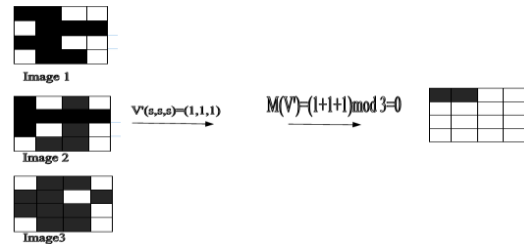
(c)The recovered process(Stacking three shadow images)

Fig 4.(2,3) Secret sharing scheme

v]N out of N secret sharing scheme:-

This visual secret sharing scheme is used for gray scale images.The recovered images is discarded as the loss in the contrast is so large.(3,3) secret image sharing scheme on grayscale secret image. Compared with the other sharing schemes, the proposed (n,n) scheme for grayscale image can reconstruct the secret image precisely with low computational complexity. It can be easily extended to binary and color image.

Fig 5.(3,3) secret sharing scheme

II.LITERATURE SURVEY

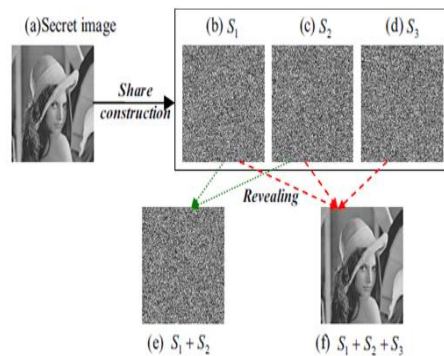The concept of iris recognition developed by Dr. Frank Burk in 1939. First algo. commercialized in iris recognition in 1990. Lee and Laih in 1997 proposed fairness(v,t,n) secret sharing scheme,where v represents the number of dishonest players & v<t/2 in which all players have an equal probability to recover the secret without providing their own shares simultaneously. Lee and Laih scheme was improved by Hwang and Chang in 2004 so that players hold two shares. [1]

Desmedt ,Y.Hou, S.Quisquata in 1998 proposed(2,n) audio secret sharing scheme. In this scheme shares are the audio files but the secret is the bit string which is constructed without any computation. The ASSS is a secret sharing scheme in which shares & or the secret are audio files. It is mainly used in audio application. This scheme achieve shares in random.[2]

Yong Zhu,Tieniu Tan and Yunhong Wang in 2000 proposed a new system based on personal identification based on iris patterns.[3] Thien and Lin in 2002 proposed (k,n) threshold secret sharing scheme using shamir secret sharing scheme to generate the image shares. This method reduces the size of shares to become 1/k of the size of secret image.[4]

Liguo Fang,Bin Yu in 2006 proposed provided the construction for (2,n) visual threshold scheme based on combination[5]. Li Bai in 2006 proposed a reliable image secret sharing method incorporates the two k-out-of n secret sharing scheme. It is reliable,effective and secure methods to prevent the secret image from being lost,stolen or corrupted.[6]

Nawal Alioua ,Auatif, Mohammed Rziza, Driss Aboutajdine in 2010 proposed eye state analysis using iris detection. Eye state analysis can be used in diverse applications. CHT extracts circle from edge images.[7] A. Ektesabi,A. Kapoor in 2011 proposed techniques to determine the exact iris,pupil boundaries with high speed processing without losing the accuracy. system to detect and measure the pupil and iris size.[8]

Pallavi Chavan, Dr. Mohammad Atique, and Dr. Anjali Mahajan proposed the concept of an intelligent hierarchical visual cryptography.[9]

R.Sinduja,R.D.Sathiyaand Dr.V.Vaithiyanatham in 2012 proposed the feature template databases and the user template should be same.For authentication,storing the template in the database.Main issue with generating the shares is the degradation on the image quality. After shares are stacked will produce the original template database[10]

T.Kathikeya ,B.Sabarigiri in 2012 proposed IRIS and EEG. EEG using Liveness detection methods are effective technique to handle the direct attacks and spoofing. Iris patterns not only contains exact information from the eye,but also several unwanted parts such as eyelid,pupil etc. [11]

A.V.G.S. Sastry and B. Durga Sri in 2013 proposed Enhanced segmentation on iris detection. The design of low complexity segmentation algo. results reduced segmentation time without scarifying accuracy.The segmentation time is reduced by the factor of 5.[12]

Milos Stojmenovic, Aleksander Jevremovic, Amiya Nayak in 2013 proposed shape based circularity values should be computed by simple and fast algorithm at finite set of points. It consists of two values 0 & 1.Circularity values are 1 if the shape is circle and circularity values 0 if the shape is non-circular such as line.[13]

III.PROPOSED WORK

From the above view of observations and review of current literature it is observed that
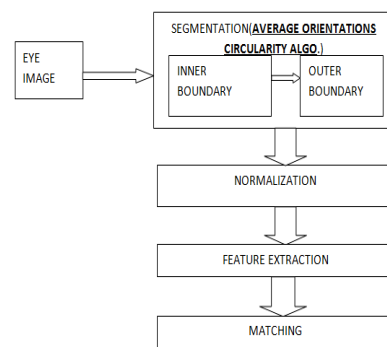

Fig6.Iris recognition steps

1. Innovating the secured authentication using secret sharing scheme (2,2).

2. To provide high contrast to the image when shares are stacked.

3. To quickly detect circular region we used (average orientation circularity algo.)

IV. CONCLUSIONS

To provide the authentication it uses the (2,2) secret sharing scheme so that shares are not lost.Iris recognition is more secure while comparing each and every authentication scheme.

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