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Iris Segmentation Based on High Dynamic Range Images

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Abstract— Iris segmentation plays a vital role in iris recognition. The iris segments based on the image processing techniques are playing an vital role in the security systems and biometrics. The major impact is obtaining the details of the images, this is been done through the High Dynamic range images which are very useful in giving the details of the images. It is been noted that the HDR images and the normal images are been compared and various image segmentation steps are followed. This experiment shows that the proposed work basically consists of matching an iris image already present in the database and providing a secure environment, thereby this image segmentation can be applied to different types of images.
Keywords— Iris, Iris recognition, HDR images, OTP.

I. INTRODUCTION

In today's technically advanced world, autonomous systems are gaining rapid popularity. As the social computerization and automation has been increased and the ATM and credit card has been installed and spread out to simplify the activity for financial activity, the banking activity has been simplified, however the crime related with financial organization has been increased in proportion to the ratio of spread out of automation and devices. Security of one-time password is essential because nowadays most of the e-commerce transactions are performed with the help of this mechanism.

The security is required for dual purposes. They are, i) to protect customers privacy ii) to protect against fraud. While more than two parties communicate to each other then they worry about confidentiality, data authentication, non repudiation.Iris recognition is an automated method of biometric identification that uses mathematical pattern-recognition techniques on video images of one or both of the iris of an individual's eyes , whose complex random patterns are unique, stable, and can be seen from some distance Retinal scanning is a different, ocular-based biometric technology that uses the unique patterns on a person's retina blood vessels and is often confused with iris recognition. Iris recognition uses video camera technology with near infra red illumination to acquire images of the detail-rich, intricate structures of the iris which are visible externally.

An,iris-recognition algorithm can identify up to 200 identification points including rings, furrows and freckles within the iris. First the system has to localize the inner and outer boundaries of the iris pupil and limbus in an image of an eye. It is an internal organ that is well protected against damage and wear by a highly transparent and sensitive membrane . This distinguishes it from fingerprints, which can be difficult to recognize after years of certain types of manual labor. The iris is mostly flat, and its geometric configuration is only controlled by two complementary muscles that control the diameter of the pupil.

II. RELATED WORKS

The reliability of any biometric identification depends on ensuring that the signal acquired and compared has actually been recorded from a live body part of the person to be identified and is not a manufactured template. Many commercially available iris-recognition systems are easily fooled by presenting a high-quality photograph of a face instead of a real fact, which makes such devices unsuitable for unsupervised applications, such as door access-control systems. The problem of live-tissue verification is less of a concern in supervised applications (e.g., immigration control), where a human operator supervises the process of taking the picture.

Methods that have been suggested to provide some defence against the use of fake eyes and irises include changing ambient lighting during the identification (switching on a bright lamp), such that the pupillary reflex can be verified and the iris image be recorded at several different pupil diameters; analysing the 2D spatial frequency spectrum of the iris image for the peaks caused by the printer dither patterns found on commercially available fake-iris contact lenses; analysing the temporal frequency spectrum of the image for the peaks caused by computer displays. The normalized image is usually run through different filters and attempts are made at removing noise.

Sometimes the purpose of the filters is to improve the quality of the image such as sharpness of the iris. Other times filters are used to enhance the unique features of the iris for better detection. Next the enhanced image is processed for feature detection and

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converted into an iris code which is a machine readable representation of the iris image. The generation of the iris code is simple and there are many methods that can generate an iris code. The difficulty lies in finding a method that can generate iris codes that can reliably maximize true positives and true negatives while minimizing false positives and false negatives.

A simple example for understanding iris code generation and Take a normalized iris image of 64x512 pixels resolution, also Examine each 8x8 section of that image and make a feature detection decision 0 or 1 based on that small section .In order to process an iris image more consistently, it must be in a uniform shape. This leaves you with a 512-bit iris code.

Fig:1.3.Iris segmentation

Before an iris can be matched, it initially needs to first be saved / trained. This involves all the steps and the iris code (or a representation) is saved to a database. Matching then compares a new iris code to the saved code. If the algorithm determines that the iris code matches the saved one (within a tolerance) it returns a positive (hopefully a true positive). the focus on biometrics in mobile devices and the low false acceptance rates of iris recognition, this particular Biometric is poised to be the dominant method of authentication.

Therefore, that iris codes are protected and not made available to anyone, they will be much more comfortable about using iris recognition. The image obtained or got is undergoing certain steps of Pre processing .Firstly ,the image acquisition is done Isolate the iris from the other parts of the eye. Depending on the camera & algorithms used the camera could use visible light as well as near infrared light for a more detailed iris image.

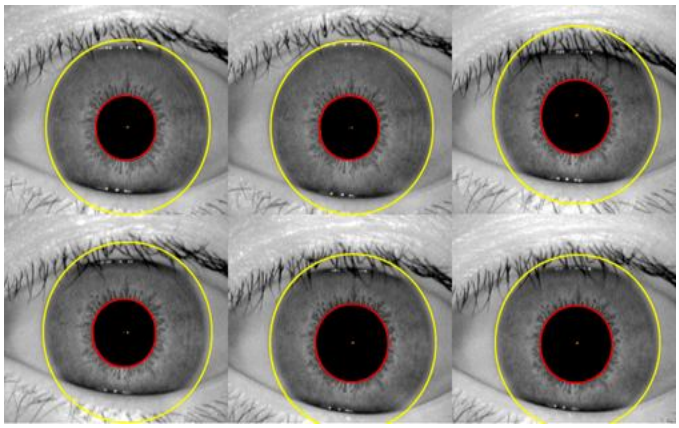

Fig.1.2.image recognition.

III. PROPOSED WORK

The purpose of our project is to make a secure ATM system. Here we also added Mat-lab technology to prevent theft process by using palm scanner and Iris scanner inside ATM, with help of image processing we recognize the original image. Here user can get OTP from the ATM machine after enter the OTP that money transactions its possibles. If anymore other person enter into room that ATM system will get automatically lock. These methods can resist offline dictionary attacks without smart-card Avoided ATM security related issues, Prevents ATM from unauthorized users.

The proposed work can also be done using MATLAB, The constant advancement and production of physical equipment and hardware related to digital imaging has effected the environment surrounding the field. From cameras and web cams to printers and scanners, the hardware is becoming sleeker, thinner, faster, and cheaper. As the cost of equipment decreases, the market for new enthusiasts widens, allowing more consumers to experience the thrill of creating their own images.

Everyday personal laptops, family desktops, and company computers are able to handle photographic software. Our computers are more powerful machines with increasing capacities for running programs of any kind—especially digital imaging software. And that software is quickly becoming both smarter and simpler. Although functions on today's programs reach the level of precise editing and even rendering 3-D images, user interfaces are designed to be friendly to advanced users as well as first-time fans At the heart of MATLAB is a new language you must learn before you can fully exploit its power. You can learn the basics of MATLAB quickly, and mastery comes shortly after. You will be rewarded with high productivity, high-creativity computing power that will change the way you work. Development Environment - introduces the MATLAB development environment, including information about tools and the MATLAB desktop. Manipulating Matrices - introduces how to use MATLAB to generate Matrices and perform mathematical operations on matrices.

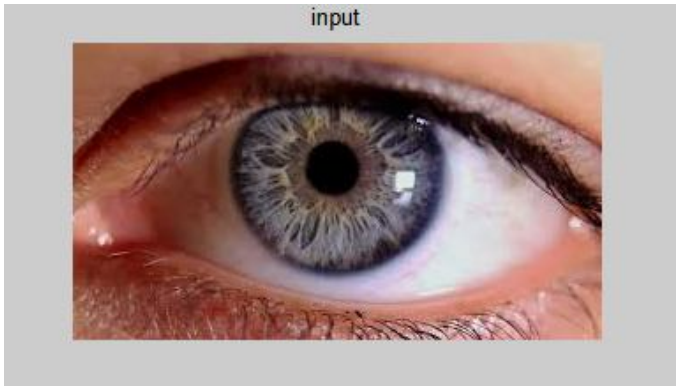

Fig 1.4.input image to gray scale

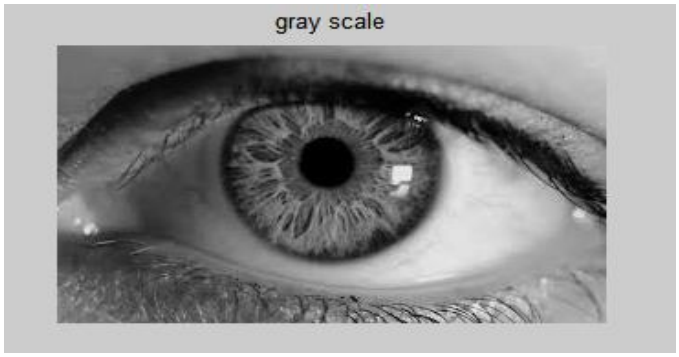

Fig 1.5.graylevel image

Graphics - introduces MATLAB graphic capabilities, including information about plotting data, annotating graphs, and working with image. Programming with MATLAB - describes how to use the MATLAB language to create scripts and functions, and manipulate data structures, such as cell arrays and multidimensional arrays . MATLAB is a high-performance language for technical computing. It integrates computation, visualization, and programming in an easy-to-use environment where problems and solutions are expressed in familiar mathematical notation.

This can further developed and employed by generation of OTP and through Bluetooth facilities it can secure.This lead to generation of output in secure manner,the image is stored in each persons database and once during transactions the corresponding image of the individual is matched it is been viewed through the ordinary lens system and the through GSM an one time password is generated through the mobile and individualistic operation is performed by entering the OTP and transactions are been done.

IV. CONCLUTION

Today image processing is used in many areas,the effectiveness of this paper is providing an safe and secured system in digital

economic. The image processing techniques involves many procedure based on canny segmentation and even can be implemented with matlab version .The High Dynamic Range of the image is simultaneously improved by the processing steps and thereby the calibrated process is followed like iris segmentation ,iris acquisition,iris recognition and localization is done by using all steps and the images segmented and matched for detection.

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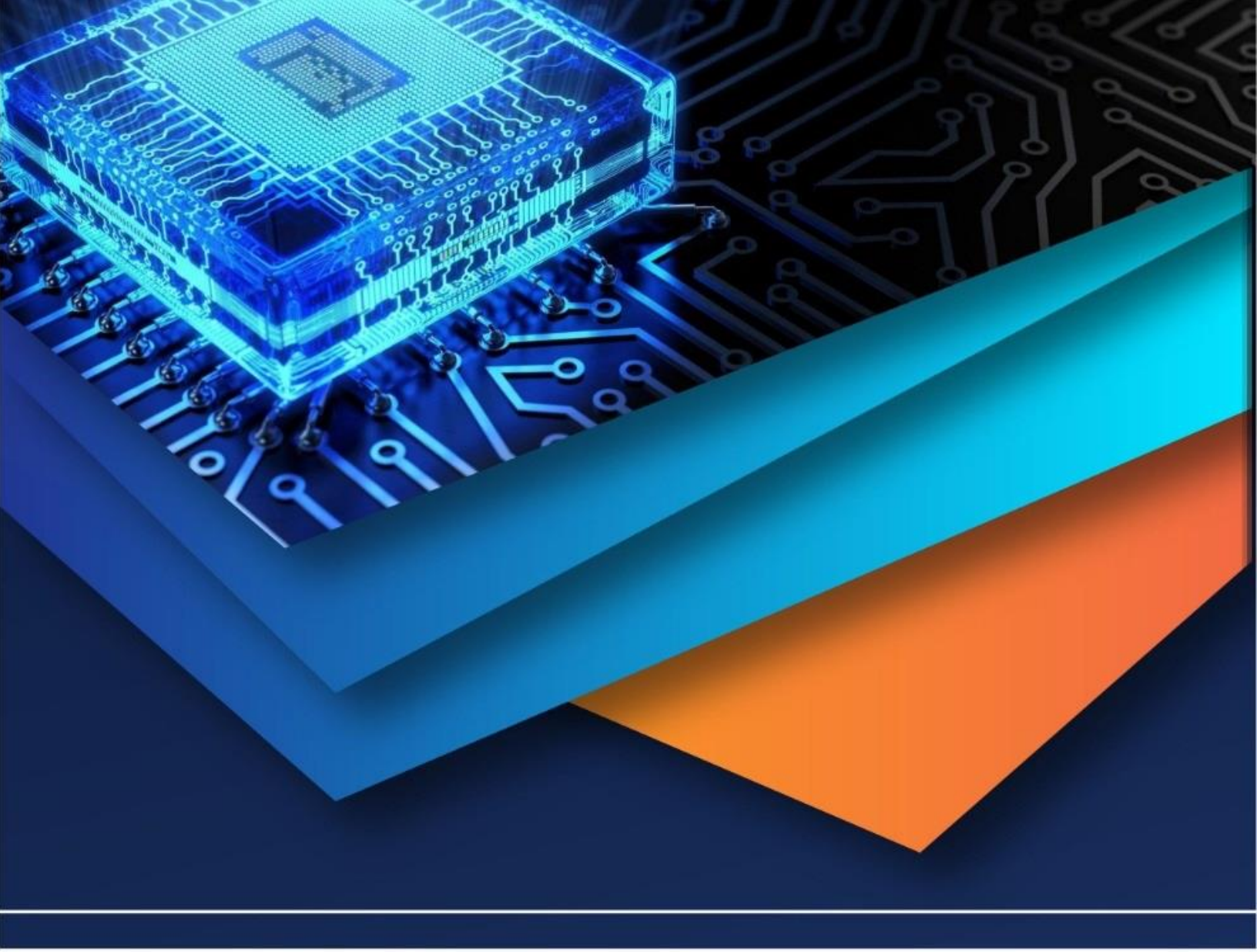

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