International Journal of Emerging Technology in Computer Science & Electronics (IJETCSE)
ISSN: 0976-1353 Volume 25 Issue 9 – AUGUST 2018.

An Labeled Observations Iridology For Diagnosing Kidney Disease

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***Abstract*— Data mining is the process of analyzing data from different perspectives and summarizing it into useful information. The efficient classification technique is used to assist doctors to identify ectopic kidney disease. ECG is the diagnostic tool which analyzes the physiological kidney function. In this work a new approach is used to describing the contents about current condition of patient and exploiting data to improve the effectiveness of retrieval. Based on irish value patient level categorized into Low (L), Normal (N), High (H) and patient level stored in database. To evaluate the output measure mean variant technique used which compares patient irish point value and the reduced level of risk factor such as Age, Gender, Body mass, Diabetic. The mean variant algorithm reduces the arithmetic overflow when deal with irish values. To improve the performance and accuracy of the result prompting treatment given to patients based on computed value by using semi supervised algorithm.**

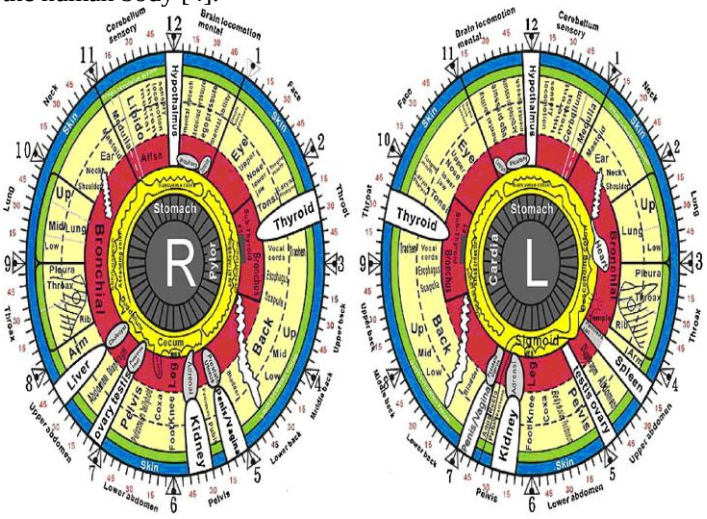
***Index Terms*— Kidney Disease, Classification, Mean Variant Technique, Risk Parameter, semi supervised algorithm.**

I. INTRODUCTION

The use of eye for biometric has been widely used as the biometric identification because the eye has a very unique and complex iris pattern. The iris pattern is not the same for every man [1], therefore it is suitable for use as a biometric identification [2]. In addition there are research studies conducted showed the potential to use eye as parameter for health monitoring such as alcohol addiction problems [3] and smoking [4], hypertension [3], diabetes [5] and obesity [3][6]. Normally analysis conducted for vision problems related cases such as retinopathy, glaucoma and cataracts. This paper will look at the use of the eye through semi supervised algorithm method for determining the presence of diseases that are correlated with the signs and markings on the eyes.

A. IRIDOLOGY FOR DIAGNOSING KIDNEY DISEASE

Complementary medicine is those therapies that are claimed to improve quality of life, prevent disease, and address conditions that conventional medicine has had limited success in curing, such as chronic back pain and certain cancers. Proponents of complementary medicine believe that these approaches to healing are safer and more natural and have been shown through experience to work. In certain countries, complementary medical practices are widely used methods of health care. However, many practitioners of modern conventional medicine believe these practices are unorthodox and unproven [1]. Although some medical schools have now begun offering complementary medicine, no standardized curriculum for medical students is available and there is still a debate about whether it should be offered at all. There is an argument that its inclusion in medical schools could be seen as an endorsement by conventional medicine, however if conventional medicine ignores it that will put patients at risk as complementary medicine use is so prevalent Complementary medicine regulation is a complicated and contentious issue. Currently only osteopaths and chiropractors have achieved statutory regulation in the UK. Theoretically anybody, regardless of insurance, skills or specialist knowledge, could set themselves up as a therapist. This leaves many clients with very little redress should they have a complaint. The UK government has been consulting on complementary medicine regulation since 2000 but progress has been slow. The main problem is achieving a consensus of the numerous therapy-specific regulatory organizations that already exist [3]. Iridology is a form of complementary medicine whose proponents believe patterns, colors, and other characteristics of the iris can be examined to determine information about a patient's systemic health. Practitioners match their observations to iris charts which divide the iris into zones corresponding to specific parts of the human body [4].



Peczely [5] and Liljequist [6] have independently noticed irises changes that correlate to different illnesses. They

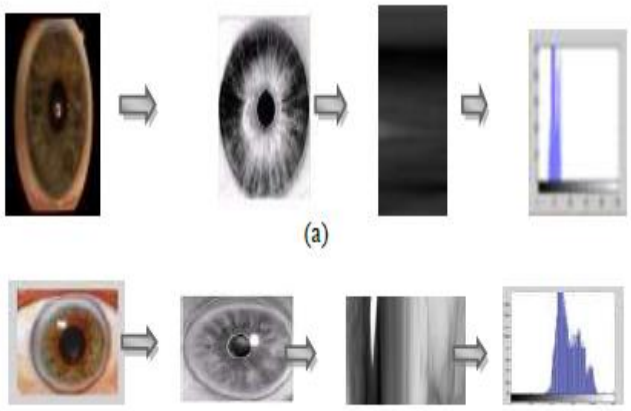
depicted in their publications very similar iris charts based on their own observations. Lane [7] carried out further surgical and autopsy correlations with iris markings which sparked the effort of Kritzer [8] and Jensen [4] to develop an updated iris charts that are widely used among iridologists as shown in Fig. 1. Typical charts divide the iris into approximately 80–90 zones. For example, the zone corresponding to the kidney is in the lower part of the iris, just beside 6 o'clock. However, there are minor variations between charts' associations of body parts and areas of the iris [9].

II. LITERATURE SURVEY:

A. CHOLESTEROL PRESENCE DETECTION USING IRIS RECOGNITION

Arcus senilis is a whitish ring-shaped or bowshaped deposit in the cornea. It is recognized as a sign of hyperlipidemia and is also associated to coronary heart disease (CHD). Iridology is an alternative method to detect diseases using iris's pattern observation. Iridologists believe that the whitish deposit on the iris is sign of heart diseases. We develop the simple and non-intrusive automation system to detect cholesterol presence using iris recognition (image processing). This system applies iris recognition method to isolate the iris area, normalization process and lastly determining the cholesterol presence using thresholds and histogram method to determine the threshold value. The result showed that the incidence of cholesterol was high when Eigen value exceeds a threshold value.

The objective of this paper is to explain how the presence of cholesterol in blood vessel can be detected by using iris recognition algorithm. Cholesterol or Hypercholesterolemia is a high level of lipid in the blood poses a significant threat to person's health. It is an indication of elevated cholesterol This may lead to cardiovascular diseases. It is caused by extracellular lipid deposition in the peripheral cornea, with the deposits consisting of cholesterol, triglycerides cholesterol esters, and phospholipids. The current technique used to measure the cholesterol level is by doing blood test and the test is known as lipoprotein profile. The lipoprotein profile is an invasive method which causes discomfort amongst many patients. A laser based technology as non-invasive technique to measure blood cholesterol through skin. They proposed infrared (IR) absorption spectroscopic as the characterization of cholesterol in the skin. Based on [4], skin contains approximately 11 percent by weight of all body cholesterol and when severe coronary artery disease is present, the numerical values acquired with the skin cholesterol test increases. Thus, the palm test is not useful in identifying coronary artery disease and it is not intended to be used as a screening tool to determine the risk for coronary artery disease in general population. In order to have a simple and nonintrusive means to be as a screening tool to detect cholesterol, we found out that high cholesterol can be detected from changes in iris pattern and they are called Arcus Lipoides (Arcus Senilis or Arcus Juvenilis). The Arcus senilis is a greyish or whitish arc or circle visible around the peripheral part of the corner in older adults[10]. Lipid deposits causes Arcus senilis in the deep layer of the peripheral cornea and similar discoloration in the eyes of younger adults (arcus juvenilis) is often associated with high blood cholesterol [4]. This statement proves that iris pattern can be analyzed and used as another technique to detect cholesterol presence in body.



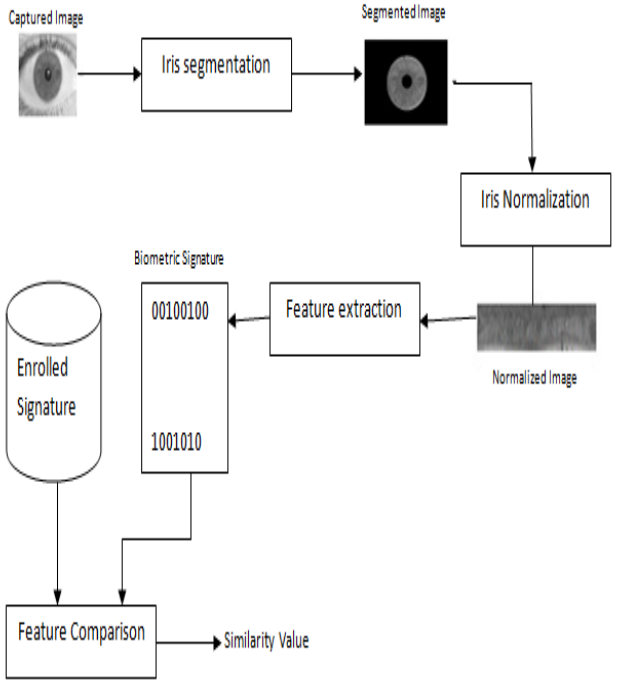
This work introduces a non-invasive method and iris recognition to detect the presence of cholesterol known as hyperlipidemia by the sign of existence arcus senilis in iris pigmented. It can prove an advantageous method for the cholesterol detection than the other past medical methods available. Similar opinion support by iridology practitioner call this symptom as sodium ring refer to arcus senilis sign of cardio heart diseases (CHD). This program also can be used to determine the eye problem due to other type of eye diseases such as cataract, glaucoma, diabetic, tumour etcetera.

B. IRIS RECOGNITION USING CIRCULAR HOUGH TRANSFORM

The demand for an accurate biometric system that provides reliable identification and verification of an individual has increased over the years. A biometric system that provides reliable and accurate identification of an individual is an iris recognition system. This reliability is provided by unique patterns of human iris which differs from person to person up to an extent of identical twins having different iris patterns. In this paper, we propose circular Hough transform with horizontal and vertical derivatives for edge mapping for iris recognition. The results shows that 95.6 % accuracy is achieved compared to 88.1% attained by previous system.
Human identification or authentication in computer visions has always been an attractive goal. These authentication systems that are based on human characteristics such as face, iris and voice are known as biometric systems. Biometric systems can either be physiological or behavioural depending on the characteristics used. Human signatures and voice are classified as behavioural while face, figure print and iris traits are physiological. The first step of any biometric system is capturing a sample of a feature, such as recording a digital sound signal for voice recognition, or taking a digital eye image for iris recognition. Among the various traits, iris recognition has advantages like high speed of computation because of sample size, simplicity and accuracy compared to other biometric traits [1]. Iris recognition relies on the unique patterns of the human iris in identification and verification of an individual. Iris recognition systems are divided into four blocks, iris segmentation, iris normalization, and feature extraction and matching. Iris segmentation separates an iris region from the entire captured eye image. Iris normalization fixes the dimensions of segmented iris region to allow for accurate comparisons. Feature extraction draws out the

biometric templates from normalized image and matches this template with reference templates. The performance of an iris system closely depends on the precision of the iris segmentation. The existing methods assume that pupil is always central to an iris, hence both pupil and iris share a central point. This inaccurate assumptions results in wrong a segmentation of an iris region. The upper and the lower parts of the outer iris boundary are generally obstructed by eyelids and eyelashes, this provides problems during segmentation. These eyelids and eyelashes act as noise which needs to be eliminated to achieve optimum segmentation results

In order to solve these problems, a system is proposed that uses circular Hough transform to deduce the radius and centre coordinates of the pupil and iris regions. Biasing the derivatives in horizontal direction during edge mapping detects the eyelids and biasing the derivatives in the vertical direction helps in detecting the circular boundary of the iris.



The level of accuracy of an iris recognition system depends on the precision of the segmentation of an iris region. The eyelids and eyelashes which obstruct the upper and lower parts of the outer iris boundary are removed perfectly. This enhances the accuracy of the system in that, only the iris region can be converted to biometric templates for matching. Circular hough transform method proposed on this paper proofed to be more effective compared to existing methods. The proposed system has achieved a recognition accuracy of 95.6%.

C. COLOR TEXTURE CLASSIFICATION USING WAVELET TRANSFORM AND NEURAL NETWORK ENSEMBLES

The wavelet domain features have been intensively used for texture classification and texture segmentation with encouraging results. More of the proposed multi-resolution texture analysis methods are quite successful, but all the applications of the texture analysis so far are limited to gray scale images. This paper investigates the usage of wavelet transform and neural network ensembles for color texture classification problem. The proposed scheme is composed of a wavelet domain feature extractor and ensembles of neural networks classifier. Entropy and energy features are integrated to the wavelet domain feature extractor. Various experiments have been carried out with different wavelet filters. The performed experimental studies show the efficacy of the proposed structure for color texture classification. The highest success rate is over 98%. Moreover, we compare our results with wavelet energy correlation signatures [2].. In this paper, we have discussed the effect of the color and wavelet domain features on the texture classification problem. The main aim of the study is combining the color and texture information to improve the classification of the texture images. We proposed a system which uses the wavelet domain entropy and energy quantities of the red, green, and blue component of the RGB texture images. Among the three wavelet based methods that we examined, our proposed system for color texture provides the best classification result. Experimental studies and subsequent results using a set of real world colored texture images show the usefulness of the wavelet entropy and energy for color texture analysis. The results show that color is an important component for improving the classification results for the texture analysis problem. In this study, several important parameters such as wavelet decomposition level, wavelet filter type, and norm entropy parameter value are constant. Selecting the best decomposition level is an important issue. Furthermore, selecting the best wavelet filter type and the best p parameter value for norm entropy will be studied in the future. Another important point is the chosen color space. Several color spaces, such as K-L color space, I1I2I3 color space, and UVW color space, will be added in future works.

D. FINGERPRINT VERIFICATION BASED ON GABOR FILTER ENHANCEMENT

Human fingerprints are reliable characteristics for personnel identification as it is unique and persistence. A fingerprint pattern consists of ridges, valleys and minutiae. In this paper we propose Fingerprint Verification based on Gabor Filter Enhancement (FVGFE) algorithm for minutiae feature extraction and post processing based on 9-pixel neighborhood. A global feature extraction and fingerprints enhancement are based on Hong enhancement method which is simultaneously able to extract local ridge orientation and ridge frequency. It is observed that the

Sensitivity and Specificity values are better compared to the existing algorithms.

In this paper, we proposed FVGFE algorithm for extraction of minutiae. Fingerprint pattern is enhancement to improve the clarity of the ridge and furrow structures by local ridge orientation and ridge frequency. The minutiae points are extracted from the fingerprint image using 9-pixel neighborhood method. The performance of proposed method is better than the existing method in terms of sensitivity and specificity. In future the minutiae extraction algorithm is combined with ridge extraction for better performance.

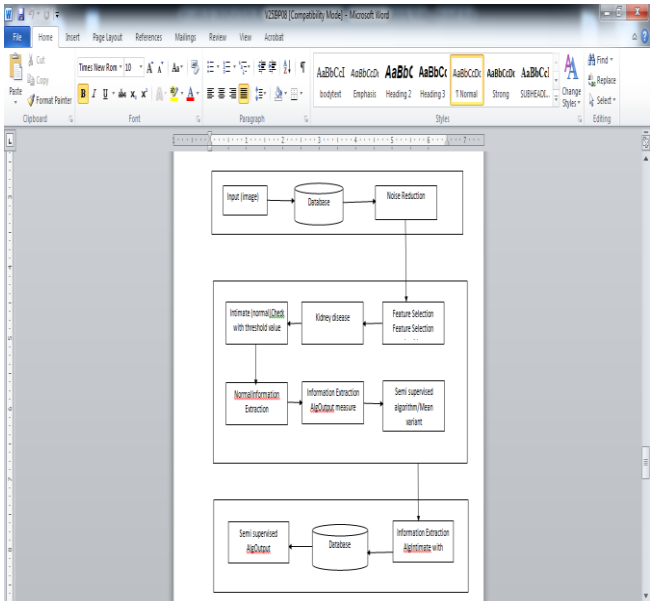
E. DETECTING CHOLESTEROL PRESENCE WITH IRIS RECOGNITION ALGORITHM

Found that the mean duration of the arthritis and the mean duration of seropositivity were found to be significantly higher in patients with ocular (pigmented organ in eye) complication (S.CReddy et al, 1996). Another study done on bilateral retinal detachment in acute myeloid Leukemia by (K Pavithran et al., 2003), found that ocular manifestations are common in patient with acute Leukemia. This can result from direction infiltration by neoplastic cells of ocular tissues, including optic nerve, choroid, retina, iris and ciliary body, or secondary to hematology abnormalities such as anemia, thrombocytopenia, or hyperviscosity states or retinal destruction by opportunistic infection (K Pavithran et al., 2003).

The improvement can be done such as the using GUI for execute and displaying the result and using other method for determines the threshold of the normal or problem eye. Others application that can use this program is to determine the eye problem due to other type of eye diseases such as cataract, glaucoma, diabetic, tumour etcetera. This work shows that there is a simple and non-intrusive method to detect cholesterol in body and iris recognition is not only mainly for biometric identification but it can also be used as a mean to detect cholesterol or maybe diagnose any diseases as iridology claimed it is supposed to be. However, this work is only preliminary work and experiments that are more extensive need to be run in future in order to know the real level of cholesterol in the body. This program had been executed on more than 50 samples of normal and abnormal eye images; it can be conclude that the threshold boundary of the normal and problem eye is about 139. This project had shown the entire process of detecting cholesterol presence using automated program (ADCP).

III. PROPOSED METHODOLOGY

A. ARCHITECTURE DIAGRAM



In this section we look at the types of imaging modality used to detect the disease and also the types of diseases that can be detected by ocular manifestation. Generally there are two categories of diseases discussed in this paper, the first category is related eye diseases and the second category is that the disease manifest by ocular signs. The medical imaging standard used in eye examinations such as optical coherence tomography (OCT) [7] , slit lamp [8], RetCam [9], fundus retinal and Heidelberg Retina Tomography (HRT) [10]. For the first category of diseases associated with eye problems such as age-related macular degeneration (AMD) [10], myopia [11], cataracts [12] , glaucoma [13] and retinopathy [14]. While for the second category of diseases that can be detected through the eye such as cardio heart diseases (CHD), diabetes, leukemia, cancer and tumor. Table 1 lists the type of diseases which reported able to identify the diseases through eye diagnosis. There are various types of medical imaging device that has been developed as a diagnostic tool for detecting ocular problems related to signs of pathology. There are also cases where these signs are present have been associated with health problems such as cancer. Hence this paper see the review study conducted by researchers on the use of SSA in diagnostic to identify the diseases which associated to eye problems.

IV. CONCLUSION

In the conclusion, This review presents a detailed study conducted methods for detecting diseases associated with ocular diseases and diseases that can be detected through the signs contained in ocular automatically using SSA. The use of SSA is very useful and benefits, where it can reduce the workload of tasks to doctor or ophthalmologist in making health screening and examination of the patient. Tasks such as grading, classify and make interpretation of potential problems associated with ocular problems sometime very challenging. Where to diagnose the eye there are several steps that need to be done such as, identify eye's anatomy, segmentation, localization and normalization on ROI. There are also processes such as extraction, classification and grading using a variety of methods and algorithms. To perform an analysis of disease associated with ocular problems most researchers using OCT images, slit lamp, Ret Cam, and retinal fundus. While for diseases identified by signs found on the ocular, most researchers use iris image in their analysis.

V. FUTURE WORK

From research studies that have been conducted by researchers, it can be concluded here ocular provide clues to potential health problems. Thus, we propose that the doctor and specialist ophthalmologist using observations during screening examinations of patients, if there are signs of abnormalities in the eyes of patients, so that more detail medical studies can be performed to identify the problem. Use of ocular diagnosis automatically in SSA extremely beneficial and potentially to be studied in greater depth. Therefore further research needs to be done to ensure that the usage of the eye as one of the parameters used in screening for health problems have firm foundation of medical terms.

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