ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation Journal Home Page: www.pharmascope.org/ijrps

Identification of Diabetics Mellitus using Iridology

Asuntha A*[1], Sree Charan Y[1], Siddartha M[1], Udhaykumar K[1], Andy Srinivasan[2]

[1]Department of Electronics and Instrumentation, SRM Institute of science and technology, Kattankulathur-603203, Chennai, Tamil Nadu, India
[2]Department of Electronics and Instrumentation Engg., Valliammai Engg. College, Chennai, Tamil Nadu, India

Article History:

Received on: 29.03.2019
Revised on: 08.06.2019
Accepted on: 12.06.2019

Keywords:

Iridology chart,
Image processing,
Diabetes mellitus,
Pancreas

ABSTRACT

Diabetes is a general illness regularly contaminated in people. Numerous approaches to recognize diabetes, one of them is checking circulatory strain, however, along these lines isn't compelling, in light of the fact that it takes blood first and takes a ton of time. Iridology is a one-way investigation wellbeing dependent on the iris. In this manner, we need an apparatus used to recognize pancreatic harm as a sign of diabetes through iridology. The Burden picture is the initial step to distinguish pancreatic organs dependent on the iris. The eye picture that we utilized as the info framework originates from the eye facility database. The subsequent stage is a versatile middle sifting utilized in the process preprocessing to lessen the commotion on the picture. After that, the subsequent stage is a division process utilizing Hough circle change technique. The consequences of division will be standardized and take the Region of intrigue. Return for money invested will be done element extraction by utilizing GLCM (Gray Level Co-Occurrence Matrix). To know the state of a pancreas organ utilizing back propagation strategy.

* Corresponding Author

Name: Asuntha A
Phone: +91-9551925514
Email: asu.vero@gmail.com

ISSN: 0975-7538

DOI: https://doi.org/10.26452/ijrps.v10i3.1325

Production and Hosted by

Pharmascope.org

INTRODUCTION

Iridology is a branch of science that deals with the study of the iris, i.e. the colored part of an iris. Diabetes can be detected by having a medical health checkup, blood sugar level check-up, etc. These methods will consume a lot of time and efficiency is less. Therefore, by using Iridology detection of diabetes can be done without involving any pain. Iris image is used as an input to the system, and it helps to know the condition of our internal organs and parts of the body. In this paper, we will be discussing the condition of the pancreas through the iris. An Iridology chart gives the location and placement on the part of the iris for a particular organ or part of the body. The chart is divided into segments based on the placement of the organ or part of the body like lower abdomen, upper abdomen, pelvis, thorax, an upper back, a lower back, neck, etc. (S. K. Bhatia et.al., 2015) According to the iridology chart, the location of the pancreas organ will be identified.

Proposed methodology

By processing the images of eyes using Matlab, diabetes can be detected. This process includes seven steps, which are, 1. An Input image, 2. Image preprocessing, 3. Image segmentation, 4. Normalization, 5. ROI extraction, 6. Feature extraction, 7. Classification.

Image acquisition: Pictures of eyes has to be captured with the proper camera so that the iris can be clearly seen.

Load image: Input image is the first process to identify the pancreatic organ of an iris. The iris images used as input are collected from the iris

database. Iris images were captured within highly constrained, capturing surroundings, which conditioned the characteristics of the resultant images. They present very close and homogeneous characteristics, and their noise factors are exclusively related to an iris (Ridza Azri Ramlee *et al.,* 2011). The images of an eye will be captured with the help of iris scanners, and stored in the database which contains both the images of normal and abnormal images of an iris.

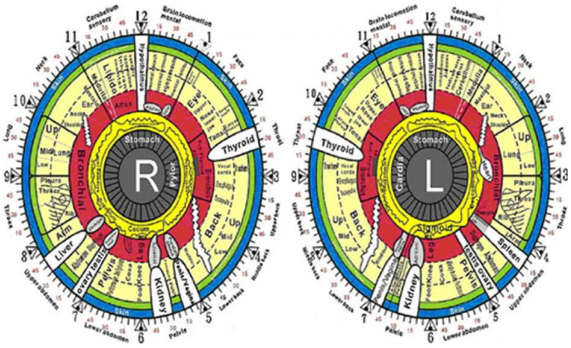

Figure 1: Iridology chart

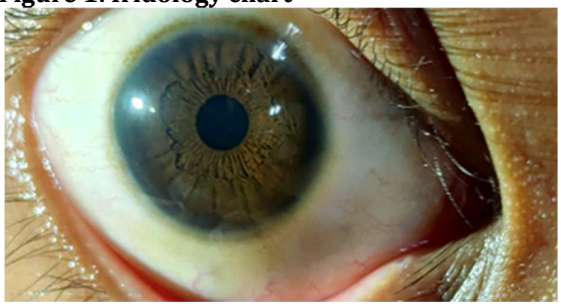

Figure 2: Input image

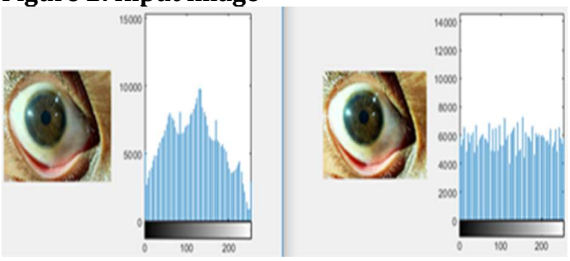

Figure 3: Histogram analysis

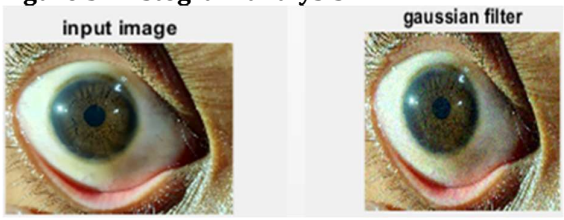

Figure 4: Filter image

Image preprocessing

The pre-processing is done in order to decrease the noise in the iris image and enhancement is done to manipulate an image, so the results are more suitable than the original. Gaussian filter is used for the reduction of random noise(Chaskar, U.M et.al., 2011). It highlights the hidden features of an image. This process is done to improve the details of an iris image.

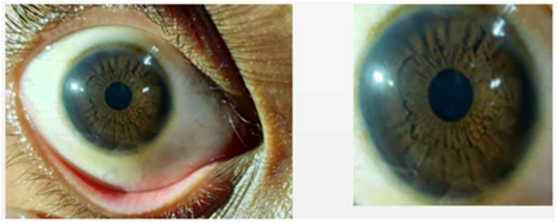

Figure 5: Crop image

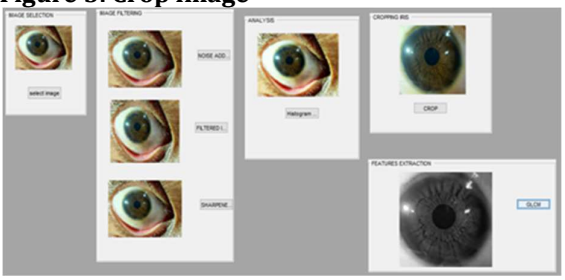

Figure 6: GUI of the process

Segmentation

This division procedure is to look for the inside directions of the student and the iris alongside sweep and the parameters of iris and understudy with inward and external limits. By subtracting, we will get the iris part of an eye(Christopher E. Hann, et.al., 2009). Once the segmentation of the iris is done, the next step is to transform the iris region into constant dimensions. After segmenting, we will get the iris with a circle shape which contains only iris and pupil of an eye.

Normalization

Normalization converts the iris and pupil into a rectangular shape from a circular shape. Normalization is done so that the different sizes of irises of each patient can be converted into standard size and shape. It makes finding ROI easier.

ROI extraction

After normalization, the next step is to find the region of interest (ROI) and extract the region of the iris, which is related to the pancreas.

Feature extraction

Characteristics of the eyes with diabetes and without diabetes are different. By using the feature extraction, special features of the eyes are extracted to find the difference between the two eyes, i.e. normal and abnormal eye.

Classification

As the feature square measure extracted, an appropriate classified method should be chosen(Christopher E. Hann et.al, 2009). A variety of classified square measure used and every

classified method is found appropriate to classify a specific reasonably feature vectors relying upon their characteristics.

First, the sample image is turned from RGB to Greyscale image. Then the image is filtered by using the Gaussian filter method.

Filtering

Gaussian filter is used to reduce the noise. It is used to highlight the hidden features of an image. This process is done to improve the details of an image.

Histogram analysis

Histogram analysis is performed on an image to distribute the pixel intensities equally over the image.

Cropping

In this process, only the iris part of the eye is needed. To remove the sclera (white part of the eye) cropping is done.

Table 1: Feature extraction comparison between

Image	Entropy	Mean	Standard deviation
Nd	1.004	0.51	0.04
D1	0.998	0.55	0.08
D2	0.861	0.44	0.15
D3	0.863	0.46	0.11

*ND= Non-diabetic; *D=Diabetic

CONCLUSION

We are proposing a replacement framework for Detection of the Diabetes from an Iris image. For clinical feature analysis (Chaskar *et al.,* 2012), enhancement is important for extraction of deep layer options, in this project we tend to a non-inherit one eye image, hold on into a database, a filtered image of an eye by Gaussian filter, found iris pattern from eye image, normalized and increased that iris pattern and extracted some options like mean, variance, entropy. We tend to a square measure learning the simplest method for diabetic recognition.

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Early Detection on the Condition of Pancreas Organ as the Cause of Diabetes Mellitus by Real Time Iris Image Processing Adhi Dharma Wibawa Electrical Engineering Department Technical Faculty, Hang Tuah University Sukolilo, Surabaya Indonesia, arzabelva@yahoo.com, Mauridhi Hery Purnomo Electrical Engineering Department Institut Teknologi Sepuluh Nopember Surabaya, Indonesia hery@ee.its.ac.id

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