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LESION DETECTION USING SEGMENTED STRUCTURE OF RETINA

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Abstract—Morphology of fundus image indicates diseases like diabetic retinopathy and glaucoma. Features of the retinal images allow ophthalmologist to perform retinal disease identification. Presence of lesions in the fundus retinal image is initial sign of diabetic retinopathy. The paper proposes a method for the detection of lesions in retinopathy fundus images based on segmented structure of retina. Morphological operators extract image features and selected features are passed into the support vector machine (SVM) classifier which classifies the images into normal and abnormal classes

Keywords—Adaptive histogram equalization; Gaussian filter;fuzzy ;morphological operation;SVM classifier

I INTRODUCTION

In a Fundus image consist of retina, optic disc, macula, fovea, fundus images are taken opposite to the lens. The morphology of the retinal fundus image is an important indicator of disease like diabetic retinopathy, hypertension, glaucoma, hemorrhages like diseases [6] increases in the sugar level in blood. It increases the amount of reactive oxygen species in blood. Damages in the retinal vascular tree leads to the formation of lesion in retina. Presence of exudates in retina is the primary sign of diabetic retinopathy. Diabetic retinopathy retinal regions shown below fig 1.

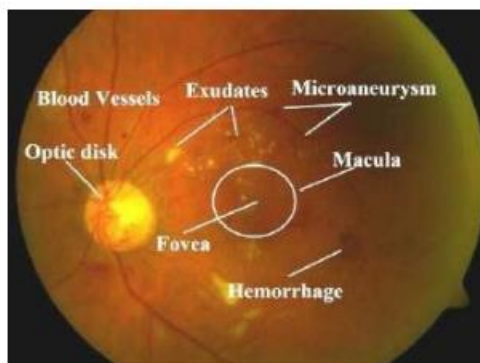


Fig 1 Main retinal regions

The most common sign of DR are red lesion and bright lesion. Microaneurms and hemorrhages are red lesion exudates and cotton wool spots are bright lesion. Presence of

lesion is early sign of diabetic retinopathy. Image processing widely used for automatic diagnosing of DR from retinal images.

Optic disk is a bright oval structure and it represents the start of the optic nerve and this is the entry point of blood vessels. Macula responsible for high resolution vision. The blood vasculature in retina is a tree like structure having high frequency component .and it has high contrast in the fundus image[9].

Diaretdb1, Drive, Stare databases are mainly used for retinal images. In DRIVE database consist of 40 colour images and captured with a Canon CR5 non-mydratiac 3CCD camera with a 45° field-of-view (FOV). Each image represented in 8 bits captured at 768 x 584 pixels and saved as JPEG format. STARE database consist of 81 retinal images taken with a Topcon TRV-50 fundus camera at 35° FOV. The image FOV and which camera used change accordance with which database used. In the acquired image consist of noises to remove noises and enhancement of the image pre-processing used after preprocessing segmentation occur grouping of pixels occur in this stage then extract particular feature using feature extraction classifier classifies the image features

II RELATED WORKS

Diabetic Retinopathy can cause the complete loss to the vision. The detection of early stage of can help the people from complete vision loss. Blood vessels supply blood and oxygen to the retina. If the oxygen supplies to the retina are not smooth, then this will create health problems [8].

DR can be classified as NPDR (Non-Proliferative diabetic retinopathy) and proliferative diabetic retinopathy. In NPDR, lesion occurs are micro aneurysms and exudates. Micro aneurysms are small, round structure and occur as red dots with sharp margins [5] in the case of proliferative DR. It is the advanced stage compare to NPDR. In this case growth of abnormal blood vessels occur and these blood vessels can grow along with retina and cause complete vision loss[9].

Hemorrhage is the blood leakage in retina. It can be occur in various sizes and various shapes. Hemorrhages can be identified mainly by its characteristics. Dark appear for



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HAND ANTHROPOMETRIC MEASUREMENTS OF SOUTH INDIAN MALE POPULATION COLLECTED USING TRACER METHOD AND ITS CORRELATION ANALYSIS WITH HEIGHT AND SHIRT SIZE

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Abstract

Anthropometric dimensions are integral part of customized hand instruments which can improve safety, comfort, and efficiency. For this, it is essential to collect anthropometric data from different populations. This paper is aimed to collect a detailed hand anthropometric data of south Indian male population which can be employed for developing various hand tools and its correlation analysis. Tracer method is employed to collect the hand measurements from a convenience sample of 162 subjects and compared with direct or traditional measurement method. The mean values of height and total hand length of the south Indian male population obtained is 171.31cm and 19.275cm respectively. The highest value of Pearson correlation coefficient is 0.57 found between height and total hand length. Descriptive statistics can directly be used for design without considering the correlation for the targeted population. The scope of this work is undergone only for south Indian male population.

Keywords – Hand anthropometry, Hand, Human, South India, Male; Population, Tracer method, Correlation, Height; Shirt size.

