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Patent Search

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Abstract:

Diabetes is a disorder that occurs when the body's blood glucose levels become too high and is the primary energy source. The common complication of diabetic path diabetic retinopathy (DR). It is a leading disease in the eye and causes vision loss. DR occurs when blood vessels in the eye are damaged. The detection of the blood vessel is necessary for the eye to diagnose eye diseases or DR. A Novel System for evaluating Blood Vessels in Digital Retinal Images using Soft Computing comprising of Input Pre-Processing (102); Segmentation (103); Feature Extraction (104); Classification (105); and Performance Measures (106). The present invention disclosed herein can detect eye diseases by segmenting blood vessels in digital retinal images. The invention uses a soft computing technique to optimize the grey retinal image before performing threshold segmentation in the retinal image to enhance the segmentation. The noise regions in the retinal images are removed with pre-processing. The RGB retinal image is converted to the grey-scale image, which is optimized by the Genetic Algorithm (GA) to optimize the intensity values of the veins in the retinal image. The GA enhances the vessel region by improving the intensity levels across all the regions of the vessels. Further, thresholding and morphological operations are performed to generate the segmented blood vessels which are used to classify the retinal images. The present invention disclosed herein is developed using Matlab R2020 (a) framework by collecting the retinal images from a publicly available dataset.

Complete Specification

Description:FIELD OF INVENTION

The present invention relates to the technical field of Computer Science Engineering.

Particularly, the present invention is related to a novel system for evaluating blood vessels in digital retinal images using soft computing of the broader field of Computer Vision in Computer Science Engineering.

More particularly, the present invention is related to a novel system for evaluating blood vessels in digital retinal images using soft computing used to generate the segmented blood vessels in the retinal images to classify the eye diseases. The present invention disclosed herein uses genetic algorithm to optimize the vessel region by improving the intensity values at the vessel regions.

BACKGROUND & PRIOR ART

Recent research has revealed that some morphological anomalies in the retinal blood vessels serve as an essential early warning sign for conditions like diabetes, hypertension, and glaucoma. Changes in blood vessel size, however, can be a sign of a number of eye conditions. Neovascularization is a complication of diseases like diabetes that can result in unusually small, fragile, and new blood vessels (neovascularization), vessel occlusion (which can extend veins), and abnormal retinal blood vessel growth.

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