**Abstract**

The retinal abnormalities and diagnosis of Diabetic Retinopathy (DR), Glaucoma are accomplished by extraction of vessel network in human retinal images. An accurate segmentation is required for the pathological analysis. Various researchers proposed many automated systems for vessel segmentation, still this process needs an improvement due to the presence of abnormalities, different magnitude, dimension of the vessels, non-uniform lighting and variable structure of the retina. The proposed work is a new method for retinal vessel segmentation, which consists of three phases, (i) The vessels network is enhanced by using Contrast Limited Adaptive Histogram Equalization(CLAHE) and Median filtering techniques (ii) the smoothened image is segmented based on mathematical morphology and maximum principal curvature followed by cleaning operation to remove the small objects, (iii) the segmented image is compared with hand labeled Ground Truth image and is evaluated with the True Positive, False Positive , True Negative and False Negative parameters. The performance of this work is tested with the images existing in DRIVE database. This work achieves 0.965 Accuracy, 0.752 Sensitivity and 0.989 Specificity