Abstract

Blood vessel in retinal image plays a vital role in medical diagnosis of many diseases. Diabetic retinopathy is one of the diseases which damages the retina and leads to blindness. Segmentation of blood vessels is helpful for ophthalmologists and this paper presents a new automatic method to extract blood vessels with high accuracy. This algorithm is comprised of optimized Gabor filter with local entropy thresholding for vessels segmentation under various normal or abnormal conditions. The frequency and orientation of Gabor filter are tuned to match that of a part of blood vessels to be enhanced in a green channel image. Segmentation of blood vessels pixels are classified by local entropy thresholding technique in this method. The performance of the proposed algorithm is evaluated by MATLAB software with DRIVE database.


Automated Segmentation of Retinal Blood Vessels using Optimized Gabor Filter with Local Entropy Thresholding


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- R. Haralick and L. Shapiro, Computer and Robot Vision. vol. 1, Chap. 5, Addison-Wesley, 1992

Index Terms

Computer Science

Automated Systems

Keywords

Retinal image  Blood vessels  Diabetic retinopathy  Optimized Gabor filter  Local entropy thresholding