Abstract
For the automatic detection of retinal venous beading and to calculate tortuosity of extracted retinal blood vessels. Venous beading represents focal areas of venous dilation and thinning of the venous walls. Venous beading is most easily comprehended as changes in the vascular caliber of the veins of the vascular arcades. This algorithm proceeds through three main steps

1. Preprocessing operations on high resolution fundus images
2. Simple vessel segmentation techniques formulated in the language of 2D Median Filter for retinal vessel extraction
3. Detection of Venous beading and Tortuosity from extracted blood vessels. Performance of this algorithm is tested using the fundus image database (300 Fundus Images) taken from Dr. Manoj Saswade, Dr. Neha Deshpande and online available databases diaretdb0, diaretdb1 and DRIVE. This algorithm achieves accuracy of 98% with 0.92 sensitivity and 0 specificity for Saswadedefabase, for diaretdb0 accuracy 95% with 0.95 sensitivity and 0 specificity, for diaretdb1 accuracy 96% with 0.96 sensitivity and 0 specificity, and for DRIVE database 98% accuracy with 0.98 sensitivity and 0 specificity.

References

- Yogesh M. Rajput, Ramesh R. Manza, Manjiri B. Patwari, Neha Deshpande, "Retinal Blood Vessels Extraction Using 2D Median Filter", Third National Conference on Advances in Computing (NCAC-2013), 5th to 6th March 2013, School of Computer Sciences, North Maharashtra University, Jalgaon-425001 (MS) India.
- Manjiri B. Patwari, Ramesh R. Manza, Yogesh M. Rajput, Manoj Saswade, Neha K. Deshpande, "Detection and Counting the Microaneurysms using Image Processing Techniques International Journal of Applied Information Systems (IJAIS) – 6(5):11-17, November 2013. Published by Foundation of Computer Science, New York, USA. , ISSN :
Automatic Detection of Retinal Venous Beading and Tortuosity by using Image Processing Techniques

2249-0868, Vol. 6 Number 5, October - 2013, Impact Factor 1.187

Index Terms

Computer Science

Image Processing

Keywords

Blood Vessels  Venous Beading  Tortuosity.