

A METHOD FOR ESTIMATING MORPHOLOGICAL PARAMETERS OF VESSELS IN FUNDUS IMAGES BASED ON CURVE VISIBILITY MATRIX

© 2008 M. A. Anan'in, N. Yu. Ilyasova

Samara State Aerospace University
Image processing Systems Institute of the RAS

We discuss an approach to fundus image analysis that enables one to modify the diagnostic vessel parameters in such a way that the morphological peculiarities of tree-like structures are accounted for. A feature estimation method based on processing the geometric characteristics of central vessel line lobes is described. An approach relying upon partitioning the curves into lobes with use of the algorithm of visibility matrix construction is discussed. The approach developed makes it possible to construct a primary feature space that can be used for constructing morphological features invariant to various types of geometric distortions.

Processing of images, vessels, eye bottom, morphology, signs, geometrical characteristics, average line

References

1. **Jomier, J.** Quantification of Retinopathy of Prematurity via Vessel Segmentation / J. Jomier, D.K. Wallace, S.R. Aylward // Proceedings of MICCAI 2003. – LNCS 2879. – P. 620-626.
2. **Osareh, A.** Classification and Localisation of Diabetic-Related Eye Disease / A. Osareh [and others] // ECCV 2002. – LNCS 2353. – P. 502-516.
3. **Korepanov, A.O.** A method for extracting blood vessel central lines in diagnostic images / A.O. Korepanov, P.M. Chkulyayev, N.Yu. Ilyasova // Computer Optics. – 2006. – No.29. – P. 146-151. – [in Russian].

Anan'in Michail Alexandrovich, S.P. Korolyov Samara State Aerospace University, a post-graduate student. Establishment of the Russian Academy of Sciences Image Processing Systems Institute of the Russian Academy of Sciences, Samara, Russia, a trainee-researcher of laboratory of laser measurements. He has published 16 works in domestic and foreign editions. Area of research: analysis of multicolored digital biomedical images, methods for estimating object morphological characteristics.

Ilyasova Natalya Yurjevna, S.P. Korolyov Samara State Aerospace University, Cand. Tech. Sci., the senior lecturer. Establishment of the Russian Academy of Sciences Image Processing Systems Institute of the Russian Academy of Sciences, Samara, Russia, the senior scientific employee of laboratory of laser measurements. He has published over 70 works in domestic and foreign editions, including one monography (in the co-authorship). Area of research: image processing, pattern recognition, object detection, development of biomedical hardware-software complexes.