Reconstructing the line connectivity in binary images of tree-like structures

N.Y. Ilyasova[1,2], A.A. Kovalev[1,2], A.V. Kupriyanov[1,2], A.G. Khramov[1,2]
[1]Image Processing Systems Institute of RAS,
[2]Samara State Aerospace University

Abstract

The work analyzes the possibility of eliminating line breaks in images to obtain tree-like structures. As a solution method, the authors use a decision function that is calculated for the pairs of break points and takes into account various geometric characteristics of lines near the breaks. The studies were performed by the method of simulation modelling and on natural images. The experiments have demonstrated the applicability of the developed algorithms to eliminating line breaks and obtaining tree-like structures.

Keywords: binary image, tree-like structure, line break, geometric characteristic, natural image, method of simulation modelling.

Citation: Ilyasova NY, Kovalev AA, Kupriyanov AV, Khramov AG. Reconstructing the line connectivity in binary images of tree-like structures. Computer Optics 2002; 23: 58-61.

Access full text (in Russian)

References

[1] Ilyasova NYu. Methods and algorithms for evaluating the geometric parameters of diagnostic images. The thesis for the Candidate's degree in Technical Sciences. Samara; 1997.
[2] Pratt WK. Digital image processing. 3rd ed. New York: John Wiley and Sons Inc; 2001.
[3] Big medical encyclopedia [In Russian]. Vol 5. Moscow: "Sovetskaya Encyclopedia" Publisher; 1976: 396-399.
[4] Cooke DJ, Bez HE. Computer Mathematics. London: Cambridge University Press; 1984.
[5] Krainyukov NI. Methods and algorithms of displacement field recovery based on the holographic interferometry [In Russian]. The thesis for the Candidate's degree in Technical Sciences. Samara; 1992.