

Analysis of the coronary vessels structure based on the method of projections tracing

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Abstract

The images of a cardiovascular system are used as an example to consider a class of images containing branches of tree-like structures. The tracing algorithms are described, that allow to estimate the coordinates of the points of the vessels' centerlines based on the projection images obtained by X-ray angiography. A number of algorithms are proposed that provide for the automatic formation of segments of the vascular tree. The algorithms are adapted for complex research objects characterized by low contrast and poor resolution. Based on the results of experimental studies on natural and generated images, a comparative analysis of each algorithm is performed and the peculiarities of each algorithm are revealed.

Keywords: coronary vessels structure, method of projection tracing, tree-like structure, X-ray angiography, automatic formation of segments vascular tree, generated image.

Citation: Ilyasova NY, Korepanov AO, Kupriyanov AV, Baranov VG, Khramov AG. Analysis of the coronary vessels structure based on the method of projections tracing. *Computer Optics* 2002; 23: 53-57.

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