MULTISCALE EXTRACTION OF DIAGNOSTIC CONTENT APPLIED FOR CT BRAIN EXAMINATIONS

Artur Przelaskowski[1], Grzegorz Ostrek[1], Katarzyna Sklinda[2]

[1]*Institute of Radioelectronics, Warsaw University of Technology, Warsaw, Poland*
[2] *Department of Radiology CMKP, CSK MSWiA, Warsaw, Poland*

Abstract

This paper presents the estimation methods of subtle hypodense changes of brain tissue in noncontrast eT scans. The purpose of reported research is improved detection of direct signs of hyperacute ischemic stroke. Proposed 1001 is nonlinear approximation in base of multiscale functions with respective thresholding. Different rationales for best basis selection were considered. Several local bases including wavelets, curvelets, contourlets and wedgelets were considered and characterized with a criterion of as fast as possible approximation error decay. Adaptive thresholding was suggested for defining of nonlinear approximation space for different image models. Procedures of estimation and extraction of diagnostic information were experimentally verified. Improved diagnosis of acute stroke eases was reported.

Keywords: ischemic stroke, image nonlinear approximation, multiscale image analysis, wavelets