

Numerical Implementation and Testing of Fractioning Estimator Method for the Box-Counting Dimension of Fractal Objects

Authors : Abraham Terán Salcedo, Didier Samayoa Ochoa

Abstract : This work presents a numerical implementation of a method for estimating the box-counting dimension of self-avoiding curves on a planar space, fractal objects captured on digital images; this method is named fractioning estimator. Classical methods of digital image processing, such as noise filtering, contrast manipulation, and thresholding, among others, are used in order to obtain binary images that are suitable for performing the necessary computations of the fractioning estimator. A user interface is developed for performing the image processing operations and testing the fractioning estimator on different captured images of real-life fractal objects. To analyze the results, the estimations obtained through the fractioning estimator are compared to the results obtained through other methods that are already implemented on different available software for computing and estimating the box-counting dimension.

Keywords : box-counting, digital image processing, fractal dimension, numerical method

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