

An Effective Algorithm for Arranging Two Dimensional Image Samples Into one Dimensional Series ¹

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Abstract

There has been a clear and rapid development in signal processing systems, this development comes as a result of the availability of modern techniques in electronic systems and also as a result of achieving mathematical algorithms which were effective and perfect for signal processing.

One of the most important application in signal processing is the digital image processing techniques. Sampling process is regarded as one of the basic and important operations in signal processing, from which we obtain samples that can represent the original image in perfect way.

We present in this essay an affective algorithm which helps to arrange one-dimensional samples from two- dimensional samples image. This enables to obtain a series of samples which has an ability of representing images with concern of their general structure. Also the neighborhood correlation of image points is respected, in addition to carrying out the subsequent treatments with less mathematical cost.

The study of spectral power density allows to this series to demonstrate how this algorithm maintains the characteristic of spectral power density in different circumstances of the image (scale changes, rotation, changes in illumination intensity, and overlapping as result of noise).

Many tests were executed and distinct results were achieved showing the efficiency of this algorithm.

Keywords: Signal Processing, Image processing, Computer Vision.

¹ For the paper in Arabic see pages (129-166).

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