Abstract

In this paper, we present a new approach to deal with the noise inherent in the microarray image processing procedure. The method is based on the following procedure: We apply 1) Bidimensional Discrete Wavelet Transform (DWT-2D) to the Noisy Microarray, 2) scaling and rounding to the coefficients of the highest subbands (to obtain integer and positive coefficients), 3) bit-slicing to the new highest subbands (to obtain bit-planes), 4) then we apply the Systolic Boolean Orthonormalizer Network (SBON) to the input bit-plane set and we obtain two orthonormal output bit-plane sets (in a Boolean sense), we project a set on the other one, by means of an AND operation, and then, 5) we apply re-assembling, and, 6) rescaling. Finally, 7) we apply Inverse DWT-2D and reconstruct a microarray from the modified wavelet coefficients. Denoising results compare favorably to the most of methods in use at the moment.
References

Study and Analysis of Microarray Denoising using Systolic Boolean Orthonormalizer Network in Wavelet Domain


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