NOISE REDUCTION IN IMAGE PROCESSING BASED ON AN ADAPTED VERSION OF THE INNOVATION ALGORITHM

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Abstract

A new approach of image restoration based on the innovations algorithm is reported. The input samples $X^{(1)}$ of noisy versions of a given image X_0 is filtered using a binomial mask B_3 and a method based on PCA and shrinckage technique yielding to new samples $X^{(2)}$, $X^{(3)}$. Next, an approximation scheme for the matrix $K(4, j)$ is developed and, according to the innovations algorithm, the estimation $\widehat{Z}^{(4)}$ and the samples $X^{(3)}$, $z^{(3)}$. A PCA based shrinckage method to noise removal is presented in the third section of the paper together with the results of some performed tests. The fourth section presents an adapted version of the innovation algorithm to solve image restoration problems.