A Hybrid Filtering Technique for Eliminating Gaussian Noise and Impulse Noise on Digital Images

Abstract

A new hybrid filtering technique is proposed to improving denoising process on digital images. This technique is performed in two steps. In the first step, gaussian noise and impulse noise is eliminated using decision based algorithm (DBA). Image denoising process is further improved by an appropriately combining DBA with Adaptive Neuro Fuzzy Inference System (ANFIS) at the removal of gaussian noise and impulse noise on the digital images. Three well known images are selected for training and the internal parameters of the neuro-fuzzy network are adaptively optimized by training. This technique offers excellent line, edge, and fine detail preservation performance while, at the same time, effectively denoising digital images. Extensive simulation results were realized for ANFIS network and different filters are compared. Results show that the proposed filter is superior performance in terms of image denoising and edges and fine details preservation properties.

References

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- E. Srinivavsan and R. Pushpavalli, "Multiple Decision Based Switching Median Filtering for Eliminating Impulse Noise with Edge and Fine Detail Preservation Properties,"
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