A Hybrid Approach for Efficient Removal of Impulse, Gaussian and Mixed Noise from Highly Corrupted Images using Adaptive Neuro Fuzzy Inference System (ANFIS)

Abstract

The aim of the paper is to remove the noise in the images and at the same time to preserve the edges, fine details and texture in the image. This paper proposes a novel Adaptive Neuro Fuzzy Inference System (ANFIS) filter to remove impulse, Gaussian and mixed noise without affecting edges and texture of an image. It is a hybrid filter constructed by combining an appropriate noise filter, an edge detector and ANFIS. Different edge detectors are implemented such as canny, sobel and prewitt. The performance of the proposed filter is tested for impulse, Gaussian and mixed noise in Lena image. As a result, it is observed that the proposed hybrid filter effectively removes the noise in the following order: impulse > Gaussian > mixed noise with canny edge detector.

References

- T. A. Nodes and N. C. J Gallagher, "The output distribution of median type filters,


Index Terms

Computer Science Signal Processing

Keywords
Adaptive Neuro Fuzzy Inference System Median Filter Wiener Filter Image Processing