Abstract

Adaptive median filter has been an efficient algorithm for salt and pepper noise removal. But, if the noise percentage are very high, adaptive median filter may still remain noise regions in result image. So a Particle swarm optimization based novel and modified adaptive median filter (PSOMF) is proposed. The Proposed filter works in two stages: Noise detection stage and noise filtering stage. Particle swarm optimization is a simple algorithm that seems to be effective for optimizing a wide range of functions. Noise Detection stage works on it. First, a test decides whether or not a given pixel is contaminated by impulse noise. If contaminated, a median filter is applied. Simulation results show that our method is significantly better than a number of existing techniques in term of image restoration and noise detection, even for noise levels as high as 90%.

References

Median Filter for Noise Removal using Particle Swarm Optimization


Index Terms

Computer Science          Signal Processing
Keywords

Particle Swarm Optimization, Impulse Noise, PSNR, IQI, SSIM.