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Using MLP Neural Network and PSO Algorithm for Reduction of Degradation Caused by High Density Impulsive Noise in Mammography Images

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Abstract

Introduction: Impulse noise removal of mammography image is of great importance. The presence of different signs and characteristics of the disease has made it difficult for physicians' to diagnose. MLP neural network allows the analysis of the patients' medical data for medical decisions. The goal of this paper is to present an accurate model designed for reduction of degradation caused by high density impulsive noise in mammography images.

Methods: In this study, the medical case files of 574 patients. Patient information was acquired from the Mortaz General Hospital Standard Database and selected. GBC Algorithm and MLP neural network are used for reduction of degradation Caused by high density impulsive noise in mammography images.

Results: The suggested model was compared with the MDBUTMD and ATSM methods. In reduction of degradation caused by high density impulsive noise in mammography images, the suggested model acquired the least error and the most PSNR and validation in comparison with other methods. The ATSM method has the most error and least PSNR.

Conclusion: Subjective and objective evaluations on different images with different noise densities show the superiority of the proposed method over the related recent works in the field.

Keywords: Mammography Images, Breast Cancer, GBC Algorithm, MLP Neural Network, Impulse Noise Removal.