Kernels Analysis in MRI Images Noise Removal Methods

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With advanced imaging techniques, Magnetic Resonance Imaging (MRI) plays an important role in medical environments to create high quality images contained in the human organs. In the processing of medical images, medical images are coordinated by different types of noise. It is very important to acquire accurate images and observe specific applications with precision. Currently, eliminating noise from medical images is a very difficult problem in the field of medical image processing. In this document, three types of noise, Gaussian noise, and salt & pepper noise, uniform noise are tested and the tested variances of Gaussian noise and uniform noise are 0.02 and 10 respectively. We analyze the kernel value or the window size of the medium filter and the Wiener filter. All experimental results are tested on MRI images of the BRATS data set, the DICOM data set and TCIA data set. MRI brain images are obtained from the BRATS data set and the DICOM data set, the MRI bone images are obtained from the TCIA data set. The quality of the output image is measured by statistical measurements, such as the peak signal noise ratio (PSNR) and the root mean square error (RMSE).