ABSTRAK

Compressive sensing (CS) also known as compressed sensing, or compressive sampling is a technique that allows data acquisition with far fewer samples than conventional methods, but still allows signal or data reconstruction with a high degree of accuracy and efficiency. One of the CS methods that can be used in this study is the Sparsity Averaging Reweighted Analysis (SARA) proposed to improve the performance of the Basis Pursuit Denoise (BPDN) method. In previous studies SARA was proposed for radio-interferometric image data and natural images. Detailed analysis of SARA in medical images is not available in the literature. To fill this gap, various types of medical data are used to investigate the performance of SARA.

This final project uses SARA analysis on iris image data. SARA itself consists of 2 stages, namely the initial stage to determine the sparsity basis by proposing the process of calculating the average of several wavelet basis frames and the reweighting process from the BPDN reconstruction method.

The test results of this final project are SARA, where SARA outperforms RW-Haar with a value of 11.26 dB and RW-Curvelet with a value of 13.21 dB at MR = 0.1. The performance increase from reweighted analysis reconstruction is very large by adding a base process the average or sparsity averaging (SA). By using SA, the pattern of the iris image that is not sparse on one type of base can be accommodated by another type of base so that the resulting signal after the transformation becomes more sparse compared to using only one type of Haar or Curvelet basis. The average processing time for the best parameter is 20 seconds.

Keywords: ***Compressed sensing, sparsity averaging, reweighted analysis, medical data compression, spread spectrum, wavelets.***