ABSTRACT

Magnetic resonance imaging(MRI) is a way that doctors examine and take high-solution images of organs, tissues and skeletal systems. The results of the MRI will be stored in the hospital computer memory for a long time as a patient examination file. With large data sizes and increasing amounts, computers in hospitals have large memory. The main motivation in the development of Compressive Sensing (CS) in MRI was the desire to reduce the amount of data required to create images.CS is a method in which the process of taking each sample / acquisition and compression is done simultaneously.

In this final project, a system design for reconstruction has been carried out using MRI video data of the brain with Alzheimer's disease, normal brain video MRI data, spinal MRI video data and MRI infarct video data. The method in this final project is CS using the Iteratively Reweighted Least Squares (IRLS) method. This system uses the sparsity transformation with the Discrete Cosine Transform (DCT) technique and the Gaussian technique is used for the projection transformation.

The results obtained from video MRI testing are the highest Structural Similary Index Measure (SSIM) value when the Measurement Rate (MR) parameter is 90%, which is one for all normal brain MRI data resolutions. The smallest Mean Square Error (MSE) value when the MR parameter is 90%, which is zero for all normal brain MRI data resolution. Peak Signal to Noise Ratio (PSNR) is highest when the MR parameter is 90%, which is not up to all normal brain MRI data resolutions.

Key Words: *Magnetic Resonance Imaging, Compressed Sensing, Iteratively Reweighted Least Squares, Discrete Cosine Transform*