ABSTRACT

The esophagus is the connecting channel between the mouth and the stomach, the esophagus is very susceptible to inflammation called esophagitis. To find out a person affected by esophagitis needs to be examined by wireless capsule endoscopy (WCE). The WCE image is the image resulting from endoscopy that can give photos to the digestive channel to know the abnormality that is in the human body. The development of technology body sensor network (BSN) continues to increase in the medical world as a health monitoring of the human body. However, the problem with BSN is that the data volume from a very large sensor causes limited storage size in storage. Therefore, a compression process is needed so that the available storage is sufficient and can maintain the quality of human visual images.

In this final project, system design has been made for image reconstruction using endoscopic imagery in the digestive channel of the human body. In sparsity transformation, discrete cosine transform (DCT) is used and in projection transformation, gaussian projection is used. Compressive sensing (CS) is a new technique in data compression process. It compresses the size of image to be more efficient and maintain the quality of the image in human visual basis pursuit de-noising (BPDN) with active set pursuit (ASP) is one of BPDN implementation to fix rotated images.

PSNR result without noise has the lowest value at measurement rate (MR) 90% 64x64 pixel resolution which is 35,04 dB and the highest is on 1024x1024 pixel resolution valued 52,67 dB. Peak signal to noise ratio (PSNR) result with noise has the lowest value at MR 90% 64x64 pixel resolution which is 32,99 dB and the highest is on 1024x1024 pixel resolution valued 52,2 dB. Comparison of PSNR lowest result basis pursuit (BP) AWGN canal when parameter reaches MR 90% 64x64 pixel resolution valued 32.24 dB and basis pursuit de-noising (BPDN) AWGN canal valued 32.99 dB and the highest PSNR on 1024x1024 pixel resolution BP AWGN canal valued 44.17 dB and BPDN AWGN canal valued 52.2 dB.

Keyword**:** *Compressive Sensing*, Algoritma BPDN, WCE, BSN, ASP.