

## ABSTRACT

The use of Electronic Patient Record (EPR) in the medical field as a communication medium causes a lot of anxiety. The authenticity and security aspects of patient data are the main focus. The authenticity of medical images is one of the important data and must be considered. One way that can be done to minimize the possibility of various threats such as modifying information without permission during the data transmission process is to use a watermark.

This final project designs a watermark system for medical images using the method Compressive Sensing (CS) based on Singular Value Decomposition (SVD) which can be used to reduce the size of medical images during the data transmission process. Compressive Sensing includes lossless compression which is a way to compress the size of data without losing the original information. The embedding process is carried out on the sender's side to produce a matrix A containing a watermark which is modulated using the method Spread Spectrum. While the extraction process is carried out by reconstructing the image using the method Orthogonal Matching Pursuit (OMP), reconstructing SVD and reconstructing the matrix A to produce a watermark image.

The purpose of the watermark scheme using the SVD, CS and SS methods is to be able to protect and compress medical images. The results of the watermarking are not in the form of images, but in the form of compressed data so that the system resilience test only uses noise attacks. This system produces a BER value of 0% at a PSNR greater than 30 dB. The compression ratio values obtained are 0.2.

Keywords: Watermark, Compressive Sensing, Spread Spectrum, Gaussian distributed PN code