ABSTRACT

In the current digital era, advances in technology, information, and communication make it easy for someone to access, process, and disseminate information. This causes various negative impacts such as data modification illegally and irresponsibly. Medical Image Watermarking is a branch of the science of image watermarking about the insertion of a digital sign into a digital medical image with the aim of protecting the authenticity of proprietary information contained in a digital medical image. The watermark that is inserted is expected to be unknown to the human senses, in this case the sense of sight, and to be able to withstand damage or attack to a certain extent.

In this final project, watermark is inserted into medical image using multiple bit spread spectrum technique with Gaussian distribution to protect the authenticity of proprietary information from a medical image. The host image used is a medical image and the watermark used is a binary image. The medical image watermarking process is divided into two processes, namely the insertion process and the extraction process. The watermark is inserted into the medical image by segmenting the host image and then embedding it with a Gaussian distributed PN code where the insertion is done at the Gaussian mean point which is the part of the signal that is not easily attacked. The quality of this scheme is then tested with parameters Peak to Signal Noise Ratio (PSNR), Structural Similarity Index Measurement (SSIM), Bit Error Rate (BER), Payload Capacity(C) and Normalized Correlation (NC).

From the simulations that have been carried out on watermarked medical images, the PSNR value is around 30 dB with payload capacity 0.031. On the extracted watermark obtained the best values BER 0 and NC 1. The watermarking scheme is not resistant to geometric attacks but has good resistance to filtering and processing attacks signal.

Keywords: Digital Image, Medical Image, Multiple Bit, Spread Spectrum, Gaussian Distribution, Image Watermarking, Data Hiding