

Abstract

Telemedicine is the transmission of medical information, such as texts, image, biosignal, video, sound and medical skill and care from one location to another through telecommunication connection [12]. To keep the privacy of data's transmission, it needs a data randomize technique that use *cryptology* using encryption key. But problems appear when the encryption key has to be sent with the real data. Therefore data insertion technique is needed; one of them is *Watermarking Technique*.

The implementation for cryptology in randomizing data is good (save) if the encrypted data save too. It can't be broke in without the key. The implementation of watermarking in digital data, especially in image, is told to be good if the data, which is inserted, is invisible, and the carrier image's quality doesn't decrease, and also the inserted data is persistent of signal processing. In this final project cryptology of digital medical image using *RC4* and *Riverst Shamir Adleman (RSA)* for the encryption key, are implemented. Then the encrypted medical image (using *RC4*) is watermarked using *Discrete Cosinus Transform (DCT)* transformation.

Insertion of 128 key bits on high frequency in DCT blocks with replacement number between $-3 \rightarrow 3$ to $-55 \rightarrow 55$ will give 100% validity on extraction process and is meant to keep the quality of medical image always in tolerance's range for diagnosing, which have minimum PSNR between 40-50 db.

Keywords: *Telemedicine, cryptology, watermarking, RC4, RSA, Discrete Cosinus Transform*