## ABSTRACT

*The evolution of technology makes it easier to us in getting and sending information, but the information that has been sent could be known by the third person, very crucial if that is secret information. Watermarking method has been developed for embedding data/messages into another digital data so the data is invisible and we can extract it.*

*This final project explain about optimization on .wav audio file from watermarking system with Empirical Mode Decomposition (EMD) method and will be optimized with genetics algorithm.Genetics algorithm used for searching optimal value of watermarking components so the result are better, genetics algorithm used for solving optimization problem.*

*The initial stage is done by framing process on the host. Then do the EMD process to obtain residual signal on each frame so that watermark can be inserted then do inverse EMD to reconstruct signal that has been decomposed with EMD. Next, do the parameter optimization with genetic algorithm to get optimal parameter.*

*The optimal parameters obtained are frame length 8192, level 1, and gain 0.005 from resampling attack. With optimum parameters, the watermarking system is resistant to attack such as LPF, resampling, TSM, linear speed change, pitch shifting, mp3 compression because it has BER below 10%, but is vulnerable to BPF, noise, equalizer, echo attacks because it has BER over 10%*



*Keywords: Audio Watermarking, Empirical Mode Decomposition (EMD), Genetics Algorithm*