

ABSTRACT

Nicotine on cigarettes makes dopamine and norepinephrine increased so smokers can feel enjoyed and relaxed. To stabilize it, human brain producing the anti-nicotine which is can make smokers feel anxious and bad mood. Therefore, smokers want to smoke again to increase the mood and feel relaxed. That activities in human brain can be recorded using Electroencephalograph or EEG which is a device that can record bioelectrical or brain waves activities caused by ion fluctuations on neuron. There are 5 kind of brain waves, alpha, beta, theta, delta, and gamma. Each signals has a difference frequency range. The purpose of this thesis is to know that smoking can makes someone feeling relaxed based on the pattern of human brainwaves from delta signal with frequency range (0,1 – 4)Hz and theta signal with frequency range (4 – 8)Hz.

This thesis use a daubechies wavelet from discrete wavelet transform or DWT as a feature extraction. The daubechies wavelet are defined by computing running averages and differences via scalar products with scaling signals and wavelets. The classification system use a support vector machine or SVM which is a learning machine method who works by Structural Risk Minimization (SRM) principle to find the best hyperlane that separate 2 classes from the input space.

The final result from this thesis is a classification system that capabled to classify theta and delta signals from smokers while smoking into relaxed or not relaxed condition of human with the average results for theta signal are 89,2% and delta signal are 77,6%. Both signals has a tendency to match with a human brain waves at relaxed condition.

Keywords : EEG, DWT, SVM, delta, theta, cigarette