ABSTRACT

Vehicle security system nowadays was become a serious problem which need us to solve. The high rate of stolen vehicle especially car was need to think about the problem solving. Voice recognition system is the one of the best solution to increase the security of the vehicle.

Artificial neural network back propagation was used on this experiment because it can work well enough to do the recognition with high accuracy and precision rate and the good time response. In this system, ANN-BP work with the Linear Predictive Coding (LPC) which used for the feature extraction of voice sample. The experiment of structure variation and network parameter like hidden layer, hidden neuron, learning rate and activation function and also LPC order are tested to get the best value of parameter in order to get the best system performance. The searching method of network structure and parameter have a goal to make the ANN can learning fastest and recognize the voice fastly with minimum error. The result of this signal procesing will be interfaced as an input to microcontroller to control an indicator circuit like LED and LCD.

After the experiment and testing done, we get 2 hidden layer, 10 hidden neuron, 0,1 learning rate, and {tansig, logsig} activation function, and also 5 order of LPC which produce the recognition percentase by 100% on network training and 95% on network testing.

Keywords : Voice signal, Artificial Neural Network- Back Propagation, Linear Predictive Coding. Microcontroller, hidden layer, hidden neuron, learning rate, activation function