

## **ABSTRACT**

*Motorcycles are vehicles or transformation tools that use two to three wheels. This motorcycle uses a power source of gasoline, electricity, or a combination of fuel and electricity (hybrid). Motorcycles are very popular among Indonesian people because they are practical, economical, and can run on narrow tracks. As far as a Backpropagation Neural Network can recognize. What is the highest accuracy value of the MSE learning rate. This study designed a system that can detect Continuously Variable Transmission (CVT) damage based on the sound on a motorcycle. By using the Linear Predictive Coding (LPC) function. Feature extraction and speech signal recognition with Backpropagation Neural Networks. Backpropagation learning process by adjusting the weight of the artificial neural network based on the error value in the learning process (learning rate). The confusion matrix is a table that states the classification of the correct number of test data and the wrong number of test data. In the calculation of the first order, namely order 8, gets an accuracy value of 67%, normal precision 62%, damaged precision 75%, positive recall 84%, negative recall 60%. Subsequent calculations on order 10 get an accuracy value of 80%, 50% normal precision, 50% damaged precision, 80% positive recall, 20% negative recall. Subsequent calculations on order 12 get an accuracy value of 95%, normal precision of 49%, damaged precision of 40%, positive recall of 94%, negative recall of 4%. Subsequent calculations on order 14 get an accuracy value of 76%, normal precision 52%, damaged precision 58%, positive recall 80%, negative recall 26%. The next and last calculation on order 16 gets an accuracy value of 75%, normal precision 79%, damaged precision 36%, positive recall 68%, negative recall 21%. In this study it can be concluded that the Artificial Neural Network can recognize CVT sound (Continuously Variable Transmission) well, because the value shown is quite good. By using an artificial neural network model to distinguish CVT sound characteristics in good condition and in damaged conditions that have been determined by experts, and this neural network is able to study well. In this study, from several tests on each order, the best accuracy value was obtained, namely at order 12 where an accuracy value of up to 95% was obtained. For the Cross-Entropy value or the predicted value of the actual output entered at the input. 0.138 and epoch 82 out of a total of 88 epochs.*

**Keywords :** *Artificial neural network, Backpropagation Continuously Variable Transmission (CVT), Yamaha Mio 115 CC.*