Abstract

One solution to avoiding congestion at toll gates is the use of *Electronic Toll Collection* (ETC). ETC is one of the services that can be used automatically by toll road users to pay at toll gates. ETC users using Gardu Tol Otomatis (GTO). GTO can only be used for vehicle class I non-bus.

Classes of vehicles that are classified in this thesis consists of three groups, namely group I, II, and III. The image is used in the form of images of vehicles passing through the toll road substation. The method used in this thesis is the *Gabor Wavelet* and *Linear Discriminant Analysis* (LDA). *Gabor Wavelet* is used as a method of *feature extraction* process to get the important characteristics of an image and process the results will be input for LDA classification. Before the process of *feature extraction*, *preprocessing* is performed *background subtraction* process to get the f*oreground*. LDA has a relatively fast computation time. The process of data using 120 training practice, while for testing using 40 test images.

The results showed that the incorporation of *Gabor Wavelet* method and LDA in the classification of types of vehicles have the best recognition accuracy of 70% on the test images.

Keywords: vehicle classification, *background subtraction*, *Gabor wavelet*, *Linear Discriminant Analysis* (LDA)