# Abstract

Information about traffic density is needed not only by driver but also road operator. Vehicle counting process was conducted to determine the traffic density. Because manual counting takes a lot of time and energy, so an application that can monitor traffic density is created.

In this final project, research and implementation of application that can detect and count the traffic density in highway is done. In calculating the traffic density, this application needs information about the number of vehicle and average speed of all vehicles. To get that information, the first thing the application must do is detecting the moving object. In here, background subtraction method is used to detect the moving object and block background modeling and updating is used to update the background. The updated background is used for background subtraction in the next frame. Then tracking is performed to determine the vehicle's position in each frame. Kalman filter method is used to track the detected object. Overall, the application has good accuracy. The accuracy of application to detect the traffic density is 93,93%.

**Keyword** : vehicle counting, traffic density, block background modeling and updating