ABSTRACT

Computer vision is a technology in the field of image processing that is growing at this time. Computer vision's technology provide a solution to help human's activity. In this final project, computer vision is used to detect objects and get an estimate of the distance. The author uses the Faster R-CNN method to do an object detection. The object that has been detected is a component to get an estimate of the vehicle distance.

The Faster R-CNN method is used in the object detection system in this research. Faster R-CNN is a combination of the Fast RCNN and Region Proposal Network (RPN) methods. This research uses CNN architecture from the ResNet50 pre-trained model, 1064 training data in the form of vehicle object images, and test data in the form of video with a frame rate of 30 fps. The purpose of object detection is to display bounding box objects. The distance estimation system takes the pixel's width from the object's bounding box to calculate the estimated distance to the vehicle.

The distance estimation system analysis was conducted using two Linear Predictor Functions (LPF) methods, namely Least Square Regression and Fitting of a Polynomial on the result of distance estimating system to minimize errors. The testing process for the distance estimation system is taken with 6 image with object and a distance of these object are 200, 250, 300, 350, 400, 430 cm. The best configuration is the Least Square Regression with a total error of 38.375 cm. The distance estimation system is implemented on the Raspberry Pi and gets a frame rate of 0.03fps.

Keyword: *Object Detection, Estimated Distance, Faster R-CNN*