ABSTRACT

The tragedy of traffic accidents from year to year is unavoidable so that it becomes a fear for some people and even almost everyone. Many factors cause accidents including the lack of visibility of drivers caused by lighting conditions, distortion immediately, and weather. The purpose of this study is to increase the visibility of drivers using computer vision technology.

Therefore, the authors designed a human detection system with a thermal camera using the YOLO v3 algorithm method. Thermal imagery is used so that even at blurry viewing distances the system can detect humans precisely. Thermal image data is taken using a thermal camera which will be trained in several stages so that the human detection system using the YOLO v3 algorithm method can show maximum performance.

The thermal image-based human detection system designed in this study produced the highest performance with the mAP value of 85.56%. This condition is obtained when the input size of the system resize is 512×512, the batch size value is 64, the learning rate value is 0.0001. The increase in the mAP value occurs because changing the input size value by 512×512 makes the model can learn more pixels, and changing the learning rate value by 0.0001 makes the learning rate smaller and more in the training period, considering that smaller changes are made to the weight of each renewal.

Keywords : object detection, thermal image, yolov3.