ABSTRACT

Traffic accident are still one of the serious problems that occur in the world. One of the causes of traffic accidents that frequently considered not important by vehicle user is using vehicle with drowsiness. Drivers under the drowse effect have slow reaction time compared with normal active driver. Drowsiness driver usually will be victim of microsleeps. Drivers who have microsleeps only drowse a few seconds, but a few seconds with high speed and slow reaction time very possible to cause traffic accidents. If traffic accidents can occur because abnormality driver behavior, this can also be solved with system that can detect the abnormality in the vehicle and become preventive step so that traffic accidents case that can occur by Drowsiness driver can reduce. Therefore, then a realtime drowsiness detection system was developed. This drowsiness detection system will be implemented using Raspberry Pi *device and* Raspberry Pi *camera equipped with night vision as computer and image video capture sensor. This system also utilizes* Tensorflow *Object Detection API which has several machine learning architecture models like* SSD MobileNet v2 *to process detection system. Because of that implementation of the drowsiness detection system using* Raspberry Pi, TensorflowLite (TFLite) *feature can be implemented on the development of a drowsiness detection system. The methodology that be used in this study is the prototyping method because researchers still not get an overview of system requirements and still looking for good algorithm efficiency and dataset, so system effectiveness is much better. Object detection modeling implementation results using* SSD mobileNet v2 *architecture get detection boxes precision mAP (mean Average Precision) is at value* 0.8658 *or* 86,58%. *detection boxes recall*/AR@1 *is at value* 0.8938 *or* 89,38%. *The success rate of drowsiness detection system to detect the face of the test sample is 91%.*

Keywords: *drowsiness detection system, Tensorflow Object Detection API, SSD MobileNet v2.*