

ABSTRACT

The increasing number of drivers in various regions of Indonesia is accompanied by an increase in the risk of accidents. Hazardous incidents, such as vehicles veering off designated lane markings or even going into opposite lanes, need to be avoided as they pose serious danger to the drivers. These accidents can occur due to driver negligence, drowsiness, and lack of anticipation and concentration (human error). This research aims to design an intelligent system that assists drivers in keeping their vehicles on the appropriate lanes (Lane Keeping Assist) by detecting road lane markings. In addressing the escalating risk of accidents in various regions of Indonesia, particularly due to human errors such as negligence, drowsiness, and lack of driver concentration, innovative solutions are required to enhance safety and comfort during driving. The proposed system utilizes image processing methods to continuously detect white and yellow road lane markings on both sides of the road. Experiments are conducted based on simulation data, testing various positions and angles. The average success rate of the system for lane marking detection is found to be 85%. The testing of vehicle guidance points based on simulation data resulted in an error value of 3.1337%, and the detection of lane marking violations achieved an average success rate of 100%. For the testing based on real video datasets, the highest error percentages were observed at speeds of 95 km/h and 100 km/h, with error values of 15.625% and 15.893% respectively. Meanwhile, the lowest error percentage occurred at a vehicle speed of 60 km/h with an error value of 0.640%. The average error rate based on real video data was found to be 5.465%. With the results of this research, it is hoped that the development of vehicles in the transportation industry can leverage the lane marking detection system to enhance safety and driver comfort during driving.

Keywords : Road Markings, Human Error, Accidents, Transportation.