

ABSTRACT

Traffic accidents caused by driver drowsiness are one of the main factors that threaten driving safety. As an effort to reduce this risk, an effective system is needed to detect signs of drowsiness in drivers in real-time. In this research, a Raspberry Pi-based drowsiness detection system is developed that utilizes facial recognition technology to monitor the driver's condition. The system is designed to detect the condition of closed eyes (EAR - Eye Aspect Ratio) and yawning mouth (MAR - Mouth Aspect Ratio) as an indicator of drowsiness. Threshold iteration was performed by analyzing 1780 images to determine the best threshold value, where EAR threshold 0.1 achieved 96.01% accuracy to detect closed eyes, and MAR threshold 1.0 achieved 100% accuracy to detect yawning mouth. The final test of the system was conducted with 12 images, resulting in a drowsiness detection accuracy of 100%. This system has the potential to improve driving safety by reducing the risk of accidents due to drowsiness. However, there are still some shortcomings such as delay in the detection process, so further development is recommended using the latest type of Raspberry Pi and a camera with night vision so that the system can function better, especially in low light conditions.

Keywords: (Drowsiness detection, Raspberry Pi, Eye Aspect Ratio, Mouth Aspect Ratio, threshold).