

# DESIGNING AND TESTING DROWSINESS WARNING DETECTION TOOL FOR MOTORBIKE RIDER USING HISTOGRAM OF ORIENTED GRADIENT (HOG) AND EYE ASPECT RATIO BASED ON DIGITAL IMAGE PROCESSING

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## ABSTRAK

*Today, many accidents are caused by driver errors, such as fatigue and drowsiness error. Sleepiness while riding in the public is danger. However, it commonly occurs for some riders who are riding. Therefore, it needs a technology to detect riders experiencing drowsiness in riding using drowsiness detection devices based on digital image processing, with a USB camera as an input for taking pictures of the riders' face and eyes; buzzer and handgrip heater as output to transmit and signal to other riders, and the rider himself if drowsiness is detected, which is controlled by raspberry pi 3 model b+. The methods used were Histogram of Oriented Gradient (HOG) and the eye aspect ratio (EAR). The design of this system was conducted through opencv software with the python programming language. This system detects Histogram of Oriented Gradient (HOG) values and eye aspect ratio. The results of testing showed that from 15 experiments of several people, successfully detected 13 of a total of 15 experiments with several test conditions such as the position of the face, eyes, lighting conditions ranging from normal, very bright and dark (night) and distance starting from 10cm for short distances and starting from 30cm standard distance and up to a long distance of around 50cm it can be concluded that the success of this tool is 87%.*

**Keywords:** *Digital Image Processing, Histogram of Oriented Gradient (HOG) and Eye Aspect Ratio, Opencv, Python*