ABSTRACT

Traffic accidents very often occur at nights. It is understandable since at night we have low visibility. Various efforts to reduce accidents at night we have been reported by developing tools to detect nearby vehicles to avoid crashes. However, most of them worked only on detecting cars. Previous researches focused mostly on cars as they usually have a pair of lamps as a unique identifying feature. Meanwhile most identifiable parts of the backside view of a motorcycle usually contains the rider's body, motorcycle's taillight, and the license plate area. To extract those properties, first, we need to locate the suspected area containing motorcycle using HSV color thresholding, which we call a motorcycle proposal. We introduce four features that are extracted from the red pixel and edge map. The red map refers to the spreading out of taillight radiant on the image. The edge map refers to the rider, back part of the motorcycle, and the whole curve of the object. To show the effectiveness of our features, we apply them to four commonly used classifiers, such as ANN, Decision Tree, SVM, and Naive Bayes Classifier. The result shows that ANN is a better classifier because it can classify the motorcycle proposals with 63.51% of accuracy, 55.24% of recall, 31.18% of average precision, and 0.05 second per image.

Keywords: Motorcycle Proposal, Nighttime Motorcycle Detection, Taillight Detection, Red Map, Edge Map