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| Title | 4D: A Real-Time Driver Drowsiness Detector Using Deep Learning | | |
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| Abstract |  |
| There are a variety of potential uses for the classification of eye conditions, including tiredness detection, psychological condition evaluation, etc. Because of its significance, many studies utilizing typical neural network algorithms have already been published in the literature, with good results. Convolutional neural networks (CNNs) are employed in real-time applications to achieve two goals: high accuracy and speed. However, identifying drowsiness at an early stage significantly improves the chances of being saved from accidents. Drowsiness detection can be automated by using the potential of artificial intelligence (AI), which allows us to assess more cases in less time and with a lower cost. With the help of modern deep learning (DL) and digital image processing (DIP) techniques, in this paper, we suggest a CNN model for eye state categorization, and we tested it on three CNN models (VGG16, VGG19, and 4D). A novel CNN model named the 4D model was designed to detect drowsiness based on eye state. The MRL Eye dataset was used to train the model. When trained with training samples from the same dataset, the 4D model performed very well (around 97.53% accuracy for predicting the eye state in the test dataset). The 4D model outperformed the performance of two other pretrained models (VGG16, VGG19). This paper explains how to create a complete drowsiness detection system that predicts the state of a driver’s eyes to further determine the driver’s drowsy state and alerts the driver before any severe threats to road safety. | |