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Drowsiness Prediction Based on Multiple Aspects Using Image Processing Techniques: A Review

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Abstract: ***Clinical depression is a type of soft biometric trait that can be used to characterize a person. Because of its importance in a variety of legal situations, this mood illness can be included in forensic psychological evaluations. In recent years, research into the automatic detection of depression based on real image has yielded a variety of algorithmic approaches and auditory indicators. Machine learning algorithms have recently been used successfully in a variety of image-based applications. Automatic depression recognition - the recognition of facial expressions linked with sad behaviour – is one of the most important applications. Modern algorithms for detecting depression usually look at both geographical and temporal data separately. This method restricts the capacity to capture a wide range of face expressions as well as the use of different facial parts. This research introduces a novel machine learning strategy for accurately representing face information associated to depressive behaviours from real-world images. Our suggested architecture outperforms state-of-the-art algorithms in automatic depression recognition, according to results from two benchmark datasets.***

Keywords: ***Stress and Depression, E-health, Sentiment Analysis, Social Media, Deep Learning.***

I. INTRODUCTION

A large number of people around the world want to buy vehicles. It is worth noting that with the increase in the number of vehicles traveling on road, the risk of traffic accidents is also increasing rapidly. The number of traffic accidents is very high in those countries where the streets and roads are very congested. The National Crime Records Bureau (NCRB) conducted a survey of people and reported that approximately 0.13 million people died in road accidents in India in 2020 alone [7]. It is the leading cause of death worldwide. Average mortality rates are high in middle-income countries compared to low-income countries, which is alarming. fitness to think to the hook [9]. The World Health Organization (WHO) published an article that pointed out that the risk factors leading to accidents are speeding, drunk drivers, distracted driving etc. Almost all these factors indicate that most traffic accidents are caused by driver negligence and non-compliance with traffic rules and safety measures. Drowsiness can be caused by lack of sleep or continuous night driving or both, which eventually causes the driver to become tired and lose concentration while driving. In the transport sector, where bus and truck drivers drive at night, it is very common that they fall asleep while the vehicle is moving due to fatigue, especially during weeks. The above conditions require people to be warned to avoid these situations to save many past lives. Technology is advancing at a very fast pace and automation is easing the people's busy lives while providing them with services with perfection and that too in less time and more safety. Though top companies are already investing a lot of money to identify the state of a driver's drowsiness, it is still a challenging task with open research avenues. Hence, an automatic and efficient drowsiness detection and driver mood prediction-based system is required to be implement for real-time applications. This will help to reduce road accidents and increase the people's safety [3].

II. LITERATURE SURVEY

The development of deep learning algorithms, extensive research has also been done on the use of neural network algorithms to forecast and examine driver behaviour or action-related data [2]. The steps towards developing a classification system-oriented approach, where feature selection, classification and fusion-based experiments are conducted to infer which types of behaviour (verbal and nonverbal) and behaviour combinations can best discriminate between depression and non-depression [4]**.** Although several sleepiness detection systems have been created over the last ten years based on a variety of variables, the systems still needed to be improved in terms of effectiveness, accuracy, cost, speed, and availability, among other things [8]. We find that users to lessen traffic accidents brought on by drowsy driving, a novel drowsy driving detection approach based on multifeatured fusion and long short-term memory (LSTM) recurrent neural networks is presented [5]. Road traffic accidents continue to cause major deaths and injuries worldwide, and current patterns indicate that this will likely be the case for the foreseeable future [7]. To reduce the number of accidents caused by driver fatigue and increase road safety, a module for eye detection is offered.

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Our cascade model is used in this method to handle the automated detection of driver intoxication. Vehicle collisions in India are thought to cause 20 billion in losses per year [9]. Realistic high-volume sleepiness data collection and modelling of the complicated temporal dynamics of growing sleepy states are demanding tasks, making it difficult to create drowsiness detection systems that perform effectively in real-world circumstances [10]. The study of evolution of activity between users the work aims to suggest a real-time, non-intrusive solution for sleepiness detection that is based on facial expression analysis [13].

III. EXISTING SYSTEM/OPEN ISSUE

Most of the existing drowsiness Design an LSTM network for the driver detection procedure to simulate the dynamic process of drowsiness generation, make the most of the time information of Collect more information and detect fatigue while driving effective way. Some experiments are done for verification The performance and results of our method show that Our method is robust and can achieve high accuracy in many cases Challenging driving scenarios.

IV. CONCLUSION

A key problem in the framework is to extract effective features from images that are cropped and trimmed from video series. The proposed work detected drowsiness of the driver based on various aspects such as eyes closed, mouth open, hand nodding and hand placed on mouth while yawning. Methods such as EAR, MAR, and proposed new FAR were used to extract the property. Facial orientation was also detected, and gradient-based patterns were used to detect different scenarios, created by different positions of facial parts and hands. Also, unlike feature extraction, the threshold is typically determined based on the input gesture. Finally, all features were integrated to create an effective feature vector, and CNN was used to classify different scenarios describing sleepiness. The proposed method is validated on a proposed dataset called EMOCDS (Eye and Mouth Open Close Data Set), which is a dataset of all possible sleep instances, and the reference datasets NHTU-DDD and YawDD. system accuracy and efficiency. The proposed work was shown to be better compared to state-of-the-art methods. However, this method also has limitations, because the gestures of individuals can vary dynamically from person to person. The proposed work can also be improved by focusing on the extracted features.

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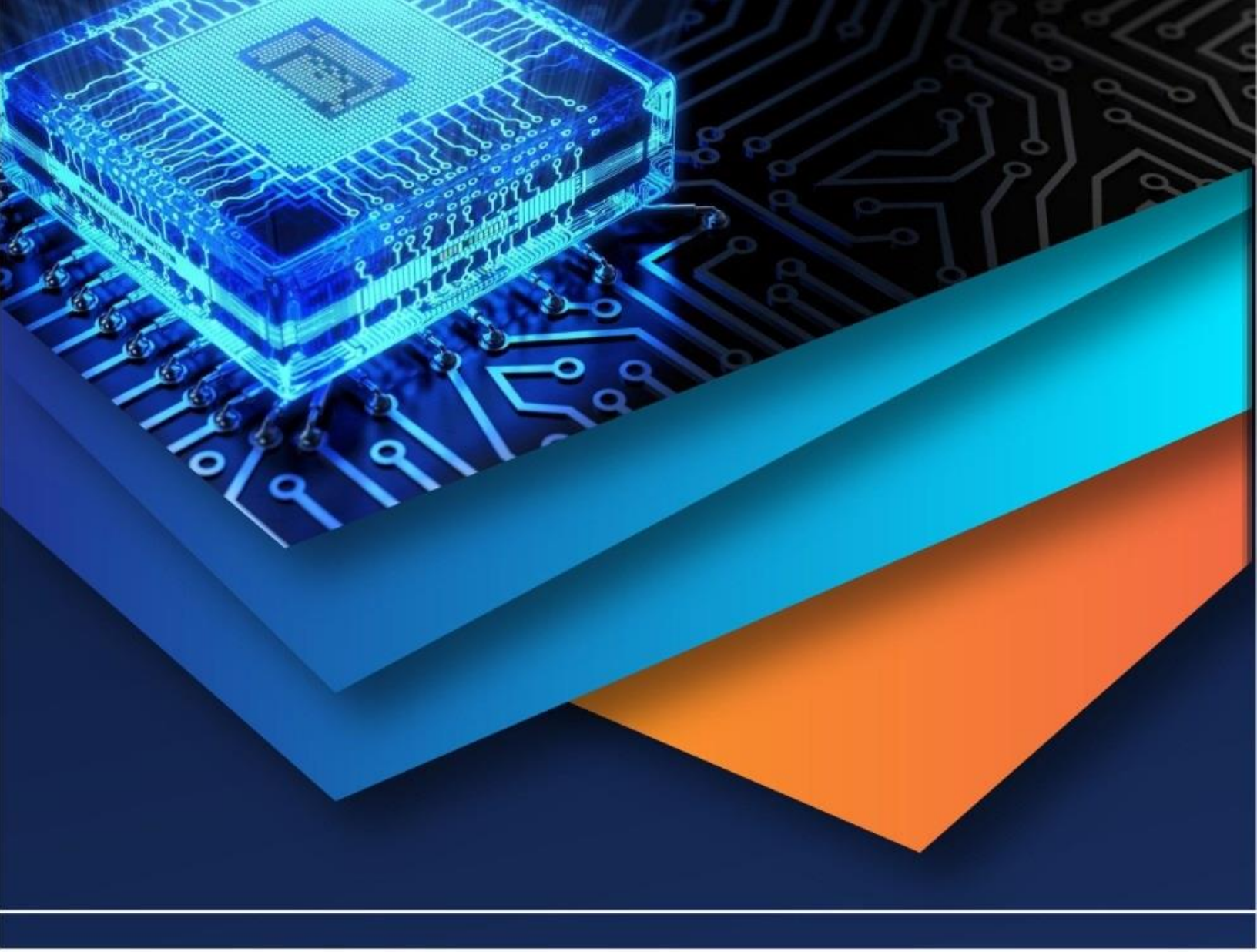

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