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Driver Emotion Recognition for Safe Driving: A Comprehensive Survey

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Road accidents have been a serious issue affecting the world for decades. As a solution to this issue, driver emotion recognition has gained much attention where the affective states of the drivers are monitored. In the context of driver emotion recognition, both the physiological and non-physiological signals are utilized for identifying the emotional states of the drivers. Among the approaches taken by researchers in determining the driver's emotional status facial emotions, speech emotions, Galvanic Skin Response (GSR), Electrocardiogram (ECG) signals, Electroencephalography (EEG) signals etc. are more prominent. Nevertheless, physiological signals are a valuable asset in identifying emotional states since non-physiological signals such as facial emotion recognition, which is mainly used to detect driver affective states, can be misleading. This study aims to review the literature related to driver emotion recognition that aims on ensuring the safety of road users. Furthermore, the approaches taken by the researchers in the reviewed literature have been briefly discussed, and the challenges to these approaches have been further discussed to enhance the safety of road users and future research in the paradigm of driver emotion recognition.

Keywords: *affective computing, challenges, driver emotion recognition, road safety, safe driving*