

Machine Learning and Deep Learning for the Detection of Eye Fatigue

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Abstract: Eye fatigue is becoming increasingly common worldwide. Currently, the only effective method for detecting eye fatigue is through sample survey questionnaires. This study proposes a machine learning-based method for detecting eye fatigue using a Single-Channel Electrooculography System. Participants complete industry-standard eye fatigue questionnaires, and their responses are used as data labels. We then collect their electrooculography signals using a single-channel device. From these signals, we extract the five most relevant features related to eye fatigue. A machine learning model is then developed, utilizing these five features for detection purposes. Experimental results indicate a clear objective correlation between electrooculography signals and eye fatigue. This method shows promise for practical daily use in detecting eye fatigue. An eye fatigue detection method by machine learning based on the Single-Channel Electrooculography-based System is proposed. Subjects are required to finish the industry-standard questionnaires of eye fatigue; the results are used as data labels. Then, we collect their electrooculography signals through a single-channel device.

Keywords: feature extraction; eye fatigue; machine learning

