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Machine Learning Classification Model for Identifying Internet Addiction among University Students
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Abstract

In this era of globalization, Internet addiction is a concerning issue, especially among university students as they are required to use the internet for academic purposes. However, things might go wrong when they are addicted to the Internet as the Internet does not only provide knowledge but also entertainment such as music, videos, games, social media, etc. Internet addiction was exposed to the public when Young introduced Internet addiction in her study as well as an assessment for Internet addiction known as Young's Internet addiction test (IAT) which is a questionnaire. Nonetheless, there are some issues associated with the questionnaire regarding the integrity and literacy of the participants as well as the experience of the specialist which might introduce inconsistencies in the assessment of one's Internet addiction level. Hence, the machine learning algorithm is introduced to replace the conventional assessment method for Internet addiction. In this study, three machine learning models are developed and compared. The three models include convolutional neural network (CNN), K-nearest neighbours (KNN), and logistic regression (LR). The low Alpha power band of the EEG data is transformed into spectrograms and utilized as the input for the machine learning models. The spectrograms are presented as images and fed into the CNN model. On the other hand, as KNN and LR could not take in images as the input data, the magnitude of each frequency in every time segment of each spectrogram is computed and fed into the KNN and LR. The results show that CNN gives the best performance in terms of overall accuracy, precision, recall, and F1-score, while KNN gives the most consistent performance. © 2023 IEEE.

Author Keywords

CNN; EEG; Internet addiction; KNN; LR; Machine Learning

Index Keywords

Classification (of information), Image segmentation, K-means clustering, Logistic regression, Machine learning, Nearest neighbor search, Spectrographs; Convolutional neural network, Internet addiction, K-near neighbor, Logistics regressions, Machine learning classification, Machine learning models, Machine-learning, Nearest-neighbour, Spectrograms, University students; Convolutional neural networks

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