Data augmentation of wearable sensor data for parkinson’s disease monitoring using convolutional neural networks

Abstract:

While convolutional neural networks (CNNs) have been successfully applied to many challenging classification applications, they typically require large datasets for training. When the availability of labeled data is limited, data augmentation is a critical preprocessing step for CNNs. However, data augmentation for wearable sensor data has not been deeply investigated yet. In this paper, various data augmentation methods for wearable sensor data are proposed. The proposed methods and CNNs are applied to the classification of the motor state of Parkinson’s Disease patients, which is challenging due to small dataset size, noisy labels, and large intra-class variability. Appropriate augmentation improves the classification performance from 77.54% to 86.88%.

Kongress- / Buchtitel:
Proceedings of the 19th ACM International Conference on Multimodal Interaction - ICMI 2017

Verlag / Institution:
ACM Press

Jahr:
2017