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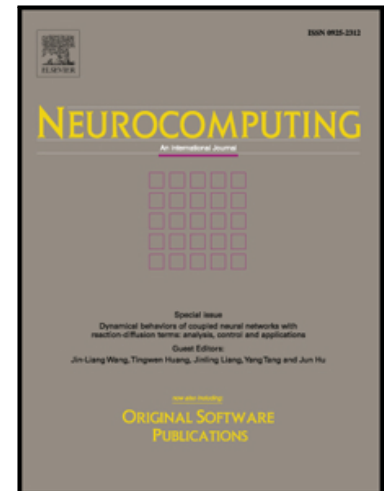
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# Deep Appearance and Motion Learning for Egocentric Activity Recognition

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## Abstract

Egocentric activity recognition has recently generated great popularity in computer vision due to its widespread applications in egocentric video analysis. However, it poses new challenges comparing to the conventional third-person activity recognition tasks, which are caused by significant body shaking, varied lengths, and poor recoding quality, etc. To handle these challenges, in this paper, we propose deep appearance and motion learning (DAML) for egocentric activity recognition, which leverages the great strength of deep learning networks in feature learning. In contrast to hand-crafted visual features or pre-trained convolutional neural network (CNN) features with limited generality to new egocentric videos, the proposed DAML is built on the deep autoencoder (DAE), and directly extracts appearance and motion feature, the main cue of activities, from egocentric videos. The DAML takes advantages of the great effectiveness and efficiency of the DAE in unsupervised feature learning, which provides a new representation learning framework of egocentric videos. The learned appearance and motion features by the DAML are seamlessly fused to accomplish a rich informative egocentric activity representation which can be readily fed into any supervised learning models for activity recognition. Experimental re-

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