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Title: **Human action recognition method based on hierarchical framework via Kinect skeleton data**

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Abstract: Human action recognition is a hot issue in the field of machine vision. It plays a pivotal role in human-centered computing. There are challenges mainly from the complexity of human actions and and high-noise data. Here we need to solve problems such as high intra-class variance with low inter-class variance, variable movement speed, and high computational costs. Based on the above points, we use a thought of hierarchy to design a multi-level hierarchical recognition model. Owing to the expression of the systemic actions and the local actions

are different, so different features are used at different levels. The method of hierarchical classification use proper classification algorithm in different levels, to subdivide category layer by layer, until it cannot be subdivided. In this paper, we use a two-level hierarchical framework based on the MSRAction3D dataset using skeleton data which captured via Kinect sensor. At the first level, we use Support Vector Machine to classify all categories into seven categories. At the second level, we use the Hidden Markov Model to reclassify seven categories. Experimental results show that our method is superior to other state-of-the-art methods, achieving 91.41% average recognition rate. The idea of stratification is applied to human action recognition to embody the inherent level relationship of human movement.

Number of references: 15

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