Exploring Multi-Feature Based Action Recognition Using Multi-Dimensional Dynamic Time Warping

Authors : Guoliang Lu, Changhou Lu, Xueyong Li

Abstract : In action recognition, previous studies have demonstrated the effectiveness of using multiple features to improve the recognition performance. We focus on two practical issues: i) most studies use a direct way of concatenating/accumulating multi features to evaluate the similarity between two actions. This way could be too strong since each kind of feature can include different dimensions, quantities, etc; ii) in many studies, the employed classification methods lack of a flexible and effective mechanism to add new feature(s) into classification. In this paper, we explore an unified scheme based on recently-proposed multi-dimensional dynamic time warping (MD-DTW). Experiments demonstrated the scheme's effectiveness of combining multi-feature and the flexibility of adding new feature(s) to increase the recognition performance. In addition, the explored scheme also provides us an open architecture for using new advanced classification methods in the future to enhance action recognition.

Keywords : action recognition, multi features, dynamic time warping, feature combination