

Compressive Classifier for Sports Video Classification

Prisana Mutchima*, Nattha Phiwma (Suan Dusit Rajabhat University, Thailand)

Parinya Sanguansat (Panyapiwat Institute of Management, Thailand)

Abstract

A key issue of video classification is that most video data are huge files, resulting in time-consuming data processing. Therefore, reducing the dimensionality of the data becomes an essential. Therefore, this paper proposes a new framework to reduce the dimensionality of video data by Random Projection (RP) technique and fix dimension by distance space technique. In addition, Compressive Classification (CC) technique will be applied to classify videos. This technique works with a dimensionality reduction method that is data independent. Initially, all training videos frames are extracted by a color histogram based method. Next, all videos features are projected onto a low-dimensional subspace using a random projection. Then a clustering technique is performed to provide the centroids of each cluster, called reference vectors. These vectors are used as a set of basis to create new space, called distance space. For any sequence in distance space, the new feature is represented by the frequencies of similar frames compared with each reference vector. Finally, videos will be classified by the compressive classifier. The experimental results show that the proposed framework significantly outperforms other approaches in video classification.

Key words: sports video classification, random projection, distance space, compressive classifier