光电信息获取与处理

一种改进的无监督聚类的关键帧提取算法

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摘要：

针对关键帧提取方法中一般聚类算法的阈值只能预先指定的缺陷,提出一种基于无监督聚类的自适应阈值改进算法。对视频帧进行区域分割并提取纹理特征，然后根据视频内容的复杂度自适应获取阈值，通过无监督聚类得到视频关键帧。大量不同视频类型的关键帧提取实验表明：该算法简单，无需预定义任何阈值便能有效地提取合适数目的关键帧。

关键词： 关键帧 纹理特征 自适应阈值 无监督聚类

Improved algorithm for key frame extraction based on unsupervised clustering

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Abstract:

Key frame extraction plays a very important role in content-based video retrieval. Since general clustering algorithm can only predefine a threshold in key frame extraction, this paper presents an improved method of adaptive threshold based on unsupervised clustering. The video frame's texture feature is extracted based on regional segmentation. The adaptive threshold is determined by video content, and then the key frames are obtained through unsupervised clustering. This algorithm is simple and effective, it extracts key frames without predefined threshold. Experimental results of some videos with different traits demonstrate the good performance of the proposed algorithm.

Keywords: key frame　texture feature　adaptive threshold　unsupervised clustering

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