

Key Frame Based Video Summarization via Dependency Optimization

Authors : Janya Sainui

Abstract : As a rapid growth of digital videos and data communications, video summarization that provides a shorter version of the video for fast video browsing and retrieval is necessary. Key frame extraction is one of the mechanisms to generate video summary. In general, the extracted key frames should both represent the entire video content and contain minimum redundancy. However, most of the existing approaches heuristically select key frames; hence, the selected key frames may not be the most different frames and/or not cover the entire content of a video. In this paper, we propose a method of video summarization which provides the reasonable objective functions for selecting key frames. In particular, we apply a statistical dependency measure called quadratic mutual information as our objective functions for maximizing the coverage of the entire video content as well as minimizing the redundancy among selected key frames. The proposed key frame extraction algorithm finds key frames as an optimization problem. Through experiments, we demonstrate the success of the proposed video summarization approach that produces video summary with better coverage of the entire video content while less redundancy among key frames comparing to the state-of-the-art approaches.

Keywords : video summarization, key frame extraction, dependency measure, quadratic mutual information

Conference Title : ICAIA 2018 : International Conference on Artificial Intelligence and Applications

Conference Location : Kuala Lumpur, Malaysia

Conference Dates : February 12-13, 2018