J Real-Time Image Proc
DOI 10.1007/s11554-013-0366-x

SPECIAL ISSUE PAPER

# Real-time emotion retrieval scheme in video with image sequence features

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Received: 18 March 2013 / Accepted: 25 June 2013


**Abstract** In the current Internet environment, a lot of multimedia information is navigated on the on-line computer systems. Among the multimedia information, video sequence has the most valuable and meaningful influence on human emotions. Therefore, one human's emotions to see and feel the same video can be different from that of others depending on the person's mental state. In this research, we propose a new real-time emotion retrieval scheme in video with image sequence features. The features of image sequence consist of color information, key frame extraction, video sound, and optical flow. Each video feature is combined with the weight for the emotion retrieval. The experimental results show the new approach of real-time emotion retrieval in video with the better results compared to the previous studies. The proposed scheme will be applied to the many multimedia fields: movie, computer game, video conference, and so on.

**Keywords** Image feature · Emotion retrieval · Video sequence · Key frame · Optical flow

## 1 Introduction

Human emotions appear differently on the same external stimulation through individual standards in the personal style. According to gender, age, ethnicity, or residential areas, the emotion assessment can be diverse on the same multimedia information. These individual standards are applied to the process of the external stimulation, instead of the process of the logical calculation, and those have subjectivity, polysemy, ambiguity, and situation dependence. Therefore, the need for logically handling this sensitive information is greatly increasing. Videos are especially powerful data to change human emotions and is difficult to describe the depicted information by words or numbers. This is the paradigm for most of the human–computer interaction applications. An increasing number of television programs, games, videos, and films are being provided with audio description for the visually impaired. As well as being invaluable as a means for improving access to information for the visually impaired, key frames and audio description is also a promising source of information for generating descriptions of video content. Considering the enrichment of information in videos and the variety of human subjective factors, emotion retrieval in video lies at crossroads of many research areas such as computer vision, cognitive science, pattern recognition, game program, artificial intelligence, etc. In this paper, we propose a new real-time emotion retrieval scheme in video with image sequence features. The main purpose of this work is to extract a representative emotion of a video using moving scene features. The image sequence features consist of color information, key frames, term between key frames, optical flow, and video sound. These sequence vectors are used to extract the emotion of a video with the weighted function that we suggest in this research. This paper is organized as follows. Section 2 explores an overview of the previous and current related researches in video emotion retrieval. Section 3 presents the overall methodology of the proposed emotion retrieval in video. The experimental results of emotion retrieval method described in Sect. 3 are shown in Sect. 4; conclusion and future works are finally gathered in Sect. 5.

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Published online: 20 July 2013