An integrated semantic-based approach in concept based video retrieval

ABSTRACT

Multimedia content has been growing quickly and video retrieval is regarded as one of the most famous issues in multimedia research. In order to retrieve a desirable video, users express their needs in terms of queries. Queries can be on object, motion, texture, color, audio, etc. Low-level representations of video are different from the higher level concepts which a user associates with video. Therefore, query based on semantics is more realistic and tangible for end user. Comprehending the semantics of query has opened a new insight in video retrieval and bridging the semantic gap. However, the problem is that the video needs to be manually annotated in order to support queries expressed in terms of semantic concepts. Annotating semantic concepts which appear in video shots is a challenging and time-consuming task. Moreover, it is not possible to provide annotation for every concept in the real world. In this study, an integrated semantic-based approach for similarity computation is proposed with respect to enhance the retrieval effectiveness in concept-based video retrieval. The proposed method is based on the integration of knowledge-based and corpus-based semantic word similarity measures in order to retrieve video shots for concepts whose annotations are not available for the system. The TRECVID 2005 dataset is used for evaluation purpose, and the results of applying proposed method are then compared against the individual knowledge-based and corpus-based semantic word similarity measures which were utilized in previous studies in the same domain. The superiority of integrated similarity method is shown and evaluated in terms of Mean Average Precision (MAP).

Keyword: Video retrieval; Semantic knowledge; Content-based analysis Similarity; Search