Combination of semantic word similarity metrics in video retrieval

ABSTRACT

Multimedia Information Retrieval is one of the most challenging issues. Search for knowledge in the form of video is the main focus of this study. In recent years, there has been a tremendous need to query and process large amount of video data that cannot be easily described. There is a mismatch between the low-level interpretation of video frames and the way users express their information needs. This issue leads to the problem named semantic gap. To bridge semantic gap, concept-based video retrieval has been considered as a feasible alternative technique for video search. In order to retrieve a desirable video shot, a query should be defined based on usersø needs. In spite of the fact that query can be on object, motion, texture, color and so on, queries which are expressed in terms of semantic concepts are more intuitive and realistic for end users. Therefore, a concept-based video retrieval model based on the combination of the knowledge-based and corpus-based semantic word similarity measures is proposed with respect to bridging semantic gap and supporting semantic queries. In this study, Latent Semantic Analysis (LSA) which is a corpus-based semantic similarity measure is compared to previously utilized corpus-based measures. In addition, we experiment a combination of LSA with a knowledge-based semantic similarity measure in order to improve the retrieval effectiveness. For evaluation purpose, TRECVID 2005 dataset is utilized as well. As experimental results show, combination of knowledge-based and corpus-based outperforms individual one with MAP of 16.29%.

Keyword: Concept retrieval; Search; Semantic knowledge; Video