

NUS Graduate School for Integrative Sciences and Engineering Research Project Write-up

Title of Project : Multi-modal Multi-source and Multi-resolution (M^3)
Analysis of Video

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Short Description

Analysis of multimedia contents has in the past been carried out on the basis of a single medium. Only recently have we begun to use multimodal features routinely to analyse multimedia contents. The use of only intra-content features, however, is still inadequate. To progress further, we need to utilise the available external information sources, such as the abundance of Web, ontology, human language resources (dictionaries, encyclopaedia), and various encoded knowledge, to supplement media content analysis.

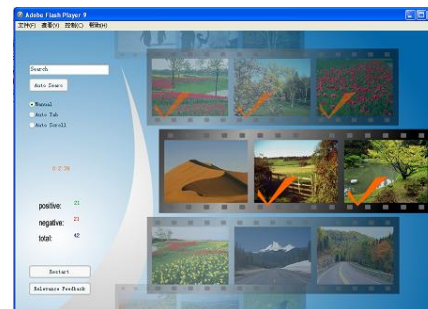
Along this theme, we have carried out research on concept extraction, retrieval and question answering in video, working on both news and informational videos. The long-term goal is to develop automated techniques to index an input video stream to facilitate the retrieval, summarisation and personalisation of video. In concept annotation, which involves assigning one or more pre-defined concepts to input video clips, we are focusing on employing hierarchical concept structures and developing visual vocabulary to perform multimodal concept annotation.

In retrieval, we explore domain models for news and other domains, together with various audio-visual (AV) features inherent in the video streams, and external information sources, such as the parallel text news reports, blogger sites and arts ontologies for paintings. We participated in large scale public news video retrieval evaluations organised by TRECVID (see <http://www-nlpir.nist.gov/projects/trecvid/>), and achieved top positions in auto-news video retrieval tasks in 2005-06.

We apply the similar multimodal, multi-source and multi-resolution framework to news video, personal media and painting domains. Sub-projects of interests include: (a) interactive news video search; (b) personalized video (and video summarization) for mobile environment; and (c) media search on the Web.



1a) News video question answering system



1b) Browser for interactive news video retrieval that incorporates active learning