MKLab Interactive Video Retrieval System

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ABSTRACT

This paper presents the MKLab interactive video retrieval system, which is capable of searching into video content by combining effectively visual and textual-based techniques.

Categories and Subject Descriptors

H.3.3 [**Information Storage and Retrieval**]: Information Search and Retrieval – *retrieval models*, *search process*.

General Terms

Algorithms, Performance, Design, Experimentation

Keywords

Search engine, retrieval, visual, hybrid, video, MPEG-7, query

1. INTRODUCTION

The Search Engine implemented by MKLab is capable of handling video resources, integrating different search modules.

2. VIDEO RETRIEVAL SYSTEM

In general, the developed application is a hybrid interactive retrieval system (Figure 1), combining basic retrieval functionalities with a user-friendly interface supporting the submission of queries and the accumulation of relevant retrieval results. The following retrieval modules are supported:

- Visual similarity search module
- Textual information processing module
- High level concept retrieval module

Evaluation of this search engine was performed with participation in video retrieval related conferences and showcases as TRECVID and VideOlympics [1].

3. RETRIEVAL MODULES DESCRIPTION

3.1 Visual Similarity Search

Content based similarity search is realized using either global information such as the MPEG-7 visual descriptors capturing different aspects of human perception, or local information as formulated by vector quantizing the local descriptors obtained by applying the SIFT transform [2]. An r-tree [3] structure is constructed by using the feature vectors of all images to support efficient indexing and fast retrieval.

3.2Textual Information Processing Module

Text search exploits audio annotations automatically transcribed from video and it is implemented using Kinosearch library [4].

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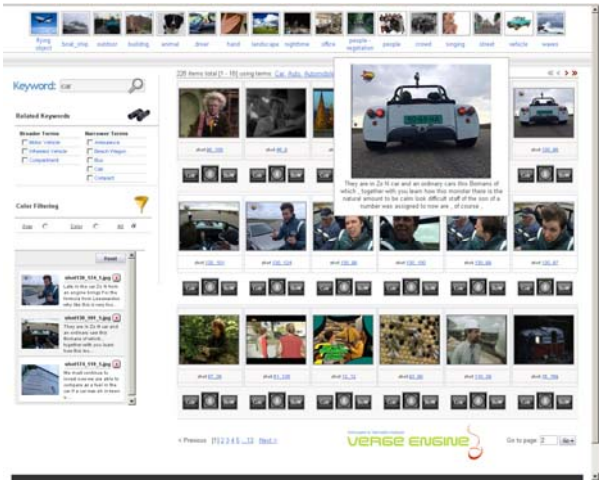

Figure 1. GUI of MKLab Video Retrieval System

In addition, query expansion is supported by generating a list of synonyms for each query term from a local WordNet database [5], while broader and narrower terms are provided as suggestions to the user.

3.3 High Level Concepts Retrieval Module

This module provides high level concept selection (e.g. animal, landscape, outdoor, etc.) for the user. After an off line preprocessing the images are sorted based on similarity co-efficients for each concept. The procedure required for the extraction of high level concept information is based on a combination of MPEG-7 and SIFT [2] based global image features.

4.REFERENCES

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