

MEDIAMILL: VIDEO QUERY ON DEMAND USING THE ROTORBROWSER

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ABSTRACT

In this technical demonstration we showcase the RotorBrowser, A visualization within MediaMill system[1] which uses query exploration as the basis for search in video archives.

Keywords: Multi dimensional browsing, semantic indexing, video retrieval, query on demand, information visualization.

1. INTRODUCTION

Nowadays there is an ever increasing amount of video material available about various subjects. Video fragments can be quickly retrieved if you know the exact title of the fragment. If this is not known a content based video search system[1], [2], [3] can be used to find the fragment. Most of these systems enable a user to find results by performing a query, and then browsing through the results.

In the world of textual retrieval, querying is simple: you type a few words in a text entry component, and you click “Search”. This will generate results. However, video search allows for more types of query components: query by text to search through subtitles or recognized speech, query by example to search for similar imagery, semantic concept search, all kinds of filtering methods - language, timeframe, colors used, etc. Hence, the possible number of queries can be enormous and intimidating for a novice user. As a consequence, it can be difficult for a user to translate an information need into the correct configuration of query components. Also, when the generated results from the query do not match the user’s expectations he or she is often forced to go back to the query screen. This “do query - browse results” loop is far from optimal. Our system attempts to alleviate this problem by focussing on finding results through dataset exploration.

2. EXPLORATION USING THREADS

In our system, the basis for navigation is the thread, defined as a linked sequence of camera shots from various videos in some specified order. These automatically computed threads run through the entire dataset, creating a “web” of relatedness. Visualization of these threads is done as follows. The user specifies one initial query. This generates a list of relevant shots. The most relevant shot is used as the starting point for exploration. The system computes relevant threads for this shot and displays these in a star formation around it as

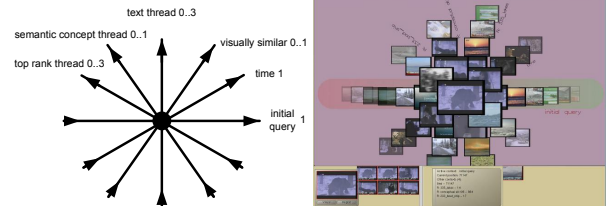


Fig. 1. Left: multi thread dimensions for the RotorBrowser. The number indicates the times this dimension can be present for any shot. Right: multi thread visualization in the demo.

possible navigation directions. The user can browse into any of the directions shown by selecting any shot visible. This shot will then become the new center, and relevant threads are added to the visualization for that shot.

Many different threads can be computed. We define the following threads. A textual thread containing shots with similar textual annotation. A visual thread with visually similar shots constructed from low-level visual features. A timeline thread which contains all shots ordered by their original timeline. A semantic thread containing semantically equivalent shots constructed from high-level textual and visual features. Finally, an initial query thread contains the results obtained from the standard query interface.

3. DEMONSTRATION

We demonstrate exploration through video using a dataset of 200 hours of news video with the MediaMill RotorBrowser system. We will show how querying can be avoided by exploiting exploration.

4. REFERENCES

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