Consuming videos with the ForkBrowser

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The Problem: Search in video

What is search?: enter query… \rightarrow browse results

Query by keyword

Query by concept

Query by example

Query by region selection

Automated Concept suggestion

Query component 'mixer'

Language filter… and search

Leads to: RANKING

Repeat
Mixing dimensions: CrossBrowser

- Easy to understand
- Time is very important
- Very fast browsing

Combination of query results and time
Mixing dimensions: RotorBrowser

- Doesn’t require the user to think of options.
- Allows dataset exploration.
- Browsing ‘outside query’ very important for some topics.
- Query screen visited only once.

Initial query result

Allows combinations based on query on demand.
Mixing dimensions

- Easy to understand
- Time is very important
- Very fast browsing
- Doesn’t require the user to think of options.
- Allows dataset exploration
- Browsing ‘outside query’ very important for some types of query
- Limits visits to a “query screen”

Typically a user wants to explore a dataset fast and easy, without difficult query screens. A hybrid between both browsers is required
Consuming Videos With The ForkBrowser

The ForkBrowser

Combination of fixed set of query methods

any query method

results

any query method

time

history

Combination of fixed set of query methods
Combines

- Fast browsing through results
- Assignable dimensions, e.g.
  - Visual similarity
  - Semantic similarity
- User doesn’t have to revisit query screen
- Animations on demand
The ForkBrowser

1. Define textual query
   - Query: Find shots of a train in motion

2. Add relevant semantic concepts:
   - Concept tree browser
     - TRIEVID_Annotations
     - MadalWil_Annotations
     - LSOCOM_Annotations
     - Color

3. Construct the initial query
   - automatic

The ForkBrowser is a tool for browsing and querying videos. It allows users to define textual queries and add relevant semantic concepts to refine their search. The interface includes features for filtering by program, topic, and other metadata.
Experiments

TRECVID 2007 Interactive Search
We compare:
- Run with CrossBrowser (UVA_MM_1)
- Run with ForkBrowser (UVA_MM_2)
- Evaluation metrics try to minimize effect of comparing expert users

Set up:
- Seed:
  - Automatic search results
  - Query by concept, keyword and example
- Extra ‘tines’ in ForkBrowser:
  - Weibull and Gabor visual similarity features

What do we want to know?
- Is browsing using multiple dimensions useful?
- Does a fixed layout lead to faster browsing and better results?
Is browsing multiple dimensions useful?

- Evaluate effectiveness of having multiple dimensions
Different topics have different search strategies.
Unique results per browser

Graph shows the number of (correct) shots retrieved

Grey: shots found by both browser
Red: shots found only by the CrossBrowser
Green: shots found only by the ForkBrowser

Both browsers find different results
Movement vs Average Precision

Clear difference between # of movement actions required
Conclusions

Evaluation:

- Different combinations of query dimensions are beneficial for individual topics
- ForkBrowser requires less interaction steps from the user for the same average precision
- Both browsers find different unique results
Any questions?