Project description

The volume of content stored both by large media organisations and across the social web is ever-increasing. Trying to find a specific clip or segment of a clip is a time-consuming and unsystematic process. The lack of any indexing or tracking method, and the fact that current search tools require detailed user input make searching prohibitive.

SEMEDIA’s goal is to tackle this problem by developing new search tools for online and broadcast environments. The project’s research and development efforts have produced a group of search tools for video environments, such as audiovisual production, film industry postproduction and online communications media. The first versions of search tools were produced, early in 2008. They have been tested and evaluated and based on these results, further developed and updated. A Demonstrator showing the whole range of SEMEDIA tools and operating on a test dataset was also produced at the end of 2008.

Summary of Activities

SEMEDIA started in January 2007. The project is now ending its second year. In 2008, the technical body of work as a whole was significantly advanced. The major achievements in 2008 have been:

Comprehensive review of user requirements and future needs for Media Access, Search and Retrieval. In the first quarter of 2008, a second round of interviews and questionnaires helped to refine use cases and user requirements in the different contexts of broadcast television, postproduction (across film, advertising and new media), on-line social networking.
Integration of research results into a series of prototypes (tools) and into existing media content management and retrieval systems. In the first quarter of 2008, prototypes in Broadcast Media, Postproduction and the Web were produced. The prototypes operate on the test dataset consisting of large representative snapshots from the post production, broadcast and archive sectors. This test dataset was created in the project’s first year and then expanded to meet prototype testing and evaluation needs in the project’s second year. A report analysing and describing future plans for the integration of SEMEDIA results with available media management tools was produced in the first half of 2008. A Demonstrator showing the range of SEMEDIA tools and interfaces operating of the data set was produced at the end of 2008.

In 2008, SEMEDIA produced innovative Media Interaction, Media Mining and Media Search tools and technologies. Technical evaluations and a number of user based evaluations have been conducted on this wide range of technologies. More user based evaluations are planned for 2009.

Two dissemination workshops were held. One was held in London in May 2008 and another in Barcelona in June 2008. Attendance and interest were high. Videos of the workshops will be available on www.semedia.org.

In addition, SEMEDIA partners have been actively promoting the project throughout 2008. They have given talks, project presentations and displayed posters at academic workshops and industrial trade shows. They have published numerous papers. The project flyer has been widely distributed. These activities will continue in 2009. See the project web site for a list of promotional activities.

In the final six months of SEMEDIA, January-June 2009, the second versions of the prototypes will be produced. Further technical and user based evaluations will be carried out. Two Showcase events will be held where final prototypes and results will be presented to potential customers. The final adjusted prototypes will be produced in the last month of the project, in June 2009.

Research, Innovations, Prototype Toolsets, the Demonstrator and Market Prospects

SEMEDIA builds on research in the fields of web semantics, artificial intelligence, content based information retrieval, and interface design. The results are expressed as innovations in the form of:

- Algorithms for retrieval, data-mining models and metadata extraction;
- modular plug and play tools that sit on a wide range of media management platforms;
- query options that integrate secure access and rights management; and
- usage based annotation and feedback models for multimedia objects.

SEMEDIA has produced these innovative tools and technologies:

**Media Interaction**

- User Behaviour Analysis
- Analysis of Flickr Usage
- Analysis of YouTube Usage
- Annotations
  - Tag Suggest tool
  - Video Interaction Platform (tool)
- Interfaces

Concept based video explorer (Explore conceptually-related videos)
- Allows divergent content exploration
- Explore related videos based on semantic and conceptual relations
- Glanceable interface

Tag Suggestion Tool within the Digimedia interface
Web Browser Interface (Spycer Web)
Web-based interface for the Spycer content management system with search dialog for and visualisation of metadata that was produced by image analysis tools from JRS.

**Media Mining**
- Metadata Extraction
  - Setting Detection Tool
  - Retake Detection Tool
- Using Collective Knowledge
  - Tag Mining Tool
- Event Pattern Mining
- Attention-Based Event Detection modelling

Stripe image tool within Digimedia interface
Stripe images are a navigation aid for video browsing. They are constructed by attaching the middle pixel column of every video frame next to each other. Through the stripe images the user can get a quick overview of the type of content, Shot boundaries can easily be identified, parts with static recordings can be distinguished from shots with camera motion or moving objects.
Stripe images have been integrated into CCMA’s inhouse Digition content management
system. One stripe image gives a condensed overview on an entire video, while another gives a close-up view on any 20-second segment of the video.

Facet browser
The "FacetBrowser" is a novel search interface that supports the creation of multiple search "facets", to aid users carrying out complex search tasks involving multiple concepts. Each facet represents a different aspect of the search task: an assumption of this work is that search facets are best represented by sub-searches, providing users with flexibility in defining facets on the fly, rather than using pre-defined categories or metadata information as used in many other exploratory search interfaces.

Media Search
- Search Caching and Scalability
- Feedback Search
- Video Browsing Tool
- Tag Explorer Tool

Search caching and scalability
Video Browsing Tool
The Video Browsing Tool supports a user in navigating in a large video collection by clustering and filtering video segments. Content-based features are used to group the content and select subsets for further browsing and creation of Edit Decision Lists (EDL) for use in Post Production Tools (e.g. Spycer)

Prototypes and Demonstrator testing

The toolsets (prototypes) produced for three different professional and end user environments have been evaluated in laboratory benchmark tests and in usability tests. In 2009, more end user based evaluations and evaluations of the integrated tools and the Demonstrator will be carried out.

SEMEDIA framework (Spycer based framework)
A framework, based on the background process of the Spycer content management software, encapsulates and controls the low-level video and metadata processing services developed in the SEMEDIA project. The different prototypes can access the framework via a SOAP-based interface.

Market Prospects

The feedback from the attendees of the two Workshops held mid-2008 helped determine the possible market position of the prototypes. At the end of 2008, further SEMEDIA
studied the technology, standards and market environment and the implications the exploitation of SEMEDIA results.

Of Note, in November 2008, FBM-UPF Yahoo!Research released two prototypes: TagExplorer and VideoTagGame. The TagExplorer prototype was released as part of the Yahoo! Research website: http://sandbox.yahoo.com/TagExplorer. TagExplorer allows you to browse Flickr photos using tags. Tags are words or descriptions commonly associated with photos to make them easier to find later. A tag cloud is a visual representation of a set of words that are grouped into a cluster in which the importance of each word is indicated by its font size. It is one of the most common methods of navigating tag spaces. TagExplorer dynamically generates tag clouds for a given query and groups the words together that have similar meanings – making tag clouds more functional.

The VideoTagGame prototype was released as part of the Yahoo!Research website http://sandbox.yahoo.com/VideoTagGame. Annotating web-pages, photos, and now also short videos are common practice for those that share their content on social media sites, such as Delicious, Flickr, or Yahoo! Video. The massive scale at which Yahoo!’s users are annotating media is impressive and enables effective retrieval of web-pages, images, and video at large, which was believed to be out of scope for a long time. With the introduction of the VideoTagGame we try to push the boundaries a bit further. The objective of the VideoTagGame is to collect time-based annotations over video in the context of a multi-player game. Ultimately, this will enable the retrieval of relevant parts in a video, rather than returning the entire video as unit of retrieval.

Two Showcases are planned in mid-2009. Potential customers will be invited. By June 2009 the projects results will be placed in the best possible position for market exploitation.

User Involvement, Promotion and Awareness

SEMEDIA is heavily focused on user input for the development of relevant, useful and innovative search tools. SEMEDIA’s industrial partners help assure that the SEMEDIA
retrieval toolsets will be based on real life media content analysis and user behaviour scenarios. In addition, we will measure the toolset acceptance by professionals from the SEMEDIA User group and from on-line community users.

The SEMEDIA User group is made up of professionals from the archive, broadcast and post-production sectors. They will assist in the agreement of standards, comment upon technology developments, and contribute to the "Industry Use Cases" and liaison for Market Analysis. (A Market Analysis Report will be produced at the end of year 2.) The SEMEDIA User group held its first meeting in September 07.

The User group members were invited to two Dissemination workshops in May and June, 2008. The User Group has been involved in tool testing and further testing is planned in 2009.

SEMEDIA co-operates closely with these projects:

- CHORUS (concertation activities, organizer of the April 08, thinktank in Barcelona)
- PatExpert
- SALERO
- IP-RACINE
- RUSHES
- K-Space
- Vidi-Video
- VITALAS
- TRECVID
- PrestoSpace
- PHAROS, TRIPOD, SAPIR

Promotion and Awareness
The project has published 24 papers, given frequent invited talks, attended numerous conferences and tradeshows, and hosted two Dissemination workshops. These activities will continue in the last six months of the project and beyond as results are fully analyzed exploited. SEMEDIA will also host two Showcases in June 2009.

Future Work or Exploitation Prospects
The future work will focus on producing and testing second and final prototypes due in March and then June 2009. Feedback from the potential customers attending the SEMEDIA Showcases will be used to update the final exploitation.

Further Information
SEMEDIA COORDINATOR
Ricardo Baeza-Yates
Tel +34 93 542 1100
Fax: +34 93 542 2896
http://www.semedia.org/
semedia@barcelonamedia.org