

Multimedia Medley

by Péter Jacsó

Searching for Video on the World Wide Web

New software now lets you collect, extract, index, and search video files

I have written before about search engines that allow you to do Web-wide and Web-site searching for images and sound (*Information Today*, Multimedia Medley; March, April, and May 1998). I did not discuss searching for video for two reasons. One is that video through the Internet has been at best a curiosity, considering its mediocre quality. The other is that there have not been substantial repositories of video materials on the Web.

Things, however, are changing. Video on the Internet is still a far cry even from much-used video tape, but the proliferation of 56-K modems, cable modems, and the T-1 lines that university students, staff and faculty, and many employees of large corporations enjoy brings a lot of improvements in the video experience. In addition, intranets are making video a feasible medium of telecommunications. Equally important, the owners of the largest video and film depositories are making their assets available to the public at a stunning rate.

The Kings of the Video Depositories

It does not take a leap of faith to say that the largest TV companies have the largest video vaults: CNN, ABC, NBC, and CBS in America; BBC in England; RTF in France; and ZDF in Germany. Movie companies also have immense video and film collections, but watching *Titanic* on your PC streamed from a server is not really here yet. It is the clips, the news footage, and the short documentaries that are the most likely targets for Internet delivery—and, of course, educational programs.

Universities are moving into asynchronous teaching by preparing well-segmented, talking-head videos that are amenable for Internet delivery. It is especially attractive for those who otherwise have much less of a chance for continuing education, such as those living in Kauai and Maui who would have to fly to Honolulu or Hilo for a class. Those on the mainland who

could spare a commute from Chicago to River Forest to take a class at Dominican University might also welcome the chance to watch and listen to their favorite professors in the comfort of their homes (even though I maintain that they miss out on the interactive "chemistry" of the live classes). Corporations with offices scattered around the city, country, and the globe also are developing the possibilities of delivering em-

that "crawl" one or more sites for video information, then index and extract the collected video assets, and make them searchable. Crawling and collecting information is not likely to be extended to the entire Web because even a few seconds of compressed video may require several megabytes of storage and hefty transfer capacity. The following products are among the most promising: Magnifi, Media Key Log-

limit topical queries to a single word (like WebSeek), and in others if you use multiple terms they consider them as terms OR-ed together, rather than as phrases. Even the same software may be implemented with vastly different feature sets. This is well exemplified by possibly the most powerful video search software, Magnifi, which is used by CBS SportsLine, ABC News, PBS, CNN, and Hollywood Online, among others.

The implementation of Magnifi differs among sites. It depends partly on the modules that the customer licenses. Magnifi shows its best and most comprehensive implementation at the CNN site (<http://cnn.com>). Although the textual aspect of query formulation is not perfect (a "search ALL the words" option is badly needed to improve relevance), the video filters of the query are impressive (see Figure 1). You may limit the search by video type, playback duration, frame rate, brightness, contrast, and color. These latter appear under the Image Filters but they apply to video. CNN uses the QuickTime and VivoActive formats. If it had RealVideo and VDOnet formats, these could also be included in the media format filters. The presentation of the results in the form of a strip of frames (thumbnail images) with the most characteristic scenes is very good. This also provides all the technical and videographical details about the footage along with a good summary. (WebSeek, for example, does not offer such annotations on its single site at Columbia University; it merely streams the video.)

CNN's collection on the Web is already very large, and makes it light-years ahead of the other commercial TV stations. NBC, CBS, and Fox have no video (or image or audio) search capabilities yet, but I bet they will soon.

The Other Side of Video Retrieval

Powerful retrieval features, of course, assume powerful extraction and indexing of the contents of video clips and film footage. Virage's Video Cataloger (<http://www.virage.com>) splits the incoming video into segments based on scene changes and creates a storyboard of key frames. Excalibur's just-released Video Analysis Engine (<http://www.excalib.com>)

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The screenshot shows the Magnifi search interface. At the top, there are 'VIDEO FILTERS' with fields for 'Duration (hh:mm:ss)' set to 'less than 00:01' and 'Frame Rate' set to 'greater than 8 fps'. Below these are navigation tabs: MEDIA, VIDEO, IMAGE, SOUND, AUTHOR, DOWNLOAD, and KEYWORD. Underneath is the 'IMAGE FILTERS*' section, which includes:

- Brightness:** A slider from 'All' to 'High'.
- Contrast:** A slider from 'All' to 'High'.
- Color:** Radio buttons for 'color', 'black-and-white', and 'Both'.
- Image Dimensions:** A field for 'larger than' followed by 'pixels' and a 'by' field.

 A 'SEARCH' button is located to the right of the filters.

Figure 1: Video filters in Magnifi let you limit your search by video type, playback duration, frame rate, brightness, contrast, and color.

ployee training programs and conducting videoconferences through the Internet and intranets. All these activities generate an ever-increasing depository of digital video materials. These need to be indexed, and made searchable and retrievable.

Video-Specific Search Engines

There are a number of companies that have been developing software programs

Virage, Excalibur, and WebSeek. I mentioned some of these in my reviews of image and sound retrieval software because they are also capable of collecting, extracting, indexing, and making searchable such files in themselves. After all, video is a succession of still images (moving at varying speed) and sound.

Most of these products are rather limited in search capabilities. Many of them

Firefly Books Ltd. Releases *Lost Animals: Living on the Edge of Extinction* Multimedia CD-ROM

Firefly Books Ltd. has announced the latest title in the Warwick Interactive's Natural History series, *Lost Animals: Living on the Edge of Extinction* CD-ROM. With this multimedia CD-ROM, users can explore the lives and history of over 50 animal species that have been lost to the world during this century.

Utilizing cutting-edge virtual reality graphics, film, and video sources from the BBC Natural History Library, *Lost Animals* presents a visually stunning natural history learning experience. It boasts fas-

inating and detailed narration and text that adds extra depth and zest to this virtual experience. With hundreds of video clips, historical images, maps, diagrams, and animations, *Lost Animals* offers a unique examination of the historical, geographical, cultural, social, and ethical issues that culminated in our world's animal losses.

In the product's "Virtual Museum," users journey into a series of virtual rooms to explore and learn about the tragic story of each species that has passed into extinction:

- The Visitor Center: Interact with the museum's database and holographic displays.
- The Lobby: Discover the endangered animals for whom time may be running out.
- The Hall of Time: Listen to narratives about the animals and discover more about the history of the 20th century.
- The Activity Room: Recreate images, create projects, and solve puzzles.
- The Globe Room: Learn about the extinction levels of the animals and about

the influences of people and places on their fate.

- The Taxonomic Dome: Compare the fates of different animal families.

Other titles in the Warwick Interactive Natural History Series include *Sonoran Desert: A Multimedia Field Trip to the Cactus Desert of Arizona* and *Worlds of the Reef: A Multimedia Expedition to the Rain Forests of the Sea*.

The CD-ROM requires an IBM-compatible PC running Windows 3.0 or higher, 4 MB of RAM, a CD-ROM drive, an SVGA monitor, a mouse, and a Windows-compatible sound card and speakers.

Source: Firefly Books Ltd., New York, 800/803-8488; Fax: 800/488-6441.

ixMicro

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and adjusts playback rate based on network traffic and buffer space to ensure continuous playback.

The University of Wisconsin-Madison chose Network Video Explorer as a tool for training researchers and teachers throughout the state. The university learned about the solution from its full-service vendor, Dell Computer.

"We knew this solution would answer many of our needs for high-quality video as well as interactive multimedia on the Web," said Chris Thorn, director of technical services at the University of Wisconsin-Madison's Center for Education Re-

search. "This is helping us establish a true 'learning community,' encompassing secondary schools, researchers, and other universities.

"More and more educational research is becoming multimedia-based. This solution gives us high-quality MPEG-2 video, so we can see facial characteristics and details that are lost on lower-quality video tape," said Thorn. "The ixJet Streaming Server also offers scalability, enabling us to connect to classrooms that have slower connections."

Network Video Explorer eliminates the distance barrier between student teachers in the field and their mentoring professors on campus. Professors can watch streamed videos of their students teaching, and can

critique them via an online chat function. This function, a part of ixMicro's Web-based Visual Constructor feature, provides a pathway for convenient feedback and communication.

The center has also established an extensive in-house digital video library that includes videos for teachers to use in the classroom as well as highlights of conferences.

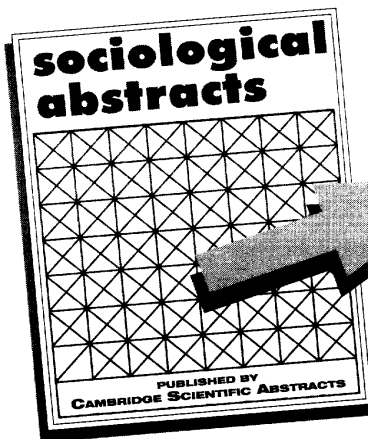
Network Video Explorer features an easy point-and-click interface that users can customize for maximum efficiency. From the interface, both the Web and the video library can be accessed and edited. A search capability helps users locate materials that interest them. The streaming of

networked digital video and audio is now an integral part of the learning process.

Network Video Explorer uses ixJet Streaming Server, an industry-leading technology that employs off-the-shelf technology and open-standard specifications. ixJet Streaming Server runs on Microsoft Windows NT. No particular hardware is required. ixJet users can use either a PC running Windows 95, Windows 98, and Windows NT 4.0/5.0, or a Power Macintosh running MacOS to retrieve video on demand.

Source: ixMicro, San Jose, CA, 408/369-8282; Fax: 408/369-8388; <http://www.ixmicro.com>.

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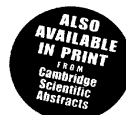
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follows the same strategy. One of its fortes seems to be the capability to program the engine to look for specific events, motions, and scenes. I can imagine how welcome this may be among surveillance camera users—and special persecutors (pun intended) digging for intimate hugs in newscasts by the President while pressing the flesh.

ISLIP's Media Key Logger (<http://www.islip.com>) stood out for me, with its smart solution that offers a convenient way to allow humans to log the events to enhance the data gathered by automatic processing. Loggers can add the traditional textual information to scenes, such as names of persons and locations in the clip, as well as topical descriptors. In my salad days, I assisted in the creation of a videographic database for the Hungarian television station (a monopoly at that time). I realize with envy that such software could have reduced the time needed to create adequately descriptive records by 75 to 80 percent.

Who Are the Potential Users?

These software products are not meant for home video collectors (though it certainly might help the editors of *America's Funniest Home Videos* when looking for clips with man falling in pool, from ladder, etc.). Their prices range from \$20,000 to \$70,000, and this is reasonable for the large stock-footage companies, TV stations, and mega-corporations that produce and store lots of videos that have not been readily accessible on short notice. Individual users will also benefit from yet another search possibility: being able to find short video clips about a resort, a building, or an event that they read about. In this era of video information glut, efficient searching for video is becoming increasingly important.

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