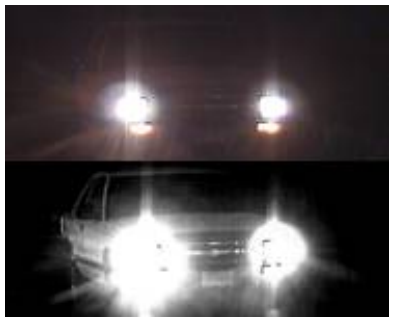
October 26, 2001

FEATURED SERVICES
RELATIONSHIPS
SHOPPING
DOWNLOADS
WIRELESS

INTERACT
VIDEO & AUDIO
BOARDS
CHAT
NEWS ALERTS
CONTACT ABC



When dTective software processes grainy surveillance video (top), details such as license plates can be seen in the resulting images (bottom). (Ocean Systems)

Scouring to Reveal Hidden Clues

Software to Help Investigators Clearly Scrutinize Videos

By Paul Eng
ABCNEWS

Oct. 26 — Videotapes from surveillance cameras can provide criminal investigators with a wealth of information — a getaway car's license plate, the type of weapon used in a holdup, and perhaps even the face of the perpetrator of the nation's anthrax attacks.

MORE ON THIS STORY

IN DETAIL

• High Court Mail Facility Tests Positive

RELATED STORIES

• Cutting Edge Archives

CUTTING EDGE

ABCNEWS has learned that one law enforcement agency has already keyed its search to a select few tapes from several post offices' tiny video surveillance systems.

But to find that face or other clues hidden within often grainy and poor-quality videotapes, investigators are turning to a new computer-based tool called dTective.

The computer program, produced by Ocean Systems in Burtonsville, Md., works with a digital video-editing system called Avid Xpress. That machine, basically a high-powered computer, converts images stored on the magnetic tape of a videocassette

ALSO ON abcNEWS.com

• Mom Hopes Mystery Boy Is Her Son

• 'Silly Season' Begins in 2004 White House Race

• Lowly Fruit Fly's Amazing Flight Secrets

into digital form.

Video, at least in the United States, is typically recorded at a rate of 30 frames, or images, a second. Each frame of video is comprised of thousands of tiny dots of light, or pixels. The Avid machine captures and converts each one of those pixels for each frame into the computer code of ones and zeros and stores it on the machine's hard drive. Once on the hard drive, investigators can use the dTective software to mathematically clarify the pictures and perform other enhancements.

Play It Really Slow

For example, most video surveillance systems will record at a much slower rate — say, five frames a second — in order to store a whole day's worth of surveillance on a single videotape. Using dTective software, investigators can automatically slow the playback of the digital images it captured from the tape so that it appears to investigators as if it had been shot at normal recording speeds.

This feature becomes even more useful if the videotape comes from a "multiplex" surveillance system. In those setups, the videotape stores images from several cameras on a rotating basis. The first frame, for example, may be from the camera mounted above a store's checkout counter, the next frame from the camera above the store's front door, and the next frame from a camera at the store's back door. If a detective played such a tape back on a standard VCR, all they would see is a wild blur of flashing images.

But since each frame is captured and defined as a separate and distinct image, investigators can easily sort out only the frames they're interested in seeing. They merely program the software with the number of frames per camera and how many cameras were used in the original surveillance system and the dTective sorts the images into the proper order.

Cleaning Up On Averages

What's more, since each pixel of each frame of video is stored as a mathematical piece of data, dTective can use a routine known as image averaging to "clean up" the images and allow detectives to see the footage more clearly.

How does it work? Footage with moving objects — raindrops, a speck of "noise" — contain frames that have many pixels with wildly fluctuating mathematical values. The software combines the information from a number of frames to generate a set of averaged frame values. The resulting video frames created by those averages filters out the moving objects, leaving behind only the images of consistently non-moving objects within each averaged frame.

Since investigators can selectively set how many frames to average over the part of

SCI / TECH HEADLINES

• A File-Sharing Network Inspired by Ants
• Quick Fix for Wrinkles and Crow's-Feet
• Millions Mob NASA's Online Mars Site
• What's Wrong With AOL Instant Messenger?
• New Twists to Digital Fun

WEB LINKS

• dTective System

footage they wish to clarify, the results can be stunning. In some cases, objects that were obscured in the original video can be clearly seen on the digital version modified by dTective.

Clearing Cases

And such abilities of the dTective and Avid systems have helped local law enforcement officers catch and convict criminals.

"Many times investigators will look at a videotape and conclude that there's no evidence there," says Grant Fredericks, a forensic video specialist who teaches at the FBI Academy in Quantico, Va., on how to use the systems. But with these video tools, "We are clearing cases that we never thought were clearable in the past."

And it's possible dTective will give police a hand in the ongoing anthrax investigations. "I have no doubt that the people who bought those stamps were caught on video," says Fredericks. And if they were, officials and the public may finally get a clear glimpse at the faces of those responsible for such the attacks. ■

ABCNEWS' John Bilotta contributed to this report.

PRINT THIS PAGE | SEND THIS TO A FRIEND | VIEW MOST EMAILED

Click here for: HELP ADVERTISER INFO CONTACT ABC TOOLS PR TERMS OF USE UPDATED PRIVACY POLICY

Family of sites: ABC.com ABC Family ESPN.com Disney.com FamilyFun.com GO Mail Movies.com