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Local company helps FBI focus on terrorism

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Detectives probing how terrorists financed the Sept. 11 attacks on the World Trade Center and the Pentagon are using a Merrimack Valley company's software to bring their investigation into sharper focus.

Closed-circuit surveillance cameras capture our images an average of 12 times a day, and each camera captures 3,180 frames a second. The same cameras that see us walking into a discount store, withdrawing money from an ATM or parking our cars, see the criminals who walk among us.



Surveillance video evidence could be critical in finding the people behind the terrorist attacks on the World Trade Center and the Pentagon as well as the anthrax attacks that have killed four people and infected 16 others, said Grant Fredericks, manager of Avid Technology's Video

Forensic Solutions Group.

dTective, the portable film- and sound-editing system developed by Avid Technology of Tewksbury and Ocean Systems of Burtonsville, Md., helps investigators make fuzzy images sharp, stabilize shaky video, draw detail out of darkness, and isolate clues from one video frame to the next. It collects the clues and files them without damaging the original, which usually is a poor-quality, overused videotape.

Avid Technology, whose Avid XPress editing systems have earned the company an Oscar, a Grammy and an Emmy, worked with Ocean

Systems to adapt its patented editing system for criminal justice use.

"The combination of the two is a unique and powerful package," said Fredericks, who trains detectives to use the system.

Last year, the private security industry generated \$2.5 billion in closed-circuit security-system sales in the United States alone.

"Since Sept. 11, that's changed dramatically," Fredericks said. "Most of the security concerns today are the result of the terrorist attacks. Cameras are a very important tool in the fight against terrorism."

Investigators tracking terrorist Mohammed Atta and his co-conspirator Abul Aziz Alomari in the days before they boarded American Airlines Flight 11 at Logan Airport, used surveillance video from an automatic teller machine, a discount store, a gas station and, finally, the airport.

The FBI has hundreds of surveillance tapes to review -- from airports where the hijacked flights originated to banks where the terrorists made cash withdrawals.



An association of investigators trained in video analysis put out a call for help.

"The call was for anyone who had an Avid system and whose agency would allow them to assist. And, of course, all the agencies said, of course they'd assist," Fredericks said.

Detective Eric Kumjian, a forensic video analyst for the Miami-Dade Police Department, was among them.

"I wish I could do more," Kumjian said. "We all in our way want to be a part of it."

Investigators know from credit card receipts and other paper evidence where the hijackers spent or withdrew money in the days leading up to the attacks.

"We're following the financial paper trail," Kumjian said. "We're doing the follow-up investigation based on transactions that were made. The videos can lead us in lots of different directions."

And though his role in the FBI's case is more technical than investigative, Kumjian said, "In this case we can actually do something, and it feels great. "

Last month, Fredericks demonstrated the system at a training session at the FBI Academy in Quantico, Va., to the investigators who are assisting the FBI. The first thing dTective does is make a digital recording of the surveillance videotape.

"Video tape is a very delicate medium," Fredericks said. "Usually the tapes we get are overused and the image quality is poor to begin with. The tapes can get damaged very easily. We can do one pass of the videotape into the computer with no loss of quality; then the video is turned back over to the investigator and secured for court."

Then, with 60 images per second captured in the computer, video forensic analysts can spend as much time as they need on each image.

Reviewing surveillance videos "gives us all kinds of information -- car descriptions, associates -- those are the top two right there. We can track the criminals prior to their committing the crime."

"These videos were better quality so we spent a lot of time going through every frame and breaking that down to every field."

The Avid system helps technicians stabilize a shaky picture, isolate specific images from multi-camera systems that record four or more screens on each frame of film, and manipulate light so more is visible.

Using a process called "frame averaging," the software can pull detail like license plate numbers out of what appears to be complete darkness.

When police have identified the suspect, the Avid system helps them make comparisons based on stitching or clothing tears, marks on shoes or jewelry.

"Most of the time when I show this tool to law enforcement they say, 'That's good. Now show us what it can do with our videotape,' " Fredericks said. "At that point I've never failed to get the 'wow' factor. It's very enjoyable doing the training because everyone leaves with a

smile."

More than 50 U.S. law enforcement agencies are using the editing system. Each unit costs about \$25,000.

"The departments start off with one and almost always buy a second one," Fredericks said.

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