

# LAW and ORDER

## Video Forensic Tools

by Kevin Gordon

While investigating a crime, many patrol officers and detectives alike have realized that a video record of the crime existed from a security camera. Often the elation that a silent witness was available can quickly fade when viewing the actual video.

Old tape, poor time lapse, bad coloring or lighting, and non-sharp images are just some of the many common problems. How many times have we said, "If only I could see..." as we looked at a fuzzy, gray, dark video? How often have you wished that the image could be improved easily and affordably?

We all know many convenience stores and other businesses have signs to indicate, "These Premises Videotaped." I don't know of many such stores that could add "and our video surveillance equipment is state of the art, well maintained and constantly updated ensuring excellent pictures to assist law enforcement in prosecution."

The answer to poor images? Take a look at the professional video and audio forensic tools available from Ocean Systems. These will literally change the way we view video evidence. It may be the most powerful forensic video analysis system available.

Ocean Systems has produced a comprehensive set of video analysis tools that are versatile, innovative and most importantly, user friendly. If the fear of a long learning curve has caused you to avoid such systems, look again.

Whether you need to simply stabilize a video or enhance a small portion, Ocean Systems dTective powered by Avid Systems may well be the answer to assist your department in developing visual evidence. It is presently used by a variety of agencies from the largest to the smallest but many departments do not realize how beneficial and affordable it is.

Ask an officer what he thinks or knows about dTective and you'll generally get one of two responses; either they've never heard of it or they know it and respond, "amazing" and "fantastic" and "unbelievable." Users will gladly sing its praises as to know it is to love it.

dTective is a suite of the latest generation of audio and video forensic analysis instruments that allows you to perform accurate and reliable analysis that you probably thought was only capable by a select few large labs. While this is not a complete list of the tools, filters or capabilities, the suite includes dVelooper, dPlex and dPlex Pro, MAGNIFi, Spotlight and DVR dCoder.

Due to the user-friendly format, these forensics tools are not limited to experts in video forensics but are just as easily used by officers who don't work forensics full time. Formal training is available as is professional support.

dVelooper addresses those old security tapes and poor lighting by assisting in clearing up a video and bringing out hidden details. It can remove snow and rain and enhance a dark video by removing noise and video graininess, permitting an optimized picture.

dVelooper was used by the Columbus Ohio Division of Police to apprehend a serial rapist. The suspect operated in an area of the Ohio State University and after committing the rape, would use the victim's ATM card to withdraw money. The surveillance video from the ATM window was basically a dark screen with only vehicle taillights visible. Forensic video specialist John Hodson of the Ohio Organized Crime Investigations Commission used dVelooper and was able to make the license plate number visible, which led to an ultimate conviction.

Many security videos are multi-plex and in a variety of formats as there is no standard. dPlex Pro allows, as the name suggests, to d-plex them. It allows you to separate the camera views, rearrange them, and view them in a variety of ways including customized views. Any officer who has tried to watch and follow a screen with 16 + separate video images understands. Even if the evidence is clearly visible, it is distracting and that may be enough to lose a jury.

Charles Guarino, the Director of Product Development for Ocean Systems, refers to the d-plex capabilities as the nut and bolts of dTective since it is often the starting point. "Once you demultiplex the video evidence, you can then use all the other tools of dTective to enhance the evidence." dPlex Pro is Hodson's favorite tool of the dTective package as "it saves hours and days. Being able to break out individual camera views in that short a time is phenomenal."

Using dTective Sgt. Connor McCourt of the NYPD Technical Assistance Response Unit (TARU) was able to use time correction and resizing features to investigate an arson. One videotape was of the gas station where the suspect reportedly purchased the gas and a second videotape was the office that was burned. The same suspect was viewed at both locations, buying the gas and later holding the gas can at the crime scene, only visible due to the enhancements.

MAGNIFI allows you to zoom into any area of interest and view those often small but critical portions of the video. The area can be enlarged, tracked, stabilized and clarified. Spotlight quite simply is used to highlight or mask details and is just plain neat. It can be used to highlight a suspect in a crowd while protecting sensitive info such as undercover officers or juveniles, etc. Spotlight can greatly enhance the video presentation for court purposes.

We have all interviewed witnesses who saw the same thing quite differently and jurors are no different. Even with a clear, easy-to-follow video, they may not see what you wanted them to see and Spotighting the region of interest can greatly assist in this. McCourt was able to take a video of a hallway that depicted a running suspect with a dark object in his hand. Detectives correctly assumed it was a gun in his hand but couldn't verify it until McCourt magnified the gun, highlighted and circled it. The new enhanced video caused the suspect to confess.

DVR dCoder converts digital files to analog video. It is a universal decoder that works with any disk-based system even if it is a proprietary digital format. It permits the user to capture the digital video clip and then use the other dTective suite elements to process the video. dTective is just one of the forensic solutions and products available from Ocean Systems.

Complete systems are available to fit all budgets. The Luggable system is a portable variety while the Flyaway is set up for easy transport and shipping. The RackMount is a professional rack-mountable solution and the Tower, advertised as the "all-in-one," is the most affordable solution available.

Filters available include Timecode AVX Plug-in that permits an accurate time stamp on a video even if no time was on the original. A known time, such as officer arrival, is added and then a time reference is available for investigators or court. Locators permits the analyst to add on-screen case notes, which can be viewed, printed and even color-coded to distinguish notes per officer or item or event, etc. Image Stabilization cannot only stabilize in-car or hand-held video but can correct tilts, zooms and pans. Color Correction is used for poorly lit videos or inaccurate colors including grayscales of a black and white video.

Picture-in-Picture allows the analyst to display one moving image within another moving image. Motion Effect takes a time-lapse video to a real-time video. Script-based editing is simply an amazing function that integrates transcripts directly with a video. A transcript such as a suspect's interview can be aligned to the audio and video. It can appear on the video as subtitles, can be searched for a specific phrase, word or sentence, and then played from that point!

Det. Bill Coakley of the Woburn, MA Police uses the Luggable version because of its portability. Coakley says while the system is used in the office, it can be broken down in about 10 minutes and transported to the scene in a squad car. That benefit has paid off several times including an instance where a tape was stuck in a store's machine. Coakley was able to record the video directly from the victim's equipment. Det. Coakley credits the use of the dTective system in developing needed evidence in a variety of cases.

Vicki Long, Alameda County, CA District Attorney's Office resident forensic video analyst, likes the fact that the original videotape only needs to be touched once, when making a copy. After that investigators can work with the video evidence without worrying about harming the original tape. Long used the dTective tools to review a video from a fast-food restaurant holdup.

The original tape was dark and blurry and the suspect hardly visible, making it unusable in its original condition. Long was able to enhance the video resulting in a clear image of the suspect. Long's forensics work was recognized by an award from the Law Enforcement & Emergency Services Video Association.

Grant Fredericks, the Manager of Avid Technology's Public Safety Video Solutions, is a former officer and is recognized by many as a pioneer in Forensic Video Analysis. Fredericks, as coordinator of Vancouver, Canada PD's forensic unit, used the Luggable system in response to a bank robbery investigation. The bank did not have a surveillance system but the suspect had been chased several blocks by a bank guard. Fredericks walked the foot pursuit route and found five cameras at ATMs and other businesses along the route. Reviewing those videos resulted in a useable image of the suspect.

A 1994 riot in Vancouver after a Stanley Cup finals loss to the New York Rangers by the Canucks Hockey team resulted in 40,000 folks rioting and \$1 million in damage. Over 100 hours of video from a variety of sources were viewed and analyzed which resulted in the identification of 365 individuals and 106 of them being charged.

As with all types of evidence, sometimes the result is not what you expect. Det. Jim Wood and Officer John Hackel of the Louisville Kentucky Police Department Video Unit used dTective to view a video of an armed robbery suspect who was charged with attempted murder of a security guard. Their analysis showed the identified suspect was not the shooter.

When it comes time to purchase any technology system, it is easy to convince yourself to postpone, procrastinate or just throw it on the shelf until later. There is a lot of work involved in looking into specs, figuring out what we need versus what we can afford and trying to make that mesh, not to mention the time spent speaking with sales folks. Ocean Systems makes that a lot simpler with a complete and professional Web site.

Just about everything you need to know about the products, their capabilities, specs, testimonial videos, newspaper testimonials, and purchasing and training information is all online. It makes it much easier to determine what you want and/or need. Since we all like to hear what other officers think, call Ocean Systems to see who in your area is using dTective and then speak with them.

As with most technology items, both purchase and leasing options are available but many agencies are using creative methods of financing. A turnkey system is available for as low as \$13,500, less than a squad car. The Nebraska State Patrol utilized seized funds for its purchase. Other agencies have used grant money, pooled funds from a variety of agencies as in a task force, or solicited donations from community banks and businesses that use surveillance videos and often need the assistance of the police in using the video to prosecute.

Officers assigned to video forensics may be interested in membership in the Law Enforcement & Emergency Services Video Association (LEVA). LEVA is online and provides many benefits for officers assigned to video forensics. Two popular guides are available in a PDF document for online download. "Best Practices Guide for Forensic Video Analysis" is a 20-page guideline to assist law enforcement agencies in developing SOPs for Forensic Video analysis. "Shooting for Justice" is a seven-page guide with LEVA recommendations for videotaping crime scenes.

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