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PORTLAND, MAINE**

**34th Annual Digital Multimedia
Evidence Training Symposium**



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**October 28 – November 1, 2024 for
LEVA's 35th Annual Digital Multimedia Evidence Training Symposium**

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110 W. Washington St., Indianapolis, IN 46204



The Law Enforcement & Emergency Services Video Association is a 501(c)(3) non-profit corporation providing globally recognized training and certification in the science of forensic video analysis. Chartered in 1989, LEVA serves as a key resource providing professional development through quality training and informational exchange.

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INDIANAPOLIS, INDIANA 2024!!!!

Join us the week of October 28 – November 1, 2024
for LEVA's 35th Annual Digital Multimedia
Evidence Training Symposium.

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Each two-room suite has a fridge, microwave and safe.
Free WiFi.

Daily room rates: Limited number of rooms will be
available at the prevailing government rate.
All others: \$165+ tax daily.

Exhibit times: Monday, Oct. 28, 7 – 9 pm
and Tuesday, Oct. 29, 9 am – 5 pm.

Servicing airport: Indianapolis (IND)

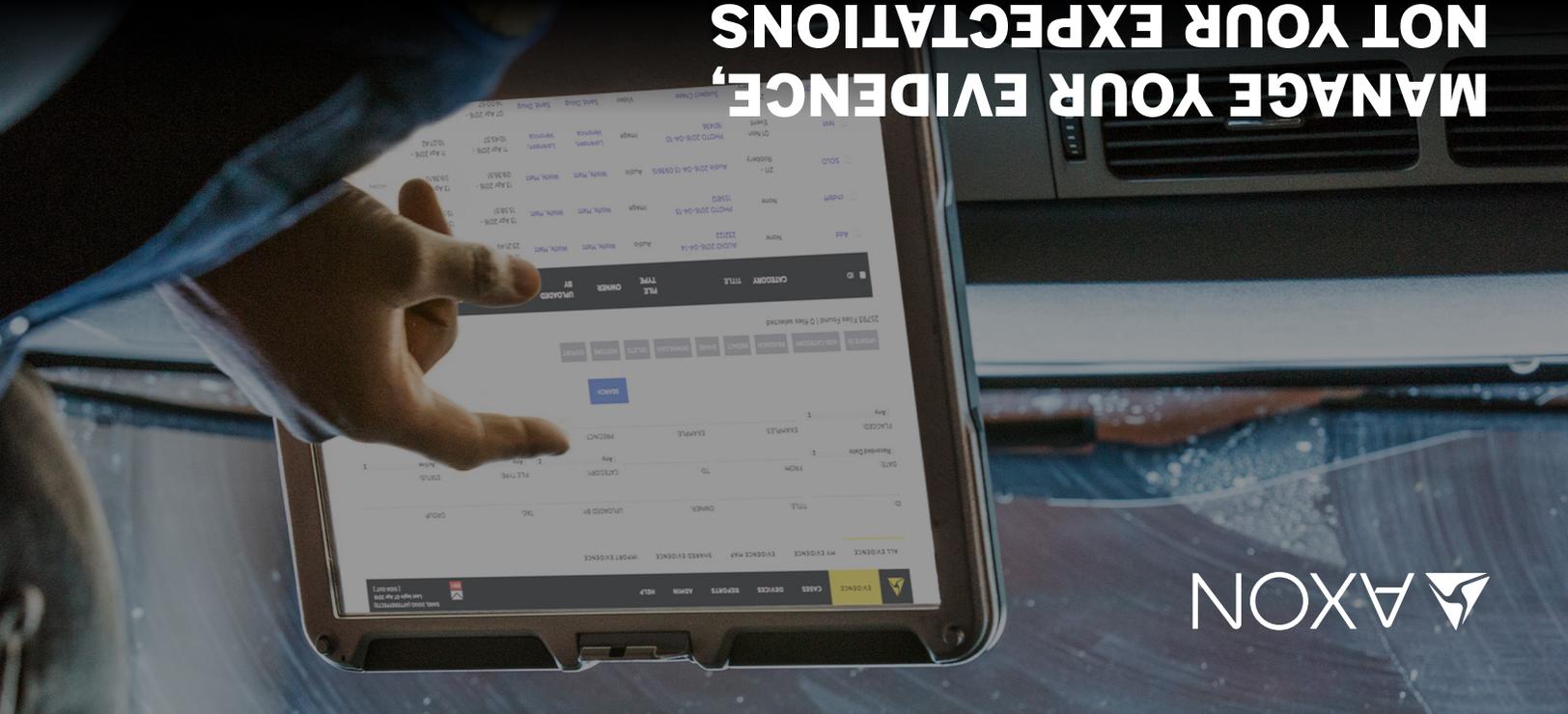
Send any questions for this event to Mr. Jan Garvin,
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As always, changes may occur for any number of excuses.

Room Location in **BOLD**

Monday, October 23	
0800 - 0830	Welcome and Announcements
0830 - 1200	Workshop: How Does Your Evidence Measure Up? LIGHTHOUSE A
0830 - 1000	Forensic Gait Analysis: The Benefits of Interdisciplinary Collaboration CUMBERLAND ROOM
1030 - 1200	Effective Authentication of Citizen Submitted Video Files CUMBERLAND ROOM
1200 - 1300	On Your Own Lunch
1300 - 1500	Going Backwards to Move Forward: The Image Generation Model CUMBERLAND ROOM
1300 - 1500	Carving Proprietary Files LIGHTHOUSE A
1530 - 1700	Evaluation Of YouTube Video File Acquisition Methods And Considerations For Analysis CUMBERLAND ROOM
1900 - 2100	RECEPTION IN EXHIBIT AREA LIGHTHOUSE B
Tuesday, October 24	
Exhibits Open 0930 - 1530	
0800 - 1930	Case Studies: 1) Bar Fight. 2) Light Analysis and Reverse Projection LIGHTHOUSE A
1000 - 1200	Examinations or Processing - Which Do You Perform? CUMBERLAND ROOM
1000 - 1200	Dealing With Doorbell Camera Systems: A Forensics Approach LIGHTHOUSE A
1200 - 1330	BUFFET LUNCH ON LEVA IN EXHIBIT AREA: Technology On Display LIGHTHOUSE B
1330 - 1700	Workshop: FFmpeg: A Multitool For File Analysis, Playback, And Conversion LIGHTHOUSE A
1330 - 1500	Adding Techniques to Your Video Authentication Toolkit CUMBERLAND ROOM
1530 - 1700	Reverse Projection...Without Access To The Camera CUMBERLAND ROOM
1900 - 2100	Video/Imaging Technology, Analysis Standards CUMBERLAND ROOM

We will look at examples and talk through the File Analysis tools built into the platform and how understanding what happens in FFmpeg will help you the next time you use one of your favorite forensic video tools or even VLC. #NOTE: Safety not guaranteed. Some conversion or playback processes may report the video data differently than encoded. **Objectives:** Practice some of the analytical tools found in fprobe and fplay. Learn about the platform and basic commands for playback and conversion. Discuss potential issues with trusting our FFmpeg overlord in all cases.

Presenter: Blake Sawyer is certified as a LEVA Forensic Video Analyst and an IAI Certified Forensic Video Examiner. He has taught courses with LEVA and served on its Board. His daily focus is helping video examiners better understand the scientific workflow of Video Forensics. Currently, he is the Chair of the Video subcommittee for the Scientific Working Group for Digital Evidence. He is a member of the Digital Evidence subcommittee of the Organization of Scientific Area Committees. Before joining Amped Software in 2019, Blake worked for the Plano Police Department, where he founded the digital media unit of their Crime Scene.

WORKSHOP: FROM THE CRIME SCENE TO THE COURTROOM*

This is a full-day hands-on class. Real world video examples will be used to answer questions about a crime scene and generate court-ready exhibits. From the file analysis, conversation, clarification, comparison and even compilation, you can gain confidence in knowing how to take your video from the crime scene to the courtroom. Examples will be shown using Amped FIVE. Students must bring a computer but do not need to have FIVE installed. Someone will be available to assist, so there should be plenty of

room. If you have any casework to work on together, bring it! Who doesn't enjoy trying to stump the presenter? **Objectives:** Learn to properly examine your files, from the container, codec, stream, frame and metadata. Follow a consistent forensic method for clarification of your evidence. Generate court ready exhibits and demonstratives, including video from multiple sources

Presenter: Blake Sawyer. (See bio above (FFmpeg)).

WORKSHOP: HOW DOES YOUR EVIDENCE MEASURE UP?*

Often, in Forensic Video Analysis, we are asked to aid in video playback, conversion, and clarification. In my former agency, an entire unit was devoted to deriving measurements and speed from crime scenes or traffic accidents. In this lecture, we'll go through how using video evidence, and a few references from the scene; we can help investigators quickly and accurately estimate measurements—converting evidence from pixels to inches. Learn that the validation of those measurements and how understanding the limitations of different tools can be used to our advantage and limit time at the scene. **Objectives:** Understand how Single View Metrology can be used to measure unknown measurements or distances. Analyze the frame timing or timing difference to verify accurate playback. Combine the measurements and the timing together to derive speeds from videos.

Presenter: Blake Sawyer. (See bio above (FFmpeg)).

LEVA BANQUET (ROOM TBA)		Reception: 1830	Dinner Seating: 1900
1500 - 1700	Audio Forensics: <i>SEE</i> What You Might Be Missing (Pt. 2) LIGHTHOUSE A		
1300 - 1430	Audio Forensics: <i>SEE</i> What You Might Be Missing (Pt. 1) LIGHTHOUSE A		
1200 - 1300	On Your Own Lunch		
1030 - 1200	To Be An Expert or Not Be An Expert. That is THE Question! LIGHTHOUSE A		
0800 - 1000	Geospatial Presentations or Visual Investigations For Court LIGHTHOUSE A		
Friday, October 27			
1530 - 1700	Building Interactive Timelines Throughout the Investigation and Prosecution of Complex Cases (Repeat) CUMBERLAND ROOM		
1300 - 1500	Introduction to the Comparison of Hands and Skin in Forensic Video Comparison (Repeat) CUMBERLAND ROOM		
1200 - 1300	On Your Own Lunch		
1000 - 1200	Examinations or Processing - Which Do You Perform? (Repeat) CUMBERLAND ROOM		
0800 - 0930	Dealing With Doorbell Camera Systems: A Forensics Approach (Repeat) CUMBERLAND ROOM		
0800 - 1700	Workshop: From The Crime Scene To The Courtroom - A Workflow Using Real World Examples LIGHTHOUSE A		
Thursday, October 26			
1730 - 1830	LEVA's First Membership Meeting LIGHTHOUSE A		
1530 - 1700	Video Analysis of IP Camera Recordings LIGHTHOUSE A		
1530 - 1700	Introduction to the Comparison of Hands and Skin in Forensic Video Comparison CUMBERLAND ROOM		
1430 - 1500	Suffering In Silence LIGHTHOUSE A		
1230 - 1400	They Don't Know <i>WHAT!</i> LIGHTHOUSE A		
1130 - 1230	On Your Own Lunch		
1000 - 1130	Helping Change the Leadership View on DME LIGHTHOUSE A		
1000 - 1130	Workshop: Adobe Premiere Pro – Intermediate to Advanced Techniques Sampler CUMBERLAND ROOM		
0800 - 0930	Workshop: Adobe Premiere Pro – Beginning Sampler CUMBERLAND ROOM		
0800 - 0930	Building Interactive Timelines Throughout the Investigation and Prosecution of Complex Cases LIGHTHOUSE A		
Wednesday, October 25			

Coordination between VITAL and the Scientific Working Group on Digital Evidence, the OSAC Standards Development and Registry Processes, and the application of American Society for Testing and Materials (ASTM) material will also be presented. **Objectives:** Define standards. Explain OSAC registry. Discuss best practices.

Presenter: Christina Malone has been a Digital Evidence Examiner at the U.S. Army Criminal Investigation Laboratory since 2009. She conducts forensic analysis in Image, Audio, and Video. She is the current chair of the Organization of Scientific Area Committees Video/Imaging Technology and Analysis Subcommittee. She is also an active member in the Scientific Working Group on Digital Evidence, the American Society of Testing and Materials, and the American Academy of Forensic Sciences. She is also a member of the International Association for Identification and completed its Forensic Imaging & Photography certification.

WORKSHOP: ADOBE PREMIERE PRO – BEGINNING SAMPLER

Although the use of images and videos as evidence in the An introduction to using Premiere Pro for basic processing functions as an absolute beginner. Learn to quickly link together files into one video, enlarge an area of interest, do a simple levels adjustment, create still frames or image sequences and raise or lower the audio volume. **NOTE:** Bring a laptop with Premiere Pro if you want to follow along. If needed, download demo version 24 hours before. **Objectives:** Use Premiere Pro for help with basic processing. Gain some familiarity and confidence using Premiere Pro. Become inspired to learn more.

Presenter: Angela Ellis is a Media Forensic Specialist with the Pinellas County Sheriff's Office in Pinellas County, Florida. She has been an editor for 23 years as both a narrative editor for film and television and a technical editor within science, medical,

engineering and government industries. Merging that narrative and technical editing experience together, she currently provides complex geospatial visual investigations, using Premiere Pro, for PCSO's Investigative Operations Bureau and the Office of The State Attorney, Sixth Judicial Circuit. In addition, Angela teaches LEVA's Premiere Pro for Forensic Media (beginner to advanced courses.)

WORKSHOP: ADOBE PREMIERE PRO – INTERMEDIATE TO ADVANCED TECHNIQUES SAMPLER

Although the use of images and videos as evidence in the Learn ways to highlight and annotate areas of interest within a forensic video evidence file for use as a stand-alone derivative, part of a larger presentation or for inclusion within a Power Point project. Learn how to use Premiere Pro to move compositing assets on a map that match and represent the movements in time of a subject within a video evidence file. **NOTE:** Bring a laptop with Premiere Pro if you want to follow along. If needed, download demo version 24 hours before. **Objectives:** Learn to highlight and annotate using PP. Learn various techniques for doing so. Learn an advanced technique that you will want to use often. Be able to add more clarity to the video evidence. Become inspired to learn more.

Presenter: Angela Ellis (See bio of "Beginning" session).

WORKSHOP: FMPEG: A MULTITOOL FOR FILE ANALYSIS, PLAYBACK, AND CONVERSION**

In 2014, a video production and streaming friend tried to show me how he used the command line to convert videos, so they played clearly in almost any setting. I say 'tried' because it took another year and a lot of practice before I understood the secrets behind that black DOS-like interface. In this workshop, my hope is to demystify the process, help you understand what is there, how to help videos play, and discuss a few issues in just playing a video.

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TO BE AN EXPERT OR NOT BE AN EXPERT. THAT IS THE QUESTION!

Although the use of images and videos as evidence in the courtroom has been around for decades, certified forensic video experts are hard to come by. Yet, it seems the attorneys on both sides of the aisle can find an "expert" around every corner. As true forensic video analysts (certified or not), what is our obligation to the truth (justice) when faced with an opposing "expert?" In this session we will review four case studies: CFVA v. Audio Expert answering the question, who shot first, CFVA v. Accident Reconstructionist Expert involving a fatal traffic crash, CFVA v. Jack of All Trades Expert conducting a tattoo comparison analysis in a homicide case, and last, but not least, CFVA v. the armchair expert providing their expert opinion during a live Facebook broadcast of an officer involved shooting. Do we have an obligation to refute false claims? Is there any danger to allowing both "expert" reports into the courtroom? How many post-nominal letters can one person have after their name? These and many more questions will be explored. Objectives: What is our obligation when faced with an opposing expert? When faced with an "expert," how to use training and science to help the trier of fact.

Presenter: Sergeant Chris Andreacola. See "They Don't Know WHAT" above for bio.

VIDEO ANALYSIS OF IP CAMERA RECORDINGS

IP camera recordings may shed light on what happened and who was involved in a crime. The advent of higher resolution cameras, together with digital storage units that allow for recordings to be retained for longer times, can allow investigators to watch an entire incident unfold, providing information about the sequence of events. Many of the IP camera installations today are still done without a proper security analysis that defines exactly for what

specific purpose the camera will be used and what angle of view is necessary to capture the most essential events and details. Although the ongoing shift from Analog to IP cameras has brought much better video resolutions and full HD is considered as standard, there are after factors affects the quality of the footages. As a Forensic Examiner it important to understand why the footage is captured in poor quality even when the IP cam setting is configured in the HD quality. **Objectives:** How to overcome challenges when facing video evidence from an IP camera system. What to do when video to be examined was extracted from an email. How video frames per second are questioned and challenged in court.

Presenter: Gogila Vaani is a Senior Forensic Examiner with the Home Team Science and Technology Agency (HTX), and have been since 2018. Previously she worked for the Singapore Police Force (SPF) from 2012 to 2016 as a forensic officer and tasked to collect and photograph evidence from crime scenes, storing it in conditions that preserve its integrity and to conduct digital forensic examination involving computer systems, networks and mobile devices. Gogila was trained to keep records and prepare reports detailing findings, investigative methods, and the methodologies used for presentation in court. She completed LEVA 1, 2 and 3 to conduct video forensic examination using different tools and methods.

VIDEO/IMAGING TECHNOLOGY, ANALYSIS STANDARDS AND THE OSAC REGISTRY

The Organization of Scientific Area Committees Video/Imaging Technology and Analysis Subcommittee focuses on standards and guidelines related to forensic imagery. This presentation will highlight projects under development that are applicable to Video Analysis, Image Analysis, and Forensic Photography.

from law enforcement. Now, she travels around the country with a military war production called, "Last Out: Elegg of a Green Beret", sponsored by award winning actor Gary Sinise. Kari has been LEVA's Social Media Manager for 3 years.

THEY DON'T KNOW WHAT!

After the surveillance video of a double homicide was reviewed in which the suspect was wearing a disguise the investigators and prosecutors felt the video was useless. I was asked if I could simply provide a "timeline" of the incident and look at a few frames of video to "dispute" the defense's assertion that the suspect had a full head of hair. I asked and was advised "there was nothing found with their arrestee to compare" with the suspect. Well, they did not even know what they had! After 5 months, multiple discussions, and two additional disclosures, I was able to provide a camera view demonstrative, gunshot analysis with a timeline, image comparison and height estimation. Walk through the process of balancing the danger of asking too many questions (confidentiality bias) with not asking enough and possibly missing the opportunity to provide the evidence that was there all along! **Objectives:** How much is too much (when questioning investigators)? How little is too little (when questioning prosecutors)? The value of a thorough review of the evidence.

Presenter: Sergeant Chris Andraocola a LEVA Certified Forensic Video Analyst and has been a member of the Tucson Police Department for over thirty-five years. 28 years as a first line supervisor. He became an instructor in Mobile Video Recording for Law Enforcement in the late 1990's. He began performing forensic video analysis for the Department in 2013. In 2018, he formed the department's first Video Analysis and Management Unit. He currently teaches around the country on Body Worn and In-Car Cameras.

Collision Reconstruction Group's California office. He is a registered professional engineer, has reconstructed hundreds of crashes and injury-producing events, and has testified in court as an expert witness. He has published research on how to use video to reconstruct rollover crashes. Cole has analyzed video from a variety of sources: body-worn cameras, dashcams, surveillance systems and cell phones.

Thomas Flynn is a senior engineer in MEA Forensic's Collision Reconstruction Group's Toronto office. He is a registered professional engineer, has testified in court as an expert witness and has reconstructed hundreds of crashes and injury-producing events. Since joining MEA in 2012, Tom has applied his engineering knowledge to evidence like tire marks, black box data, and vehicle crush, to determine collision severity, vehicle speed and dynamics, occupant movement, and driver response. Tom has analyzed video recorded by dashcams, traffic cameras, surveillance system, onboard bus cameras, and cell phones.

SUFFERING IN SILENCE

Today, almost every person has a video recording device No-holds barred. Authentic. Hear first-hand how denial of post-traumatic stress degraded a professional life processing video evidence in law enforcement and sent their personal life into a tail spin. It doesn't have to be this way. There is a better pathway and this revelation will show you and others the urgent need to recognize and normalize trauma, while still maintaining high performance. **Presenter:** Kari Ellis began her career in forensics in 2001 with the Fayetteville Police Department in NC. From 2001-2009 she was a Forensic Crime Scene processor. In 2009, Kari created a Video Lab that was later combined with the Photo Lab. She ran the Video Lab solo being on call 24/7 for 5 years. In 2018, after losing her military husband of 24 years to suicide, Kari fully retired

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LEVA 2023 SESSION DESCRIPTIONS

In Alphabetical Order

* Indicates presentation by an exhibitor

ADDING TECHNIQUES TO YOUR VIDEO AUTHENTICATION TOOLKIT*

This session will focus on the practical application of video authentication and source identification using a non-content based approach. Digital file structure will be leveraged, as a supplement to existing metadata and pixel analysis techniques, in order to effectively authenticate and examine submitted digital video. **Objectives:** Explain digital video file internal structures. Applying file format structural analysis for video source identification. Leveraging file format structural analysis + internal metadata analysis for video authentication.

Presenter: Bertram Lyons is the CEO at Medex Forensics, a leading provider of digital video authentication software and services. Bert is an Associate Member of the American Academy of Forensic Sciences (AAFS) and an active member of the Scientific Working Group on Digital Evidence. He has received certification from the Academy of Certified Archivists and is a graduate of the Archives Leadership Institute. He holds an MA in museum studies with a focus in American studies and archival theory from the University of Kansas.

AUDIO FORENSICS: SEE WHAT YOU MIGHT BE MISSING

Audio Forensics is much more than clarifying speech. Investigating other sounds can often tell us about what happened and be of great importance when making a timeline. This lecture will take you thru several cases where audio has been of importance for

clarification of the case. How to synchronize sound and video from different sources and build forensically proven timelines. How to make and how to present this timeline in court. Is AI the future? How much of this audio work can be done by personnel without specialist training? What tools are a must have for the users? Which procedures must be in place? **Objectives:** Raise the general awareness around Audio in Criminal Cases. Importance of Audio when it comes to building timelines. Why Audio makes synchronizing video so much easier.

Presenter: Truls Birkeland is a former Record Producer / Engineer that has been working the last 20 years with Forensic Audio, serving the Norwegian and International Police, National Crime Investigating Services and other Government Agencies with Forensic Audio & Video work. He is Court qualified as expert witness in Forensic Audio, Norwegian Court, "Lagmannsretten" and "Tingretten". (Court of Appeal and District Court). Truls is currently a full time employee at Oslo Police district.

LEVA's FIRST MEMBERSHIP MEETING

EThis gathering serves as a prime opportunity to connect with fellow members and interact with LEVA leadership. The meeting will be attended by members of the Board of Directors, Curriculum Committee, Certification Committee, Ethics Committee and the LEVA Executive Staff, all of whom will be available to address any queries you might have. During this session, there will be a presentation outlining LEVA's accomplishments and initiatives for 2023, as well as a glimpse into our exciting plans for the years ahead.

role started in 2017 when he was selected as the sole video and audio forensic detective for the AZ Department of Public Safety Computer Forensics Unit. John has a Bachelor's degree from DeVry University in Computer Information Systems; is certified as a LEVA Forensic Video Technician and a GIAC Certified Forensic Examiner. John joined Amped Software in 2023 to help with North America with Training and Technical Support.

HELPING CHANGE THE LEADERSHIP VIEW ON DME*

Today, almost every person has a video recording device and almost every building has CCTV systems. This means a tremendous increase in digital media evidence for law enforcement to interact with. This interaction could come at a cost for some departments if those who must deal with video evidence do not have the proper technical preparation, training, or right tools. But those decisions are not made at the bottom but at the top levels of departments by leaders who have little to no education or experience and make policies for handling DNA but not for DME. So, how do we change the mindset of law enforcement leaders to give the same respect and adherence to DME as to traditional physical evidence like DNA? **Objectives:** Describe the main principles of video evidence. Repercussions of not applying the principles of video evidence. Raising awareness to leadership.

Presenter: John Barahona. See bio above "Going Backwards...".

INTRO TO THE COMPARISON OF HANDS AND SKIN IN FORENSIC VIDEO COMPARISON

When analyzing videos, there are often instances where we only can see body parts such as hands, patches of skin, feet, etc. These can be seen in child exploitation videos, where we never see the perpetrators face, but often see the hands, wrists and forearms. Weapons videos, where we again do not see the face but they

are displaying what the weapon is or what it can do with their hands. Other areas where we can see these body parts are in sexual assaults and homicides. In this session, a discussion on types of comparison characteristics that can be found in these areas of the body, the basics on how they are formed and what we can compare and possibly conclude to try to assist the courts while staying in our lane. **Objectives:** Discussion of things we may see in video segments and how to deal with them. Introductory discussion on how characteristics on skin/hands are developed. What can you do with this information?

Presenter: Tracy Peloquin has been a LEVA Certified Forensic Video Analyst since 2007. Tracy retired from the Ontario Provincial Police in Canada in 2021 after 32 years with the organization and is now providing FVA duties as a Consultant in Ontario. She has been working in the field of forensic video analysis since 1992. She started her career in the field of forensic identification specializing in finger/palm print comparison and crime scene analysis.

REVERSE PROJECTION WITHOUT ACCESS TO THE CAMERA

In the private sector, we don't typically get access to the subject camera, yet the case calls for precise positioning of vehicles. Discover some techniques for solving lens distortion in video frames for use in position analysis using 3D measurements. Understanding the benefits and limitations of a full 3D recreation can better inform the investigator as to whether or not a specific investigation warrants the work required. **Objectives:** Understanding basic concepts in lens distortion math and software packages. Common questions faced by crash reconstructionists in video centric cases. Approaches to address uncertainty in position measurements.

Presenters: Cole Young is a senior engineer in MEA Forensic's

FORENSIC GAIT ANALYSIS: THE BENEFITS OF INTERDISCIPLINARY COLLABORATION

The use of gait analysis as evidence is now a well-established contributor to identification, with a validated, peer reviewed and published methodology, published standards of practice, and international competency testing. This presentation will consider the value of the developing collaboration between forensic video analysts and forensic gait analysts, and the benefits that can be gained by both disciplines. Particular consideration will be given to the role of video analysts in the development and delivery of forensic gait analysis education and training programs, and the implications for the wider field of forensic science. **Objectives:** Understand the benefits of interdisciplinary collaboration in forensic science. Understand how collaboration between video analysts and gait analysts has strengthened forensic gait analysis.

Presenters: Michael Nirenberg is a clinical and forensic podiatrist with experience in the forensic analysis of gait. He (with Ivan Birch) is a co-editor of the textbook Forensic Gait Analysis: Principles and Practice and President of the American Society of Forensic Podiatry. Ivan Birch is an expert in forensic gait analysis and was awarded Chartered Scientist by the Science Council for his work in gait analysis and has more than 40 years' experience in it. Scott Kuntz is a LEVA Certified Forensic Video Analyst and certified by the IAI as a Forensic Video Examiner. Ed Baker is a Certified Forensic Video Analyst and a retired Major Crimes Detective.

Visual and geospatial presentations can produce a precise and streamlined narrative of an occurred event. Providing a visual aid with a linear delivery of facts to a jury (similar to the way modern

GEOSPATIAL PRESENTATIONS OR VISUAL INVESTIGATIONS FOR COURT (PANEL)

Presenter: John Barahona is a retired Detective with over 27 years in law enforcement having served in the United States Air Force Security Police, Mesa Police Department, and retiring with the Arizona Department of Public Safety in 2023. John's video forensic

BUILDING INTERACTIVE TIMELINES THROUGHOUT THE INVESTIGATION AND PROSECUTION OF COMPLEX CASES*

Once you have gathered the important video information, corrected for timing issues, enhanced the image quality, performed a scientific examination, and interpreted the video evidence to uncover accurate information about events, individuals, and objects captured on video, your job as an analyst isn't done. While attention spans continue to decrease, the need to present clear, concise visual stories, continues to increase. Demonstrated and shown will be the importance of building interactive timelines throughout the investigation and prosecution of a case to help you organize your evidence, tell better stories, and win more cases.

Presenter: Brian Carney is a veteran Boston prosecutor of eleven years and president of WIN Interactive, a Massachusetts based multimedia visualization firm. He has lectured on the admissibility of demonstrative evidence to the American Bar Association, the National District Attorney's Association, the National Association of Attorneys General, the National Crime Investigators Conference, and the National Cyber Crimes Conference. He has consulted on several high-profile criminal prosecutions and testified as an expert in forensic video analysis for cases in Massachusetts, Rhode Island, and New Hampshire. Brian has developed demonstrative evidence and technology training programs for prosecutors and is the creator of Crimelines.

CARVING PROPRIETARY FILES*

Proprietary video files come in many shapes and sizes but the one thing that almost all of them have in common is that they are a pain to deal with. Commercial software can make this easier, but what do you do if a particular file isn't supported? In

this session, we'll discuss when to consider manual carving, what tools you can use to assist in the process, some basic techniques/workflows, and how to explain what was done and why in simple terms. **Objectives:** Understand when it is possible and appropriate to consider manual carving. Learn basic tools, techniques, and workflows to assist in the process. Be able to explain what was done and why.

Presenter: Jimmy Schroering is the Senior Director of Video Forensics Engineering at Magnet Forensics. He created DVR Examiner, a software application used by forensic professionals around the world for recovering video from proprietary surveillance systems. His experience in the digital forensics space also includes conducting forensic examinations for the FBI and the North Carolina SBI, testifying in numerous cases as an expert witness, as well as developing and instructing digital forensics curriculums.

CASE STUDY: BAR FIGHT

Two people were shot in a bar fight, one died. A suspect was immediately identified because he was seen on video, prior to and after the shooting, waving a gun. Over a year later, I was asked to analyze the video, and through reverse projection figure out where the suspect was when the shooting happened. Discover what was done and how these lessons learned can benefit you. **Objectives:** Use of reverse projection to locate a subject. Even if cameras are not available measurements may be taken at the scene to aid in locating a subject. Hard to believe sometimes, but sometimes the guy with the gun isn't the shooter.

Presenter: Keith Mancini is a Forensic Scientist Specialist – Multimedia at the Westchester County, NY Forensic Lab, where he has been employed for the past 24 years. He graduated from the Rochester Institute of Technology with a Bachelor of

GOING BACKWARDS TO MOVE FORWARD: THE IMAGE GENERATION MODEL*

As forensic video examiners conducting any type of image clarification or enhancement, our job is to ensure that it is an accurate and faithful valid representation of the scene. How can we scientifically conduct this if we do not understand the technical limitations of the imaging system, which will introduce some defects that will make the image different compared to the original scene? Understanding the image generation model draws the line between who tries to play with the image to get something out of it, and who does the forensic video enhancement with the aim of reconstructing a more faithful representation of the captured scene. **Objectives:** Explain what is the Image Generation Model. What defects are introduced at each phase within the Model. How to apply the Image Generation Model in practice.

Presenter: John Barahona is a retired Detective with over 27 years in law enforcement having served in the United States Air Force Security Police, Mesa Police Department, and retiring with the Arizona Department of Public Safety in 2023. John's video forensic

media provides for them) gives them better fact retention and better clarity regarding the entirety of a case. Done right, these are extremely powerful court room tools. Done wrong, they can do far more damage than good. This panel will open up discussions and questions about the use of these visual and geospatial presentations and how best to produce them in the safest way possible. **Objectives:** Setting standards for visual presentations. Critical thinking when creating visual presentations. Design strategies for visual presentations.

Presenters: Angela Ellis and Jody Soutullo, Pinellas County Sheriff's Office, FL; Lovisa Inerra and Victor Bystrom, Swedish Cyber Crime Centre; Lance Sullivan, Detroit Police Department, MI.

Science degree in Biomedical Photographic Communications. Keith is certified as a Forensic Photographer and Forensic Video Examiner by the International Association for Identification. He is also a member of the National Institute of Justice's Organization of Scientific Area Committees (OSAC) Video and Image Analysis Subcommittee, and a member of the Scientific Working Group on Digital Evidence (SWGDE) where he serves on the Photography task groups.

CASE STUDY: LIGHT ANALYSIS AND REVERSE PROJECTION

The application of the scientific method in the performance of forensic video analysis will be demonstrated. A method (using reverse projection) will be shown to determine the physical location of light recorded on CCTV at night. The location of the light was crucial in the investigation and proving a case of double-homicide, mutilating a corpse and hiding a body. **Objectives:** Apply the scientific method to forensic video analysis. Learn how reverse projection can be used for things other than just height estimation. Describing how and why comparison and contrast are both crucial to proper comparative analysis.

Presenter: Scott Kuntz has been a Sheriff's Deputy at the Dane County Sheriff's Office in Madison, WI for 30-years. He is assigned to crime scene processing and analysis, crash reconstruction, overt and covert surveillance, certified drone operations and forensic video/audio and still image analysis. He is the owner of Scott Alan Video, LLC. Scott previously worked for NBC affiliates in Production and Engineering roles. Scott is an instructor for LEVA's Level 2 and Level 4 classes. He has been certified by LEVA, the IAI and NATIA.

DEALING WITH DOORBELL CAMERA SYSTEMS: A FORENSICS APPROACH

Doorbell cameras have increased in popularity amongst

homeowners. This had led to an increase in crimes being recorded on these camera systems. Law enforcement has had little to no guidance on how to save videos from these systems. This presentation will show step by step instructions on how to save video from specific doorbell camera makes such as Ring and Arlo. In addition, new automated tool technology will be covered to assist in collecting doorbell and other cloud-based video evidence. **Objectives:** Learn how to save video from doorbell cameras using a computer or phone. To teach metadata information attached to doorbell camera video files. To learn how to use automated tools to preserve the evidence from cloud storage expiration or direct/shared account access.

Presenters: Brad Barkhurst is a Forensic Specialist Supervisor and LEVA certified forensic video analyst. Max Bothe is a Forensic Specialist and LEVA certified video technician. Both Brad and Max work at the Ohio Fire Marshal's Forensic Laboratory. Bart Wolczyk is a Staff Software Engineer at Magnet Forensics. He has worked the last six years implementing recovery software for new makes and models of DVR recorders. He holds a BS in Computer Science from Southeast Missouri State University.

EFFECTIVE AUTHENTICATION OF CITIZEN SUBMITTED VIDEO FILES*

Public evidence and file sharing portals like Google Drive, Dropbox and Axon Citizen provide the ability for the public to easily share video files from cell phones with law enforcement; they also present unique video authentication challenges. These challenges are often compounded by the lack of direct access to the recording device and "original" recording. How does law enforcement know that a complete and unedited video is received? How do we authenticate citizen submitted videos for admission in court? This session will address strategies to effectively analyze and authenticate citizen submitted video for

use in investigations and legal proceedings. **Objectives:** Explain the function of a public evidence portal and how it acquires video evidence. Identify the changes to a video file when it is transmitted using a cell phone mobile web browser.

List effective approaches to authenticate video that has passed through a mobile web browser.

Presenter: Brandon Epstein is the Chief Forensic Officer at Medex Forensics. Brandon hold a Master of Science in Recording Arts - Emphasis Media Forensics degree and is a LEVA Certified Forensic Video Analyst and IAI certified Forensic Video Examiner. He currently chairs the Scientific Working Group on Digital Evidence and the IAI's Forensic Video Certification Board and is appointed to the IACP Computer Crimes and Digital Evidence committee as well as the NIST/OSAC Video/Imaging Technology and Analysis Subcommittee. Brandon is also an adjunct professor at the New Jersey Institute of Technology.

EVALUATION OF YOUTUBE VIDEO FILE ACQUISITION METHODS AND CONSIDERATIONS FOR ANALYSIS*

YouTube videos are a common source for forensic video analysis. In order to perform any analysis on videos posted to YouTube, they must first be acquired, either directly from Google (YouTube's parent company) or using a third-party utility. The resultant files can vary greatly in quality and avenues for authentication, complicating further analysis. This presentation will discuss various methods to acquire YouTube videos along with different variables present in the acquired files. Upon completion, technicians/analysts will be better prepared to select the most appropriate method and acquire YouTube for use in forensic video analysis.

Objectives: Provide an overview of how YouTube re-encodes video files for streaming. Identify multiple methods for acquiring video files. Identify the differences in files generated between third

party acquisition tools and those obtained directly from Google (YouTube)

Presenters: Jointly presented by Medex Forensics and Amped Software.

EXAMINATIONS OR PROCESSING - WHICH DO YOU PERFORM?

This workshop, a combination of lecture and #hands-on, is designed to bring back the examination process into your workflow when performing FVA work, thus, bringing awareness to the importance of your preliminary research in forensic video case investigations. Also, how being unfamiliar with the source video evidence can have an unintended impact on your conclusions or opinions. This class will emphasize the different results that can exist between FVA software programs and how to overcome those differences. **Objectives:** Learn the importance of examining source video evidence. Learn through real life examples, there can be differences in results between FVA software, and what to do when that occurs. Learn what the responsibilities of a forensic video analyst or technician are when they discover the investigator/investigation is focused on the wrong suspect or the preliminary investigation is incorrect. #Bring a laptop to participate in the hands-on. Media will be provided.

Presenter: Ed Baker is a LEVA Certified Forensic Video Analyst and a retired major crimes detective with over 27 years of law enforcement experience and over 24 years of forensic video analysis expertise. Ed has been a member of the LEVA Instruction team since 2009 and served as LEVA's President and Vice President. He is the sole proprietor of Video Consultants NW LLC, a forensic video company providing FVA work on criminal and civil litigation matters worldwide as well as forensic video analysis and examination courses on-line.