

## LEVA 2021 SESSION DESCRIPTIONS

In Alphabetical Order #Indicates you must have pre-registered for a seat

\* Indicates presentation by an exhibitor

### Accelerating Discovery in Unstructured Digital Evidence\*

Google produces maps and translates language. Facebook uses facial recognition. Snapshot has effective encryption. Netflix indexes its videos. Isn't the mission of law enforcement worthy of these tools? Learn how a department of any size can have the same computing power as the FBI while remaining within budget. See how cloud can be used to accelerate investigations and unlock and index information buried in your images from cellphone extractions, videos from CCTV/mobile phones/BWCs etc., documents, and more.

*Presenter:* Marc Messina is the Product Manager for iOLAP Inc. He assists law enforcement agencies fulfill their objectives and mission with a holistic, systematic approach to technology that improves CID clearance rates, staff shortfalls, compliance, and budgets too. Previously, he spent 15 years extracting value from data on hedge fund trading desks.

### Case Workflow Workshop\*# Limited to 30 pre-registered students

Spready's workflow class is back! Learn how to best manage all your evidential material. Identify best methods to perform difficult enhancement requests. Speed up your reporting and documentation process. This 2-day fully hands-on practical workshop will go step by step using real cases to help you speed up your Forensic Video Analysis and CCTV Investigations. From tips and tricks to advanced reporting, if you are an Amped FIVE User, you will for sure learn lots of new functions to help you in your day-to-day work.

*Presenter:* David "Spready" Spreadborough served as a UK Police Officer for 24 years, the final 12 of which were spent as a CCTV investigator. He is the first LEVA certified Forensic Video Analyst in Europe and remains one of only four outside of North America. Since working with Amped Software, Spready has provided a key role in the development of Amped Software's technical training, as well as spreading his passion for jurisprudence reform through the latest technological innovations. He is still a practicing forensic video analyst and has frequently been called as an expert witness to assist legal teams and law enforcement with on-going criminal investigations.

### Calculating Speeds of Vehicles: How Reliable is Timing Metadata?\*

Previous LEVA sessions have explored the frailties of relying on frame rates to measure vehicle speeds. In this year's session, Andrew Fredericks will expand on previous LEVA seminars and address the deeper frailties of calculating vehicle speeds using any video metadata (including FFprobe reports). Through this 90 minute lecture, Andrew will provide an overview of how timing is stored within both proprietary formats and standard ISO MP4 formats and will also highlight real-world vehicular homicide cases where these metadata values are invalid for calculating vehicle speeds. The session also provides a detailed step-by-step walkthrough of an accurate methodology for calculating vehicle speeds in all video files using VFR Lightboard technology.

*Presenter:* Andrew Fredericks is a LEVA certified Forensic Video Analyst and a founder of Occam Video Solutions, whose flagship product iNPUT-ACE empowers forensic video analysts around the world to further video-centric investigations. Andrew designed iNPUT-ACE, including each of its patent pending technologies, and has directed the software's development since the company's inception. As a forensic video analyst, Andrew has been qualified as an expert in various courts in the USA and Canada and has successfully testified during Daubert and Mohan motions. Andrew continues to lead the development of iNPUT-ACE, while maintaining his commitment to teaching video analysis methodologies to thousands of police investigators and forensic video analysts every year.

## **Calculating Timing and Distance From Video\***

Building on Andrew Frederick's session on Calculating Vehicle Speeds, students will receive **hands-on** instruction on best practices for utilizing the VFR (Variable Frame Rate) Lightboard and Camera Match Overlay Tool to accurately calculate timing and distance from video. Brandon will guide attendees through setting up the VFR Lightboard on scene, retrieving from the DVR, and processing the data through the VFR Lightboard Calculator in iINPUT-ACE. The session will also cover the step-by-step workflow using the Camera Match Overlay Tool to calculate distances in any 3D pointcloud software.

*Presenter:* Brandon Wahl is a LEVA certified Forensic Video Technician and Technical Support Director for the iINPUT-ACE software. As a Forensic Video Technician, he has assisted on hundreds of video-centric investigations and continues to help agencies accurately decode proprietary video file formats, process digital multimedia evidence, and prep demonstratives for court. Brandon has been a member of the iINPUT-ACE team since the launch of the software in 2016 and continues to train investigators on accurately decoding and interpreting video evidence.

## **Courtroom Trial Preparation: You Have All This Tech Evidence—Now What?**

The Courtroom Technology Trial Preparation will discuss the pitfalls of using technology to present evidence to the jury when limited by the tools provided in a specific courtroom as well as the hurdles in converting this evidence to usable formats for the presentation. While the example case will be a drug case, it is a Federal Title III wiretap example that encompassed all forms of media. Investigators will learn how to use open source tools to visualize their evidence and see demonstrations of some paid tools that are available.

*Presenter:* Billy Rodgers is a High-Tech Crime Specialist with the National White Collar Crime Center (NW3C). In 1997, Billy was hired as a Special Agent with the U.S. Drug Enforcement Administration (DEA). His focus was on wiretap cases involving cellphones and apps. Billy assisted in a wiretapping case that involved the cloning of a WhatsApp account and the unique difficulty in collecting live evidence in an international money laundering organization. He is pursuing a master's degree in Digital Forensics and Cyber Security at Desales University and is a Cellebrite Certified Physical Analyzer. Billy has had A+ and Net+ courses through the Investigative Technology branch of DEA and completed the Cisco Certified Networking Academy courses.

## **Creating Demonstrative Exhibits Using Photoshop Workshop**      **Limited to 20 pre-registered students**

This eight-hour hands-on workshop will cover methods for creating demonstrative court exhibits using Adobe Photoshop for both still and video files. This will include methods for demonstrating the step-by-step process used for clarifications, illustrating enlarged pixel data, creating annotations, making comparison charts, contact sheets and storyboards, multipage PDF or PPT files from video or still images, frame-by-frame PDFs and video files, and more! Step-by-step methods will be used, but Photoshop Actions will also be created and provided as part of this workshop. In addition, several Photoshop Scripts will be provided to even further automate these processes. The participant will gain the skills to create strong courtroom exhibits from still frames and from video segments with an efficient workflow.

*Presenter:* George Reis a LEVA Certified Forensic Video Analyst who provides training and consulting in video analysis, photo analysis, and forensic photography through his firm, Imaging Forensics. He has worked on, and testified in, criminal and civil cases throughout the US. He has provided training to thousands of officers, investigators, and analysts throughout the world over the past 25 years. George is also certified in Forensic Photography & Imaging through the IAI. His background includes 15 years at the Newport Beach (CA) Police Department.

## **Detecting Image and Video Manipulations Using Conventional Methods and AI\***

The increasing possibility of manipulation is changing the perception on images and video's used for intelligence and evidence in forensics and other branches. A tendency towards incorporating authentication into the standard workflow for professional forensic practice can be noticed worldwide.

In this lecture, Foclar and DuckDuckGoose presenters discuss the different types of manipulation, including deep fakes. Next to an overview of more conventional detectors, the application of deep learning neural networks is discussed. During training, such a neural network is given thousands upon thousands of both deepfake images and real images. After training the system is able to classify any image as real or fake with a certain accuracy. To make results more insightful, the so-called explainable networks can also highlight the pixels based on which it decides that a certain image is a deepfake. Are you ready to dive deep into tackling manipulations?

*Presenter:* Henk-Jan Lamfers is one of the founders of Foclar. By translating scientific methods into intuitive software applications, Foclar aims to provide law enforcement around the world with the tools to effectively extract intelligence and build a case from digital images and video. Henk-Jan holds a PhD in Physics and more than 20 years of experience in software developing.

## **Did You Pull the Correct Video?**

Hear learned details from cases that involved pulling video, such as, where to get your time reference, best way to download, what to include in your report. You'll be provided with a sample form to use at your work the presenter has filed on hundreds of cases.

*Presenter:* Gary Freedman is a LEVA Certified Forensic Video Technician and with the Concord Police Department in California. A 21-year veteran in law enforcement, he has handled over 700 cases involving video evidence...and counting!

## **Emerging IoT Digital Evidence Considerations; Challenges, Opportunities, and What's Ahead.**

Become familiar with the Internet of Things as an emerging source of Digital Evidence in a wide array of potential search site environments. The presentation will baseline the technology with a focus on consumers and small business implementation. Further, this session will address numerous law enforcement challenges from officer safety to identification and preservation of evidence. Special attention will be paid to classes of IoT technology, capacity to store or share data, processing capabilities, power considerations, the wide variety of connectivity options, and what this all means for planning, identification, access, handling and preservation of evidence. The presentation will also look at technology trends and new challenges ahead.

*Presenter:* Lt. Colonel James J. Emerson USMC (Ret.) is Vice President at the National White Collar Crime Center (NW3C). Jim has more than 42 years of law enforcement and security experience, encompassing a wide spectrum of national security and public safety disciplines which focus on cybercrime investigation, computer forensics, and seventeen years of related criminal intelligence. In addition to holding numerous certifications in cybersecurity and digital forensics, Jim has presented both evidence and expert testimony related to digital evidence in US Federal Court and trained law enforcement executives, criminal investigators, and prosecutors regarding digital evidence and forensics. Jim has been the Chairman of the International Association of Chiefs of Police Computer Crime and Digital Evidence Committee for over ten years and currently serves on a NCMEC task force to their Advisory Council.

## **FFmpeg Basics Workshop\***

The FFmpeg application and the LIBAV decoding library is used by media houses, broadcasters, stream services, CCTV companies and Forensic Video Software providers. Grasping the building blocks of these packages can not only assist you in the lab, but also in the courtroom. Designed for those people new to the command line tool, this hands-on workshop will help you understand the components and their use.

*Presenter:* Blake Sawyer is certified as a LEVA Forensic Video Analyst and an IAI Certified Forensic Video Examiner. He has taught courses with LEVA, as well as served on its Board. Currently, he is the Chair of the Video subcommittee for SWGDE (Scientific Working Group for Digital Evidence) and is a member of the Digital Evidence subcommittee at OSAC (Organization of Scientific Area Committees). Before working for Amped Software, Blake worked for Texas' Plano Police Department in 2014, where he created the digital media unit within its Crime Scene section.

## **Fraudulent Evidence Using Different Methods of Attack\***

With the advent of Deep Fakes there has been a heightened interest in video authentication. In this talk we explore some possible methods of tampering with Security Digital Video Recorders to produce fraudulent evidence. We have selected a variety of methods based on different attack vectors and complexities, and discuss the requirements and weaknesses of each attack to better understand its plausibility and methods to detect the tampering involved.

*Presenters:* Tim Bate, Technology Manager and Bart Wolczyk, Senior Technology Engineer, of DME Forensics.

## **Game On!**

Back for its 4th season! Patterned after popular game show formats, teams and individuals will again answer questions regarding forensic video analysis leading up to prizes including **free tuition to LEVA's 2022 training symposium in San Diego, CA!** Are you game?

*Presenters:* Roger Cain is a LEVA Certified Forensic Video Analyst and LEVA's Certification Program Manager assigned to the Rocky Mountain Information Network (RMIN) in Phoenix.

Roy Dunkelbarger is a LEVA Certified Forensic Video Analyst assigned to the Rocky Mountain Information Network (RMIN) in Phoenix and on LEVA's Deputy Certification Program Manager.

## **Hidden in Plain Sight - Video Layering Techniques**

With caseloads increasing and data storage sizes exploding, computer forensic examiners are feeling the pressure to clear data and close cases quicker. With the ease of access to pirated material, and the lack of prosecutorial recourse for such media, many examiners quickly clear the material to ensure there is no illegal Child Sexual Abuse Material and move on. This can lead to missed evidence. We have discovered a way to conceal a video file within a video as a secondary layer. This prevents many utilities from displaying the second or hidden stream to forensic examiners. In this lecture, we discuss the new discovery regarding potential hiding places that have not been identified previously by automated forensic tools. We also address the solution to ensuring you are not missing this new potential hiding place and provide open source resources to ensure each video file you investigate is truly non-relevant.

*Presenter:* Olin Rankin is a High-Tech Crimes Specialist with the National White Collar Crime Center (NW3C). He teaches classes regularly on Dark Web, Virtual Currency, and Basic Digital Forensic Analysis. Also, he develops and tests course content that specializes in Computer Forensics and Investigative Techniques. Olin was in law enforcement for 15 years and remains a Reserve Deputy in Arkansas. An active member of the International Association of Computer Investigative Specialists (IACIS), Olin is a Certified Forensic Computer Examiner (CFCE) acts as a Peer Review Coach for the CFCE process with IACIS.

## **Interactive Video Authentication Workshop\***

This workshop will focus on the practical application of video authentication and source identification. Join us in this interactive journey evaluating the authenticity and provenance of attendee submitted videos. Attendees are encouraged to submit their most interesting (from a potential manipulation/source identification viewpoint) video files for analysis, either self-created or obtained elsewhere. A special prize will be awarded for the most interesting video that can “stump” the group. Instructions for video submission will be provided prior to the workshop.

*Presenters:* Bertram Lyons is the Managing Director, Software at Medex Forensics. Bertram specializes in the analysis, management, and preservation of digital content. For fifteen years, Bertram worked as a digital archivist for extensive archives. His recent clients include the Federal Bureau of Investigation, Smithsonian Institution, Paramount Pictures, Yale University, the Library of Congress, and the International Olympic Committee. Bertram, as a contractor, currently develops software and training for FBI’s Forensic Audio Video and Image Analysis unit and has been serving in that capacity for more than three years — providing digital audio and video forensic analysis support through customized training (for digital audio and video examiners) and through customized software for the unit. Bert also serves as a member of the SWGDE (Scientific Working Group on Digital Evidence) Digital Video Working Group.

Brandon Epstein is the Director of Training at Medex Forensics. Serving in law enforcement since 2007, Brandon has performed hundreds of digital forensic examinations involving thousands of hours of digital video and has been qualified as an expert witness over a dozen times in the past two years. Brandon holds a Master of Science degree in Recording Arts – Emphasis Media Forensics and is a Certified Forensic Video Analyst (CFVA) and Certified Forensic Video Examiner (CFVE). He is active with many professional organizations, including the Scientific Working Group on Digital Evidence, the IAI Forensic Video Certification Board, the IACP Cybercrime and Digital Evidence committee and ASTM Committee E30 on Forensic Science.

## **Not All Body Worn Cameras Are Created Equal\***

What every video practitioner needs to know about body worn camera technologies. The recent consolidation of BWC manufacturers has resulted in significant changes to how video images and audio data are recorded, stored, and later recovered for investigations. Some systems that used to record real-time video, no longer meet the standards set by the International Association of Chiefs of Police for mobile video recording. Through recent casework, mostly related to Officer Involved Shooting investigations, this presentation demonstrates techniques and methodologies used to expose the many technical limitations of BWCs to reproduce events accurately. You’ll learn about the many technical differences between the primary BWC systems used by North American Law Enforcement Agencies. You’ll explore the challenges and potential solutions to video synchronization between BWC and other video sources. Discover how motion blur, image refresh rates and image sample rates, can be used to interpret force events, when specific timing of images are unreliable.

*Presenter:* Grant Fredericks is a LEVA Certified Forensic Video Analyst and contract instructor at the FBI National Academy in Quantico. He specializes in the video examinations of Officer Involved Shooting Incidents. As a consultant for Major Crime and Joint Forces Operations, Grant provides technical consulting for the nation’s most high-profile video related cases. He has testified over 300 times in courts throughout the US, Canada, the UK, New Zealand, and elsewhere. He has consulted for the US Department of Justice, the IACP and the National Institute of Justice. He is a co-author of Digital Video Systems Minimum Performance Specifications for US law enforcement. Grant is a former police officer and coordinator of the Vancouver Police Forensic Video Unit in Canada.

## **Real-World File Integrity and Content Analysis Workshop\***

In this presentation, you'll understand the key concepts of Image Authentication, learn the different analysis stages and identify the importance of fact based reporting. Analyzing image integrity and authenticity is a lot more than just reading the metadata. The entire structure, which includes the pixels that form the image, must be analyzed and compared to ensure you can not only see data abnormalities, but also image artifacts that question the images reliability. Using Amped Authenticate, users will work on real-world images, answering real-world questions regarding integrity and authenticity.

*Presenter:* Blake Sawyer (See FFmpeg Basics above)

## **Report Writing Fundamentals for Forensic Video Analysis**

Analytical report writing has been evolving in recent years regarding content, wording, opinions, attachments and presentation. This session will include what is necessary to include in a scientific analysis report to provide to investigators and the courts.

*Presenter:* Tracy Peloquin is a LEVA Certified Forensic Video Analyst and principal instructor for LEVA's Level 3 course. She has been employed by the Ontario Provincial Police since 1990. During her 31 years in forensics, Tracy has written thousands of reports in the field of Forensic Video Analysis and the field of Forensic Comparison (fingerprint, footwear, physical match). She has a vast amount of court experience in several different forensic science disciplines. Tracy has a Bachelor of Science in Criminalistics and an Associate degree in Law Enforcement from Lake Superior State University in Michigan.

## **Shots Fired! The Workshop Sequel**

This is a follow up to last year's class "Shots Fired: When a picture is NOT worth a thousand words". As a workshop, student will be guided through processed in order to conduct an analysis to include syncing of video files, identifying video and audio cues of shots fired, using time data to possibly determine who and where the shots came from. The students will be shown/or can utilize three different software packages while attempting each activity to include Adobe Premiere, iNPUT-ACE and Amped FIVE.

*Presenter:* Sergeant Chris Andreacola a LEVA Certified Forensic Video Technician and has been a member of the Tucson Police Department for thirty-four years, 26 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.

## **Starting Out\***

New to Amped FIVE or curious about it? In this one-day workshop, you'll understand the concept and interface of Amped FIVE, perform simple conversions and analyze and interpret media files and restore and enhance images using the Image Generation Model. Using the key scientific concepts of repeatability, reproducibility, and reliability, you will better understand its conversion, analysis, measurement, interpretation, restoration, enhancement and presentation capabilities.

*Presenter:* Blaine Davison is a retired Forensic Video Analyst and Digital Evidence Administrator from the Norman, Oklahoma Police Department. He joined the team at Amped Software in March of 2021 after over 23 years of commissioned service. He is also a LEVA Certified Forensic Video Technician and served on the LEVA Board of Directors as President, Corporate Vice President and Webmaster. He was also a recent member of the video subcommittee of the Scientific Working Group for Digital Evidence (SWGDE).

## **Understanding the Amped Conversion Engine\***

At the start of every job, a technician or analyst must decode and view the video. This is where the Amped Conversion Engine takes the challenge from you. Amped DVRConv, Replay and FIVE all have the same engine but work differently in each application. Lossless conversion or transcoding of proprietary formats is only the beginning of the process but understanding how it all starts will help you make better informed decisions on where and when to use the applications depending on operational requirements.

*Presenter:* Blake Sawyer (See FFmpeg Basics above)

## **Understanding Multimedia Timing Information\***

Video is full of timing information..... Frames per second, Presentation Time, Universal Time Code, Real Date and Time.....Understanding each one, and how they are calculated and presented, will help you utilize the data better and identify inconsistencies. From use of force, to vehicle speed and motion, identifying the reliable timing is everything.

*Presenters:* Blake Sawyer, David Spreadborough and Blaine Davison of Amped Software.

## **Working With Motion-Detect and 360 Views In Premiere Pro**

Premiere Pro is an excellent tool for multi-camera demonstratives, but there are challenges in working with surveillance systems that use motion detection and/or distorted views such as 360 degree or fisheye lenses. Techniques will be demonstrated the presenter developed to combine disparate sources into a synchronized multi-camera view that aid with case investigation and presentation in court.

*Presenter:* G. David Frye is with the Champaign, IL Police Department. He is a software developer with 6 years experience in digital forensics. His video production experience dates back to high school. He taught analog video production for community video organizations and is grateful to no longer be messing with reel-to-reel tape! He expects to complete his LEVA video technician certification in 2021 and analyst certification in 2022. He has produced multi-source video demonstratives for investigations and his productions have been used successfully in two homicide trials.