

DIGITAL & MULTIMEDIA SCIENCES



Wednesday

Poster Session

- 11:30 a.m. - 1:00 p.m. C1 **Convolutional Neural Networks for the Automatic Classification of Shoe Print Features**
*Miranda R. Tilton, BA**; *Susan VanderPlas*
- 11:30 a.m. - 1:00 p.m. C2 **Digital Evidence in Missing Persons Investigations**
*Glenn K. Bard**

Thursday

Can We Talk? Information Sharing and Caring

Moderator: *Patrick A. Eller, MS*
United States Army Criminal Investigation Command
Quantico, VA

Co-Moderator: *Eddy B. Brixen, BA*
EBB-Consult
Smorum, DENMARK

- 8:30 a.m. - 8:50 a.m. C3 **Improving Information Sharing With the Cyber-Investigation Analysis Standard Expression/Unified Cyber Ontology (CASE/UCO)**
*Vikram Harichandran, MS**; *Cory Hall, MS*
- 8:50 a.m. - 9:05 a.m. C4 **Inter-Regional Digital Forensic Knowledge and Information Exchange Platform**
*Eoghan Casey, PhD**; *Anna Zehnder*
- 9:05 a.m. - 9:25 a.m. C5 **Digital Trace Reference Library (DTRL)**
*Eoghan Casey, PhD**; *Owen Brady, PhD*
- 9:25 a.m. - 9:45 a.m. C6 **The Development of Protocols for the Analysis of Mobile Devices That Have Been Submerged in Oil-Based, Flammable, and Clandestine Chemical Liquids**
*Nico Kresl**; *Chelsey McPhillen**; *HollyAnn D. Swann, BA*; *Steven B. Watson, BA*;
David Rathbone; *Lauren L. Richards-Waugh, PhD*; *Joshua L. Brunty, MS*;
Catherine G. Rushton, EdD
- 9:45 a.m. - 10:10 a.m. C7 **Guidance to Digital Forensics Practitioners on the Handling of Evidence Exposed to Biohazardous Materials**
*Steven B. Watson, BA**; *Kaitlyn Fox, BS**
- 10:10 a.m. - 10:20 a.m. **Break**



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Danger Ahead! DMS Forensic Impacts

*Moderator: Stephen B. Roche, MS
Sempra Energy
San Diego, CA*

*Co-Moderator: Alex J. Nelson, PhD
National Institute of Standards and Technology
Gaithersburg, MD*

- 10:20 a.m. - 10:40 a.m. **C8** **Examination of First-Year Research Findings for the Safer Viewing Platform: A Convergence of Convolutional Neural Network Predictions and a Safer Viewing Technology to Speed Up the Triage of Sex Assault Multimedia While Managing the Investigator's Stress Level**
Cory Hall, MS; Jay Doyle, PhD*; John Tavalacci, BS*; James D. Morris-King, PhD;
Rob H. Schmicker, BS*
- 10:40 a.m. - 11:00 a.m. **C9** **Human Versus Computer: Age Estimation Applied to Child Pornography**
*Mateus D.C. Polastro, MSc**
- 11:00 a.m. - 11:20 a.m. **C10** **Assessing the Psychological Well-Being of Multimedia Forensic Analysts**
Kathryn C. Seigfried-Spellar, PhD; Kyle A. Schnetzler, BS; Marla E. Carroll, BS**
- 11:20 a.m. - 11:35 a.m. **C11** **A Fake News Reporting Manual to the Elections**
Mateus D.C. Polastro, MSc; Pedro M.S. Eleuterio, MSc*
- 11:35 a.m. - 11:55 a.m. **C12** **Social Network Image Ballistics Through Automatic Reverse Engineering**
Oliver Giudice, PhD; Antonino Paratore, MS*; Sebastiano Battiato, PhD*;
Luca Guarnera, MS**
- 11:55 a.m. - 1:00 p.m. **Lunch**

Poster Session

- 11:30 a.m. - 1:00 p.m. **C13** **Child Pornography in Computer Forensics: What Are the Most Relevant Pieces of Digital Evidence?**
*Pedro M.S. Eleuterio, MSc**

Hiding in Plain Sight: Evidence Collection

*Moderator: Christina A. Malone, MSFS
Defense Forensic Science Center
Forest Park, GA*

- 1:00 p.m. - 1:20 p.m. **C14** **Fortnite Forensics: A Study of How to Extract Artifacts From Android™ Memory**
Justin Grover, MS; Chris Meffert, MS**
- 1:20 p.m. - 1:40 p.m. **C15** **WAEventsLogParser: Recovering Hidden (and Relevant) Evidence From WhatsApp Events Log File in Android™ Devices**
*Mateus D.C. Polastro, MSc**
- 1:40 p.m. - 1:55 p.m. **C16** **Breaking User Passwords in Android™ Devices Through Recovery Partition Substitution**
*Pedro M.S. Eleuterio, MSc**

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1:55 p.m. - 2:10 p.m. C17 **Stego App Database (DB) and the Prevalence of Mobile Steganography**
*Jennifer Newman, PhD**; *Li Lin, BS*; *Wenhao Chen, BS*; *Yong Guan, PhD*;
Stephanie Reinders, BA; *Min Wu, PhD*

2:10 p.m. - 2:20 p.m. **Break**

Hiding in Plain Sight: Evidence Analysis

Moderator: *Steven B. Watson, BA*
VTO, Inc
Broomfield, CO

Co-Moderator: *Shuangteng Zhang, PhD*
Eastern Kentucky University
Richmond, KY

2:20 p.m. - 2:40 p.m. C18 **Forensic Audio Analysis of Apple iPhone® Voice Memo Recordings**
*Catalin Grigoras, PhD**; *Jeff M. Smith, MS*

2:40 p.m. - 2:55 p.m. C19 **Android™ App Forensic Evidence Database**
*Chao-Chun C. Cheng**; *Chen Shi, MS*; *Brody Concannon*; *Zhenqiang Gong, PhD*;
Yong Guan, PhD

2:55 p.m. - 3:10 p.m. C20 **Go-Go Gadget, Smartwatch! An Investigation of Wearable Devices and Their Forensic Value**
*Nicole R. Odom, BS**; *Jesse M. Lindmar*; *Joshua L. Brunty, MS**; *Catherine G. Rushton, EdD*

3:10 p.m. - 3:30 p.m. C21 **Using Reverse Projection and File Metadata Analysis to Calculate Speed in Recorded Digital Video**
*Brandon Epstein, BS**; *Marla E. Carroll, BS**

3:30 p.m. - 3:40 p.m. **Break**

Fun Times! Emerging Technologies

Moderator: *Marla E. Carroll, BS*
Forensic Video & Audio Associates, Inc
Plantation, FL

3:40 p.m. - 4:00 p.m. C22 **Smart Home Internet of Things (IoT) Traces: Forensic Potential and Challenges**
*Eoghan Casey, PhD**; *Joshua I. James, PhD*; *Francesco Servida*

4:00 p.m. - 4:20 p.m. C23 **Diving Into Blockchains Contents: The Bitcoin Snapshot**
*Oliver Giudice, PhD**

4:20 p.m. - 4:40 p.m. C24 **Face Morphing Detection**
*Ilias Batskos, BSc**; *Andrea Macarulla, MSc**; *Zeno J. Geradts, PhD**

4:40 p.m. - 5:00 p.m. C25 **Analysis of “Deepfakes” Creation and Detection: Video and Image Fabrication Using Deep Learning**
*Jeff M. Smith, MS**; *Catalin Grigoras, PhD*



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Friday

Some Sci-Fi Stuff Goin' On Here: Fraud and Anti-Forensics

*Moderator: Irfan Ahmed, PhD
Virginia Commonwealth University
Richmond, VA*

*Co-Moderator: James E Siegmund, BS
United States Army Criminal Investigation
Command
Guyton, GA*

- 8:30 a.m. - 8:45 a.m. **C26** **Non-Obvious Links in Online Frauds: Modeling and Comparison of Digital Traces, Context, and Actions**
Timothy Bollé, Eoghan Casey, PhD*
- 8:45 a.m. - 9:05 a.m. **C27** **Proving Database Tampering Through In-Memory Object Reconstruction**
Aisha Ali-Gombe, PhD; Sneha Sudhakaran, MTech; Andrew Case, MS;
Golden G. Richard III, PhD*
- 9:05 a.m. - 9:25 a.m. **C28** **Hands-On Digital Image Authentication Techniques**
Oliver Giudice, PhD; Antonino Paratore; Sebastiano Battiato, PhD*; Luca Guarnera*
- 9:25 a.m. - 9:45 a.m. **C29** **Analysis of Virtual Machines and Type II Hypervisors in Forensics and Anti-Forensics Paradigm**
Hammad Riaz, MS; Mohammad A. Tahir, PhD*
- 9:45 a.m. - 10:00 a.m. **C30** **A New Botnet Command and Control Mechanism Using the Ethereum Platform**
*Joshua Ralls; Shuangteng Zhang, PhD**
- 10:00 a.m. - 10:10 a.m. **Break**

The Fuzziness of IT: Evidence Collection II

*Moderator: Jason Lewis, PhD
University of South Florida
Department of Computer Science & Engineering
Tampa, FL*

- 10:10 a.m. - 10:30 a.m. **C31** **Rapid Differential Forensic Acquisition Using Limited Resource Computing**
Mark D. Guido, MS; Vikram Harichandran, MS; Glenn A. Melton, BS*
- 10:30 a.m. - 10:50 a.m. **C32** **Reevaluating the Mobile Forensic Acquisition Levels**
Troy Lawrence, BBA; Umit Karabiyik, PhD**
- 10:50 a.m. - 11:10 a.m. **C33** **iPhone® Video Metadata: What Can It Teach Us About a Recordings History?**
James Zjalic, MSc; Jeff M. Smith, MS; Cole Whitecotton, BS; Catalin Grigoras, PhD*
- 11:10 a.m. - 11:25 a.m. **C34** **Instagram™ Forensic Artifacts on Windows® Systems**
*Carol S. Smith, BS; Shuangteng Zhang, PhD**

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- 11:25 a.m. - 11:45 a.m. **C35** **Fuzzing Memory Forensics Frameworks**
*Arian Dokht Shahmirza, BSc**; *Aisha Ali-Gombe, PhD*; *Andrew Case, MS*;
Golden G. Richard III, PhD
- 11:45 a.m. - 12:05 p.m. **C36** **WITHDRAWN**
- 12:05 p.m. - 1:10 p.m. **Lunch**

Machines and People—Match-Making: Biometrics and Hardware

Moderator: Yong Guan, PhD
Iowa State University
Ames, IA

Co-Moderator: Andrew N. Crouse, BA
Epiq Systems, Inc
Washington, DC

- 1:10 p.m. - 1:35 p.m. **C37** **Machine Learning to Detect and Localize Forensics-Relevant Features**
Sara Mousavi; *Audris Mockus, PhD**; *Dawnie W. Steadman, PhD*; *Angela M. Dautartas, PhD*
- 1:35 p.m. - 2:00 p.m. **C38** **An Investigation of Distinctiveness of Skin Texture for Forensic Applications**
Frodo Chan, PhD; *Xiaojie Li, PhD*; *Wojciech Matkowski**; *Adams Wai Kin Kong, PhD*
- 2:00 p.m. - 2:25 p.m. **C39** **A Study of Wrist Identification for Forensic Applications**
*Wojciech Matkowski**; *Frodo Chan, PhD*; *Adams Wai Kin Kong, PhD*
- 2:25 p.m. - 2:50 p.m. **C40** **Methods to Characterize 3D Scanners for Forensic Applications**
*Prem Rachakonda**; *Bala Muralikrishnan, PhD**
- 2:50 p.m. - 3:10 p.m. **C41** **A Ladder Logic Decompiler for Supervisory Control and Data Acquisition (SCADA) Network Forensics**
*Irfan Ahmed, PhD**