

ENGINEERING & APPLIED SCIENCES

Thursday

Poster Session

11:30 AM – 1:00 PM **D1** **Technology Advances in Crime Scene Investigation**
*Massimiliano Esposito, MD**; *Gluseppe Li Rosi, PhD*; *Elisa Pappalardo, MD*; *Monica Salerno, MD*

Forensic Analysis/Collision Reconstruction

8:30 AM – 8:45 AM **D2** **A Method for the Evaluation of Upper Rear Vehicle Structures**
*Brian Herbst, PE**; *Chris Clarke, BS*

8:45 AM – 9:05 AM **D3** **Rear Impact Crashworthiness Defects Proven by Forensic Analysis Combined With Static and Dynamic Testing: The Failures of Seats, Head Restraints, and Belts**
*Mark C. Pozzi, MS**

9:05 AM – 9:20 AM **D4** **Mapping Vehicle Headlights to Identify the Threshold of Human Visual Performance in a Nighttime Visibility Study**
*Jorge Mendoza, BS**

9:20 AM – 9:30 AM **D5** **An Experimental Analysis of How Non-Nominal Sitting and Pyrotechnic Seat Belt Pretensioners Interact**
*Adam Goodworth, MS, PhD**

9:30 AM – 9:50 AM **BREAK**

9:50 AM – 10:10 AM **D6** **Photogrammetry Software Used to Survey Site, Map Tire Friction Marks, and Recreate the Driver's View in Support of Alternative Collision Scenarios**
*Kurt D. Weiss, MSME**; *Jorge Mendoza, BSME*

10:10 AM – 10:30 AM **D7** **Recreational Vehicle Crashworthiness: Enhanced Injury Caused by Unsafe Vehicle Interior Structures Combined With Predictable Seat and Belt Failures**
*Mark C. Pozzi, MS**

10:30 AM – 10:45 AM **D8** **Visibility Study Uses Camera Tracking Software to Analyze Dashcam Video in a Bicycle Collision**
*Jorge Mendoza, BS**

10:45 AM – 11:45 AM **D9** **Slip and Fall: Methods of Simulation and Validation of a Formula**
*Darren Franck, MSME**; *Harold Franck, MSEE**; *Vincent D. Franck*; *Alexander Franck*

11:45 AM – 1:00 PM **BREAK**

Statistics and Machine Learning #1

1:00 PM – 1:20 PM **D10** **Comparing Statistical/Machine Learning Approaches to Identifying Authorship**
*Francesco Gabriele Strafforello, MA**; *Carole E. Chaski, PhD*

1:20 PM – 1:40 PM **D11** **Counterexamples for the Use of Spectrogram Comparison as a Method of Forensic Speaker Recognition by Law Enforcement and in Courts as Evidence**
*Jeffrey Nathaniel Holmes**

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1:40 PM – 2:00 PM	D12	Using Statistical Analysis to Assist With Writer Identification <i>Mike Wakshull, MS, BS*</i>
2:00 PM – 2:20 PM	D13	Linguistics, Computer Vision, and Handwriting Identification: HANDLER <i>Carole E. Chaski, PhD*</i>
2:20 PM – 2:35 PM		BREAK

Statistics and Machine Learning #2

2:35 PM – 2:55 PM	D14	Presenting Model Uncertainty to Decision Makers <i>Willem A. Schreuder, PhD*</i>
2:55 PM – 3:25 PM	D15	Graph Theoretic Techniques for Image Comparisons <i>Gautham Venkatasubramanian*; Alicia Laura Carriquiry, PhD</i>
3:25 PM – 3:30 PM	D16	Quantitative Matching of Forensic Evidence Fragments Using Fracture Surface Topography and Statistical Learning <i>Ashraf Bastawros, PhD*; Ranjan Maitra, PhD; William Meeker, PhD; Lauren Claytor, MS, BS</i>
3:30 PM – 3:50 PM		BREAK

Innovation in Forensic Science

3:50 PM – 4:05 PM	D17	Innovation Fundamentals: The Prelude for Next Generation Advances in Forensic Sciences <i>David Pienkowski, PhD, MBA*; Jacklyn N. Ady, MBA, BS</i>
4:05 PM – 4:25 PM	D18	What Researchers and Practitioners Should Know About the Forensic Innovation Ecosystem <i>Rebecca L. Shute, MS*</i>
4:25 PM – 4:40 PM	D19	The Use of STL Technology and 3D Processing in Forensics: New Tools and a Multidisciplinary Approach <i>Gennaro Baldino, MD*; Fabio Salmeri*; Daniela Sapienza, MD*; Filippo Cucinotta; Marcello Raffaele; Alessio Altadonna; Cristina Mondello, MD; Vincenzo Cianci; Elvira Ventura Spagnolo, MD; Alessio Asmundo, MD</i>
4:40 PM – 5:00 PM	D20	Rule 702: Origins and Implications for Engineers and Attorneys <i>Gail Groy, JD*; David Pienkowski, PhD, MBA</i>

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Friday—Session I

Poster Session

11:30 AM – 1:00 PM **D21** **A Study on the Application of the Genetic Algorithm for Fall Analysis**
*Chan-Seong Park, PhD**

EDR Analysis Applied to Crash Reconstruction

8:30 AM – 9:00 AM **D22** **Comparing Event Data Recorder (EDR) Pre-Crash Data With UTC Time Codes in Cell Phone Records and Pre-Crash Data and UTC Data in Front Camera Modules (FCMs)**
*Billy S. Cox**

9:00 AM – 9:30 AM **D23** **Using EDR Pre-Crash Data to Evaluate Driver Behavior in Traffic Collisions**
Kurt D. Weiss, MSME; Billy Cox*; Robert Anderson, MSBE**

9:30 AM – 9:50 AM **D24** **Understanding the Limitations of EDR Data for Crash Reconstruction**
Brendan Bourdage, PhD; John Smith, MSEE, PE; Peter Alexander, PhD*

9:50 AM – 10:25 AM **D25** **Vehicle Wheel Speed: Did Tire Wear Lead to a Sudden Loss of Control on a Wet Road?**
*Billy S. Cox**

10:25 PM – 10:40 AM **BREAK**

Crime Investigation Techniques

10:40 AM – 11:00 AM **D26** **The Detection of Blood Stains on Natural, Semi-Synthetic, and Synthetic Fabric Exposed to Extreme Environmental Conditions Using ATR/FTIR Spectroscopy**
Entesar Al-Hetlani, PhD; Zainab Hussain; Meshari Al-Qalfas; Mohamed Amin, PhD; Igor K. Lednev, PhD*

11:00 AM – 11:15 AM **D27** **Fluorescent Carbon Quantum Dots Produced From Natural Resources for Sweat Latent Fingerprint Recognition**
Amarnath Mishra, MPhil, PhD; Nisha Yadav, MSc; Vivek Mishra, PhD*

11:15 AM – 11:35 AM **D28** **The Discrimination of Smokers and Non-Smokers Based on the Analysis of Fingermarks Using ATR/FTIR Spectroscopy and Chemometrics**
Mohamed Amin, PhD; Entesar Al-Hetlani, PhD; Igor K. Lednev, PhD*

11:35 AM – 11:55 AM **D29** **The Influence of Taphonomic Changes on the Persistence of Serrations in Stab Wounds**
Sarah V. Hainsworth, BEng, PhD; Sophie A. Stanley, MBChB, BSc; Guy N. Ruttly, MBBS, MD*

11:55 AM – 1:00 PM **BREAK**

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Environmental

1:00 PM – 1:15 PM	D30	Environmental Forensic Microscopy Considering Assemblages for World Trade Center Dust and Wildfire Smoke <i>James Millette, PhD*</i>
1:15 PM – 1:30 PM	D31	Noxious Gas Inhalations—A Lethal Occupational Hazard While Cleaning Effluent Treatment Plants in India: A Forensic Analysis <i>Deen Dayal, MBBS, MD*; Mohit Chauhan, MBBS, MD</i>
1:30 PM – 1:45 PM	D32	The Ruggedness of a Kinetic Model to Predict Chromatograms of Gasoline Under Different Evaporation Conditions <i>Hannah Jewell LaVoie, BS*; Victoria L. McGuffin, PhD; Ruth Waddell Smith, PhD</i>
1:45 PM – 2:00 PM		BREAK

Artificial Intelligence: Machine Generated Text

2:00 PM – 2:20 PM	D33	Data Collection of Forensically Feasible AI-Generated Texts: The ILE AI-Generated Corpus <i>Colton B. Wolk, BS*</i>
2:20 PM – 2:40 PM	D34	The Lexical Characteristics of AI-Generated Texts <i>Colton B. Wolk, BS*</i>
2:40 PM – 3:00 PM	D35	Semantic Characteristics of AI-Generated Texts <i>Francesco Gabriele Strafforello, MA*</i>
3:00 PM – 3:20 PM	D36	The Syntactic Characteristics of AI-Generated Texts <i>Samuel Olanrewaju, MA*</i>
3:20 PM – 3:35 PM	D37	A Statistical Authorial Modeling of AI-Generated and Human-Generated Texts <i>Carole E. Chaski, PhD*; Colton Wolk, BS; Francesco Gabriele Strafforello, MA; Samuel Olanrewaju, MA</i>

Friday—Session II

Multidisciplinary Session: Engineering & Applied Sciences and Forensic Nursing Science

9:00 AM – 9:15 AM	D38	Bone Injuries in Nursing Home Residents <i>David Pienkowski, PhD, MBA*</i>
9:15 AM – 9:30 AM	E20	Crowd Surge Triggers and Mitigating Factors <i>David A. Williams, DDS, MPH*; Joyce P. Williams, DNP, MFS, RN</i>
9:30 AM – 9:45 AM	D39	Electrical Injury Causes: Part 2—Evidence Retention <i>Helmut G. Brosz, BASc, DBA*</i>
9:45 AM – 10:00 AM	E21	Interdisciplinary Research Related to Sexual Violence and Dating App Usage <i>Emma Mae Walquist, BS*; Douglas Zytko; Michele Parkhill; Melissa M. McDonald, PhD; Kelly A. Berishaj, DNP, MSN; Wenqi Zheng, MS, BA; Xiangyu Zhou; Dongxiao Zhu</i>

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10:00 AM – 10:15 AM	D40	Powered Two-Wheeler Safety: An Experimental Analysis of Injuries and Injury Mechanisms Using Instrumented PMHS <i>John H. Bolte, PhD, MSc*; Amanda M. Agnew, PhD; Yun-Seok Kang, PhD</i>
10:15 AM – 10:30 AM		BREAK
10:30 AM – 10:45 AM	E22	Shaken Baby Syndrome—A Force to Be Reckoned With: A Case Review <i>Janean M. Fossum, BSN*</i>
10:45 AM – 11:00 AM	D41	What Is Known About Pregnant Occupants and Fetal Risk in Car Crashes <i>Adam Goodworth, MS, PhD*; Ciboney Hellenbrand; Charlotte Bloom; Ashley Pitzen</i>
11:00 AM – 11:15 AM	E23	"Compressed Baby Head": A New "Abusive Head Trauma" Entity? <i>Enrica Macorano, MD*; Mattia Gentile; Giandomenico Stellacci; Mariano Manzionna; Federica Mele, MD; Mariagrazia Calvano, MD; Mirko leonardelli, MD; Stefano Duma, MD; Giovanni De Gabriele, MD; Alessandro Cristalli, MD; Raffaella Minella; Aldo Di Fazio</i>
11:15 AM – 11:30 PM	D42	A Child Fatality in a Vehicular Rear Impact: A Forensic Analysis and Static Testing to Scientifically Prove Seat and Belt Failures <i>Mark C. Pozzi, MS*</i>