

# ENGINEERING & APPLIED SCIENCES

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## Thursday

### Poster Session

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| 11:30 am – 1:00 pm | <b>D1</b> | <b>A Study on the Application of a Thermal Mannequin for Estimating a Hypothermia Environment</b><br>Chan-Seong Park, PhD*                                                                                        |
| 11:30 am – 1:00 pm | <b>D2</b> | <b>Forensic Reconstruction of a Fatal Stair-Related Fall Using Postmortem CT, Photogrammetry, and Virtual Reality: A Case Report</b><br>Haruki Fukuda, MD, PhD*; Tadashi Hosoya, MD, PhD; Hiroyuki Tokue, MD, PhD |
| 11:30 am – 1:00 pm | <b>D3</b> | <b>A Study on an Analysis Methodology for Crowd Crush Accidents</b><br>Kyeongmin Lee, MEng*; Chan-Seong Park, PhD                                                                                                 |

## Thursday

### Medical Topics

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Moderator: Kurt Weiss, MS

Co-Moderator: Darren Franck, MSME

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| 8:30 am – 9:00 am | <b>D4</b>    | <b>Built to Harm? Forensic Perspectives on Design-Induced Suicide and Self-Harm in Detention Facilities</b><br>Mohsen Ghoreishi, MA*                                                                                                                              |
| 9:00 am—9:20 am   | <b>D5</b>    | <b>The Fluid Dynamics of Intravitreal Injections as It Relates to Needle Design</b><br>Amanda Felstow*; Cynthia Bir, PhD; Andrew Davis, MPH; Brittany Hodges, MD; Kavon Rahmani, BSc; Pradeepa Yoganathan, MD                                                     |
| 9:20 am—9:40 am   | <b>D6</b>    | <b>Spectral Characterization and AI Modeling of Human Decomposition-Impacted Soils Over the Period of One Year</b><br>Koushik Sanjay Saravana Kumar*; Lois Taylor, PhD; Jennifer DeBruyn, PhD; Sathish Samiappan, PhD                                             |
| 9:40 am—10:00 am  | <b>D7</b>    | <b>The Use of Postmortem Computed Tomography in the Identification of Bodies: A Newly Emerging Technique to Complement Traditional Methods</b><br>Maiko Yoshida, MD, PhD*; Yohsuke Makino, MD, PhD; Yukiko Uemura, MD; Ayaka Sakuma, PhD; Hirotarō Iwase, MD, PhD |
| 10:00 am—10:15 am | <b>BREAK</b> |                                                                                                                                                                                                                                                                   |

### AI, Linguistics, and Forensic Methods

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Moderator: Nathan Holmes

Co-Moderator: Carole Chaski, PhD

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| 10:15 am—10:35 am | <b>D8</b> | <b>Building the Artificial Intelligence Infrastructure for Forensics</b><br>Mihir Joshi, BS*; Vikas Kakar*; Maneesha Pandey, MD; Avneesh Pradhan, MS<br>Avneesh Pradhan, MS* |
| 10:35 am—11:05 am | <b>D9</b> | <b>Computational Linguistic Analysis in Financial Fraud Investigations</b><br>David Weber, DBA*; Ruwan Adikaram, PhD; Carole Chaski, PhD                                     |

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| 11:05 am—11:25 am | <b>D10</b>   | <b>From Variation to Verification: A Basic Forensic Method for Identifying Single vs. Multiple Authors of Anonymous Letters</b><br>Jelena Tabak, MA*; Andrea Ledić, MSc; Ivan Jerković, PhD                                                   |
| 11:25 am—11:45 am | <b>D11</b>   | <b>Exploring Runtime Evolution in Android: A Cross-Version Analysis and Its Implications for Memory Forensics</b><br>Babangida Bappah*; Aisha Ali-Gombe, PhD; Lauren Bristol, BS; Lamine noureddine, PhD; Sideeq Bello, BSc; Umar Farooq, PhD |
| 11:45 am—1:00 pm  | <b>BREAK</b> |                                                                                                                                                                                                                                               |

## Multidisciplinary Session: Engineering & Applied Sciences and Forensic Nursing Science

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Moderator: Max Veltman, PhD

Co-Moderator: Katie Wells, MPH

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| 1:00 pm—1:20 pm | <b>D12</b>   | <b>Thoracic Aorta Injuries in Fatal Motor Vehicle Crashes: A Pilot Study and Comparative Mechanism Analysis</b><br>Angela Harden, PhD*; Delaney Edwards, MA; Mary Cole, PhD; Brian Bautsch, MBA; Lauren Cardoni, MS; John Bolte, PhD        |
| 1:20 pm—1:40 pm | <b>D13</b>   | <b>Evaluating Thoracic Deflection and Injury Risk from Seatbelt Pretensioners in Small Female Occupants</b><br>John Bolte, PhD*; Allison Guettler, PhD; Amanda Agnew, PhD; Yun-Seok Kang, PhD                                               |
| 1:40 pm—2:10 pm | <b>E9</b>    | <b>A Patient-Centered Forensic Nursing Model of Care for Victims of Law Enforcement Violence</b><br>Maija Anderson, DNP*; Jacqueline Callari Robinson, RN; Jocelyn Anderson, PhD; Erin Pollitt, MS                                          |
| 2:10 pm—2:25 pm | <b>BREAK</b> |                                                                                                                                                                                                                                             |
| 2:25 pm—2:45 pm | <b>D14</b>   | <b>Seeing Beyond the Surface: Structured-Light 3D Scanning in a Prison Suicide by Hanging</b><br>Simona Calabrese, MD*; Alessandro Nicolosi, MD*; Daniela Sapienza, PhD; Filippo Cucinotta, PhD; Fabio Salmeri, PhD; Cristina Mondello, PhD |
| 2:45 pm—3:15 pm | <b>E10</b>   | <b>Smarter Than the Science: The History of Service Dogs</b><br>Janean Fossum, BS*                                                                                                                                                          |
| 3:15 pm—3:35 pm | <b>D15</b>   | <b>Multi-Modal Deep Learning for Bruise Age Estimation: Enhancing Forensic Reliability Through Integrated Visual and Contextual Data</b><br>Mehrdad Ghyabi, PhD*; Katherine Scafide, PhD; David Lattanzi, PhD                               |

## Friday

### Poster Session

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| 11:30 am—1:00 pm | <b>D16</b> | <b>A Forensic Investigation of Hydrogen-Driven Blasts in Galvanized Sprinkler Systems</b><br>Songhie An, PhD*; Sungwan Park, MASc; Wooyong Park, MSc                  |
| 11:30 am—1:00 pm | <b>D17</b> | <b>Multidimensional Scaling of Hybrid Similarity Search Match Factors for Fentanyl Analogs</b><br>Melinda Kleczynski, PhD*; Arun Moorthy, PhD; Anthony Kearsley, PhD* |

# ENGINEERING & APPLIED SCIENCES

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## Vehicle Forensic Investigations

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Moderator: David Pienkowski, PhD

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| 8:30 am—8:50 am  | <b>D18</b> | <b>Officer Confusion Leads to Improper Conclusions in a Fatal Head-On Accident</b><br>Darren Franck, MSME*; Harold Franck, MSEE                               |
| 8:50 am—9:10 am  | <b>D19</b> | <b>Sun Altitude and Azimuth Causes a Fatal Crash With a Flatbed Trailer</b><br>Kurt Weiss, MSME*                                                              |
| 9:10 am—9:30 am  | <b>D20</b> | <b>Heavy Truck Cab Integrity and the Swedish Test</b><br>Christopher Clarke, BS*; Brian Herbst, BS                                                            |
| 9:30 am—9:50 am  | <b>D21</b> | <b>The Fine Points of the Interrelationship Between Vehicle Dynamics and Occupant Kinetics in Frontal Motor Vehicle Accidents (MVAs)</b><br>David Porta, PhD* |
| 9:50 am—10:05 am |            | <b>BREAK</b>                                                                                                                                                  |

## Environmental Topics

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Moderator: Kurt Weiss, MSME

Co-Moderator: Harold Franck, MSEE

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| 10:05 am—10:25 am | <b>D22</b> | <b>The Detection and Forensic Documentation of Clandestine Pollutant Discharges in Federal Watercourses in Brazil</b><br>David Domingues Pavanelli, PhD*                    |
| 10:25 am—10:45 am | <b>D23</b> | <b>WITHDRAWN</b>                                                                                                                                                            |
| 10:45 am—11:15 am | <b>D24</b> | <b>Robust Linking Estimation in the Graded Response Model With Contaminated Ability Distributions</b><br>Ibrahim Almansour, MS*; Larry Tang, PhD                            |
| 11:15 am—11:35 am | <b>D25</b> | <b>Aerosols With Addresses: A Method for Testing Aerosol Dispersion in Variable Environments</b><br>Catherine Reyes, PhD*                                                   |
| 11:35 am—1:00 pm  |            | <b>BREAK</b>                                                                                                                                                                |
| 1:00 pm—1:30 pm   | <b>D26</b> | <b>The Aberrant Behavior of Gas Appliances That Incorporate Flame Arrestors Being Indicative of Fugitive Fuel Gas Intrusion by Soil Migration</b><br>Tim Dunn, MS*          |
| 1:30 pm—2:00 pm   | <b>D27</b> | <b>Lessons From the Wreckage: Forensic Architecture and Construction Failures Every Professional Should Understand</b><br>Mohsen Ghoreishi, MA*                             |
| 2:00 pm—2:20 pm   | <b>D28</b> | <b>Technical Cooperation in Forensic Engineering and Innovation in Dredging Survey</b><br>Jose Medeiros, DSc*; Julio Neto, MSc; Thiago Albuquerque, DSc*; Vladimir Paz, BSc |
| 2:20 pm—2:40 pm   | <b>D29</b> | <b>Hydrogen Explosion in Sprinkler Pipes: A Forensic Chemical Analysis</b><br>Songhie An, PhD*; Sungwan Park, MAsC; Wooyong Park, MSc                                       |
| 2:40 pm—3:10 pm   | <b>D30</b> | <b>A Mechanical and Metallurgical Investigation of Cracks Within a Pipeline Repair</b><br>Bart Kemper, PE*                                                                  |