



### Annual Meeting 2022 Research Portfolio Overview



### Criminal Network Analysis and Predictive Modeling

- Cross-platforms Cybercrime Detection on Inter-connected Heterogeneous Networks
- Exploring Graph Neural Networks for Attributed Multilayer Criminal Network Analysis
- Graph Analytics and Visualization for Criminal Network Identification
- Illicit Gold from Peru and Colombia: Understanding Trade, Routes, and U.S. Linkages
- Location Data Analytics and Visualization for Criminal Network Identification



#### Traditional and Digital Forensics

- Agent-Based Learning to Utilize Local Surveillance Data for Activity Recognition
- A Machine Learning-based Approach to Analyzing and Triaging Encrypted Data Containers in Law Enforcement Applications
- Data Science-integrated Experiential Digital Forensics Training based on Real-world Case Studies of Cybercrime Artifacts
- Digital Forensic Investigations Involving Cryptocurrency Wallets Installed on Mobile Devices
- Digital Forensic Tools & Techniques for Investigating Control Logic Attacks in Industrial Control Systems
- Digital Holographic Acquisition, Storage, Retrieval and Analysis of Three-Dimensional Fingermarks Developed with the Nanoscale Columnar-Thin-Film Technique
- Evaluate Current NCFI Course Offerings and Develop Recommendations for Prerequisites and Post Curriculum Evaluations
- Identity Sciences Interdisciplinary Research



# Analysis of Dynamic Patterns of Criminal Activity

- Effects of Natural Disasters on Spatio-temporal Patterns of Crime Types in the United States
- Innovative Spatiotemporal Pattern Detection:
   Examining Changes in Crime Hot Spots Across Six U.S. Cities
- The Emergence and Diffusion of Illicit Virtual Goods across the International Cybercrime Ecosystem
- Understanding the Economy and Social Organization of the Underground Market for Cybercrime as a Service



# Improving Criminal Investigative Processes

- An Architectural Model for Web-Based
   Technologies to Enhance Text-Image Capabilities
   in Detecting Sex Trafficking Cases
- Detecting Criminal Disruption of Supply Chains Study
- Detection of Illicit Massage Businesses through Spatial and Socio-Demographic Data Enrichment
- Is There Money Laundering in Cryptocurrency Markets?
- Overcoming Reluctance and Increasing Intelligence Gathering from Victims of Trafficking
- The Next Battlefield: Illicit Markets Hosted on Encrypted Communication Platforms
- Time Series Analysis of Anonymized Communication Channels
- Training on Intelligence and Evidence Gathering in Darknet Environments
- Visualizing the Membership of Organized Criminal syndicates: A Field Evaluation of the Reporting Information about Networks & Groups (RING) Task

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