



Criminal Investigations  
and Network Analysis  
A DHS CENTER OF EXCELLENCE

2018 **ANNUAL REPORT**



# BRIDGING DISCIPLINES TO PURSUE BREAKTHROUGHS

**Today, sophisticated networked criminal activities cross physical and cyber borders in pursuit of illicit profit, wreaking havoc on societies and devastating communities around the world.** The Criminal Investigations and Network Analysis (CINA) Center, a DHS Center of Excellence, serves as a strategic innovation partner for Homeland Security Enterprise (HSE) stakeholders in their efforts to combat such networked criminal activities.

Centered at George Mason University, and partnering with leading researchers within Mason and throughout the country, The CINA Center fosters innovation by building an ecosystem of multidisciplinary research, outreach, and educational partnerships. 2018 was the first full year of our operations. In this first annual report, we present an overview of our current portfolio, spotlight a few of our research activities, and highlight a selection of educational and outreach activities from the past 12 months.

With a research portfolio that covers a broad range of efforts, from forensic analysis of voice recordings to merging crowdsourced information and authoritative data in our effort to defeat the scourge of human trafficking, CINA has already begun to impact criminal network analysis, forensics, and criminal investigative processes. Over the past year, our researchers have been featured in national media outlets profiling mass shooting suspects, have helped national law enforcement officials assess witness questioning protocols in Brazil, have testified before Congress, and have won academic awards for their contributions to science.

At the same time, CINA assumed our responsibility to lead workforce development efforts. We initiated a collaboration with minority-serving institutions (MSI), hosting a team of researchers from the Navajo Nation-serving Diné College (see page 12); established an internship program for young

scholars (page 13); and offered numerous seminars and workshops.

Furthermore, to establish our position within the exceptional network of DHS Centers of Excellence, CINA coordinated a briefing on Capitol Hill (page 15) and led the organization of the COE Summit, hosting over 500 public and private sector decision makers, as well as researchers and students from more than 40 universities (page 14).

And this is just our beginning. As we continue to pursue innovation at the intersection of academic breakthroughs and HSE mission relevance, we invite you to remain engaged with our operations and become part of our evolving network.

Dr. Anthony Stefanidis  
CINA Center Director

## Disclaimer

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# OUR MISSION

The rapid pace of technological innovation has revolutionized our world. While these technological innovations promise continuing improvements in the quality of life for individuals around the globe, criminal organizations have also capitalized on these transformative advances to become more agile and expand their illicit activities. Today, sophisticated criminal networks can easily appear, disappear, and reorganize in response to operational opportunities and authority gaps. These networks function as complex social structures across the cyber and physical spaces, and operate at a variety of scales, ranging from local to international.

Given the newfound agility and increased complexity of these networks, we need a better understanding of their operations, collaborations, and societal impact. There is, therefore, an urgent and persistent need for innovation in the fields of criminal investigations and network analysis, to allow us to better comprehend and respond to these new and evolving challenges.

In response to the above-stated need, the CINA Center undertakes its mission to be a strategic innovation partner for Homeland Security Enterprise (HSE) stakeholders in their efforts to combat networked criminal activities. By concurrently pursuing scientific advancements and practice breakthroughs, CINA will help the HSE to better comprehend and respond to the challenges posed by such illicit operations, to better anticipate the evolution of these operations and anticipate emerging challenges, and to shape a workforce that will excel in this complex operational landscape as it strives to protect our homeland.

## OUR MANAGEMENT MODEL

In pursuit of its mission, CINA manages a portfolio of research, workforce development, and outreach activities. The CINA Center overall management and operations structure includes:

- **Executive Component**

The DHS Program manager, the Center Director, and the Science Manager own primary responsibility for leading the Center, tracking its progress, and making executive decisions regarding its directions and activities.

- **Research portfolio management**

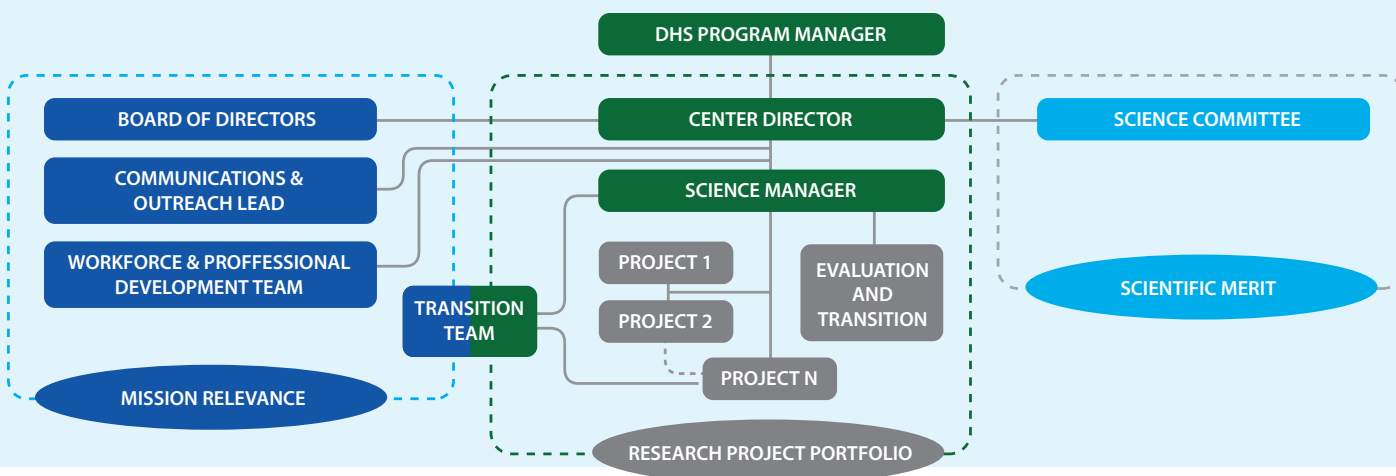
The CINA Science Manager manages the current research portfolio project lifecycle, requirements, cost, and milestones. The Executive Component, with input from the Board of Directors and the Science Committee, manages the research portfolio evolution at the intersection of mission relevance and scientific merit.

- **Mission relevance management**

The CINA Board of Directors (BoD), comprised of HSE stakeholder component representatives, provides mission relevance by supplying information on current and emerging operational needs, which guide the core CINA team and shape and refine the CINA portfolio. In a similar capacity, our workforce and professional development activities respond to HSE needs as articulated by the BoD, either as a group, or individually. CINA communications and outreach activities are also informed by, and conversely inform, the stakeholder community.

- **Science merit management**

The CINA Science Committee (SciCom), contains leading scientists from across the variety of fields which define CINA's scientific footprint. CINA SciCom provides science merit management within CINA, ensuring that our operations remain at the forefront of scientific breakthroughs. CINA leadership relies on SciCom input to shape and assess our emerging portfolio and guide certain outreach activities (e.g. seminars, webinars).



# OUR RESEARCH PORTFOLIO

The CINA Center research portfolio pursues advancing science and practice across four research themes:

- **Criminal Network Analysis:** the understanding of the operational structure and particularities of networked criminal activities to support the emergence of more effective means to disrupt the organizations that pursue them.
- **Dynamic Patterns of Criminal Activity:** the analysis of criminal activities across the geographical, social, and cyber dimensions, and across a wide variety of data sources to support the emergence of more effective means to identify and monitor such patterns and the activities they signify.
- **Forensics:** the state-of-the-art forensic methods, tools, and technologies.
- **Criminal Investigative Processes:** HSE end user investigative processes used to detect, pursue and solve networked criminal activities.

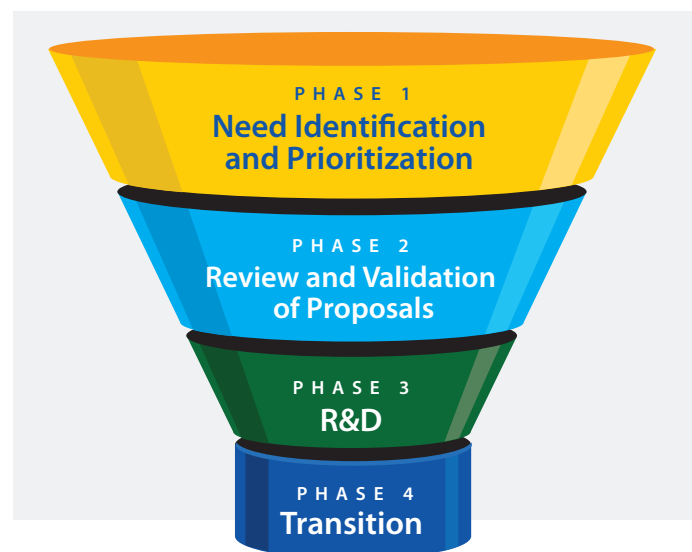
## CINA RESEARCH PORTFOLIO THEMES:

THEME 1:	Criminal Network Analysis
THEME 2:	Dynamic Patterns of Criminal Activity
THEME 3:	Forensics
THEME 4:	Criminal Investigative Processes

*The CINA Center research portfolio encompasses four focused themes to advance science and practice to protect our homeland.*

In pursuing these themes, the CINA Center manages an evolving research portfolio, with projects introduced through a 4-stage innovation and transition process: CINA Board of Director feedback identifies and prioritizes needs; these needs inform requests for proposals; CINA selects and funds research projects; then CINA transitions project findings to our partners in the HSE.

## THE CINA CENTER MULTI-PHASE INNOVATION AND TRANSITION PROCESS



With a research portfolio that covers a broad range of efforts, from forensic analysis of voice recordings to merging crowdsourced information and authoritative data in our effort to defeat the scourge of human trafficking, CINA has started impacting criminal network analysis, forensics, and criminal investigative processes.





# A GLOBAL FIRST

## PROFILING HOAX CALLERS THROUGH NEW VOICE RECORDING FORENSICS ANALYSIS TOOL

*By Eva Batts*

How often do we make guesses about a person's physical traits just based on their voice? If their voice is deep, they must be tall. If their breath is shallow, they must have bad posture. How often are we correct?



**Rita Singh**, research faculty at the Language Technologies Institute of Carnegie Mellon University, has created a software to answer these exact questions.

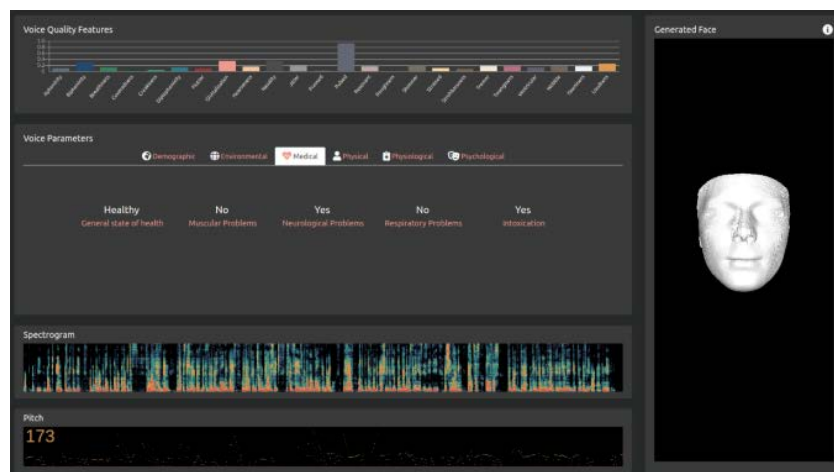
With a background in computer voice recognition, and artificial intelligence applied to voice forensics, Singh is working in collaboration with CINA to develop voice recognition software that can assist the Department of Homeland Security in profiling voice recordings.

The software Singh's team developed works in multiple interfaces analyzing voice recordings from a variety of sources such as hoax calls, wiretaps, telephone conversations, and voice evidence from a variety of criminal investigations. From a 30-second soundbite the software is able to discern age, height, weight, and ethnicity, estimated build and even render an initial 3D facial construction based on voice alone.

With CINA support initiated over this past year, Singh demonstrated an alpha version of the solution at the World Economic Forum in September 2018 in Tianjin, China, dedicated to fostering entrepreneurship and furthering technology across the world. Tested by nearly one thousand people in three days, including state dignitaries, CEOs, CTOs, and royalty, the program crowd test was a great success.

Lines formed to wait in anticipation to see if the machine could accurately describe each participant's physical characteristics. Participants read a thirty second snippet into a microphone and got to watch their own facial features reconstructed before their eyes. Although still a work-in-progress, and not yet accurate 100% of the time, the technology demos impressed all those who attended.

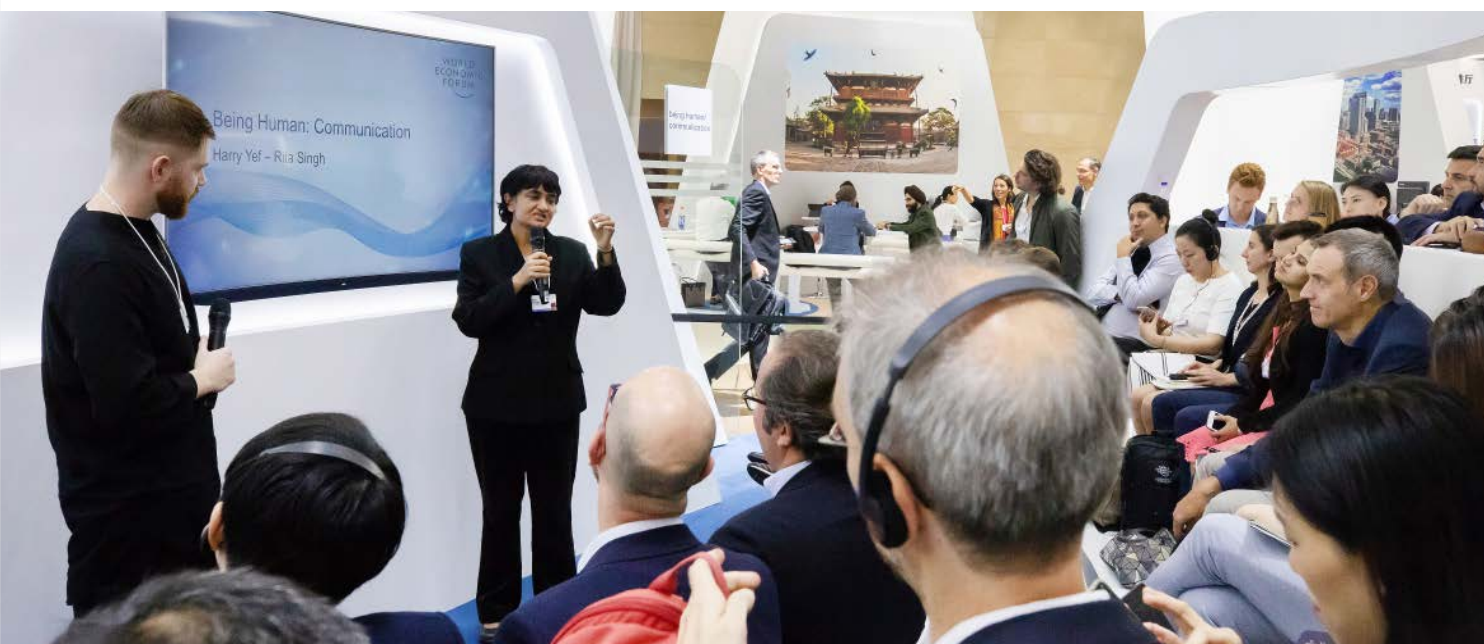
The initial scope of this language independent program was to support the detection of false mayday calls that were sending the Coast Guard out to sea on unnecessary rescue missions. The program's ability to make predictions about heartrate, voice



frequency, stress level and a number of other psychological characteristics will help separate false emergencies from real ones.

In addition to voice recognition, a database will be constructed cataloguing sounds such as the noise of certain boat engines and animal calls in order to better pinpoint call locations. For the time being, the database will contain largely maritime sounds. However, an eventual goal is to build exhaustive databases that can allow us to distinguish a call from the L Train in Chicago or the shuffle of Midtown Manhattan just based on background noise.

**(below) During the September 2018 World Economic Forum in Tianjin, China, Rita Singh offered 1,000+ live demonstrations of the CINA-funded Human Voice Profiling System. Singh's demonstration was the first global offering of an end-to-end system for profiling humans from their voices. (above) The UI screenshot includes a bar chart quantifying voice quality sub-features and tables that, when clicked, individually display different categories of deductions of human parameters.**



# INNOVATION PATHWAYS

## FOR EVIDENCE DISCOVERY AND THE DARK WEB ECONOMY



### Digital Media Sector Hashing: Connecting Needles in Haystacks

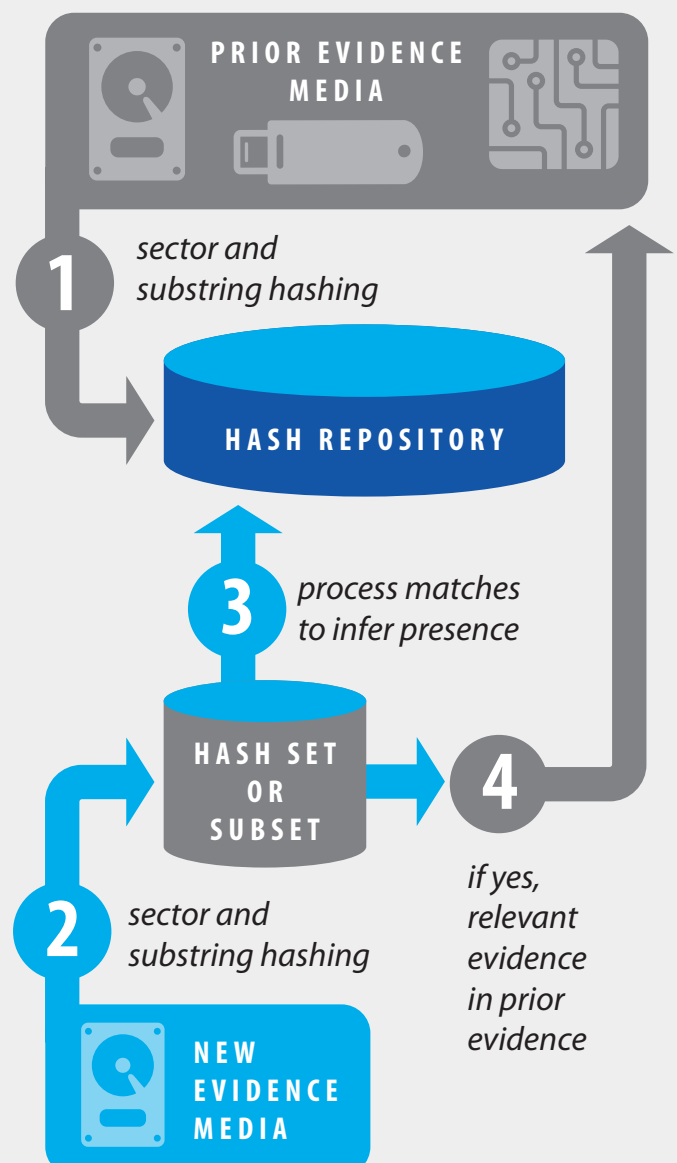
Law enforcement entities collect and process massive amounts of digital evidence in the course of investigations. However, previously examined digital evidence may not be readily identified by investigators as relevant to a subsequent investigation, thus hindering their ability to fully investigate complex cases. In order to overcome this limitation, **Jim Jones**, Associate Professor, mechanical and computer engineering, is leading a talented team at George Mason University that is developing a solution that allows agents to quickly assess whether previously collected evidence may indeed contain information relevant to a new investigation. This will result not only in more efficient investigations and prosecutions, but also addresses a more general problem faced by the HSE: the volume of data acquired by DHS is increasing at an alarming rate, making the need for intelligent and fast content searches to establish the presence of mission-relevant data ever more pressing.

This project is a paradigmatic example of the close and evolving collaboration between university-based researchers and DHS practitioners to produce the most impactful solution for an emerging problem. Investigators and technical specialists at the Cyber Crimes Center (C3) are working with researchers to offer feedback on operational needs and technical constraints. This close partnership will ensure a smooth transition of the finished product into the hands of investigators who need it the most.

This project also highlights the multiple avenues of innovation that are offered through the COE program. More specifically, as part of its engagement with C3, CINA supported a cluster of internships, placing talented students with computer science and cyber security skill sets on-site with our government partners, establishing an additional collaboration avenue that benefits from, and in return further supports, this ongoing research effort.

Jones' prototype will be completed in January 2019, and the finished product implemented with DHS customers in June 2019. When complete, the product could be shared with other DHS components, federal law enforcement agencies, and even the Department of Defense.

#### DIGITAL SECTOR HASHING







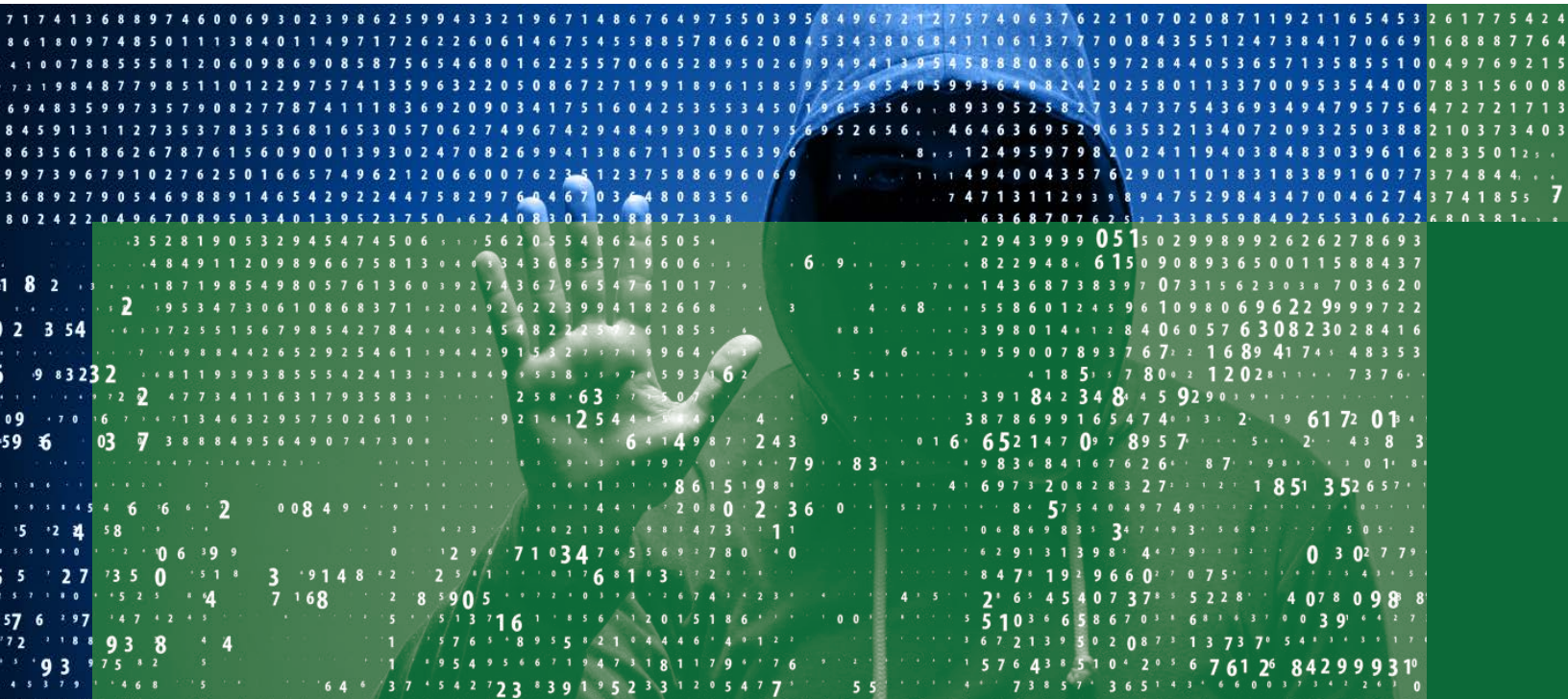
## Understanding the Economy and Social Organization of Underground Market: Drugs, Stolen Data, and Cybercrime Services

A CINA Center-sponsored research team led by Michigan State University is using online data collected from forums on the open web and dark web to assess the scope of the illicit economy for digital and physical goods and utilize qualitative and quantitative analysis methods to examine the relational structures between market actors. The project employs a sociological framework of social organization using grounded theory analysis procedures and a quantitative assessment of network density, centrality and other measures.

Preliminary data scrapes were completed in August 2018, and Principal Investigator **Thomas Holt** has shared four written briefs covering how different parts of the internet are used for crime, the market for cybercrime, the geographic distribution of victim nations in stolen data markets, and the dark web markets for drugs and firearms. Collectively, the briefs provide an introductory overview of the ways in which illicit trade is conducted in the open, deep and dark web, including increasing sales of stolen data and a “towering

growth” in cybercrime, and that illicit businesses closely mirror legitimate ones, using familiar pricing structures and customer review mechanisms. Delivery and dropoff mechanisms are slightly more complex, in order to avoid detection by law enforcement. Criminal groups use cryptocurrency transactions through encrypted hidden websites accessed with VPNs. While they utilized licit third-party shipping companies such as UPS, FedEx, and USPS, they will use fake company logos, ship in small amounts, or ship illegal items inside other items in order to avoid detection. These techniques facilitate the purchase of drugs and firearms in the dark web.

The MSU team has discussed and shared preliminary research methods with the Detroit Field Office of the U.S. Secret Service, FBI, and U.S. Department of Defense Office of the Inspector General. Holt gave a short briefing to the San Diego Field Office, and more briefings are planned for early 2019. Complete findings will be shared in webinar format with CINA's stakeholders in the Homeland Security Enterprise.







## Innovation and Academic Leadership

While these research activities are introducing innovation through our multifaceted research portfolio, the CINA team is also contributing thought leadership in the field of networked criminal investigations through various activities of its team members, especially the members of the Science Committee.


George Mason University (Mason) College of Science Forensics Program Director, Professor **Mary Ellen O'Toole** is contributing her expertise in forensics. A renowned FBI profiler, O'Toole was featured numerous times in national broadcast news networks in 2018 (e.g. CNN, CBS, Fox, and NPR), discussing a variety of high-profile criminal cases.

**David Weisburd**, a Distinguished Professor in Mason's Criminology, Law and Society Department and an international authority on evidence-based crime policy, this year served as the lead editor of a Consensus Study Report of the National Academies of Science on *Proactive Policing and its Effects of Crime and Communities*. In November, 2018, Weisburd received the first James Short Senior Scholar Award from the Division of Communities and Place of the American Society of Criminology.

**Allison Redlich**, a Professor in Mason's Department of Criminology, Law and Society, continued her CINA-relevant research on effective interviewing and interrogation methods. In September 2018, she traveled to Brazil to give a keynote address to the Federal Police and other justice officials on this research and her related research on plea bargaining. In 2018, she also published several articles, has two books forthcoming, and was awarded the American Psychological Association Mid-Career Award for Outstanding Contributions to Benefit Children, Youth, and Families, largely for her work on interrogating juveniles.

**Louise Shelley**, University Professor in Mason's Schar School of Policy and Government, is an expert on human trafficking, illicit trade, transnational crime and terrorism. She is director of the Terrorism, Transnational Crime and Corruption Center (TraCCC). In late 2018, she published *Dark Commerce: How a New Illicit Economy Is Threatening Our Future* (with Princeton University Press), which has garnered considerable press attention, including recent interviews with Dr. Shelley on Marketplace and CSPAN.

**Ed Hovy**, a computer scientist and research professor at Carnegie Mellon University who specializes in various aspects of artificial intelligence (AI), notably human language technology, leads projects on automated authorship attribution of online user accounts, the automated construction of communication and influence networks of people and other entities, the construction of very large knowledge bases with facts, claims, and hypotheses out of text, images, and spoken data, and other topics relevant to criminal justice. Last year, he was named a Fellow of the Association for the Advancement of AI for his significant contributions to language processing. **Jim Jones**, a Mason Associate Professor of Digital Forensics and Cyber Analysis, led the first group of CINA Scholars during their DHS Cyber Crime Center internship (see page 8).



*The CINA Center Science Committee includes researchers from across its various institutions who construct educational opportunities, collectively prioritize research, educational and outreach program funding allocation, and track industry trends.*



# RESEARCH PROJECTS

In the project 'Detecting and disrupting transnational criminal investigations' a team of researchers from Rensselaer Polytechnic Institute (RPI) led by **Boleslaw Szymanski** pursues the development of advanced network analysis solutions to better study the structure and membership of criminal networks. Of particular interest is the identification and disruption of layered and/or interdependent criminal networks. A research paper by the team was awarded Best Paper in Land/Maritime Borders and Critical Infrastructure Protection track (out of 31 papers) at the 2018 IEEE International Symposium on Homeland Security Technology.

Mason Professor **Huzefa Rangwala** leads a team of researchers from George Mason University, Virginia Tech, and the City University of New York (CUNY), on the project 'Tracing networks of gangs using data analytics'. The team is building on prior work funded by a variety of agencies to develop innovative solutions that will support the analysis of reports from international news media for the identification of cascading patterns in criminal activities, in order to advance our ability to forecast and disrupt emerging events.

As human trafficking is slowly moving into the spotlight of news cycles, CINA is sponsoring two parallel efforts that aim to advance our understanding of the problem and responses to it. In an effort led by **Louise Shelley**, researchers from Mason, CUNY, Florida International University, and the University of Texas at El-Paso are studying similarities and differences among different human trafficking hubs in the U.S. At the same time, a team of researchers from the University of Texas-San Antonio, led by Professor **Michael Smith**, laid the foundation to pursue a collaborative project that brings together non-government organizations and official agencies to study the merit of crowdsourced information in pursuit of human trafficking, complementing authoritative data to improve our understanding of this modern-day plague.

Criminal activities have complex negative effects on communities throughout the U.S. **David Weisburd** leads a team of Mason and Temple University researchers who will be developing models that will allow the estimation of the positive community impacts of DHS investigations that disrupt and dismantle crime networks. Those outcomes will focus on health and quality of life within communities, including crime, victimization, illicit substance use, employment, and residential stability.

Further expanding the multimedia analysis part of the CINA research portfolio (see page 6 on Dr. Singh audio forensics), a team of researchers from Purdue and Notre Dame, led by Professor **Ed Delp**, pursues a video analytics project. An objective of this effort is to synthesize views of crime scenes from multiple feeds to allow the 3D reconstruction of these crime scenes for forensics analysis.

With an eye on workforce development, a CINA research team at Rutgers University, led by Professor **Dennis Egan**, works with the Federal Law Enforcement Training Centers (FLETC) to identify gaps in cyber forensics training and certifications within DHS investigative units as well as state and local law enforcement. This information will be used to design better training modules to develop a robust workforce that will be better qualified to address the emerging challenges associated with networked criminal activities.

## Tracing Networks of Gangs using Data Analytics

*George Mason University*  
Lead PI: Huzefa Rangwala

## Human Trafficking Hubs

*George Mason University*  
Lead PI: Louise Shelley

## Improving Human Trafficking Investigations: A Data-Driven Approach

*University of Texas, San Antonio*  
Lead PI: Michael Smith

## Detecting and Disrupting Transnational Criminal Organizations: Analytics for Interdependent Smuggling and Money-Laundering Networks

*Rensselaer Polytechnical Institute*  
Lead PI: Boleslaw Szymanski

## Joint Exploitation of Personal and Premises Surveillance Video

*Purdue University*  
Lead PI: Ed Delp

## Digital Media Sector Hashing for Evidence Correlation

*George Mason University*  
Lead PI: Jim Jones

## Geospatial Technology and Agent-based Modeling

*George Mason University*  
Lead PI: David Weisburd

## Understanding the Economy and Social Organization of the Underground Market for Cybercrime as a Service

*Michigan State University*  
Lead PI: Thomas Holt

## Profiling Hoax Callers: Forensic Analysis of Voice Recordings

*Carnegie Mellon University*  
Lead PI: Rita Singh

## Best Practices for Sharing Digital Evidence

*Rutgers University*  
Lead PI: Dennis Egan



*Diné College Professor, Sara Kien (right) analyzed post mass shooting “contagion” Twitter activity and media coverage with students Ashley Lee (left) and Tatyana Begay (center) to categorize psychological causal attributions and evaluate emotions. Photo by Andrew Brown.*

# WORKFORCE DEVELOPMENT

## CINA Hosts MSI Diné College Research Team

As part of our efforts to support the development of a diverse and agile workforce, in the summer of 2018 we hosted a one-week stay of a team of researchers from the Navajo Nation-serving Diné College of Tsale, Arizona. This was part of the DHS Summer Research Team (SRT) program to increase and enhance the scientific leadership at Minority Serving Institutions (MSIs) in research areas that support the mission and goals of DHS.

The Diné College team comprised Professor **Sara Kien**, a cognitive psychologist, and rising seniors **Tatyanna Begay** and **Ashley Lee**. They worked together with CINA researchers to study the public’s response to acts of mass shooting, as it is gauged through open-source content. This is part of a broader research direction that aims to advance our ability to detect and deter copycat acts of mass violence.

The Diné College researchers specifically focused on the aftermath of mass shootings, as discourse in social media and other open source forums may affect responses to the event, including potential follow-up acts of violence. Previous studies have shown evidence of a 13-day so-called “contagion” period following a shooting or other act of mass violence in which additional violence is more likely, Kien said, especially in the wake of incidents with substantial media coverage.

Kien, Begay and Lee created coding and analysis protocols to review millions of tweets in the aftermath of the shooting massacre in Las Vegas, Nevada, in October 2017 where 58 people were killed and hundreds of others were wounded, as well in as the aftermath of recent school shootings in Parkland, Fla. (Stoneman Douglas), and Santa Fe, TX. They wanted to learn how the events were portrayed and how people processed the media coverage.

“My research experience has been analyzing the qualitative data of Twitter to better understand the contagion in social media by categorizing psychological causal attributions, evaluating emotions and closely examining the direction of focus on victims, during the

time of and after the events of mass/school shootings,” Begay said. “I have learned to polish my critical thinking and team working skills, which will also prepare me for graduate school.”

“The most impactful skill I’ve gained throughout my summer participation in research at Mason was enhancing my approach and ability to think critically about research in the context of mass shootings and the contagion effect,” Lee said. Both Begay and Lee plan to attend graduate school after graduating next spring with psychology degrees.

During their stay at CINA, Kien, Begay and Lee also completed a study on the role of visual content on the responses from the general public. In their study they used synthetic news stories on fictitious shooting events, with the accompanying imagery depicting various levels of aggressive situations, from the points of view of perpetrators or victims. This is another important research component of the above-mentioned broad research challenge of understanding how media coverage of such events elicits various types of public response.

In their efforts, Kien and her students have worked closely with researchers affiliated with Mason’s CINA Center. Of particular relevance was the CINA team’s in-house capability to analyze open-source and social media content, supporting the detection of communities and information exchanges among these communities. The team also worked with two members of CINA’s Science committee: **Mary Ellen O’Toole**, the former FBI profiler now heading Mason’s Forensic Science Program; and **Allison Redlich** (and her postdoc researcher **Skye Woestehoff**), with Mason’s Criminology, Law, and Society Department.

Making their CINA experience even more unique, the Diné College team had a tour of the FBI Headquarters, and also joined Mason Forensic Science students as extras in an active shooter training exercise conducted by local police departments on Mason’s Fairfax, VA Campus.



***The first CINA Scholars (from left), Kang Xu, Lithe Abushaikha, Manil Trivedi, and Fatema Tuz Johra worked on-site in summer, 2018 with DHS C3 operations staff. (Below) Fatema Tuz Johra also became a CINA sponsored graduate assistant, performing digital media sector hashing research throughout the fall.***



## First CINA Scholar Internship at DHS Cyber Crime Center

Today's fast pace of technological innovation is posing substantial workforce challenges to the Homeland Security Enterprise (HSE), as it emphasizes the need for skillsets that may have emerged and matured only recently, or, in some cases are still being developed. This puts renewed emphasis on the need for nimble workforce development and enrichment programs. CINA is pursuing a variety of activities that aim to educate the current workforce and develop the next one, ranging from educational and training offerings to webinars and thematically focused events.

As part of this portfolio, this year we initiated the CINA Scholars program, placing outstanding undergraduate and graduate students as interns at U.S. Department of Homeland Security (DHS) components for the summer semester, while providing support for their efforts through CINA scholarships. Under this program, students benefit by working on-site with DHS staff on current problems and challenges, gaining real-world, hands-on experience from active practitioners, while in turn contributing to practice fresh looks and outside-the-box thinking, and cutting-edge solutions. By exposing these outstanding students to this work environment we hope to provide pathways for their future employment within HSE.

The inaugural class of CINA scholars comprised four students who interned with the DHS Cyber Crime Center (C3), working on a variety of problems, ranging from the dark web and online anonymity and attribution, to cyber-criminal organizations and forensic data recovery. The work performed by our students was deemed exceptional by C3, as they bring a new view to their traditional problems, and also offer a horizon view for forthcoming challenges. As a result, C3 extended their internships for the Fall semester.

One of the CINA scholars, Ms. Fatema Johra, is now supported as a Graduate Research Assistant as part of a CINA-sponsored research project on digital media sector hashing. Ms. Johra is an

MSc student in Computer Forensics with a BS degree in Applied Information Technology. The unique insight on C3 operations that she acquired through her internship will certainly be used to optimize the suitability of that project for our government partners. This is a reflection of the multiple potential benefits of the unique partnership between academia and the government that is the DHS COE program.

CINA has already initiated the Scholar competition for Summer 2019. This involves seeking input from DHS components on particular backgrounds and skillsets that are most in need, identifying candidates matching these profiles, and selecting scholars through a series of interviews.





# COE SUMMIT

U.S. Department of  
Homeland Security  
Centers of  
Excellence  
Summit 2018



**MATTHEW ALLEN**

Assistant Director for Investigative Programs  
Department of Homeland Security

*By John Hollis, edited by Eva Batts*

## University Research and Development to Protect the Homeland

**Christopher C. Krebs**, director of the DHS Cybersecurity and Infrastructure Security Agency (CISA), said he keeps two basic questions in mind when preparing to deal with critical homeland security issues.

“So what, and what are we going to do about it? These are the two questions I ask myself every morning, particularly as we go into hurricane season,” said Krebs, a Mason law school graduate who also served as Under Secretary for the National Protection and Programs Directorate (NPPD). In his keynote presentation, Krebs spoke to how DHS continues to address the growing threats America faces, both in virtual and physical spaces.

Krebs was the keynote speaker for the DHS Centers of Excellence Summit, co-organized and hosted by CINA on May 30 and 31, 2018 at Mason’s Arlington Campus. The Summit was attended by well over 500 university researchers as well as government and industry leaders, and served as a showcase of

the unique partnership that is the Centers of Excellence (COE) program. “Given that we live in a world that changes so rapidly, we need to accelerate the pace of innovation, and this is what the COEs are helping the government do,” said CINA director Anthony Stefanidis.

**William Bryan**, the Senior Official Performing the Duties of the DHS Under Secretary for Science and Technology, noted that “the COE model is a different approach to research, requiring a new set of management and communication skills.” He emphasized the key role that COEs will be playing to help the DHS security enterprise make best use of emerging solutions (such as blockchain technology, or data analytics) in order to address the increasingly complex challenges caused by bad actors.

**Matthew Allen**, Assistant Director of Domestic Operations of Homeland Security Investigations (HSI) of ICE, emphasized the significance of CINA to HSI, the Secret Service, and Coast Guard, especially as it

relates to the slice of DHS operations that is associated with criminal investigations and criminal network activities. Understanding the social or economic nexus that drives and facilitates these illicit activities will allow these agencies to move from transactional responses to the problem to better informed and more thorough response strategies. Customs and Border Protection (CBP) Commissioner Kevin McAleenan further emphasized the increasing significance of advancing our understanding of networks for future security and intelligence operations.

New technologies were also on display as the Summit organizers sought to advance collaboration not only between government and academia, but also among the various Centers for Excellence, in the hopes of accelerating the transition from research and development to field use. CINA will be organizing and hosting a follow-up event in July, 2019. [View the summit highlights.](#)



# Convening Expertise: Global Forum on Migration, Gangs, and Homeland Security

By Buzz McClain

In our ongoing effort to highlight current issues of importance to the homeland security community, CINA co-hosted a forum on the nexus of migration and gangs, and its relation to homeland security. The event, organized by CINA-affiliated researchers Guadalupe Correa-Cabrera and Mariely Lopez-Santana, was held on October 24 at Mason's Fairfax, VA campus and featured a dozen global academic, media, and policy experts. Advancing our understanding of the complex mechanisms that drive these two phenomena, separately and together, is arguably one of the key challenges our country faces today.

Panelists pointed out certain misconceptions regarding the operations of gangs like MS-13. Mr. Óscar Martínez, special investigations editor for the Latin American digital newspaper *El Faro* and a recognized global authority on the subject, argued that MS-13 in Honduras and its counterpart in the U.S. should not be viewed as a single entity, but rather as two separate ones, each with its own leadership structure and operations. Furthermore, MS-13 should not be viewed as a drug cartel, but rather as a violent street gang that pursues a much broader array of illicit activities. Hector Silva, from the Insight Crime Foundation, emphasized the importance of engagement with local communities (and local law enforcement) when attempting to better understand how these gangs operate.

Panelists also discussed unwanted effects of policies on migration and gangs. Florida International University Professor, Jose Miguel Cruz explained how the Mano Dura policies of the Salvadoran government, instead of deterring, actually helped gangs recruit members and organize themselves in prisons. Adam Isacson of the Washington Office on Latin America, echoed this point and explained how prisons functionally serve as gang universities.

Local economic conditions in Central America are a defining parameter of the complex nexus of gangs and migration. As pointed out by Celina Realuyo of the National Defense University, migration is a push-and-pull process; migrating away from lack of opportunity or oppression and violence, and migrating towards an opportunity from which our country is built. Corruption in Central America strips the local communities from any economic resources, rendering migration a commodity, with remittances from the U.S. often being the only source of subsidy for a large part of the local populations. As a result, repatriation policies may be driving repatriated individuals into the arms of local gangs, noted Maria Sacchetti of *The Washington Post*, Ron Nixon of *The New York Times*, and Mark Greenberg of the Migration Policy Institute. Indeed, these individuals find themselves back in a country where they no longer belong nor know how to function, and with even fewer resources than when they left for the U.S. as they commonly sell off all their belongings to finance the trip.

View a brief video summarizing this event at [cina.gmu.edu/gangsforum](http://cina.gmu.edu/gangsforum)

**Below: Mason Professor Jim Witte, at microphone, facilitates discussion on gangs and migration with, from left, Mark Greenberg, Maria Sacchetti, Adam Isacson, Ron Nixon, and Celina Realuyo. Top right: Directors from nine DHS Centers of Excellence gathered for a Capitol Hill briefing.**



## CINA leads Capitol Hill Briefing on DHS Centers of Excellence

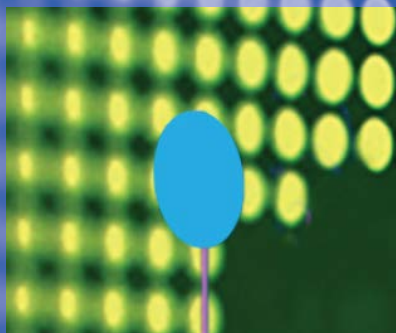
In June 2018, CINA Director Anthony Stefanidis joined fellow COE Directors on Capitol Hill to brief congressional staffers on the important role DHS COEs play to support the Homeland Security Enterprise.

"We wanted to communicate the tremendous benefits the government gets through its collaboration with the designated COEs," Stefanidis said. "Universities help the government accelerate its pace of innovation, to better meet the demands posed by a rapidly changing world".

The broad scope of the COE program helps to advance America's technical capabilities across a variety of topics, ranging from protecting against terrorism and securing the nation's borders, to responding to natural disasters and (as is the case with CINA) advancing our ability to investigate and thwart networked criminal activities. By bringing together universities, industry and public agencies, the COEs generate basic and applied research that can be rapidly developed into innovative technologies for the homeland security community. The centers also serve as training grounds for the current and next generation of homeland security experts.

U.S. Representative Barbara Comstock, R-Va., arranged the briefing, in coordination with George Mason University's director of federal government relations Kerry Bolognese. George Mason Rector, Tom Davis opened the session.





**Criminal Investigations  
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A DHS CENTER OF EXCELLENCE

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