



DASSH student event aims to develop the next generation of homeland security professionals



During the course of a weekend in February, over 115 students from 11 higher education institutions met to develop innovative solutions to protect public access areas in the United States. Public access areas include anywhere that large numbers of people gather, such as sporting and cultural events, bus and rail terminals, shopping malls and schools. The student teams were challenged to develop solutions for three scenarios that could impact public access areas; 1) How do we guide crowds to good decisions during an attack? 2) How do we enable effective and timely communication among stakeholders and responders to allow for oversight and response to an attack and 3) How can we inform and enable civilians to prepare for a drone attack?

Two Department of Homeland Security Centers of Excellence, the Center for Accelerating Operational Efficiency (CAOE) and Soft Target Engineering to Neutralize the Threat Reality (SENTRY), partnered with DHS Science and Technology Directorate (S&T), to host the national multi-school Designing Actionable Solutions for a Secure Homeland (DASSH) student event. DASSH is a design challenge that is similar to a hackathon except instead of coding challenges, DASSH is focused on a multidisciplinary approach to finding real solutions regardless of the method or medium.

This challenge is the fourth year that such an event was hosted by CAOE and the first co-hosted with SENTRY. This partnership between the centers encouraged participation from a diverse student population that comprised students from six Minority Serving Institutions (MSI) including San Diego State University, University of the District of Columbia, Fayetteville State University, Elizabeth City State University and Chapman University. [READ MORE](#)

First Place Teams



AzTechs – SDSU
Tiber Hernandez, Milan Bujosevic, Elisha Reece, Christopher Choo, Jared Acosta, Douglas Younkin

Scenario 1: How do we guide crowds to good decisions during an attack?



Malindo – ASU
Rui Heng Foo, Fawwaz Firdaus, Kalyanam Priyam Dewri, Nathan McAvoy, Camelia Arian Binti Ahmad Nasri

Scenario 2: How do we enable effective and timely communication among stakeholders and responders to allow for oversight and response to an attack



The Untouchables – UDC
 James Fitzgerald, Bob Kingombe,
 Jasmine Gibson, Maya Smith

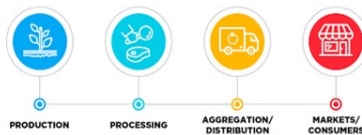
Scenario 3: How can we inform and enable civilians to prepare for a drone attack?

Project in-depth: Optimization for disaster response **(New Video)**

Value-focused Robust Optimization for Disaster Response (VFRO)



A contagious disease spreading through cough, sneeze, respiratory droplets, or exhale



Measure the impact of COVID-19 on Food Supply Chains (FSC) due to cultural practices at home



Schedule & route essential medical personnel and dependent resources

The project “Value-focused Robust Optimization for Disaster Response (VFRO)” being led by Pitu Mirchandani, ASU, with co-investigators Lauren Davis, North Carolina A&T University, and Dave Morton, Northwestern University, is working on projects to enhance preparations and response for natural disasters and national emergencies. This project started with a focus on hurricane preparedness then, during the pandemic, pivoted to pandemic responsiveness and has now expanded to food supply chain research.

In this video, Mirchandani, Davis and Morton, along with student researchers from ASU, North Carolina A&T and Northwestern discuss the value, evolution and progress of the project and how the work of CAOE is making a difference by developing solutions to improve homeland security operations.



Dr. Lorrie Cranor to deliver the capstone seminar for Privacy Enhancing Technologies (PETs) Series

Designing Usable and Useful Privacy Choice Interfaces

May 18, 2023

9am PT/ 12pm ET



Dr. Lorrie Cranor

Director and Bosch Distinguished Professor in Security and Privacy Technologies of CyLab and the FORE Systems
Professor of Computer Science and of Engineering and Public Policy at Carnegie Mellon University

<https://lorrie.cranor.org/bio.html>

CAOE invites you to our latest seminar series Privacy Enhancing Technologies - Challenges, Opportunities and Advancements. The final seminar in this series will feature capstone speaker Dr. Lorrie Cranor. She will be discussing user-centric approaches to designing and evaluating privacy interfaces that better meet user needs and reduce the overwhelming number of privacy choices.

Seminar abstract : Users who wish to exercise privacy rights or make privacy choices must often rely on website or app user interfaces. However, too often, these user interfaces suffer from usability deficiencies ranging from being difficult to find, hard to understand, or time-consuming to use, to being deceptive and dangerously misleading. This talk will discuss user-centric approaches to designing and evaluating privacy interfaces that better meet user needs and reduce the overwhelming number of privacy choices. Cranor will present a privacy choice mechanism evaluation framework and several examples of privacy interface design and evaluation from her research, including more usable cookie consent banners, mobile app privacy nutrition labels, IoT privacy and security labels and a privacy options icon for the state of California.

Event Link



CAOE adds new privacy projects to research portfolio

Privacy-enhancing technologies (PETs) under development promise the ability to control the sharing and use of sensitive information, while minimizing the risk of unauthorized use. These technologies have been under development by researchers for nearly four decades but have been slow to migrate from the research lab into operational use. To address this, CAO E conducted a workshop in June 2022 that brought together academics and industry and homeland security practitioners to discuss open problems and needs for PETs in the Homeland Security Enterprise (HSE). Based on the outcomes from this workshop, the CAO E accepted proposals for new research focused on privacy-enhancing technologies (PETs). CAO E recently funded three new projects to address this need.

Privacy-Preserving Analytics for Non-IID Data

Principal Investigator: Jingrui He, University of Illinois, Urbana-Champaign

Co-Investigators: Ross Maciejewski, Arizona State University, Hanghang Tong, University of Illinois at Urbana-Champaign

The large amount of data collected throughout the HSE contains critical information for daily homeland security operations and the potential for analysis for better decision-making. This project is creating a suite of novel deep learning techniques enabling analysis of distributed datasets held by multiple parties. This software will significantly enhance the capabilities of DHS components to derive critical insights from the large amount of sensitive data currently held by multiple parties while protecting the release of sensitive information. The results of this research will help prevent the release of sensitive data to unauthorized parties and protect against data breaches. **READ**

MORE

Cerberus: Guarding Sensitive Data with Trigenous Secure Computations

Principal Investigator: Taeho Jung, Notre Dame University

Co-Investigators: Adam Czajka, University of Notre Dame, David Cousins, Duality

This project combines three types of privacy-enhancing technologies (PETS) to protect private data while making the data more rapidly accessible for end-user decision-making capability. The research approach uses two methods of software cryptography called fully homomorphic encryption (FHE) paired with special hardware or trusted execution environment (TEE). The method allows secure querying of sensitive data sets from multiple sources and keeps the data encrypted. The goal of this project is to develop highly efficient privacy-preserving solutions that allow agencies to share and search multi-sourced data more quickly and cost-effectively while ensuring security and protecting individual privacy. **READ MORE**

A Federated Query Optimizer for Privacy-Preserving Analytics and Machine Learning

Principal Investigator: Jia Zou, ASU

Co-Investigators: Chaowei Xiao, ASU, Yingzhen Yang, ASU

This project is developing a new framework to automatically recommend privacy-

preserving mechanisms for analytics and machine learning workloads using a federated query optimizer. A federated approach allows different siloed systems and applications to solve for specific functions independently but within the same set of standards. The optimizer will automate privacy-preserving analytics that will allow the data to be used from different systems while protecting privacy. By automatically selecting a mechanism that is learning-based, the system will develop query results that achieve a balance between efficiency and privacy providing more accurate data analysis within and between organizations while meeting privacy requirements. **READ MORE**

RESEARCH GRANTS REQUEST FOR PROPOSALS



Data analytics
real-time rapid response



**Operations research
and systems analysis**
improving process and decision time



Economic analysis
understanding the true cost



**Homeland security
risk sciences**
identifying and prioritizing risk

CAOE Broad Request 2023-2024

CAOE is seeking proposals to address research questions/challenges that CAOE, DHS, or its federal partners have posed. A formal proposal review process, including evaluation by external subject matter experts, will be conducted to select those for which a grant award will be offered.

Research Areas

- Economic Analysis
- Data Analytics
- Operations Research and Systems Analysis

- Homeland Security Risk Sciences

Research Challenges Provided by DHS partners

As a cross-cutting multi-disciplinary center, CAOEE works across DHS component agencies to create innovative approaches to current and future challenges. CAOEE received inputs from six DHS partner agencies regarding current research issues/challenges they face. Below are a few of the challenges:

Customs and Border Protection (CBP)

- Checkpoint optimization
- Maritime patrolling – prediction, interdiction, classification of landing vessels.

Critical Infrastructure Security Agency (CISA)

- Dealing with workforce issues, especially around the cyber workforce
- Long-term workforce issues due to implementation of and/or augmentation using AI/ML

U.S. Citizenship and Immigration Services (USCIS)

- Systematic process improvements for reducing a long backlog of outstanding cases
- Work distribution models for enabling workloads previously assigned to specific locations to be allocated across different service centers and offices

U.S. Coast Guard (USCG)

- Examination of normalcy bias in critical decision-making (e.g., during a response to a distress call, or during the performance of a search and rescue mission)
- Strategies for mitigating normalcy bias

Intelligence and Analysis (I&A)

- Developing artificial intelligence/machine learning (AI/ML) responsibly without adding an undue administrative and/or technical burden onto the process
- Analyzing the most effective ways for agencies to implement the principles guiding AI/ML development

Transportation Security Administration (TSA)

- Studying the effects of personality or cognitive traits on screener performance and, more generally, analyzing what factors influence the TSA officer's decisions
- Planning/Optimization of screening resources in a remote screening environment and effectiveness.

The complete list of research challenges can be found in the RFP instructions.

RFP Process

A formal proposal review process will be conducted to select those for which a grant award will be offered. All proposals must be submitted through the CAOIE grant application portal.

DEADLINE: May 25, 2023

[Please click for the complete RFP guidelines and instructions.](#)

Specific questions about this request for proposals should be addressed in writing Dr. Adolfo Escobedo, Executive Director, CAOIE, at caoie@asu.edu



CAOE Undergraduate Summer Experience begins June 5

The annual CAO E Summer Experience Quantitative Analytics (SEQAL) will be starting with a new group of students on June 5. This STEM-based paid program combines significant data analytics training and real-world problem-solving. This four-week research experience will be virtual with students engaging in live expert-led workshops and group interactive problem-solving and data processes to solve real-world challenges faced by DHS. [READ MORE](#)

Amy Bennett appointed as Assistant Director for CAO E



After serving with the CAO E since its inception in 2017, Amy Bennet has recently been promoted to Assistant Director.

In this role, she leads project and financial management for CAO E's large cross-disciplinary research portfolio as well as the overall financial management of the center and oversees the cooperative agreement.

Bennett's beginning with CAO E pre-dates the center. "I was actually the research advancement administrator that assisted with developing and submitting the proposal. "I worked closely with Dr. Mirchandani, CAO E Chief Scientist, and had the opportunity to participate from the cradle for this award." [READ MORE](#)

Summer researcher receives follow on funding for airport study



The purpose of the DHS Summer Research Teams (SRT) program is to increase and enhance the scientific leadership at Minority Serving Institutions (MSIs) in research areas that support the mission and goals of DHS. In summer 2022, CAOЕ welcomed Professor Randy Napier and student researchers from the University of Texas at Arlington (UTA) to work with CAOЕ researchers.

Associate clinical professor Randy Napier is experienced in operations strategy, professional services management and business analytics. For the summer program, Napier worked closely with lead investigator Jorge Sefair, Associate Professor, University of Florida on a project improving airport security checkpoints. Joining the team as a summer researcher allowed Napier and his to research airport security screening operations and develop cost-benefit modeling on the value of passenger travel time savings (VTTS). [READ MORE](#)

Upcoming Events

May 18 - Dr. Lorrie Cranor - Designing Usable and Useful Privacy Choice Interfaces Seminar

May 22 - CAOЕ Board of Directors Meeting

June 5-30 - CAOЕ Undergraduate Summer Experience (SEQAL) 2023

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ASU Knowledge Enterprise
PO Box 877205, Tempe, AZ, 85287-7205, United States

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