



CAOE adds new projects for year 5

Improving homeland security operations

The graphic consists of three vertical panels, each with a distinct color scheme and set of icons. The first panel (orange) features icons for a network, a laptop with a padlock, a gear, a bug, and a human head profile with circuitry. The second panel (purple) features icons for a truck, a house, a magnifying glass over a bar chart, and a globe. The third panel (blue) features icons for a flame, a location pin with a gear, a warning triangle, and a radar-like graphic.

Screening for Threat Assessment and Resource Allocation
real-time rapid response

Improving Predictions for Effective Decision-Making
improving process and decision time

Risk Detection and Mitigation
understanding the true cost

CAOE is excited to introduce several new projects, researchers and institutional partners to the centers project portfolio for year 5.

Trust in AI-Enabled Decision Support Systems

The advancement of artificial intelligence (AI), including machine learning (ML) and increasingly autonomous systems, has resulted in a push for technical standards that can assess the trustworthiness of these technologies. The purpose of the project is to research the extent to which the Multisource AI Scorecard Table for System Evaluation (MAST) criteria can serve as a standard checklist for assessing trust in AI-enabled decision support systems. The specific knowledge gap addressed in this project will clarify the contexts in which the MAST may be used to evaluate the trustworthiness of advanced AI decision support systems. **READ MORE**

Principal Investigator: Erin Chiou, Arizona State University

Co-PI: Michelle (Mickey) Mancenido, Arizona State University

Modeling the Impact of Complex, Multi-Vector Disruptions to the Marine Transportation System (MCAT)

The Marine Transportation System (MTS) is a vital part of the nation's supply chain. This project will identify important examples of multiple, complex disruptions and pre- and post-incident mitigation and resilience strategies that might be implemented to reduce risk. This research will develop a framework to estimate the consequences of multiple, complex disruptions to the MTS. The project will focus on analyzing total economic consequences of these threat combinations and transition into a user-friendly decision-support tool, MCAT (Modeling the Impact of Complex, Multi-Vector Disruptions to the Marine Transportation System) to improve risk management at the local, regional, national, and global levels.

The final MCAT decision-support tool will be delivered to the Coast Guard to helpit, the private sector, and other stakeholders in the MTS better understand potential interruptions and their impact to the MTS. This knowledge will help with strategic planning, resource allocation and countermeasures to prepare for and minimize potential disruptions in the MTS. **[READ MORE](#)**

Principal Investigators: Fred Roberts, Rutgers University; Adam Rose, University of Southern California

Next hackathon dates announced: February 25-27, 2022



DHS COEs CAOE, CIRI and MSC join forces to examine critical infrastructure security in next hackathon

CAOE is in the planning stages of its next hackathon/design challenge. This event presents students with several real-world problem statements impacting homeland security and gives students the opportunity to design, build and implement innovative solutions that will be presented to DHS leadership. In partnership with DHS Centers of Excellence Critical Infrastructure Resilience Institute (CIRI) and Maritime Security Center (MSC), this hackathon will engage students from ASU, University of Illinois, and Stevens Institute of Technology to develop solutions to protect our critical infrastructure. Mentors from DHS, industry and local communities will be available to help during the event and prizes will be given to the top teams. This will be a hybrid event with students and mentors interacting in-person at the participating schools and virtually via Zoom and Discord. Please [click here](#) to be included on our mailing list for more information including student registration.

RESEARCH GRANTS REQUEST FOR PROPOSALS



Procurement Innovation

Center for Accelerating Operational Efficiency (CAOE) is seeking proposals to address research questions/challenges that CAOE, DHS, or its federal partners have posed. CAOE provides university -led academic innovation in support of DHS missions.

This RFP specifically targets improvements for contracting the procurement innovations in the Federal Government and is in alignment with the DHS strategic goal to champion the DHS workforce and strengthen the department.

[Read the RFP guidelines and instructions.](#)

Deadline: November 15, 2021

A formal proposal review process including evaluation by external subject matter experts will be conducted to select those for which a grant will be offered

Specific questions about this request for proposals should be addressed in writing to Ross Maciejewski, Director of the CAOE at caoe@asu.edu

Student researcher highlights



Laura Mills

William & Mary

Field of study: Bachelor's degree in history and data science

Undergraduate researcher creating visualizations to better understand migratory patterns

Human migratory decisions are the result of a complex range of interacting factors, including economic, social and environmental vulnerabilities. Advancing our understanding of why, how, and where migration occurs across U.S. borders will help guide both U.S. Government border operations and U.S. socioeconomic policies with countries experiencing surges in migration into the country.

Student Laura Mills is a key member of the CAO E research team that is studying the push-and-pull factors that drive migration along the southern border. She is responsible for extracting socioeconomic information at the municipality level from the world's largest collection of census data, including cleaning datasets for each country of interest. Mills also creates data visualizations using static map layouts.

As a student researcher, Mills credits the project with giving her valuable insights into how her education can be used in the field. "I am consistently putting my data science education from my classes into practice. I've grown more confident in my skills and I'm applying them to real world situations. It's been an incredible experience." **[READ MORE](#)**



Randy Grivel

Arizona State University

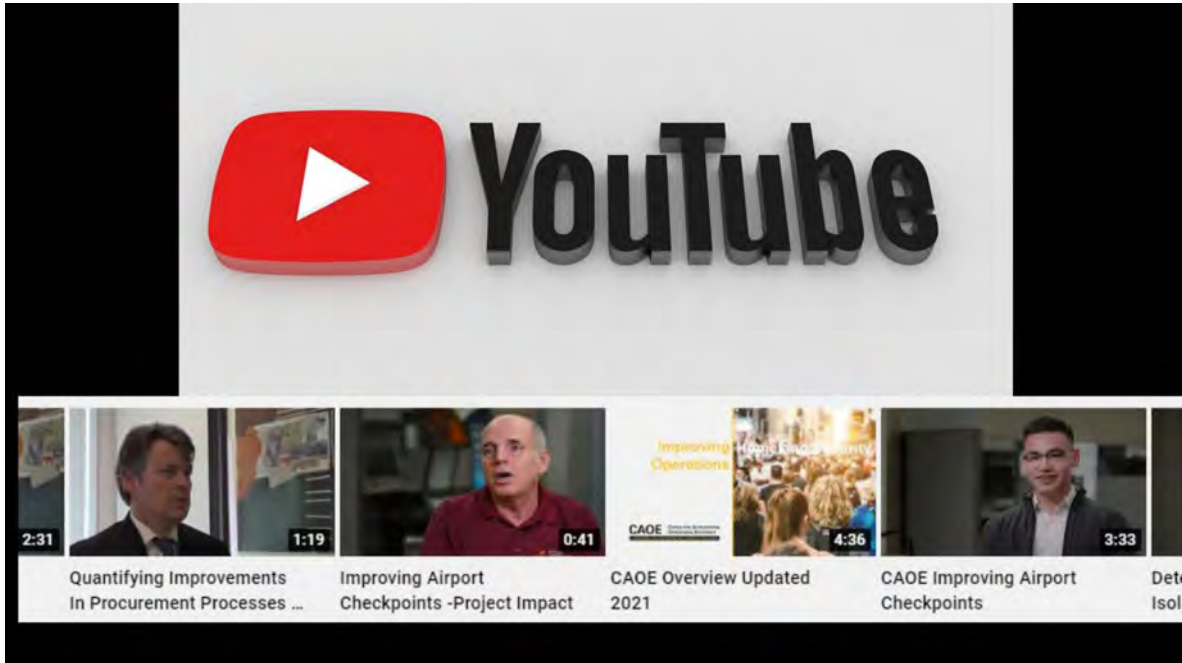
Field of study: Doctorate in industrial engineering

Graduate student researcher analyzes airport passenger arrivals to help improve TSA checkpoint operations

Researchers at CAOIE are studying this issue to help airports screen travelers more efficiently, without reducing the level of security. This study titled; "Optimization of Resources at Screening Facilities for Increased Threat Detection" is focused on assisting the TSA in achieving the agency's goal of providing customers with a positive experience as they proceed through the necessary security processes.

Student Randy Grivel is an important member on this team, working at Sky Harbor Airport in Phoenix, Arizona to analyze the patterns of passengers and their impact on TSA checkpoints.

Grivel sees the real challenge of this project in acquiring the data required for a strong model. "Most people know airlines can accurately predict how many people with tickets to a flight will arrive at the airport. It is not as clear when those travelers will arrive at a security checkpoint," he explained. "On the surface, the problem seems easy to solve but gathering the proper data is the primary obstacle." **READ MORE**



CAOE YouTube channel is growing

Interested in learning more about CAOE research and student engagement? New content currently in production includes project updates from faculty and student researchers at ASU, UTEP, William & Mary and Rutgers University. [Subscribe to the CAOE ASU YouTube channel](#) to get the latest updates.



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