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Building a Resilient Transportation

TSA-CAOE Symposium 2021

The theme and tone of the 6th annual TSA-CAOE Symposium was a positive look at how we as a nation move our transportation systems and structure forward after the challenging impacts of the COVID-19 pandemic. The Center for Accelerating Operational Efficiency (CAOE) was honored to host the continuation of the Transportation Security Administration (TSA) Symposium in 2021 after a brief hiatus in 2020 due to COVID-19. The two-day virtual event featured keynote speakers and distinguished expert panelists representing thought leaders and senior executives from across TSA, academia and industry. The structure of the event featured four sessions with different focus areas: lessons of resiliency from COVID-19, building resilience through a diverse workforce, supporting resilience through innovative acquisition and building back better. **READ MORE**


ASU capstone students work with TSA at Phoenix Sky Harbor

In a partnership between the Transportation Security Administration (TSA) at Phoenix Sky Harbor International Airport and the Center for Accelerating Operational Efficiency (CAOE) at Arizona State University, ASU undergraduate students Cooper Weisbach, Sam Teplitz and Jessica Hale had the opportunity to gain exposure to professional working environments and real applications of material taught in their coursework by engaging in solving problems that the TSA faces.

This senior capstone project "Quality Control Charts and Sensitivity Analysis in Non-Manufacturing Fields" focused on determining optimal sample sizes for TSA's covert testing process. This abbreviated abstract was first published in the ASQ Phoenix Section Sun Dial Newsletter, June 2021.

READ THE FULL REPORT HERE
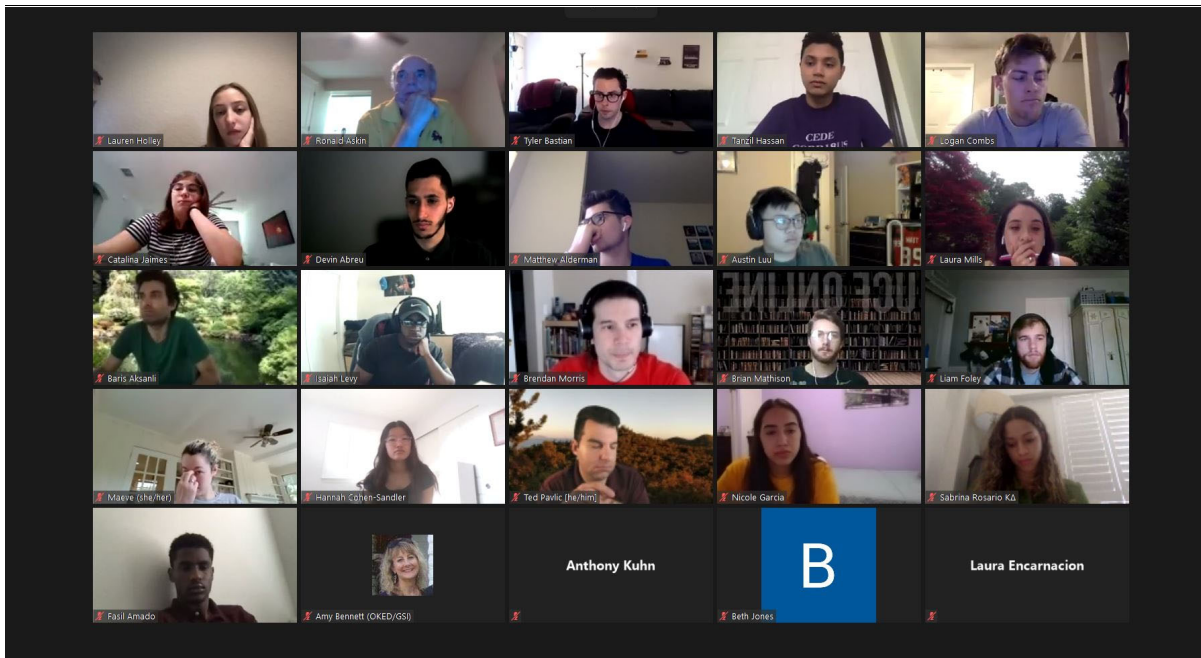
CAOE Summer Research Experience 2021

The annual CAOE Summer Experience Quantitative Analytics (SEQAL) started with a new group of students on June 1. This four-week research experience combined significant data analytics training with real-world problem solving for TSA operational

challenges. As our first virtual summer experience, the program included technology minded innovative students from around the U.S. Twenty-five students from 10 academic partners were chosen through a competitive application process. The academic partners included 7 MSI partners; John Jay College of Criminal Justice, San Diego State University, Texas Southern University, University of California-Santa Cruz, University of Central Florida, University of Houston, and University of Maryland Eastern Shore.

The experience was kicked off by Jerry Booker, Director, Special Operations Division, Inspection, TSA, who gave the students a real-world overview of the types of challenges TSA is currently facing. Booker stated, "The future of transportation security is a rapidly evolving landscape with challenges and opportunities regarding new technology and innovation. Now is the time for problem solvers to explore new ideas and better ways to protect the nation's transportation systems to ensure freedom of movement for people and commerce." **READ MORE**

Summer MSI Research Teams

CAOE is hosting two summer research teams through the DHS Summer Research Team Program (SRT). The teams are from Philander Smith College and California State University Los Angeles. The purpose of the 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.

The team from Philander Smith is led by Samar Swaid, Professor of Computer Science with student researchers, Karon Reed and Malik Tye and their project is "Understanding and Detecting Deception in Visualization." This team is working with Ross Maciejewski, CAOE Center Director and Professor in the School of Computing, Informatics, & Decision Systems Engineering (CIDSE) at ASU. **Click here** to learn more about the Philander Smith SRT team.

The team from California State University Los Angeles is led by Jiang Guo, professor of Computer Science and student Jorge Sanchez and their project is "Machine Learning Based Prediction of Passenger Arrivals". This team is working with Jorge Sefair, Assistant Professor, CIDSE at ASU. **Click here** to learn more about the Cal State LA team.

Anthony Kuhn joins CAOE as new Associate Director of Education

The CAOE is happy to welcome Anthony Kuhn as the newest member of the CAOE leadership team. Kuhn has a background in electrical engineering and computer programming and has been a lecturer at ASU since 2017. Kuhn also serves as Director of the ASU Engineering School's Design Experiences team. In this role he runs events and spaces built to help engineers practice their problem-solving and building skills, including our very successful hackathons! Our goal has been to grow the hackathon and other student engagement experiences to include more DHS Centers of Excellence (COEs) and MSI universities, and Kuhn has the technology and capabilities to continue these efforts. **READ MORE**

Project Highlight: Predicting cross-border migration 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. social-economic policies with countries experiencing surges in migration into the country.

CAOE researchers Anthony Stefanidis, Daniel Miller Runfola and Heather M. Baier from the College of William and Mary are working on a project to develop an innovative analytical framework to aggregate and better understand migration data.

"The project is basically about applying machine learning techniques to try to understand better the drivers of migration," explained Stefanidis. "Specifically, the research team is aggregating the socioeconomic and social demographic factors that drive people to move from their homeland to come to the U.S." **READ MORE**

Project Update: Threat Assessment for the ICT Supply Chain

Researchers seek root causes, root cures, for disruptions to the technology supply chain

Chips are Everywhere

The nation is responding with increasing urgency to supply chain problems affecting products with computer chips. Everything from phones and cars to temperature sensors for concrete and home appliances is experiencing supply disruption. We're discovering that information technology is now embedded in almost everything that we use or do. A team of CAOE researchers led by Fred S. Roberts, a distinguished professor of mathematics and director of CCICADA (Command, Control, and Interoperability Center for Advanced Data Analysis) at Rutgers University, has been working for the past year to track down root causes, and look for root cures that will make the Information and Communications Technology (ICT) supply chain more robust and resilient. **READ MORE**

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