U.S. DHS COE Summit 2021

May 19 – 20
Virtual Event

University Research and Workforce Development for a Safe and Secure Homeland

MARITIME SECURITY CENTER
A DEPARTMENT OF HOMELAND SECURITY CENTER OF EXCELLENCE

Maritime Security Center (MSC)

Led by: Stevens Institute of Technology
Hoboken, New Jersey

MSC enhances Maritime Domain Awareness through the development of sensing technologies that can detect, track and classify threats on or below the water's surface. MSC contributes to Homeland Security operational capabilities by conducting technology development, modeling and simulation for MTS resilience, and innovative workforce development programs.

Projects Videos Contacts Downloads

Mission: The Maritime Security Center (MSC) conducts innovative research, develops new tools and technologies, and provides relevant maritime security-focused educational programs to enhance our nation's maritime domain awareness, the resiliency of our Marine Transportation System (MTS), and the technical skills and leadership capabilities of our current and prospective maritime security workforce.

MSC Overview

Research Expertise

- Maritime Domain Awareness
- Sensor technology development and Integration
- Threat signature characterization
- Data analysis and integration
- Real-time information delivery

Academic and Industry Partners

Patents, Licensing, Recognition

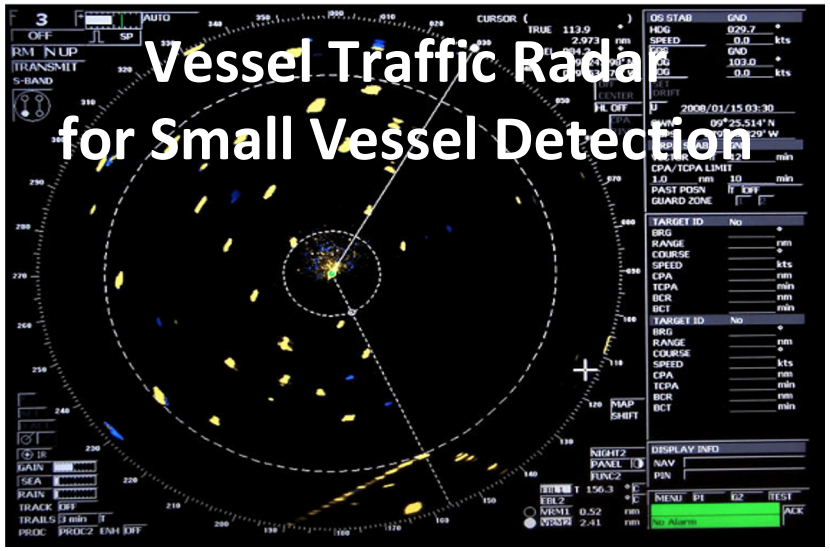
- 2020 Thomas Alva Edison Patent Award Winner in the Homeland Security category.
- Low-Flying Aircraft Detection Sensor System Patent
- Designed, built, tested and transitioned a low-cost, operationally effective sensor system to Customs and Border Protection. Entered into a licensing agreement with a Bridgenet International for manufacturing and supporting the system.

Highlighted MSC Research Projects

Image credit: Globalsecurity.org

Project: Build and test in the field a low-cost sensor suite that can work autonomously in remote areas of the open sea.

Gap Addressed: Improve dark vessel detection, tracking and interdiction capabilities in the USCG Sector Corpus Christi AOR.



Project: Development of signal processing algorithms that use the I/Q data from Vessel Traffic System (VTS) radars to extract the small vessel data.

Gap Addressed: Existing VTS radars detect large vessels, however, their displays ignore small vessels as they are difficult to distinguish from clutter.

Highlighted MSC Research Projects

Project: Develop and test methods for detection and localization of RF transmission from illegal boats.

Gap Addressed: Enhance persistent maritime surveillance capabilities in port and coastal environments. Detection and localization of RF communication signals radiated from crews of illicit boats and their accomplices can provide a source of significant intelligence.

Project: Enhance the safety, security and resilience of remote bridge operations.

Gap Addressed: Transitioning to remote bridge operations creates safety and security concerns over a cyber-physical control network. There is a lack of standards that prevent a uniform review process across all USCG Districts which lead to a potential risk to navigation and public safety.

Other MSC Research Projects

Project: MSC's patented passive acoustic sensor system can detect, track, and classify low-flying aircraft in areas where they can escape the FAA radars. MSC designed, built, tested and transitioned the sensor system to CBP and entered into a licensing agreement with Bridgenet International for manufacturing and supporting the system.

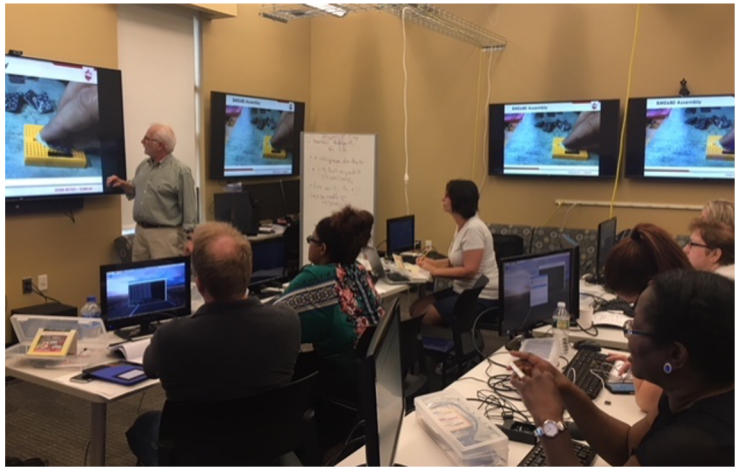
Project: MSC collaborated with CBP agricultural specialists to test and evaluate the use of microwave, acoustic, and other technologies to detect multiple pests at ports of entry. The MSC developed system has been tested at multiple US Ports of Entry and was improved based on the tests conducted.

Professional Development Education Programs

Maritime Cybersecurity Professional Development Course

The course is designed to provide marine safety personnel with foundational cybersecurity knowledge to enable cyber risk awareness as part of routine facility and vessel inspections and cyber incident response.

Workshops for MSI and Community College Educators



MSC collaborates with educators from Minority Serving Institutions (MSI) and Community Colleges to provide educational instruction and curriculum resources on topics related to maritime security.

Workforce Development and Experiential Learning Programs

Summer Research Institute

Interdisciplinary maritime security-focused research program for STEM students.

STEM Internship Program

Placing high-potential STEM students in internships within the homeland security enterprise.

Research Assistantships

Engaging students in research projects designed to produce new knowledge and technology-based solutions to homeland security problems.

MSC Education Program Impacts

Student Placement in the Homeland Security Workforce

NUSTL - Port of Houston Field Test
Four out of the seven NUSTL representatives in this picture are MSC student alumni.
Image credit: DHS S&T NUSTL

Customs and Border Protection (CBP) NY Laboratory
DHS S&T Directorate (DHS S&T)
National Urban Security Technology Laboratory (NUSTL)
Naval Surface Warfare Center Carderock Division (NSWC)
Pacific Northwest National Laboratory (PNNL)
U.S. Army – Logistics Data Analysis Center (LDAC)
USCG Research and Development Center (USCG RDC)

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