MSC Research Update
October/November 2021

Join us on December 8 at 11:00 AM, EDT for an MSC Webinar Focused on Improving the Situational Awareness of Underwater Robots for Security and Inspection Tasks. The MSC is pleased to host Dr. Brendan Englot, Director, Robust Field Autonomy Laboratory at Stevens Institute of Technology for a webinar discussion on underwater robot perception and navigation in complex maritime and port environments. Dr. Englot will discuss advancements being made in the mapping and pathfinding capabilities of a sonar-equipped, underwater robot to perform efficiently and effectively under significant localization uncertainty. The webinar is open to DHS personnel and invited guests. To register and learn more, please visit: https://www.stevens.edu/research-entrepreneurship/research-centers-labs/maritime-security-center/webinars-series.

MSC Webinar Series to Feature Talks on Sensing Technologies to Counter Maritime and Border Security Threats. The MSC is hosting a series of webinars over the next several months focused on the development, testing and evaluation of sensing technologies used to detect and counter homeland security threats by air, land, and on and below the water’s surface. MSC research scientists will discuss operational issues and technology advancements as they pertain to underwater robots, acoustic detection systems, VTS radar, RF Surveillance, and electro-optical and infrared cameras, among other sensor platforms. The first two talks in the webinar series will include:

- December 8, 2021 at 11:00 AM (EDT) - See above
- January 19, 2022 at 11:00 AM (EDT)
  Detecting and Countering Small Vessel Threats with VTS Radar, presented by Dr. Hugh Roarty, Rutgers University

The Sensing Technologies to Counter Maritime and Border Security Threats webinar series is open to DHS personnel and invited guests. All webinars will be held via Microsoft Teams. Register here to attend: https://www.stevens.edu/research-entrepreneurship/research-centers-labs/maritime-security-center/webinars-series.

MSC Student Research Teams Receive Top Honors at the 2021 Maritime Risk Symposium Student Poster Competition. MSC Summer Research Institute students Tricia Camaya, Zaid Abdul-Kaudeyr, Isabel Gutierrez, Tara McLoughlin, Andrew Narvaez, and Samantha Weckesser achieved top honors at the 2021 Maritime Risk Symposium poster competition held virtually November 1-5, 2021. Out of the four MSC posters submitted, two were recognized among the top three submissions in the Maritime Cybersecurity poster track, and two ranked in the top three for the Resilience poster track. Additional recognition was given to Tara McLoughlin for Best Undergraduate Student Poster. A breakdown of this year’s MSC poster winners includes:

MRS Maritime Cybersecurity Poster Track:
- Understanding Cybersecurity Risk in Offshore Wind Farms
  Student Presenters: Zaid Abdul-Kaudeyr and Tricia Camaya, Norfolk State University (NSU).
  Mentors: Dr. Mary Ann Hoppa, NSU and Dr. Barry Bunin, Stevens Institute of Technology

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USCG Cybersecurity and Data Analysis Research Internship
Student Presenter: Tara McLoughlin, Stevens Institute of Technology
Mentors: Mr. John Hillin, USCG Sector NY and Dr. Barry Bunin, Stevens Institute of Technology

Risk Management and Analytics Dashboard
Student Presenter: Isabel Gutierrez, North Carolina Central University (NCCU)
Mentors: Dr. Rakesh Malhotra, NCCU and Dr. Hugh Roarty, Rutgers University

Improved USCG Inspections of Hazardous Cargo
Student Presenters: Andrew Narvaez and Samantha Weckesser, Stevens Institute of Technology
Mentors: Mr. John Hillin and MST1 Christian Applegate, USCG Sector NY and Dr. Barry Bunin, Stevens Institute of Technology

Research conducted by Isabel Gutierrez (NCCU), Tricia Camaya (NSU), and Zaid Abdul-Kaudeyr (NSU) was sponsored by the DHS Minority Serving Institution Summer Research Team program, in conjunction with the MSC’s Summer Research Institute. The annual U.S. Coast Guard co-hosted event provides an ideal venue for MSC and other Center of Excellence student talent to present their research and build their professional networks. In addition to this year's awards, MSC's students received 1st and 2nd place best student poster awards at the 2020 and 2019 MRS events.

MSC SRI Student Receives DHS HS-POWER Internship to Continue Research with USCG Sector New York. Following his participation in the MSC's 2021 Summer Research Institute (SRI), Andrew Narvaez, an undergraduate computer science major at Stevens Institute of Technology applied and was selected to participate in the DHS Homeland Security Professional Opportunities for Student Workforce to Experience Research Program (HS POWER). The HS-POWER program has provided an opportunity for Andrew to continue his research started in the SRI in a hybrid (virtual and field-based) internship this Fall 2021 with U.S. Coast Guard Sector NY. Andrew's internship project focuses on identifying improved methods for targeting hazardous cargo inspections. He is working with Sector NY to develop a unified data collection system that considers USCG, CBP, and National Cargo Bureau hazardous cargo data, and is piloting a cargo inspection algorithm he and his teammates developed during the MSC summer research program. Outcomes from his internship tasks will be documented in a final report to USCG Sector NY and the HS-POWER program administrators. Andrew has accepted an internship offer with JP Morgan Chase during the summer of 2022 but is considering career options with the U.S. Coast Guard following graduation.