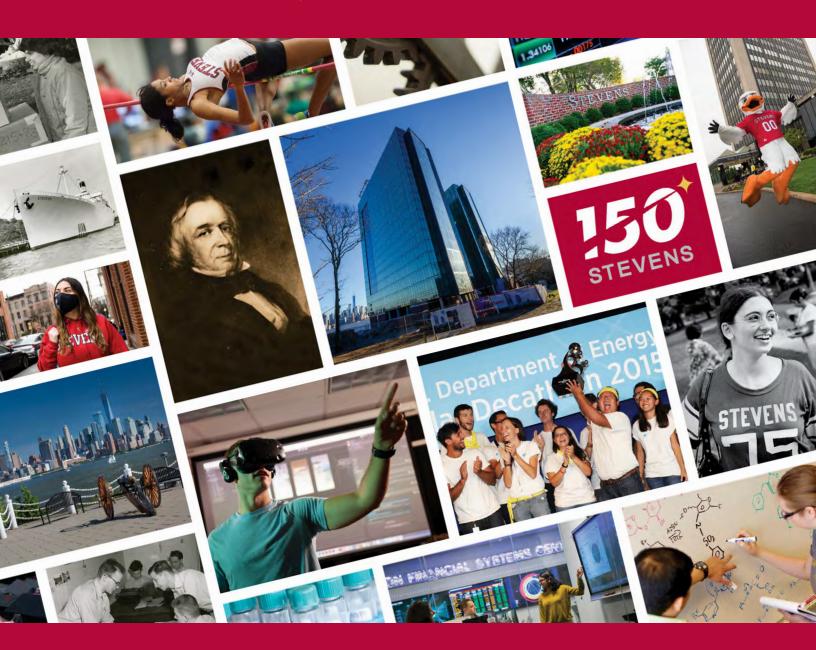
## THE STEVENS SPECIAL ANNIVERSARY ISSUE OF THE STEVENS OF THE STEVEN

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STEVENS AT 150

A proud past A promising future

## How can the U.S. protect its waterways?

**Hady Salloum** 

The Maritime Security
Center and the Sensor
Technology and Applied
Research (STAR) Center
Director Hady Salloum
is leading a team to

develop a cost-effective underwater acoustic sensor system for commercial port and waterway security and operations. The project is funded by a \$3.3 million contract from logistics technology company iModal Ground LLC.

Building upon a Stevens-patented technology called SPADES (Stevens Passive Acoustic Detection System) initially developed for the U.S. Navy, this portable passive listening system uses underwater microphones to detect, classify and track divers and small

watercraft by sound frequency. Sensor data is processed by algorithms, which compare the data to sound libraries and trigger alerts as appropriate.

Potential applications include intruder detection, toll collection, supply chain efficiency and cruise ship passenger safety. The underlying technology has also been modified by Stevens for submersible, unmanned aerial systems, aircraft and invasive insect detection.

The new prototype improves upon the original designs while taking advantage of advances in signal processing, sound technology, hardware and software. The STAR Center team is also engineering certain components in-house to make the product lighter, smaller, and cheaper to manufacture.



Stevens STAR Center researchers deploy a passive acoustic sensor in the Hudson River.

This higher-performance system will be faster, leaner, more accurate, more rugged and lower maintenance, Salloum says, while significantly lowering the bar to entry to technology previously available only to the military or large enterprises.

The team aims to have the prototype built, deployed, tested and refined by 2022. — *Kellie Walsh*