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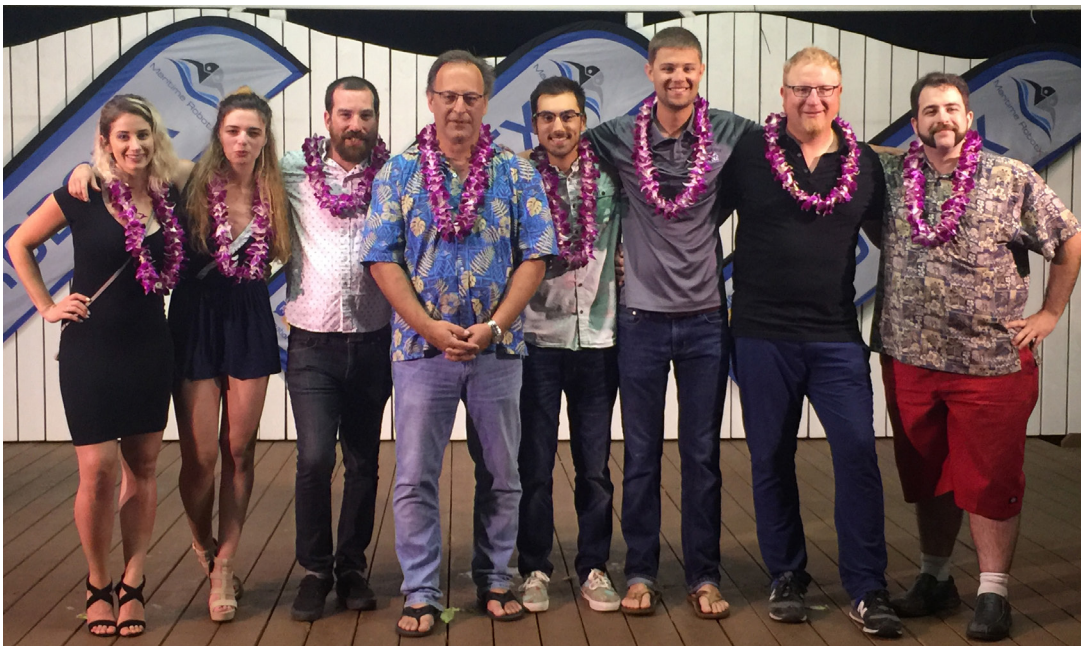
RobotX team competes in Hawaii

Students return from autonomous boat competition with $5K and new friendships

story and video by Keith Pierce

When we hear the term, "unmanned systems," we almost immediately think of drones or autonomous cars. However, for the Old Dominion University RobotX team, it's all about the boat. Last month, while most students were finishing up the fall semester and preparing for their holiday break, six multidisciplinary engineering students were in Honolulu, Hawaii competing with 14 other teams from three continents, in the 2018 Maritime RobotX Challenge. The week-long biennial competition, designed to foster student interest in autonomous systems, is supported by the Office of Naval Research (ONR) and co-sponsored by the Association of Unmanned Vehicles International Foundation and NAVATEK, a Hawaii-based company that designs ships, small crafts and other amphibious vehicles.



RobotX team from left to right: Andrea Robey, Ntiana Sakioti, Chris Lovin, Dr. Yiannis Papelis, Jay Ahangari, Michael Nilsen, Joe Lemanski and Thomas Langhorne

"You learn a lot in your classes, but you don't really get to apply it to the real world until you get out of school," said Andrea Robey, co-captain and a junior majoring in modeling, simulation and visualization engineering. "By getting involved in opportunities like this, you're able to test those new skills and try those new methods on something real and see it in action. So this has been really rewarding."

RobotX teams use a common boat platform called the Wave Adaptive Modular Vessel (WAM-V). Each team must equip their vessel with hardware, software, sensors, propulsion and control systems. The vessel must be programmed to make independent decisions to complete assigned missions including navigation, object identification, obstacle avoidance and data collection. All tasks must be completed without human guidance, intervention or remote control. Only five of the 15 teams qualified for the finals.

"There were a total of 8 challenges but we could only attempt seven because the eighth challenge required a submersible which we did not have," says Yiannis Papelis, Ph.D., chief scientist and research professor at ODU's Virginia Modeling Analysis and Simulation Center (VMASC). "As a point of reference, however, there were six teams (including Georgia Tech and Michigan) that completed fewer tasks than we did and one team that completed the same tasks; putting us somewhere around seventh place in the unofficial rankings."

Teams also had to create a website and video, write a technical design paper outlining their work and give a presentation. Nearly $100,000 in cash prizes were up for grabs. The ODU team came home with $5,300 in winnings.

"Our presentation and our technical review both received a lot of positive feedback," said Robey. "We won the 'Carpe Diem' award, which came with $3,500 in prize money, for always going for the challenge and being willing to try anything. We also took second place for our website design, which was a $1,500 prize."

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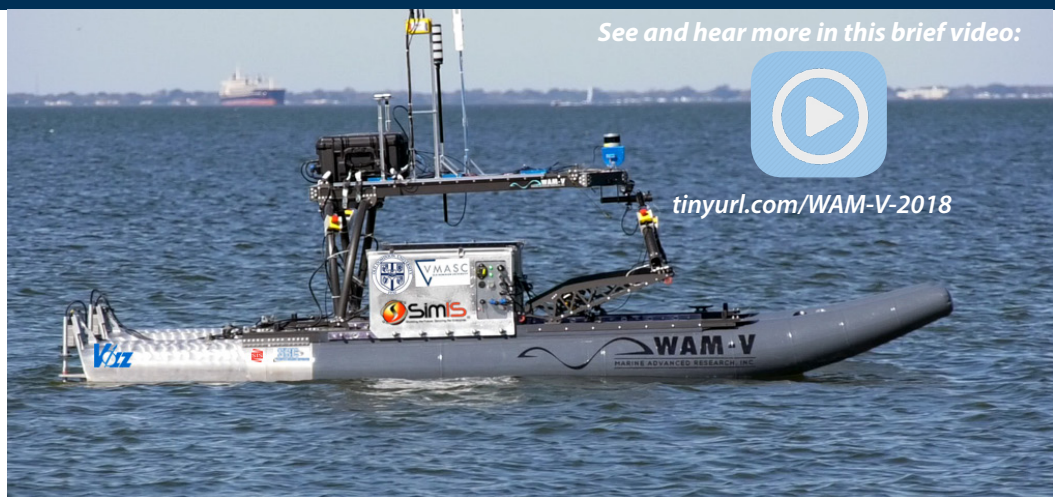
RobotX *cont'*



The team also received a $300 award for being a first-time competitor. Nearly 40 ODU students from multidisciplinary engineering programs, including mechanical, electrical and modeling, simulation and visualization engineering (MSVE), have been involved in the RobotX project – many through senior design projects – over the past year.

"Working as a multidisciplinary team in this competition gave us experience with engineering fields that we wouldn't have had otherwise, in addition to the experience presenting in detail our design and intentions to industry professionals in both group and one-on-one settings," explained co-captain and MSVE graduate student, Ntiana Sakioti. "Getting to know the other teams and judges was not only rewarding in terms of technical knowledge, but it also provided the opportunity to gain friendships and have a lot of fun."

The team also received support from ODU MSVE alum, Johnny Garcia, founder & CEO of SimIS, Inc., a modeling and simulation company in Portsmouth, Virginia that often sponsors internships for engineering students.

"We're effectively studying approaches for making intelligent machines that can behave autonomously," Papelis said. "In the maritime domain, this is very important, which is why the U.S. Navy is heavily investing in unmanned vehicles."

LEARN MORE:
- **tinyurl.com/WAM-V-2018**
- **tinyurl.com/13News-ODUWAM-V**
- **https://www.robotx.org/**

EMSE cybersecurity curriculum to support the president's Cybersecurity National Action Plan

by Keith Pierce

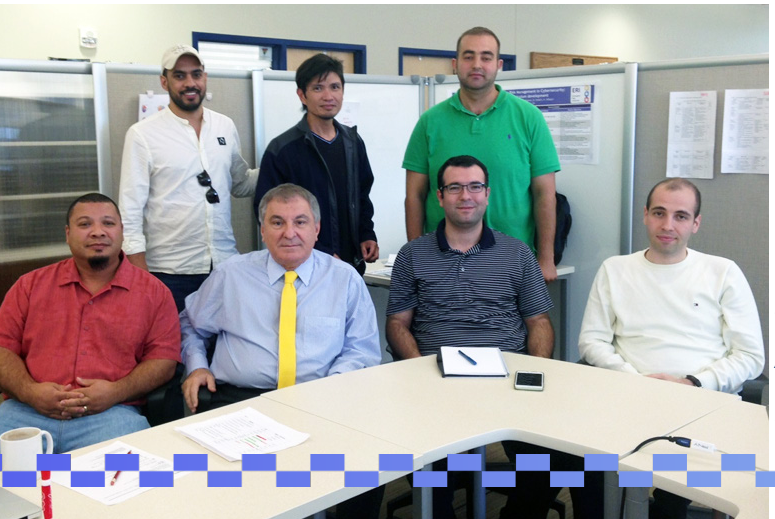
Engineering Management and Systems Engineering (EMSE) professors, Ariel Pinto and Adrian Gheorghe, along with the Emergent Risk Initiative (ERI) student cohort, are featured curriculum authors in the National Security Agency's (NSA) National Cybersecurity Curriculum Program.

"The curriculum developed by Old Dominion University is one of the first 10 to be released as we work to secure our nation by strengthening the cyber workforce," Maureen Turney, program director for the National Cybersecurity Curriculum Program at NSA, said in a letter to ODU researchers.

In the 2017 fiscal year, NSA awarded 54 grants to universities to build courses and modules in high need cybersecurity areas. Old Dominion University EMSE researchers were awarded the National Security Agency Cybersecurity Core Curricula Development Grant to develop a course on Cybersecurity Risk Management to support the President's Cybersecurity National Action Plan (CNAP).

All curriculum undergoes a strenuous multi-faceted review before being released. The ODU curriculum is now publicly available for educational institutions that want to educate and prepare cybersecurity graduates to fill Federal Government cybersecurity positions.

"We congratulate Dr. Pinto, Dr. Gheorghe and the ERI@ODU student cohort for their great work," said Andres Sousa-Poza, Ph.D., professor and chair, EMSE. "This is no small feat given that the NSA is working with more than 50 universities to develop its training capabilities. The Engineering Management and Systems Engineering department at Old Dominion University works hard to gain distinction for our academic programs and products, which are nationally recognized. We are all extremely proud of this work that continues in this tradition."

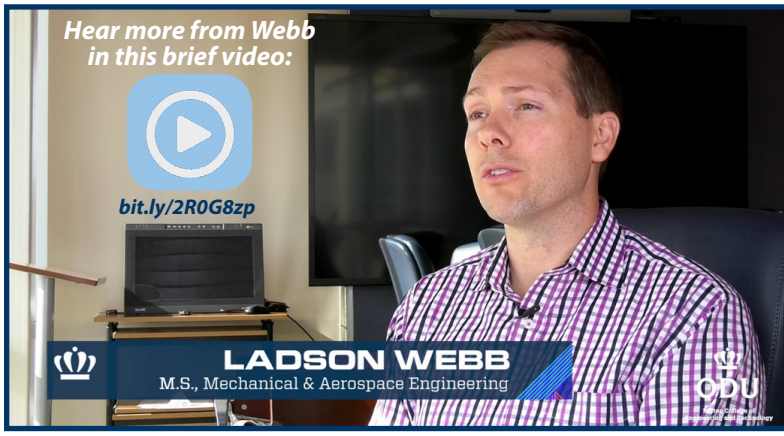


Project team members: *(L-R) Mark Guilford, Abdul Alfaqiri, Adrian Gheorghe, Ariel Pinto, Unal Tatar, Omer Poyraz and Omer Keskin. Not pictured: Goksel Kucukkaya and Leili Soltanisehat*

ERI Emergent Risk Initiative

STUDENT SPOTLIGHT: FALL CLASS OF 2018

Two Mechanical and Aerospace Engineering grads land multiple job offers



story and videos by Keith Pierce

Strong work-ethic pays off for international student

Since as far back as middle school, Parimal Prajapati has excelled academically. Always striving to be at the top of his class, he's never been a stranger to hard work or long study hours.

"When I was in eighth grade I asked a ninth grader what the highest grade point percentage a student has ever achieved," Prajapati recalled. "When he told me what it was I knew I could exceed it. I don't know what got into me, but I was so into studies that I wanted to crack that number. I gave all my efforts and ended up achieving the highest GPA in several years. From that incident, I came to believe that if you have something in you, you can get whatever you want."

Prajapati did in fact, get what he wanted. When he came to the United States from India to pursue mechanical and aerospace engineering, he had a dream to work in manufacturing design and work towards starting his own engineering design business. Now, after receiving job offers from three different states, before even graduating, the mechanical and aerospace engineering master's graduate accepted a position as a mechanical design engineer at RGD Consulting Engineers in Orlando, Florida. He credits his professors and mentors and the many hands-on project opportunities, as well as ODU's partnerships with prestigious industries, such as NASA Langley and Jefferson Lab, for his success.

"...if you have something in you, you can get whatever you want."

– Parimal Prajapati

Husband, father finds success on his path of reinvention

A husband, a father and a Virginia Beach native with more than ten years of business experience, Ladson Webb came to ODU to reinvent himself. The second career graduate student chose ODU not only because it was close to home, but because he wanted to take advantage of the open access to professors that he heard ODU was known for.

"I have developed deep friendships with several of the senior faculty and when I defended my thesis, several of them came to show their support, even though they didn't have to," Webb said. "As I look back on my decision to come to ODU, that to me is a fulfillment of one of my main objectives. I have nothing but great referral opportunities from all of my professors and I hope to continue to leverage those relationships in my professional career."

After contemplating all of his opportunities, Webb accepted a position as a test engineer for Liebherr Construction Equipment Company in Newport News, Virginia.

ODU engineering faculty work to create efficiencies for Naval shipyards

By Mike Gooding
13NewsNow (used by permission)

The shipyards, including Norfolk Naval Shipyard in Portsmouth, are in such bad shape that they are not fully meeting the Navy's operational needs, according to a 2017 U.S. Government Accountability Office report.

A new report from the GAO found that "Navy shipyards have been unable to keep up with maintenance demands for attack submarines."

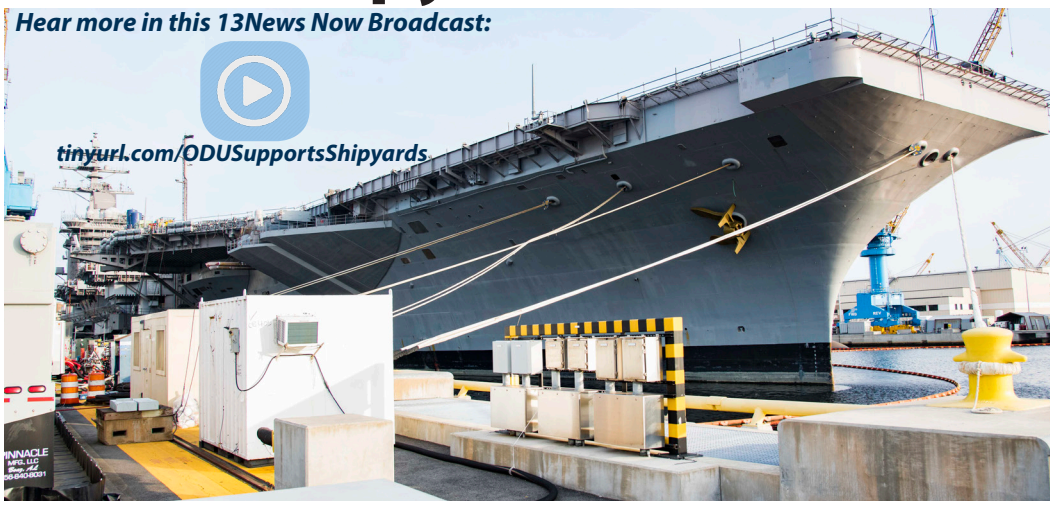
But now, help may be on the way from Old Dominion University.

"It's absolutely a brilliant opportunity, I'm really excited about it," said ODU's Batten College of Engineering and Technology Assistant Professor Andy Collins.

The engineering faculty, along with ODU's Virginia Modeling, Analysis and Simulation Center, are developing courses in the areas of predictive analytics, data analytics, data modeling and data management to help naval shipyards be more efficient.

Hear more in this 13News Now Broadcast:

tinyurl.com/ODUSupportsShipyards



The aircraft carrier USS Dwight D. Eisenhower (CVN 69) is pierside in Norfolk Naval Shipyard preparing for a planned incremental availability. (U.S. Navy photo by Mass Communication Specialist Seaman Marques M. Franklin/Released)

"We're actually going to be developing six courses over the next five years," said Collins. "They're courses designed specifically for the shipyards and their requirements. So they can take that data, look for patterns and look for efficiencies and improvements they can make within the shipyards."

The great thing is, it isn't just some academic exercise, but a legitimate contribution to national defense.

"But the idea to come across real-world problems and really something that we can contribute is just fantastic," said Collins.

Also fantastic, the dollar amount of the grant from the Pentagon's Naval Sea Systems Command for this research project is $2,056,385.

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The ***illuminator*** is a publication of the Batten College of Engineering & Technology

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