



STEM²*Stern*

2015
WINTER
NEWSLETTER

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A Guide to Naval STEM

MESSAGE FROM THE DIRECTOR OF RESEARCH



One of the most important pieces of any organization, regardless of the products it develops or the audience it serves, is the people who work there. Without bright minds, powerful drive and hard work, innovative ideas rarely come to fruition. At the same time, it helps to have a broad awareness of opportunities to truly make a difference by working with the Department of the Navy to attract the best and brightest to the ranks of our workforce.

This is precisely why naval STEM education and workforce initiatives are so vital to what we do. These programs aim to support our warfighters and complement the scientists, engineers and technicians who keep our Navy and Marine Corps on the cutting edge.

From education outreach programs that introduce students to naval applications for the content and skills they learn in the classroom, to internships and professional development programs that engage our current and future workforce in rewarding research, naval STEM endeavors to support all pieces of the education and workforce pipeline.

As you may know, there have been a lot of changes over the past few years in the broad STEM education arena. We are proud to work closely with our partners at the Department of Education, National Science Foundation, Smithsonian Institution and other mission-focused agencies to efficiently and effectively support the

nation's youth and technical workforce.

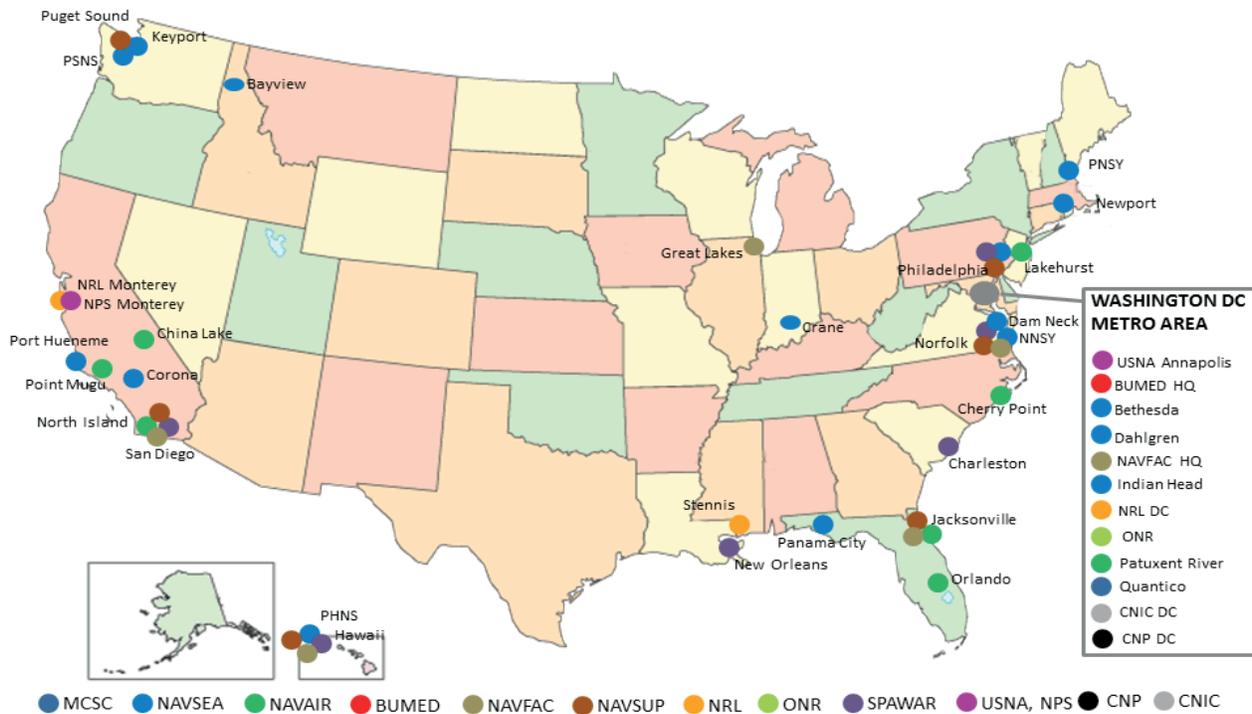
This atmosphere of increased coordination and engagement is also being applied to our efforts in the Navy and Marine Corps.

This special edition of STEM2Stern is dedicated to providing you with a broad overview of the great work our naval STEM stakeholders are already performing across the country. Although this is by no means an all-inclusive document, our hope is that it will highlight some of our education and workforce efforts and create opportunities for the broad STEM community to engage with us further.

Sincerely,

Dr. Larry Schuette
 Director of Research
 Office of Naval Research

Naval STEM Stakeholders



NAVAL STEM OVERVIEW

The Department of the Navy (DoN) must be able to recruit and employ a competent STEM workforce. This includes naval civilians, active duty Sailors and Marines and Navy and Marine Corps Reserve components. The focus of DoN STEM is threefold:

- Inspire, engage and educate the next generation of scientists and engineers
- Employ, retain and develop our civilian technical workforce
- Collaborate across the naval STEM enterprise, and with other agencies, to maximize benefits to DoN

STEM programs are mission-critical investments in the DoN current and future workforces, and are vital to meeting present and future warfighting challenges. DoN STEM also aims to complement the work of other agencies in naval STEM funding and programs.

NAVAL STEM STAKEHOLDER ORGANIZATIONS

Local STEM efforts are managed and executed at the command or organization level. These organizations implement STEM education, workforce and outreach activities within their respective communities. This newsletter provides an overview of the efforts that some of these stakeholders conduct.

EDUCATION INITIATIVES

As part of the naval STEM effort, the Navy and Marine Corps reach out to students nationwide. In K-12 programs, hands-on learning experiences are emphasized to encourage students and teachers of all ages to “learn by doing.” This encouragement comes in a variety of forms, including participation in expos and festivals; sponsorship of summer camps and teacher trainings; and support of STEM competitions.

WORKFORCE INITIATIVES

One of our primary goals is the development of the current and future naval STEM workforce. Numerous programs are available to students, academic faculty and naval scientists and engineers. This newsletter offers a look at various efforts launched by our stakeholders within their respective communities.

On the following pages you will find a sampling of the various education and workforce programs supported by Navy and Marine Corps commands across the country. To find out more about these and other programs, please contact the point of contact listed under each command.

TOP NAVAL STEM PRIORITIES

1

Develop and strengthen the engineering disciplines across all naval activities, and improve our pipeline of technical professionals

Cultivate the capacity of the current and future naval workforce to use big data analytics and enhance information science disciplines across all naval activities

2

3

Promote efforts that connect military veterans with STEM careers

Engage military-connected students, families and communities

4

5

Support the professional development of the naval technical workforce

Improve assessment and evaluation efforts of STEM programs

6



STEM2Stern

OFFICE OF NAVAL RESEARCH



ABOUT: The Office of Naval Research (ONR) reports to the Secretary of the Navy through the Assistant Secretary of the Navy for Research, Development and Acquisition. Led by the chief of naval research, its senior leadership oversees a portfolio of investments ranging from immediate, quick-turnaround technologies to long-term basic research.

STEM: Having a high-caliber naval science and engineering workforce is important to maintaining the technological superiority of the Navy and Marine Corps. To ensure access to skilled scientists and engineers, the Office of Naval Research's STEM Grants Program funds projects that provide "game-changing" solutions and establish a diverse pipeline of U.S. citizens interested in uniformed or civilian Navy and Marine Corps careers.

The STEM Grants Program focuses on students at the high school, post-secondary and graduate levels, encouraging them to learn more about naval career opportunities. Other initiatives include:

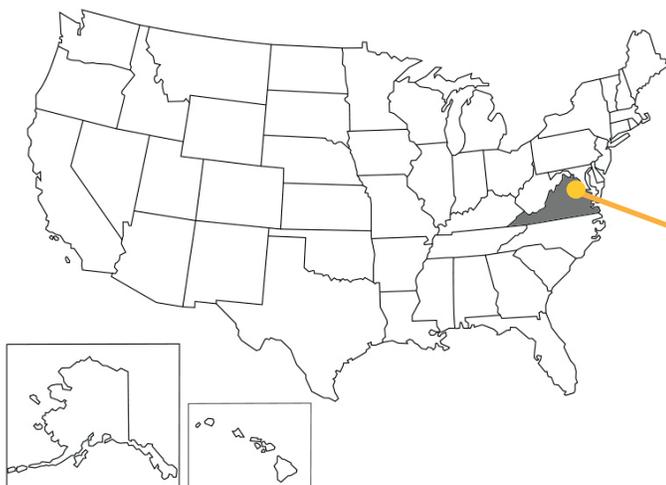
- Helping to create innovative educational programs targeting naval science and engineering workforce needs
- Providing grants up to \$600,000 over three years
- Partnering with educational institutions, nonprofits and businesses
- Cultivating and strengthening the engineering disciplines across all naval activities, and improving the naval technician pipeline
- Developing the capacity of the naval workforce to use big data and analytics to strengthen information science disciplines
- Supporting efforts to connect military veterans with naval STEM careers

EDUCATION PROGRAMS: ONR STEM initiatives encourage, promote and coordinate naval science and technology. Through participation in expos and other outreach events, ONR highlights naval-relevant STEM content, skills and career paths to K-12 students. ONR also supports students at STEM fairs and competitions, providing hands-on activities and an introduction to naval applications for subject matter and skills taught in school.

WORKFORCE PROGRAMS: ONR's workforce programs raise awareness of naval career opportunities, attract and nurture the future talent pool and foster the continued development of the current naval STEM workforce. Laboratory workforce initiatives provide students and faculty opportunities to participate in research programs at Department of Navy (DoN) labs through internships, fellowships and sabbatical leave programs. ONR STEM grants lead to innovative solutions that directly support the development and maintenance of a robust DoN STEM workforce. For example, budgets are starting to include proposal-based ONR support to other naval activities for quality STEM grants.

WEBSITE: <http://www.onr.navy.mil>

EDUCATION AND WORKFORCE PROGRAMS

**Arlington, VA**

U.S. Science and Engineering Festival
 Smithsonian Air and Space Museum Events
 YMCA Thingamajig Convention
 Naval Future Force S&T Expo
 Engineer Speaking Engagements

Michael Simpson
 onr_stem.fct@navy.mil

NAVAL RESEARCH LABORATORY



ABOUT: The Naval Research Laboratory (NRL) operates as the full-spectrum corporate laboratory for the Navy and Marine Corps—conducting broadly based, multidisciplinary programs of scientific research and advanced technological development. These programs are directed toward maritime applications of new and improved materials, techniques, equipment and systems, as well as ocean, atmospheric and space sciences and related technologies.

STEM: The goals of the STEM outreach program at NRL include:

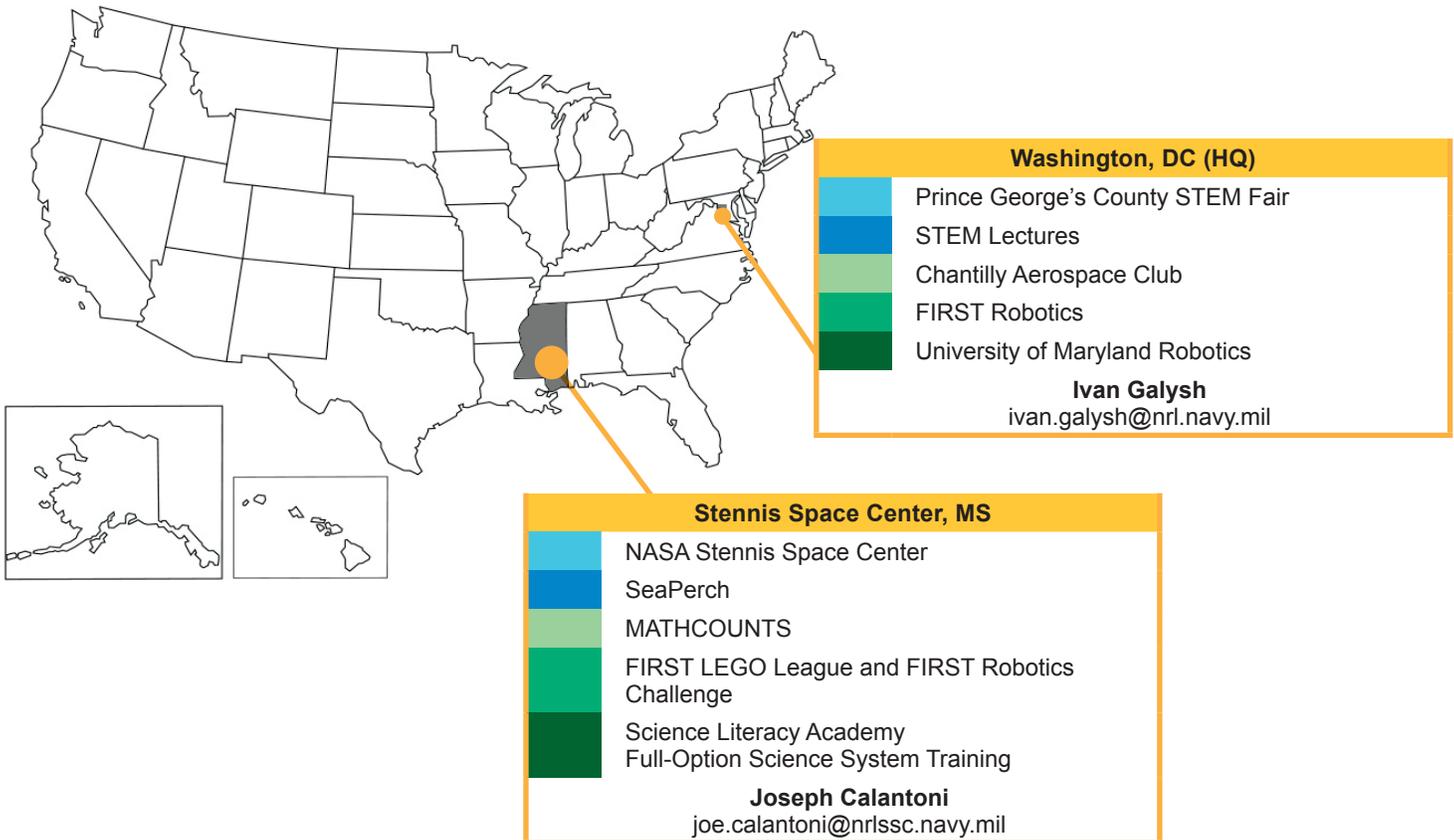
- Inspiring students to pursue STEM careers
- Sharing the Navy mission with the local community
- Retaining the best and brightest local talent for our future workforce

EDUCATION PROGRAMS: NRL’s original community outreach program was established by a 1985 presidential directive tasking government organizations with supporting local schools. Currently, NRL volunteers promote K-12 community and educational outreach through a set of core STEM programs that include SeaPerch, FIRST Robotics and MATHCOUNTS. NRL also provides professional development to science and math teachers in school districts and systems near our laboratories and field sites. NRL scientists and engineers support other activities such as STEM fairs and student lectures.

WORKFORCE PROGRAMS: In addition to the federal Pathways Internships program, NRL participates in the Science and Engineering Apprenticeship Program (high school), Naval Research Enterprise Internship Program (college) and post-doctoral programs through the American Society for Engineering Education and National Research Council. Full-time personnel are also encouraged to participate in NRL’s long-term training programs to advance their knowledge in scientific areas while pursuing advanced degrees.

WEBSITE: <http://www.nrl.navy.mil>

EDUCATION AND WORKFORCE PROGRAMS



NAVAL AIR SYSTEMS COMMAND



ABOUT: The Naval Air Systems Command (NAVAIR) provides full-life-cycle support of naval aviation aircraft, weapons and systems operated by Sailors and Marines. This includes research, design, development and systems engineering; acquisition; test and evaluation; training facilities and equipment; repair and modification; and in-service

engineering and logistics support.

STEM: Approximately half of NAVAIR's 23,000-person civilian workforce has either an engineering or science degree. NAVAIR's ability to support the development of systems used by Sailors and Marines depends on maintaining a highly educated, technical workforce. Reaching out to today's scientific and engineering students is crucial.

EDUCATION PROGRAMS: NAVAIR's STEM outreach programs include several educational components. NAVAIR scientists and engineers reach out to local teachers and help them prepare to teach science and engineering (S&E) disciplines. This involves assisting with curricula and visiting classrooms to address students' challenging questions. The command also brings students to NAVAIR facilities to

perform hands-on activities in the laboratories and show them how we apply S&E concepts in real life.

WORKFORCE PROGRAMS: NAVAIR engages in many STEM workforce programs, including:

- Mentoring local high school students in engineering classes and robotics/engineering clubs
- Participating in the Science Engineering Apprenticeship Program, which provides internship opportunities for high school students
- Participating in the Naval Research Enterprise Internship Program, which provides research opportunities for undergraduate students
- Providing opportunities for several hundred summer hire students to assist with S&E activities
- Participating in the Science, Mathematics & Research Transformation Scholars Program
- Providing internships to students with disabilities who are part of the Workforce Recruitment Program
- Supporting large national diversity organizations by sponsoring their recruiting events
- Supporting current workforce development efforts by sponsoring scientific and research projects proposed and conducted by the workforce, and by supporting employees who are pursuing advanced degrees

WEBSITE: <http://www.navair.navy.mil>

A DAY IN THE LIFE OF A NAVAIR ENGINEER

What is your job? I am an aeronautical engineer and have worked in a number of areas, including flight test, rocket propulsion design and acquisition programing. I currently support the Airborne Systems Curriculum at the U.S. Naval Test Pilot School (USNTPS), where we train students to become qualified test pilots, test flight officers and flight test engineers.

I provide in-flight demonstrations, laboratory instruction and flight test expertise for integrated mission systems (such as radar and navigation) for fixed-wing, rotary-wing and unmanned platforms. I also act as the contracting officer representative for the USNTPS Airborne Systems Flight Demonstration programs, providing technical expertise and contracting coordination.

What inspired you to go into your field? I grew up in an inner-city environment with non-English-speaking, minimally educated, blue-collar working parents. I had no exposure to STEM professionals and knew nothing about STEM careers. I enjoyed math and science and did well academically, but I was not exposed to how they applied to the real world or their potential as a career path. I had an opportunity to participate in a one-day, hands-on STEM program in middle school and a summer-long STEM program in high school, both of which opened my eyes to the application of STEM and its many career opportunities. After these programs, I knew I wanted to pursue a career in aeronautical engineering.

What do you like best about your job? As a rocket propulsion engineer, I was paid to blow things up. As a flight test engineer, I am paid to play with mission systems while flying in jets and helicopters. What's not to like about my jobs? But, specifically, the best things about any of my jobs (past and current) are the hands-on experimentation, continuous learning and high level of responsibility.



NAME: Cam Donohue (center, seated)

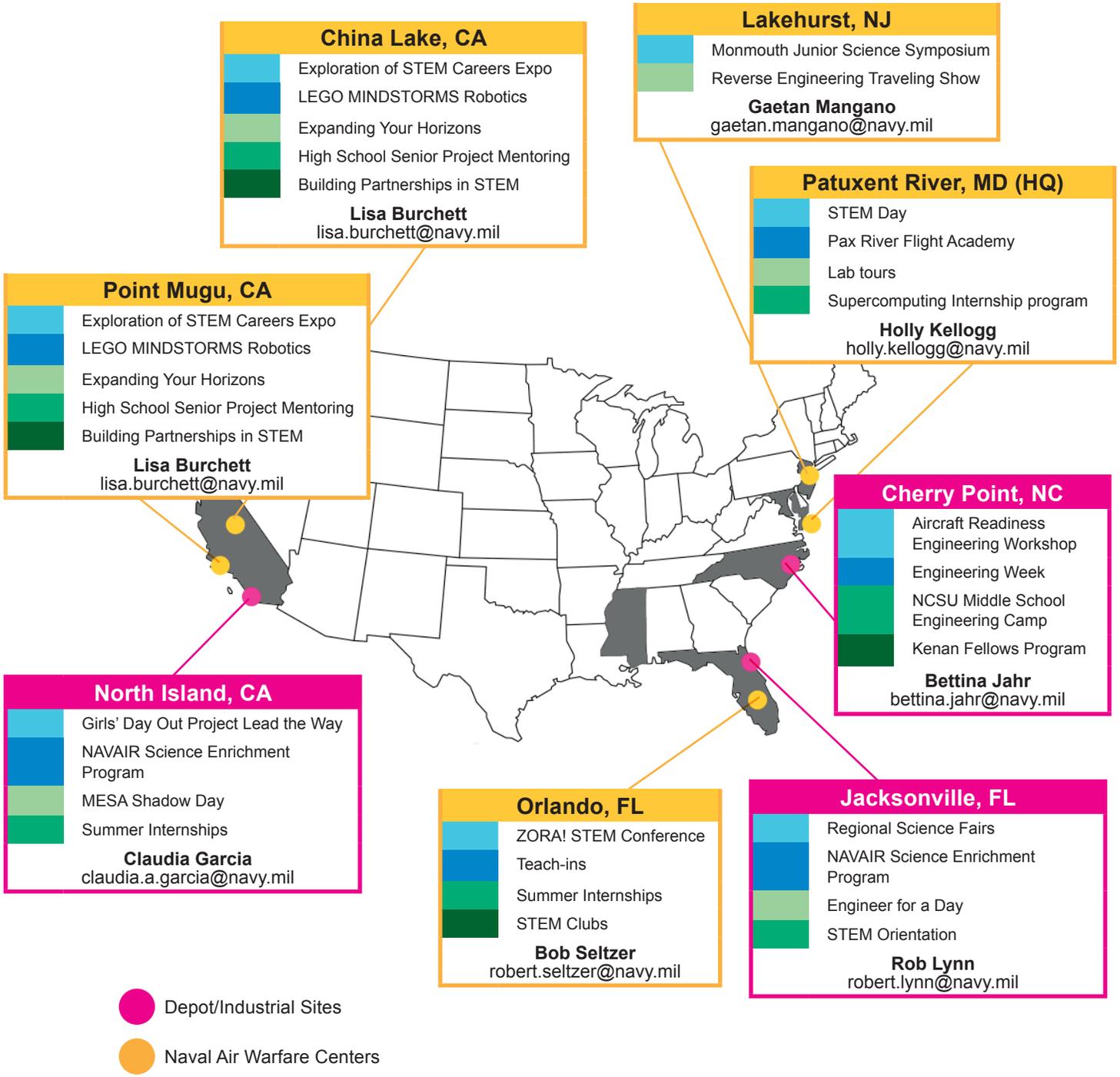
JOB TITLE: Airborne Systems Flight Test Engineer

YEARS ON THE JOB: 14

DIVISION: Naval Air Warfare Center Aircraft Division, Test and Evaluation Department

COMMAND LOCATION: NAVAIR, Patuxent River, Maryland

EDUCATION AND WORKFORCE PROGRAMS



NAVAL SEA SYSTEMS COMMAND

ABOUT: Naval Sea System Command (NAVSEA) engineers build, buy and maintain ship, submarine and combat systems that meet the fleet's current and future operational requirements.

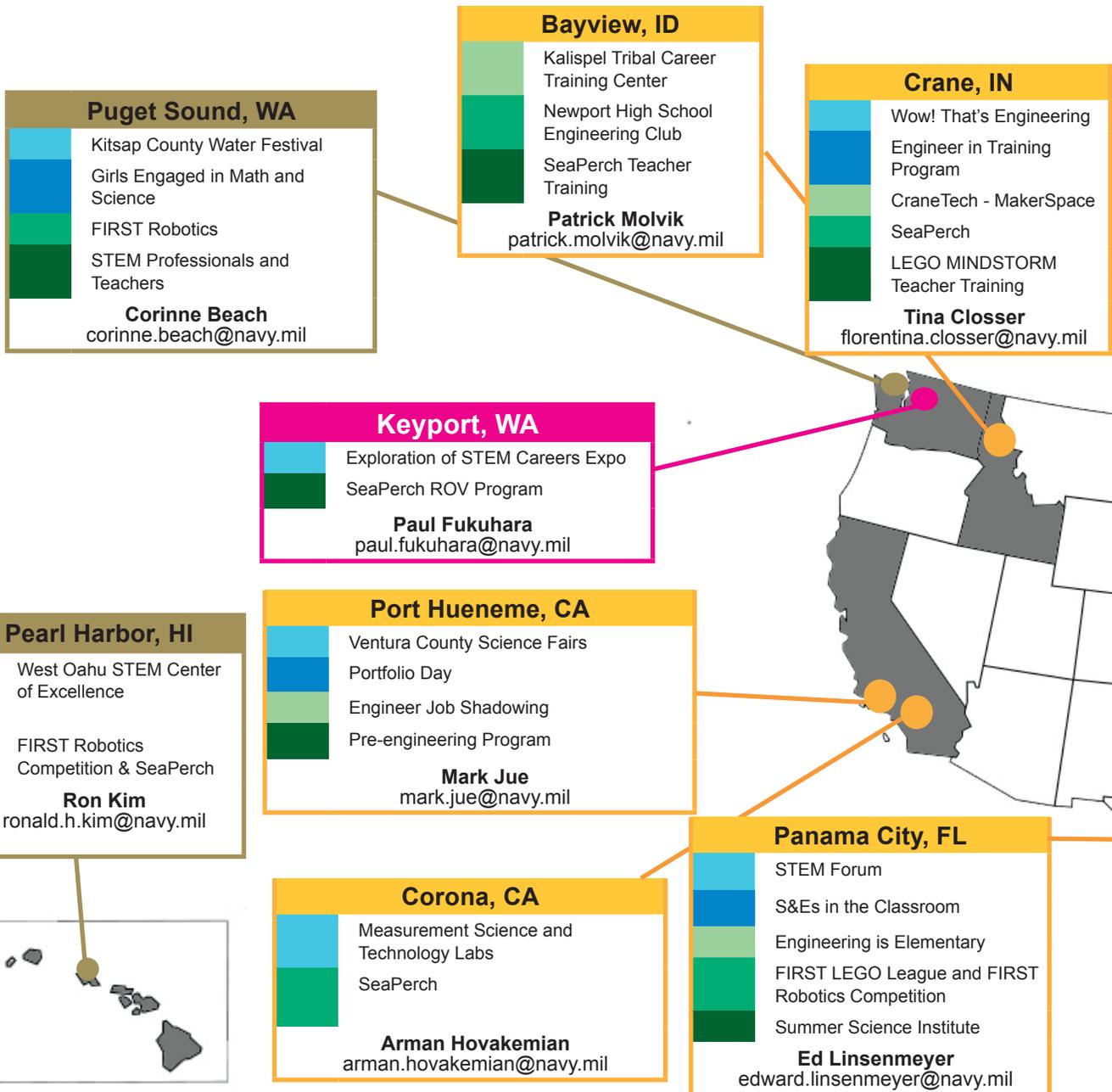


STEM: NAVSEA works to expose students to STEM activities and the command's vast talent pool of naval STEM professionals. Students interact with scientists and engineers to acquire valuable skills that can be applied to their future academic and vocational endeavors.

EDUCATION PROGRAMS: NAVSEA educational program activities run the gamut from early elementary school science labs through graduate-level directed research, providing students with a continuous stream of STEM experiences. Students work side by side with engineers and scientists on a variety of challenging, hands-on activities that reinforce the basic tenets of engineering and physics and show students the importance of these principles in the work the Navy does every day. The objective of the educational outreach is to provide NAVSEA's future workforce with a progressive, integrated path aimed at building a rewarding professional career and a lifetime of service to our nation.

WEBSITE: <http://www.navsea.navy.mil>

EDUCATION AND WORKFORCE PROGRAMS



A DAY IN THE LIFE OF A NAVSEA ENGINEER

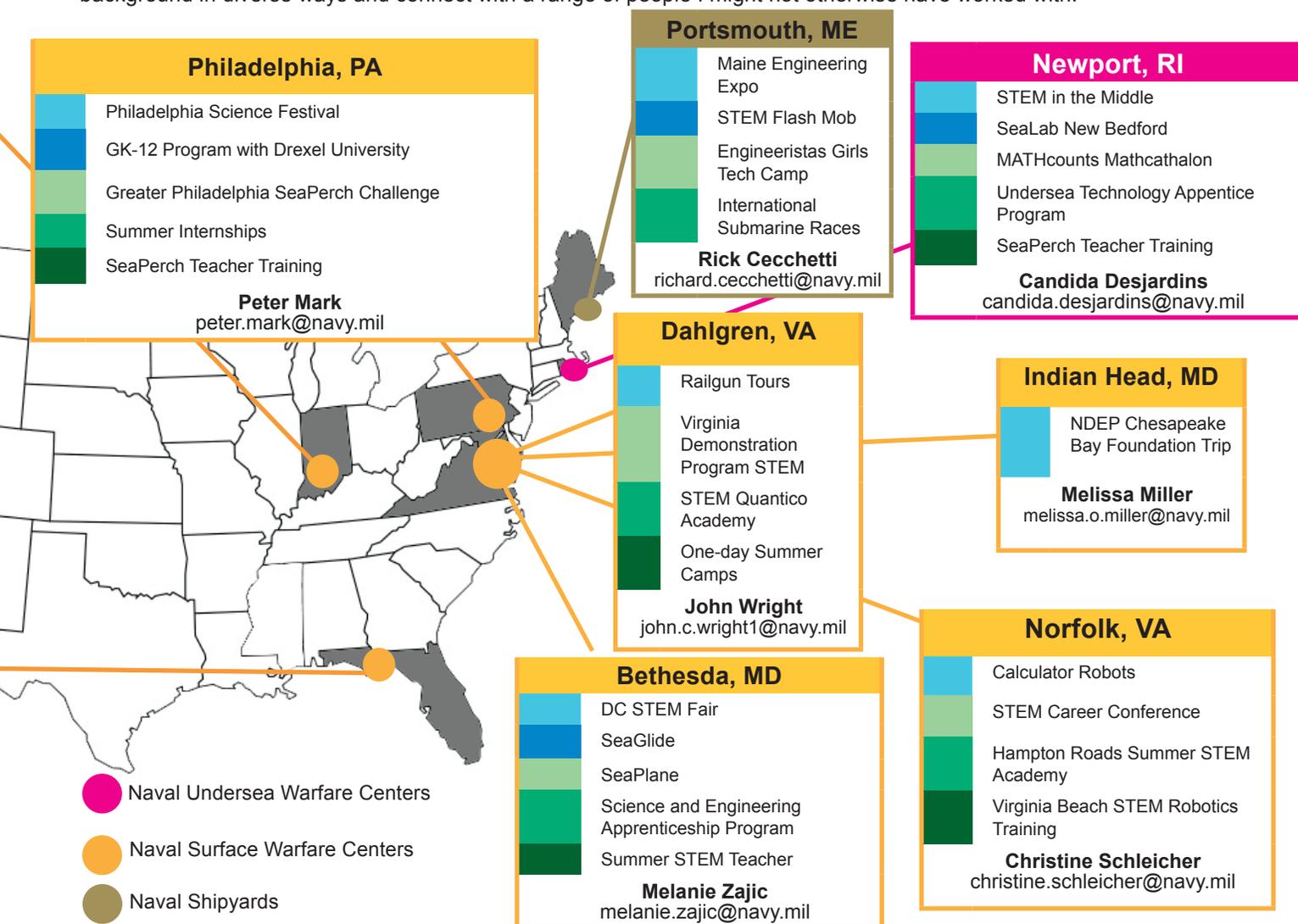


NAME: Cara Mazzarini
JOB TITLE: Mechanical Engineer
YEARS ON THE JOB: Two
DIVISION: Sustainment and Modernization Branch
COMMAND LOCATION: NAVSSES, Philadelphia, Pennsylvania

What is your job? I manage the Hazardous Materials Minimization Center (HAZMINCEN) program for a variety of surface ships. The HAZMINCEN ship alteration modifies existing systems (HVAC, electrical, piping, fire protection and others) to create a designated space to store and manage hazardous material. Every day of work looks different. Most often, I'm in the office working on plans for upcoming installations, which involve reviewing drawings and technical plans, financial management, contracting and coordinating with involved parties. Other times, I travel to shipyards to oversee HAZMINCEN installations, which last about six weeks each.

What inspired you to go into your field? I was inspired to become an engineer after participating in a STEM summer camp hosted by the Army Corps of Engineers. This high school engineering program made me realize that, at its core, engineering is problem solving. And not just any problems—engineers can solve big society problems, like energy. I then went to college and majored in mechanical engineering. At my summer internships I realized I excelled in environments that balanced people skills and technical skills. So, after school, I looked for jobs in engineering program management. The Navy has achieved the greatest engineering accomplishments in the world, and after the positive civilian-military experience at the Army Corps of Engineers camp, I felt Naval Ship Systems Engineering Station was the best fit for my interests.

What do you like best about your job? I like the variety of work and the ability to see a project through, from start to finish. I enjoy that most of my work is still technical and that I get to apply my engineering background in diverse ways and connect with a range of people I might not otherwise have worked with.



SPACE AND NAVAL WARFARE SYSTEMS COMMAND

SPAWAR

ABOUT: As the Navy's information dominance systems command, Space and Naval Warfare (SPAWAR) Systems Command develops, delivers and sustains command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) capabilities for warfighters, keeping them connected anytime, anywhere. With a space support activity and two systems centers, and through partnerships with three program executive offices, SPAWAR provides the hardware and software needed to conduct Navy missions. The team consists of more than 9,700 active duty military and civil service professionals who keep SPAWAR at the forefront of research, engineering and acquisition to provide and sustain fleet capabilities.

STEM: The goal of SPAWAR outreach is to foster a culture that celebrates education, particularly in STEM, by empowering our professionals to bring an added richness to their communities.

EDUCATION PROGRAMS: SPAWAR is dedicated to cultivating a zest for STEM among today's youth, with the intent of developing future STEM professionals and a more informed and interested citizenry. SPAWAR is building a robust K-12 and beyond pathway that reflects the demographics of each community, leading to future STEM employment, preferably at our command.

WORKFORCE PROGRAMS: SPAWAR delivers comprehensive human resource services in support of a mission-ready workforce. This includes numerous programs that develop future STEM professionals via internships, work co-ops and Science, Mathematics and Research for Transformation (SMART) scholarships. It continues through to employment via the New Professionals program and engages our current scientists and engineers through various retention programs.

WEBSITE: <http://www.spawar.navy.mil>



NAME: Anishi Scott

JOB TITLE: Scientist

YEARS ON THE JOB:
Seven

DIVISION: Information Assurance Policy & Risk Management

COMMAND LOCATION:
SPAWAR Systems Center Atlantic, Charleston, South Carolina

A DAY IN THE LIFE OF A SPAWAR SCIENTIST

What is your job? I work on a project called Agile Integrated Development Environment, which aims to provide a robust, flexible, economic and virtually managed hosted infrastructure, based on virtualization technology to support enterprise development efforts. I work as a subject matter expert in the information assurance arena, providing certification and accreditation support to ensure that risk management is applied on information systems. My normal duties include continuous monitoring, policy management, systems-level vulnerability management, audit review and analysis.

What inspired you to go into your field? I have always excelled in the areas of science and math and was inspired by my family to pursue a career in a STEM field. As a child, my dad would bring home broken electronics and encourage me and my brother to take the items apart and rebuild them. My brother and I would then turn this challenge into a competition for bragging rights. After tasting success a few times, I became hooked on building things and solving problems. Years later, I was fortunate to watch my aunt become a trailblazer in a male-dominated STEM field. Through her success, I was able to see the impact women and technology had on all facets of our world.

What do you like best about your job? I get to split my time between creative, technical and organizational tasks. I love having that variety, because I can switch gears every day and no two days are ever the same. In addition, I get a front-row view of the immediate impact my work has on our future scientists and warfighters. The programs I support have enhanced the quality of life for Sailors and Marines, and educated students about careers in STEM.

EDUCATION AND WORKFORCE PROGRAMS

San Diego, CA

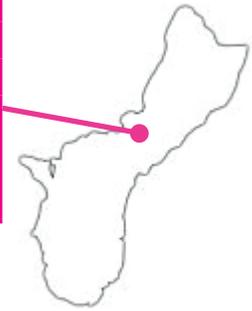
- Science and Engineering Night in Spanish
- Thinking Outside the Box
- Girls' Day Out
- Science and Engineering Apprenticeship Program
- STEM2Go Teacher Training Summer Institute

James Rohr
james.rohr@navy.mil

Barrigada, Guam

- Thinking Outside the Box
- FIRST Robotics
- Computer Science Teacher Training

Lt. Cmdr. Sean McConnon
jerome.mcconnon@fe.navy.mil



Philadelphia, PA

- BEAM Youth STEM Career Fair
- Computer Science Mentorship
- FIRST Training

Maurice Civers
maurice.civers@navy.mil

Hampton Roads, VA

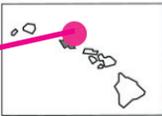
- STEM Festival
- STEM Lunch Buddy Program
- IT Shadow Day
- Hampton Roads Summer STEM Academy

Shanda Johnson
shanda.johnson@navy.mil

Pearl City, HI

- WoW! That's Engineering! Day
- Materials World Modules
- Bring Your Child to Work STEM
- Robotics Mentoring
- Lehua Elementary School Summer Robotics Academy
- Island Energy

Nick Kamin
nick.kamin@navy.mil



Charleston, SC

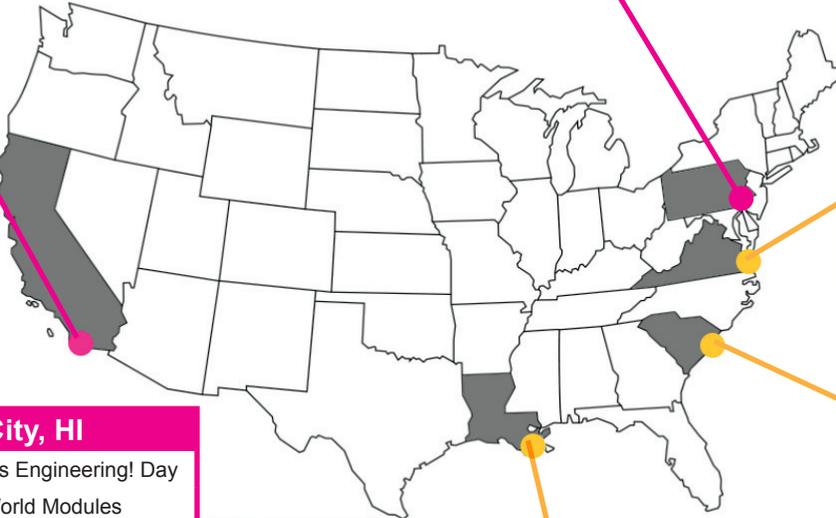
- Palmetto Cyber Defense Competition
- You Can Do It Rubik's Cube
- National Society of Black Engineers Jr.
- Lunch Buddies
- SeaPerch Teacher Training

Shanda Johnson
shanda.johnson@navy.mil

New Orleans, LA

- Science and TechNOLAgy Festival
- STEM Presentations
- National IT Shadow Day
- Math Team Mentors
- LEGO MINDSTORMS/NXT Training

Shanda Johnson
shanda.johnson@navy.mil



- Space and Naval Warfare Systems Center Pacific
- Space and Naval Warfare Systems Center Atlantic

MARINE CORPS SYSTEMS COMMAND



ABOUT: Marine Corps Systems Command (MCSC) serves as the Department of the Navy's systems command for Marine Corps ground weapon and information technology (IT) system programs, equipping and sustaining Marine forces with current and future expeditionary and crisis-response capabilities.

STEM: MCSC has more than 700 engineers, scientists and IT professionals who support the design, development, testing and fielding of Marine Corps systems supporting more than 180,000 Marines. MCSC is dedicated to promoting the development of its future workforce through hands-on engagement with students in competitions, camps and festivals.

EDUCATION PROGRAMS: MCSC participates in various activities to enhance the education and awareness of students in STEM disciplines and careers—including events such as the U.S. Science and Engineering Festival held biannually at the Walter E. Washington Convention Center; a one-week STEM Robotics Camp held annually at Quantico Middle/High School; and specialized school days set aside for STEAM (Science, Technology, Engineering, Arts and Math) activities. MCSC is also involved in STEM outreach to local schools

and sponsors STEM activities at other Marine Corps facilities, including Science Week at the Marine Corps Tactical System Support Activity at Camp Pendleton, California.

WORKFORCE PROGRAMS: All of MCSC's education programs require close collaboration with other STEM and teaching professionals and engineering/scientist mentors. The command hosts days-long training events for Robotics Camp teams in conjunction with the Naval Surface Warfare Center, Dahlgren Division, and the College of William and Mary. MCSC engineers/scientists train on Marine Corps equipment used for displays and hands-on demonstrations at festivals, camps and in classrooms. MCSC also participates in refresher training provided by the Naval Academy (Best Practices for STEM Outreach) and does STEM outreach through a group started by the organization's women engineers, called Females in Technology.

WEBSITE: <http://www.marcorsyscom.marines.mil>

EDUCATION AND WORKFORCE PROGRAMS



Quantico, VA

- U.S. Science and Engineering Festival
- STEAM (Science, Technology, Engineering, Arts and Math) Activities
- STEM Robotics Camp and Science Week
- Robotics Camp
- Teacher Training and Orientation for Robotics Camp

Michael A. Ferraro
michael.ferraro@usmc.mil

A DAY IN THE LIFE OF AN MCSC ENGINEER

What is your job? I work at MCSC for PEO LS as a project engineer. My current engineering responsibilities fall under Program Manager, Medium and Heavy Tactical Vehicles, working on the Logistics Vehicle System Replacement (LVSr) variants and the Flatrack Refueling Capability unit. A large part of my day is spent finalizing engineering change proposals and working directly with our original equipment manufacturers to review feasibility studies, test plans and procedures and to handle prototype development. In these past few months, I have had the opportunity to witness and finalize testing for updated vehicle exit windows on the LVSr Wrecker variant. Collaborating with test agencies and contractors has allowed me to learn so much about heavy tactical vehicles and how our improvements impact the survivability of warfighters.

What inspired you to go into your field? I have always been curious and, as a kid, loved dismantling what I could get my hands on. My love for science was sparked by my high school chemistry teacher, who cleaned engine parts with a mixture of Kool-Aid and vinegar. She worked in industry as a chemical engineer and made learning fun and exciting. I was hooked and decided that I wanted to be an engineer. Though it was hard, I was able to have the best of the both worlds by obtaining a bachelor's in chemistry and a master's in chemical engineering.

What do you like best about your job? I enjoy the synergy I have with the smart and resourceful folks with whom I work. We truly support and encourage one another to engineer solutions for the warfighter, from contract award all the way to logistics support. I am constantly being challenged and encouraged to apply what I learned about system engineering, actively participating in all parts of the acquisition life cycle.



NAME: Karrin Jones

JOB TITLE: Project Engineer

YEARS ON THE JOB: Four

DIVISION: Program Manager, Medium and Heavy Tactical Vehicles

COMMAND LOCATION: Program Executive Office Land Systems (PEO LS), Marine Corps Systems Command, Quantico, Virginia



NAME: Flora (Mackie) Jordan

UNIVERSITY: McGill

DEGREE LEVEL: Bachelor of Engineering, Civil/Environment Engineering

INTERNSHIP LOCATION: Marine Corps Systems Command, Quantico, Virginia

BRANCH: Armor and Load Bearing Team

MENTOR: Anne Zimmerman

A DAY IN THE LIFE OF AN MCSC INTERN

How did you become interested in STEM? I became interested in STEM during my sophomore year at the university, when I joined a committee called Promoting Opportunities for Women in Engineering (POWE). POWE focused on promoting female involvement and opportunities in engineering and science fields. One of its cornerstone projects was to host an annual conference to introduce young girls to the fields of engineering, science and mathematics and the potential career paths available within those fields. Working with the girls and helping them learn about engineering was my first unforgettable introduction to STEM. I continued by volunteering at a local high school in Kennebunk, Maine, for eight months—where I assisted with the science and math classes and helped start the FIRST Robotics competition group. It was extremely rewarding to teach young adults about potential careers and learning avenues they had never considered or knew existed.

What was the best part of your internship? Working with the customers, who happen to be Marines, and incorporating their feedback and needs into a useable end product. I enjoy the challenge of translating user needs, Marine Corps requirements and material capabilities into a useful product that protects warfighters and supports their mission.

What did you get out of your experience? I have learned a great deal about subjects that were not part of my engineering curriculum, such as penetration mechanics, material development and human factors integration. I also have been able to do things that most people never get to do, including riding around in a light armored vehicle and shooting M-27s, all in the name of engineering. This internship has been a constant learning experience, provided plenty of challenges and allowed me to progress not only as an engineer but as an individual.

What is next for you? The next steps for me are to get my master's in engineering while continuing to support the Armor and Load Bearing Team. After that, I intend to look for the next challenge available so I can continue to learn and progress.

UNITED STATES NAVAL ACADEMY



ABOUT: As the undergraduate college of the naval service, the United States Naval Academy (USNA) prepares young men and women to become professional officers in the U.S. Navy and Marine Corps. After four years of undergraduate study and military training, midshipmen graduate with Bachelor of Science degrees and reserve commissions.

STEM: The USNA STEM program provides opportunities to underrepresented populations and engages K-12 and beyond students and educators across the country and abroad. Emphasis is placed on sustainability of programs, empowering the educators through teacher training, leveraging resources, building networks and ensuring the program is oriented toward developing the abilities of midshipmen.

EDUCATION PROGRAMS: USNA STEM activities focus on naval-relevant curriculum and teacher development. Educators from across the country and abroad attend day- and week-long workshops emphasizing the use of project-based learning in engineering design, robotics, cyber security, chemistry, physics, math, computer simulation, biology, environmental science and many engineering disciplines. Additionally, thousands of students are reached directly each year via camps, mini-camps, engineering days, and festivals and fairs supported by USNA faculty and midshipmen.

WORKFORCE PROGRAMS: High school and college students participate in a variety of paid and unpaid internships, including Science and Engineering Apprenticeship Programs, Project Lead the Way and USNA/Pathways internships. Students also are mentored by faculty members in science or engineering research and development areas. Additionally, these efforts introduce incoming midshipmen to the rewarding aspects of science and engineering, and encourage retention of STEM majors by engaging them in educational outreach. Teacher training workshops focus on workforce preparation of older students in critical subject areas.

WEBSITE: <http://www.usna.edu>

EDUCATION AND WORKFORCE PROGRAMS



Annapolis, MD

- Mesa STEM Days
- STEM Mini-camps
- NESA Merit Badge Jamboree
- USNA STEM Camps
- STEM Educator Training

Angela Moran
amoran@usna.edu

NAVAL POSTGRADUATE SCHOOL

ABOUT: The Naval Postgraduate School (NPS) provides relevant and unique advanced educational and research programs to increase the combat effectiveness of commissioned naval officers.

STEM: With a rich history of being a vibrant part of our community, NPS’ interdisciplinary faculty and student expertise is harnessed to engage and inspire youth interested in STEM fields. Our local partnerships open opportunities for underrepresented populations, creating networks for all students to obtain access to local and national STEM efforts. This collective program supports academic and research projects as well as NPS student thesis work.



EDUCATION PROGRAMS: NPS educational activities include visits by resident astronauts and faculty to K-12 classes, inspiring students to consider STEM careers, and annual “Robots in the Roses” events that teach middle- and high-school students about emergent unmanned and robotic systems technology. NPS faculty and students engage in many local STEM programs—including FIRST Robotics competitions, California State University Monterey Bay Camp Sea Life, the Monterey County Science and Engineering Fair and Monterey Peninsula College Marine Advanced Technology Education.

WORKFORCE PROGRAMS: NPS works closely with community scientists, educators and professionals to expand our STEM outreach. We host robust STEM internship programs, including partnerships with several Hispanic-serving institutions serving our local underrepresented population. NPS interns also are introduced to female scientists and military officers during “Ph.D.s + Polka Dots.” The National Naval Officers Association and the Military Cyber Professional Association, both student-run organizations, work with local middle and high schools to provide free one-on-one tutoring and mentoring, student scholarships and other STEM outreach initiatives.

WEBSITE: <http://www.nps.edu>

EDUCATION AND WORKFORCE PROGRAMS

Monterey, CA

- Robots in the Roses
- Astronaut Speaking Engagements
- Cyber Adventurers
- Federal Cyber Service

Alison Kerr
adkerr@nps.edu



NAVAL SUPPLY SYSTEMS COMMAND



ABOUT: The Naval Supply Systems Command (NAVSUP) delivers sustained global logistics and quality of life support to the Navy and Joint warfighter. It manages supply chains for Navy aircraft, surface ships, submarines and their associated weapons systems. NAVSUP also provides centralized inventory management for the Navy's non-nuclear ordnance stockpile, supports base and waterfront logistics and operations, coordinates material deliveries, contracts for supplies and services and offers material management and warehousing services. NAVSUP is responsible for many of the quality-of-life programs that touch the lives of Sailors and their families, including Navy Exchanges, Navy

Lodges, the Navy Personal Property Program and the Navy Postal System. NAVSUP also administers the Navy Food Service Program, including the policies and procedures governing the daily operations of general messes afloat and ashore.

COMMANDS: NAVSUP Weapon Systems Support provides Navy, Marine Corps, joint and allied forces with program and supply support for the weapons systems that keep our naval forces mission ready. This mission is carried out by a single command organization operating as a tenant activity of the Naval Support Activities in Mechanicsburg and Philadelphia, Pennsylvania.

NAVSUP Global Logistics Support (GLS) provides Navy, Marine Corps and joint and allied forces with operational logistics capabilities via a network of eight subordinate NAVSUP Fleet Logistics Centers (FLCs). NAVSUP GLS monitors waterfront support performance; manages NAVSUP FLC operations, including contracting, fuels, global logistics services, hazardous material management, household goods movement support, integrated logistics support, postal, regional transportation and warehousing; and provides base supply support for naval installations worldwide. NAVSUP FLCs are located in Bahrain; Jacksonville, Florida; Norfolk, Virginia; Pearl Harbor, Hawaii; Puget Sound, Washington; San Diego, California; Sigonella, Italy; and Yokosuka, Japan.

NAVSUP Business Systems Center is the Navy's premier information technology provider of choice, with a responsibility to design, develop and maintain information systems supporting numerous activities in the functional areas of logistics, supply chain management, transportation, finance and accounting.

Navy Exchange Service Command (NEXCOM) is headquarters for the worldwide NEXCOM Enterprise. Its mission is to provide authorized customers with quality goods and services at a savings and to support quality of life programs for active duty military, retirees, reservists and their families.

LOCATION: Mechanicsburg, Pennsylvania

WEBSITE: <http://www.navsup.navy.mil/navsup>

STEM CONTACT: Lt. Cmdr. Daniel Bessman, daniel.bessman@navy.mil

CHIEF OF NAVAL PERSONNEL

ABOUT: The chief of naval personnel (CNP) is a three-star admiral responsible to the chief of naval operations for the Navy's manpower readiness. Dual-titled, CNP also serves as deputy chief of naval operations (manpower, personnel, training education/N1) and oversees the recruiting, personnel management, training and development of all 325,000 Sailors.

LOCATION: Washington, DC

WEBSITE: <http://www.navy.mil/cnp>

STEM CONTACT: Carol Lynn Judge, carol.judge@navy.mil



NAVY BUREAU OF MEDICINE AND SURGERY



ABOUT: The Navy Bureau of Medicine and Surgery (BUMED) is the headquarters for Navy medicine and has a long and proud history. Under the leadership of the Navy surgeon general, Vice Adm. Matthew L. Nathan, Navy medicine provides high-quality health care to beneficiaries in wartime and peacetime.

BUMED develops the policies and direction for Navy medicine to ensure its vision for patient and family-centered care is carried out throughout the world. It exercises direct control of naval hospitals, medical centers, dental battalions, preventive medicine units and technical schools for medical department personnel both inside the U.S. and around the world.

BUMED also oversees support commands and their subordinate commands that are not directly involved with patient care but are important contributors to Navy and Marine Corps medical readiness.

Outstanding care for the sick and injured, international contributions to the sciences of medicine and dentistry, and personal sacrifices and valor of its personnel in peace and combat continue to earn the Navy medical department a prominent place in the Navy's historical pages.

Highly trained Navy medicine personnel deploy with Sailors and Marines worldwide, providing critical mission support aboard ship, in the air and under the sea. At the same time, Navy medicine's military and civilian health care professionals are providing care for uniformed services' family members and retirees at military treatment facilities around the globe. Every day, no matter what the environment, Navy medicine is ready to care for those in need, providing world-class care anytime, anywhere.

LOCATION: Falls Church, Virginia

WEBSITE: <http://www.med.navy.mil/BUMED/Pages/default.aspx>

STEM CONTACT: Capt. Patricia McDonald, patricia.mcdonald3.mil@mail.mil

NAVAL FACILITIES ENGINEERING COMMAND

ABOUT: The Naval Facilities Engineering Command (NAVFAC) builds and maintains sustainable facilities, delivers utilities and services and provides Navy expeditionary combat force capabilities. NAVFAC delivers best value facilities engineering and acquisition for the Navy and Marine Corps, unified commanders and Department of Defense agencies through our five business lines: capital improvements, environmental, expeditionary, public works and asset management.



NAVFAC also provides program management for all aspects of the naval construction force and the Seabees, and equipment and materiel management for the naval beach group and other naval special operating units.

NAVFAC has 13 component commands, nine of which are facilities engineering commands reporting to NAVFAC Atlantic in Norfolk, Virginia, and NAVFAC Pacific in Pearl Harbor, Hawaii.

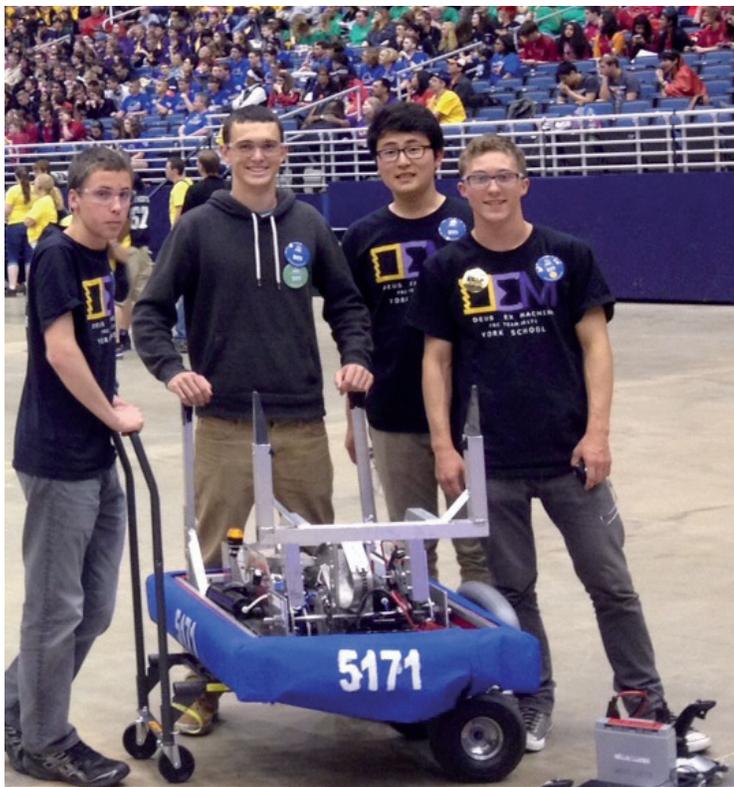
NAVFAC also has two centers that perform specialized missions. The Naval Facilities Engineering and Expeditionary Warfare Center, in Port Hueneme, California, supports combatant capabilities and sustainable facilities through specialized engineering, technology development, and lifecycle logistics services. The Navy Crane Center based at Norfolk Naval Shipyard, Portsmouth, Virginia, leads the Navy shore-based weight handling program by establishing policy and providing engineering, acquisition, technical support, training, and evaluation services to all Navy shore activities worldwide.

LOCATION: Washington, DC

WEBSITE: <http://www.navy.mil/local/navfachq/>

STEM CONTACT: Cmdr. Susanne Wienrich, susanne.wienrich1@navy.mil

SNAPSHOTS: NAVAL STEM ACROSS THE NATION



Naval Postgraduate School (NPS): York High School FIRST team from Monterey, California at FIRST 2014 World Robotics Championships in St. Louis, Missouri. (Photo by Sean Raymond)



Naval Air Systems Command: High School students show Mr. Gary Kessler, Naval Air Warfare Center Aircraft Division's executive director, elements of the supercomputing project the students are working on. (U.S. Navy photo)



United State Naval Academy (USNA): High-school students are participating in science and engineering activities and challenges, facilitated by Naval Academy faculty and midshipmen. (Photo by USNA STEM office)



NPS: Summer 2014 NPS STEM interns with NPS president Ronald A. Route, vice admiral, U.S. Navy (ret.), NPS Provost Douglas Hensler and NPS STEM Internship Coordinator Alison Kerr. (Photo by Javier Chagoya)



Marine Corps Systems Command: Students participating in the Marine Corps Tactical Systems Support Activity summer camp fire off water rockets. (Photo by Wil Williams)



Space and Naval Warfare Systems Command (SPAWAR): Students at Barnard Elementary participate in Science Night. SPAWAR professionals and parent volunteers facilitated hands-on experiences for attendees. (Photo provided by SPAWAR)



USNA: High-school students are participating in science and engineering activities and challenges, facilitated by Naval Academy faculty and midshipmen. (Photo by USNA STEM office)



SPAWAR: Cornell University students perform surface checks on their autonomous underwater vehicle, Drakar, during practice runs as part of the annual International RoboSub Competition at SPAWAR Pacific. (Photo by Rick Naystatt)



ABOUT STEM2STERN

STEM2Stern is the Department of the Navy's science, technology, engineering and mathematics (STEM) initiative. Under the leadership of the chief of naval research, who serves as the Naval STEM Executive, STEM2Stern works with the naval system commands, laboratories, warfare centers and other research and education institutions to leverage resources and maximize the impact of the department's STEM investments.

These investments support a wide variety of STEM educational programs, ranging from activities designed to spark younger students' interest in STEM careers, to more in-depth, hands-on learning opportunities for middle and high school students, internships and research fellowships for older high school and post-secondary students and professional development opportunities for naval STEM professionals and faculty.

Please visit **STEM2Stern.org** for more information about naval STEM, or contact the STEM2Stern office at **STEM2Stern@navy.mil**

NAVAL STEM WEBSITES AND SPONSORED ACTIVITIES



Below is a list of websites you may find interesting. It includes Web addresses for various naval programs, as well as some of our signature program partners.

www.usna.edu/STEM
www.ndep.us
seap.asee.org
nreip.asee.org
smart.asee.org
www.dodstarbase.org