(U.S. Navy photo by MC2 Patrick Dionne)

NPS Celebrates Winter Quarter Graduates

by Matthew Schehl

The Naval Postgraduate School (NPS) bid farewell March 30 to its most recent cohort of graduates.

Through a rousing ceremony in a packed King Auditorium, 250 advanced degrees—including three doctorates—were formally conferred on a broad assembly of U.S. service members representing all branches, Department of Defense (DOD) civilians and international students from nine different nations.

NPS president retired Vice Adm. Ronald A. Route opened the ceremony with a congratulatory message to the quarter's graduating class, recognizing the significance of their commitments and accomplishments, made possible by the love, support and sacrifice of family and friends.

"We are so proud of your success," Route said. "We have immersed you in an extremely competitive academic environment that has enabled you to focus on the challenges that affect your service, our defense capabilities and our national security."

Route then introduced the ceremony's keynote speaker, Acting Assistant Secretary of the Navy, Manpower and Reserve Affairs Robert L. Woods, who offered his congratulations to the new graduates, and commented on the university's rankings in a recent report through "U.S. News and World Reports."

"Not only have you bested Harvard and Columbia in that particular area of exploration, but you're also well-ranked in other national rankings," Woods said. "The school has every right to be proud of your accomplishments and the amazing faculty and staff we have here."

NPS students add immensely to national security and science and technology, to make the United States a more effective country writ large, he said. The diversity of their experiences and connections gained at NPS will continue be a force multiplier as they return to their respective services.

"I know that you'll continue to nurture the relationships that you've made here and work hard to stay in touch over the years to come," Woods said. "Remember, we're always stronger together."

SEXUAL ASSAULT AWARENESS AND PREVENTION MONTH

April 2018

Data Standardization Research Could Bring Landmark Change to How Ships Communicate

By Matthew Schehl

Naval Postgraduate School (NPS) students' work is about to be put to the test this Spring in a trial that has the potential to radically change the way the U.S. Navy navigates the information age.

A pilot program, "Compile-to-Combat in 24 Hours" (C2C24), will explore the boundaries of cloud computing to transfer data both within ships afloat and from shore to ship, freeing up vital communications links which are in short supply.

This would allow, for example, software updates to go out fleet-wide within 24 hours, versus the 18 months it currently takes.

"What we want to do is break down the way applications and content are delivered to the fleet right now, which is very old school," Rear Adm. Danelle Barrett, the Navy's chief information officer, recently explained in a Federal News Network interview.

The huge, monolithic applications the Navy currently uses for data transfers require constant reachback to shore via satellite, which she said is hard to do.

"When you lose that satellite link, you're kind of dead in the water," she said.

Dr. Don Brutman holds the Web|3D Consortium's Award for Outstanding Leadership and Superior Performance received in 2015 due in large part to his efforts to promote Efficient XML data standards. His hard work, along with those of several students over the years, may lead to a significant breakthrough in how Navy ships transfer data. (U.S. Navy photo by Javier Chagoya)

Two NPS former graduate students, Lt. Bruce Hill and Lt. Cmdr. Steven Debich, directly contributed some of the technology which makes such a goal possible. In March 2015, Hill and Debich each published a thesis on their research, respectively, into a new standard to compress data and how to optimize that data transfer via satellite.

Hill's thesis evaluated how 'Efficient XML' (EXI) might be used as a better compression standard for large data transfers across the Navy: much more information would require far less bandwidth. Debich's thesis then explored how EXI could be optimized within the Navy's communications networks.

"It's a perfect illustration of our students making a difference, of having a clear understanding of what it means to meet the fleet's needs" said Dr. Don Brutzman, the students' co-advisor along with faculty member retired Navy Capt. Scot Miller in the NPS Department of Information Sciences.

The history of EXI dates back at least to 2006, when the World Wide Web Consortium (W3C) – the world's primary international standards organization for the web – formed a working group to standardize a format.

Five years later, in March 2011, EXI beat out 40 other competing technologies and was adopted by the W3C as a formal recommendation, with Brutzman and students participating in the work. The purpose of EXI is to more efficiently compress Extensible Markup Language (XML), which is itself a way of compressing data. It's a "language of languages," Brutzman explained.

"The first thing EXI does is pay close attention to what kind of data it is," he said. "We call it 'data type aware', so it can use the right compression for the right data ... The second thing it does is it takes advantage of the structure of the data, so as to compress it a whole lot further."

By way of analogy, making a photocopy of a document doubles the amount of paper, but not the amount of information. EXI recognizes the structure of that information to avoid replication and cut out wasted space.

From late March to early June 2018, C2C24 will push the envelope to see how efficiently an end-to-end cloud computing architecture could run. Theoretically, EXI will allow data standardization across the cloud, both in fielding software quickly from shore to ship as well as within a shared infrastructure aboard a ship afloat.

This "micro cloud" will allow a ship to retain essential data and use it without having to reach back every time to get more information. That information would continue to be available in the event of communications disruption, whether from sun spots or adversarial action.

"All you're doing is taking what used to be big, monolithic applications and breaking them down into smaller web services that could quickly be accredited through an automated process," Barrett said. "We're saying you should be able to do that within 24 hours from 'compile to combat,' if you do it right."

Military Operations Research Society Selects Thesis Award Recipient

By Javier Chagoya

The NPS Department of Operations Research (OR) held its latest Military Operations Research Society (MORS) Tisdale Thesis Award competition in Glasgow Hall, March 8. Four finalists were selected to present their theses to a panel of OR faculty judges including department Chair, Distinguished Professor Patricia Jacobs.

"It is rewarding to hear how the students have applied their NPS OR education to research that can lead to the increased operating effectiveness of near term U.S. and allied military forces," said Jacobs.

Each student sought to find where improvements in performance, minimization in cost, and optimization could be achieved for their chosen problem using a hierarchy of analyses, mathematics and computational techniques.

While the four students were given 10 minutes to talk about their months-long research with minimal supporting slides, followed by a brief Q&A from the judges and audience, only one could be selected.

And that officer was Lt. John Tanalega, and his thesis on Analyzing Unmanned Surface Tactics with the Lightweight Interstitials Toolkit for Mission Engineering Using Simulation (LITMUS).

"I used the SEED Center for Data Farming smart and efficient design platform to help frame future combat modeling in LITMUS. Scouting and detection is a major factor, and finding the optimal sensor ranges in these applications increases a successful first-to-fire assault making for a clear advantage in the battlespace," said Tanalega.

"I feel extremely grateful for being selected for this award. I'm heavily indebted to the amazing faculty and staff in the Operations Research Department. Turning a naval officer with a bachelor's degree in English into an OR analyst is no easy feat, and none of this would have been possible without them," he added.

Tanalega also thanked the members of his cohort and others who helped him along the way through the OR curriculum.

"I'm also grateful for those whose friendship and camaraderie helped get me through the two years of the curriculum," added Tanalega.

"There's the CO of my last ship, Cmdr. Matthew Hall, an NPS OR graduate, who gave encouragement to me to choose OR. Finally, there's the love and support of my wife, Michelle, and my parents, Joy and Abel Tanalega, who kept me going all along the way."

Following graduation, Tanalega will travel to Navy Surface Warfare Officer School (SWOS) in Newport, R.I. for department head school.

Finalists for this quarter's Military Operations Research Society (MORS) Tisdale Award, from left, Lt. John Tanalega, Singapore Army Capt. Penelope Chia, Lt. Cmdr. Sean Teter and Lt. j.g. Robert Slye, presented their theses to an audience of Operations Research faculty and students in Glasgow Hall, March 8. The Tisdale Award recognizes the quarter's top operations research thesis for near-term operational impact. (U.S. Navy photo by Javier Chagoya)

Naval Postgraduate School Department of Oceanography Chair Peter Chu received the Denny Silver Gilt Medal from Institute of Marine Engineering, Science & Technology (IMarEST) for his research on atmospheric and wave modelling, March 16.

The Denny Silver Gilt Medal is awarded to the best paper published in a complete issue or supplement over the course of one year in each of the Journal of Marine Engineering and Technology (JMET) and the Journal of Operational Oceanography (JOO). Chu received the honor along with his coauthors – Dr. George Galanis, Evenia Papageorgiou, and Aristotelis Liakatas from the Hellenic Naval Academy, as well as Menas Kafatos and Nikolaos Hatzopoiulos from the Schmid College of Science – during the 115th IMarEST Awards Dinner in Guildhall, London.

"I have been studying ocean modeling for 20 years and have been collaborating with Dr. Galanis for some time when he serves as a visiting professor for NPS during the summer," said Chu. "I never would have expected to be selected for this but I am honored and very happy to have all of our hard work recognized."

The winning paper, titled "Operational atmospheric and wave modelling in the California coastline and offshore area with applications to wave energy monitoring and assessment," examined a new high-resolution operational atmospheric/wave forecasting system. The research, which was a result of a collaboration between U.S. and European universities, consists of two state-of-the-art prediction models called Regional Atmospheric Modeling and Wave modeling.

Have a story to share? Public Affairs is constantly seeking interesting news and stories for Update NPS. Send your tips to pao@nps.edu.

Internet Pioneer Vint Cerf Shares Insights with NPS

By Matthew Schehl

Vint Cerf, Google's 'Chief Internet Evangelist' and Vice President spoke with hundreds of NPS students, faculty and staff March 5 at a jam-packed King Auditorium for the latest in the Secretary of the Navy Guest Lecture series. Through a tête-à-tête with Dr. Peter Denning, NPS Computer Science Department Chair, and an extensive audience Q&A, Cerf took on a wide range of topics—from the Internet's creation to Russian cyber hacking to gender inequality—replete with personal anecdotes.

"The Internet has turned out to be a pretty amazing tool," Cerf said. "It's extremely open, it invites new inventions, but we should be very thoughtful about what we ask artificial systems to do."

Together with Robert Kahn, Cerf developed TCP/IP for the U.S. military to allow networked communications between computers so they could share information. This system, called Internet, laid the groundwork for the application of virtually every aspect of modern technology.

"We participated in the development of the ARPANET and packet switching technology in order to achieve a computer resource-sharing objective, and it worked," he said. "What was exciting about that is that we demonstrated that different brands of computers could be made to communicate with each other."

The ARPANET's email application transcended military and scientific domains into the commercial realm. The Internet extended ARPANET's concepts to embrace the interconnection of heterogeneous packet switched networks leading to a global infrastructure, a network of networks

As a country, we're now faced with the desire to stay as open as possible to give our population freedom of access to information and freedom to share, while at the same time trying to fend off the side effects of publicly accessible networking tools, Cerf said.

The only way to overcome this is to cultivate critical thinking, Cerf noted. The ability to discern between what content should be accepted and what should be rejected is of paramount importance, and one which can be obtained through computational thinking: breaking down problems, asking questions to solve them, and putting things back together again.

"Kids should be asking, 'Where did this information come from? Who put it there and why? Is there any corroborating evidence that this information is valid or not?' We should all be asking ourselves those questions," Cerf said.

Dr. Vint Cerf, Vice President and Chief Internet Evangelist at Google, right, shares his perspective on a variety of topics, from the early days of the Internet to cyber hacking to net neutrality, during an informal discussion with Dr. Peter Denning, NPS Computer Science Department Chair, at the latest Secretary of the Navy Guest Lecture, March 5. (U.S. Navy photo by Javier Chagoya)

The fundamental issue is how much autonomy we entrust to these systems, he said.

"I see these as tools to augment our capabilities, and people who worry that they will sort of take over should be worried, not about artificial intelligence but the autonomy we grant to that software: what decisions it is allowed to make and should we permit it to make those decisions," he continued.

County Supervisor Offers Perspective on Women in Government

By MC2 Brian H. Abel

Monterey County Board of Supervisors 5th District Supervisor Mary Adams offered a candid perspective on the status of women in the Monterey County government to an audience of NPS students, faculty and staff in the Mechanical Engineering Auditorium during NPS' Women's History Month celebration, March 15.

"When I was starting out back in the early days, I faced obstacles but I stand on the shoulders of a lot of women who have struggled more than I did," said Adams. "They had more ceilings to crack, and because of them, far more is open to us here now."

Adams spoke sincerely at the gathering, held by the local chapter of Federally Employed Woman (FEW) and the NPS Heritage Committee, to share some of her experiences throughout her time in the workforce.

"I had the same job as a male counterpart and it became known to me, because of the friendship he and I developed, that he was making significantly more money than I was even though our education levels were the same," said Adams. "It wasn't the first time I had my eyes opened, but it was the first time I could really point to personal discrimination in that regard.

"Remembering what it used to be is so crucial because there are so many younger people in the world today who just assume that we've always had the rights that we have," she continued. "They forget that there was a very long history here of what we had to go through in order to be able to have the freedoms that we have, and how important it is for us to stand tall and work to ensure that we keep those freedoms."

CRUSER Gauges Navy's Future With AI

By MC2 Patrick Dionne

Brett Vaughn, senior staff member from the office of the Deputy Chief of Naval Operations for Information Warfare, spoke with members of NPS' Consortium for Robotics and Unmanned Systems Education and Research (CRUSER) in the Mechanical and Aerospace Engineering Auditorium, Feb. 27. Vaughn's discussion covered the complex journey the Navy must embark on to realize the full potential of artificial intelligence, including the challenges this poses and the conditions needed to overcome them.

Vaughn covered the differences between an exponential organization, an organization that has achieved a 10-fold growth capacity via the application of exponential technology, and a linear organization. He cited companies like Google, Apple and Netflix as examples of exponential organizations that use exponential technologies to achieve an advantage over their competitors, while the Navy better fits the definition of a linear organization.

"If you look at how the Navy conducts its research, budget and programming for things, then you can see that it is very much a linear organization. So if the Navy is going to successfully peruse and apply AI, then it is important to recognize that we are a linear organization chasing an exponential goal," Vaughn said.

Vaughn turned his focus to potential challenges that stand in the Navy's way of embracing and developing AI, including the Navy's culture and business practices.

"These technologies have a distinct nature from things the Pentagon traditionally thinks of when it comes to resourcing and fielding," said Vaughn. "They move so fast and so dynamic that if you tried to resource it at the same level you would a plane or a ship, you will fail. So we need to find better approaches and faster approaches."

CRUSER seeks to capitalize efforts, both internal and external to NPS, by facilitating active means of collaboration, providing a portal for information exchange among researchers and educators with collaborative interests, fostering innovation through directed programs of operational experimentation, and supporting the development of an array of educational ventures.

NPS Students Put Their Research to the Test in Impossible City

By Javier Chagoya

NPS Systems Engineering students are taking advantage of the nearby Military Operations in Urban Terrain (MOUT) facility on the former Ft. Ord, also known as 'Impossible City,' to test and evaluate their research in ad hoc networking and autonomous control of unmanned systems.

"In this Concept of Operations, the team used an unmanned ground vehicle (UGV) and an unmanned aerial vehicle (UAV) to conduct a search and rescue mission to find and steer to a person in distress (PID) autonomously," said Professor Oleg Yakimenko.

The mission included a mannequin, substituting as an injured person, which was placed in an unspecified location. The team then utilized UAVs to scan the area from the air, helping ground vehicles locate and track the simulated wounded soldier, all connected by a network the team deployed.

"Army Capt. Todd Howe and Lt. Travis Turner developed over 1,000 lines of operating code in a self-taught, open-source programming language," said Lt. Rob Hall, one of eight members on the team.

"This exercise marked the culminating event ... that the SE cohort has worked on for three academic quarters," added Yakimenko. "This brought together several disciplines that had to be learned quickly."

Lt. Rob Hall observes autonomous vehicles navigate to a simulated person in distress during a search and rescue scenario developed by a cohort of eight students from NPS' Department of Systems Engineering (SE). (U.S. Navy photo by Javier Chagoya)
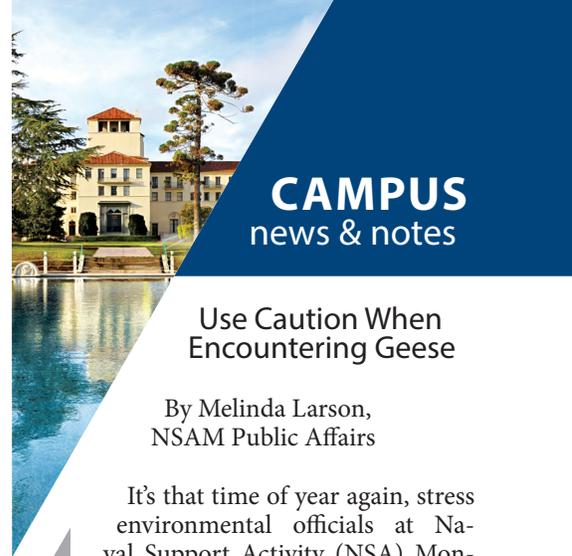
Use Caution When Encountering Geese

By Melinda Larson,
NSAM Public Affairs

It's that time of year again, stress environmental officials at Naval Support Activity (NSA) Monterey. Canada Geese, whose numbers are high across the university campus, could be displaying aggressive behavior as they watch over newly-laid eggs. All hands should be cautious when encountering the geese.

"When adult geese perceive potential danger to their young, they will become aggressive," said Todd Wills, natural resources specialist with Naval Facilities Engineering Command (NAVFAC) - Monterey. "This is primarily being played out along the trail around Lake Del Monte and specifically with people running."

Most goose attacks on humans result in minor or no injuries, but severe injuries can happen. Goose attacks have resulted in broken bones, head trauma, and emotional distress. Many of these injuries occur when the person tries to avoid an attacking goose and trips and falls.

Remember that geese act aggressively because their instincts compel them to protect their young, just as humans and other animals do. Serious injuries from goose attacks are uncommon, but it is best to avoid geese as much as possible during breeding season.

While the geese are primarily nesting around DeI Monte Lake, they may also be located in other areas of the campus. NSAM officials encourage personnel who encounter aggressive geese to let them know about it via the Public Works Trouble Desk at (831) 656-2526.

Send your campus news and notes to update@nps.edu.

NSA Guest Speaker Shares Research on Youth in Terrorism

By Matthew Schehl

From lethal suicide bombings to savvy propaganda, the Islamic State continues to use children from around the world to wage war.

Dr. Mia Bloom, world-renown expert on terrorism and political violence, shared her research into children in terrorism with Naval Postgraduate School (NPS) students and faculty, March 5, in the latest Global Connections Speaker series.

Drawing on her extensive ethnographic research and analysis of ISIS' encrypted online propaganda, Bloom charted the myriad ways terrorist groups weaponize children.

"One of the things we found was that the children were being used for a variety of roles that were not traditional, in very adult kinds of roles," she said.

Review of daily content from 27 months of ISIS propaganda showed the terrorist group increasingly using children to conduct vehicular suicide bombings, deliver sermons, assemble munitions, exe-cute prisoners and fight on the frontlines in special commando units.

Bloom was able to determine the national origin and geolocation for hundreds of children in order to trace the arc of exactly how they have been employed in Syria and Iraq.

"We started to see certain phenomena with the foreign fighter children ... Western children were very often being used in propaganda not once, not twice, but over and over again," she said.

Dr. Mia Bloom, world-renown expert on terrorism and political violence, shares her research into children in terrorism with Naval Postgraduate School students and faculty, March 5, in the latest Global Connections Speaker series. (U.S. Navy photo by Javier Chagoya)

ISIS deliberately selected racially and ethnically-diverse children to highlight the internationaliza-tion of the caliphate. This allowed ISIS to have the greatest appeal to potential recruits abroad, who were encouraged to bring their families.

"This was perhaps one of the most interesting findings," Bloom said, but the messaging was not all negative, she added.

"We expected to primarily see violence: beheadings, executions and throwing homosexuals off the tallest building," she said. "In fact, a good portion of the propaganda is positive messaging: inoculat-ing children, treating the sick or feeding the poor."

Not all children were used in equal measure, however. Local boys, recruited from orphanages and refugee camps, were more expendable than the photogenic foreign children. They were more like-ly to receive training and be thrown into combat on the frontlines, or deployed as suicide bomb-ers.

This begets a deeper question as the U.S. and the world turn to the prospect of regional peace with the impending demise of ISIS.

"We're also trying to get a grip on the fact that, as we are now entering into a post-caliphate world, what do we do with the kids?" she asked. "Do we repatriate them? Are they responsible for their actions? How do we know what kid did what? We are facing a number of challenges."

Bloom's research will be published this year in her forthcoming book "Small Arms: Children and Terror" (Cornell, 2018).

Focus On...Community Outreach

A Monthly Look at Names and Faces on Campus

Due in large part to the volunteer efforts of NPS Department of Physics student Lt. Todd Coursey, Monterey area youth are being introduced to additive manufac-turing, also known as 3D printing, during a series of free workshops at the Monterey Public Library. To date, Coursey and Library Man-ager Kim Smith have completed two courses to area youth, and just recently held a third session to introduce the innovative tech-nology to adults.

"Shortly after being stationed here as a student, I approached Monterey Public Library with the idea to purchase a 3D printer, and in return, I offered them help in developing their program by providing access to various CAD (computer-aided design) mod-eling and teaching tools," said Coursey.

"3D printing is interesting, but what is most beneficial are the doors these machines open to new and sometimes underserved

populations in STEAM [science, technology, engineering, art and math) education," he continued.

Since arriving at NPS, Coursey has been working to develop op-portunities for service members to share their ideas with the com-munity. This element of com-munity service, he says, is an important part of his obligation to the Navy.

"My hope is that the Monterey community continues to work and
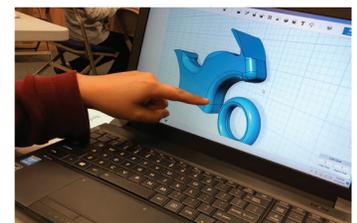
coordinate with Naval Postgradu-ate School students, educators and resources such as the RoboDojo, to expose both old and new gen-erations to the benefits of these exciting technologies; cultivating a culture that embraces STEAM as a non-traditional approach to both learning and growing."

Any Day at NPS...

The 74th graduating class of the Naval War College (NWC) Monterey Joint Professional Military Education (JPME) program poses for a class photo on the steps of NPS' Herrmann Hall, March 22. *(U.S. Navy photo by MC2 Patrick Dionne)*

The Winter Quarter's award-winning students and faculty are pictured on the Herrmann Hall Quarterdeck following the Quarterly Awards Ceremony, March 20. The ceremony recognizes graduates' outstanding achievements in a variety of areas including academics, instruction, research and community service. *(U.S. Navy photo by MC2 Michael Ehrlich)*

Dr. James Scrofani, Associate Professor in the NPS Department of Electrical and Computer Engineering and founding director of the university's Center for Multi-INT Studies, is the winner of the 2018 Richard W. Hamming Faculty Award for Interdisciplinary Achievement. *(U.S. Navy photo by Javier Chagoya)*

Algerian Officers in the Center for Civil-Military Relations Border Security Course pose for photo outside the Barbara McNitt Ballroom following their short course at NPS, March 13. *(U.S. Navy photo by MC2 Michael Ehrlich)*

Mrs. Lillian Friese and Naval Support Activity Monterey (NSAM) Commanding Officer Capt. Richard Wiley stand by wreath following a ceremony commemorating Vietnam War Veterans Day, at NSA tenant command Naval Postgraduate School, March 29. Friese is married to retired Navy Capt. Larry Friese, who was a prisoner-of-war for more than four years in North Vietnam. *(U.S. Navy photo by Javier Chagoya)*

NPS students of the Electrical and Computer Engineering (ECE) department and Pacific Grove Mayor Bill Kampe, left, gather around a scale-model prototype of a wind turbine radar interference reduction barrier devised by Singapore Navy Maj. Chai Meng Lim, center. *(U.S. Navy photo by Javier Chagoya)*

STUDENT voice

USN Lt. j.g. Tanya L. Herfi, Chairman of the President's Student Council

Fellow Students,

The President's Student Council would like to welcome all the incoming students and their spouses. PSC is here to serve you and to be your advocates within NPS and NSAM. We are students ourselves and can relate with many of the challenges faced on a daily basis. This organization allows us to communicate those challenges and provide feedback to the various supporting units throughout the NPS campus in order to help make improvements that benefit the students.

If at some point you find yourself in a position where you're not quite sure who to address with a particular concern, feel free to reach out to your PSC representative and we can hopefully point you in the right direction and find you the answer you need. The names of our representatives are listed below and can be easily found in the Global Address List in Outlook.

The PSC is always welcoming new members and would encourage you to attend our monthly meetings held the first Wednesday of each month at 1200 in the library room Kn-263A. Next meeting is Wednesday, April 4th.

Thank you for your hard work and good luck with your studies!

Chair: Lt j.g. Tanya Herfi
Vice-Chair: Capt. Dan Salazar
SIGS Lead: Capt. Alejandro Bihar
SIGS Rep: Capt. Joe Messmer, Lt j.g. Anton Balsirow, Capt. Matt Grill, Lt j.g. Tim Cole, Maj. Peter Cox, Capt. Dan Grant
GSOIS Lead: Master Sgt Alex Eudy
GSOIS Rep: Lt. Cmdr. Shivashankar
GSEAS Lead: Lt. Josh Malia
GSEAS Rep: Capt. Tyler Flansburg, 1st Lt. Helene Caniac

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On Campus this Month

April 1

Easter Sunday

April 10-12

Naval Research Working Group 18
King Hall and Barbara McNitt Ballroom
For more information on the event visit
the Naval Research Program, NRWG18 site

## April 17, 18

CRUSER TechCon 2018
1:00 p.m. ME Auditorium

CRUSER
Consortium for Robotics and Unmanned
Systems Education and Research

April 26

Climate Security
12:00 p.m. Glasgow Hall

April 21

118th Submarine Birthday Ball
6:00 p.m. Barbara McNitt Ballroom
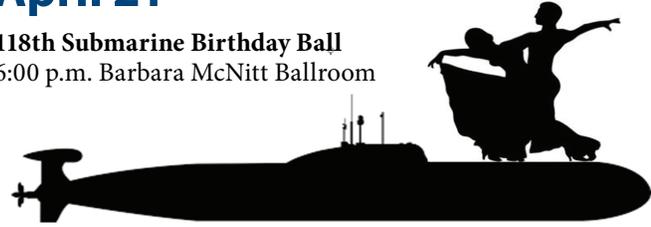
April 28

International Day
12:00 p.m. on the
Academic Quad

BREAKING NEWS HAPPENS

STAY CONNECTED. STAY INFORMED.

You Tube
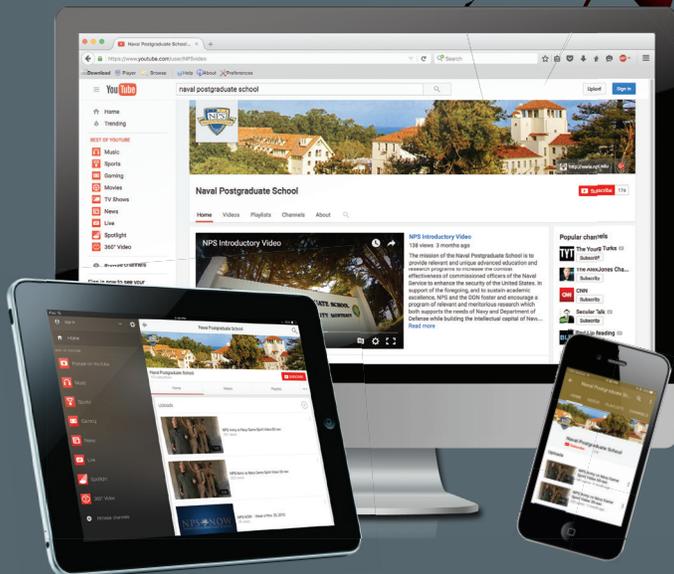
JOIN OUR GROWING
YOUTUBE COMMUNITY
www.youtube.com/NPSvideo

Historical Highlights

"Ironic and alarming," wrote the distinguished NPS Board of Advisors in 1976. The Board was "deeply concerned by the apparent long-range effects of the reduction of U.S. Navy inputs to all postgraduate education programs". Enrollment figures were down, even as technological complexity in the fleet continued way, way up: What accounted for the slide, just when the need for officers with technical, scientific and management education seemed greatest?

Nearly entirely all-military since 1909, NPS learned that year that a clarification of its charter confirmed that Federal civilian employees -- DoD or otherwise --could be admitted as students for the first time. Research Dean Robert Fossum determined that NPS Alumni should get the word out. "Every effort will be made," he wrote, to tailor programs to the needs of civilian students, and new programs would reflect their interests. They could even live in La Mesa.

By 1977, figures leveled, and that year's Superintendent's Report noted that NPS's [t]echnically and scientifically rigorous curricula ... are expanding in popularity and acceptance." NPS has supported the education and professional development of military and civilian students ever since. Welcome to NPS!

Historical Highlights are provided by the Dudley Knox Library.