



U.S. Navy photo by MC3 Shawn Stewart

JIFX Inspires Innovation Across Government

By Kenneth A. Stewart

The Naval Postgraduate School's Joint Interagency Field Exploration (JIFX) program recently brought together more than 400 researchers, scientists, first responders and military personnel to conduct a flurry of experiments and evaluations at the California National Guard's Camp Roberts facility in southern Monterey County, Calif.

"We have things flying, crawling and moving in ways that the federal government never imagined ... This is a collaborative learning environment," said Field Experimentation Director, Associate Professor Ray Buettner with the NPS Department of Information Sciences.

Experimental technologies — with names like "The Squid" and "The Crowd and the Machine" — sat side-by-side with unmanned aerial vehicles. "Everyone out here is someone the government believes may be able to help solve a problem," said Buettner. "I don't know of any other place in the government that brings together these kinds of people, and offers this many opportunities for interaction."

JIFX organizers describe the event as an "über-partnership" between the government, civilian entities and academia, where innovative thinkers across several bureaucratic boundaries come together to innovate. "We step outside our government roles by creating a shared space that brings together diverse groups that can collaborate or receive feedback from an audience of potential end-users," said Buettner.

"We have things flying, crawling and moving in ways that the federal government never imagined ... This is a collaborative learning environment."

– Field Experimentation Director, Associate Professor Ray Buettner

In spite of the broad diversity of the technologies being evaluated at JIFX, there is one commonality ... the majority of them were first developed to meet national defense needs. But like many defense technologies throughout history, they have the potential to provide tremendous benefit to homeland security and civilian applications as well. Sensors are being developed that can detect pathogen-carrying, crop-destroying pests, as well as sensors that monitor the temperature, moisture and other data necessary for optimal crop growth in California's fields.

As the quarterly JIFX program continues providing a forum for the rapid development and deployment of defense-related solutions and technologies, along the way will be the discovery of solutions to myriad challenges, from humanitarian and disaster relief operations to the multi-billion dollar Central California agriculture industry.



NAVAL POSTGRADUATE SCHOOL

UPDATE
NPS

p3 Weather Prediction Model One Step Closer to Multi-Agency Adoption

p4 Local SAPR Coordinators Provide Advocacy for Sailors in Need

p6 NPS Internship Program Leads to Increased Opportunity

SEPTEMBER 2013

NPS Student Analysis Reveals Multi-Million Dollar Lighting Solution

By Kenneth A. Stewart

A recent analysis of lighting lifecycle costs aboard the *USNS Comfort*, conducted by students at the Naval Postgraduate School, revealed a lighting solution that could save taxpayers up to \$6 million with savings beginning in as few as three years.

The *Comfort* is a 1000 bed Military Sealift Command hospital ship. The vessel was originally built in 1977 as a commercial oil tanker and was converted by the Navy in 1986 for service with the Military Sealift Command.

“We have everything a 1000 bed hospital would have, but additionally we have a galley and the quarters that support a working staff of 2200 people,” said *USNS Comfort* Chief Engineer Joseph Watts. “The *comfort* is basically a giant, floating building.”

The *Comfort* and its crew of doctors, nurses and sailors participates in Humanitarian Aid and Disaster Relief (HADR) operations, recent deployments included disaster and humanitarian relief efforts during Haiti’s tumultuous 2010 earthquake.

Watts requested a lifecycle lighting analysis of the *Comfort* in an attempt to reduce electrical, maintenance and disposal costs associated with shipboard lighting.

“Just keeping the lights on is quite a chore, we generate our own electricity at sea and plug into a public meter while in port; the bills are quite impressive. I was interested in reducing the cost and man hours necessary to keep the lights on,” said Watts.

NPS students explored the feasibility of replacing traditional fluorescent lighting aboard the *Comfort* with new LED lighting fixtures and bulbs. The *Comfort* uses approximately 14 thousand 24-inch bulbs and another 14 thousand 48-inch bulbs.

According to Watts, fluorescent bulbs must be replaced annually. The materials and maintenance costs associated with replacing some 28 thousand bulbs can be daunting.

“If you wanted to change a few light bulbs in your own home, you wouldn’t have to take out a second mortgage, but what if the scope of the problem involved government purchases of tens of thousands of bulbs plus government employee maintenance staffing spread out over many years?” asked NPS Professor of Operations Research, retired Navy Capt. Steve Pilnick.

In order to provide an accurate analysis, students compared a

wide variety of lighting options that included both fluorescent and LED bulbs.

“In terms of looking at different lighting options, many vendors did not provide very good information about how they determined bulb life and capabilities, so we had to be careful in our analysis to be sure that we were comparing apples to apples,” said analysis team member, Navy Reserve Lt. Cmdr. John Goering.



The Military Sealift Command hospital ship USNS Comfort seen during a 2012 humanitarian assistance mission near Port-au-Prince, Haiti. Recently students at the Naval Postgraduate School conducted an extensive analysis of the Comfort’s lighting that revealed cost savings measure that could lead to taxpayer savings of up to \$6 million. (Courtesy Photo by MCCS J.L. Chirrick)

But, students were not only concerned with finding a better bulb, they were tasked to find cost and energy efficient bulbs that could provide consistent lighting in the presence of radio frequency interference and harmonic distortion produced by the X-ray and CAT scan machines employed aboard the ship.

In addition to costs, students weighed the environmental impact of utilizing either fluorescent or LED lighting. Early analysis seemed to suggest that LED bulbs would provide a cost effective and more environmentally sound alternative.

According to Watts, LEDs bulbs are cheaper over time and because they do not contain hazardous materials, they are safer for the environment and do not require hazardous waste disposal.

Pilnick is hopeful that lessons learned aboard the *Comfort* will lead to further improvements throughout the fleet.

“The Navy benefits from this study, it provides the detailed cost-versus-benefit analysis necessary to meet mission requirements with tight budgets,” said Pilnick.

“Military Sealift Command leadership was able to make an informed decision due to the work of government employees that understood the problem and were able to communicate a solution,” continued Pilnick.

The student-led lighting cost analysis was part of a distance learning capstone project completed in conjunction with NPS’ Distance Learning Master of Systems Analysis curriculum. The program is designed primarily to provide graduate level education to mid-grade Naval officers whose career paths do not afford them the opportunity to conduct resident graduate studies at NPS.

“We focus our curriculum on practitioners and we build into our curriculum projects that are meaningful to our students,” said Pilnick. “95 percent of our students work on projects that come out of or are sponsored by organizations for which they are currently working.”

Weather Prediction Model One Step Closer to Multi-Agency Adoption

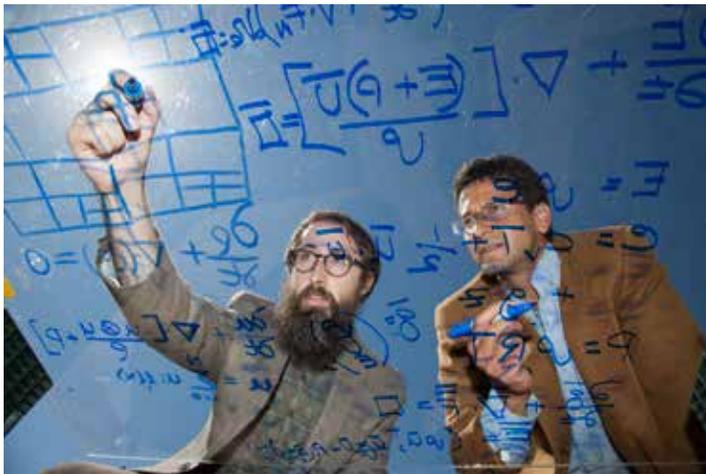
By Kenneth A. Stewart

Naval Postgraduate School Professor of Applied Mathematics Dr. Frank Giraldo has been working for several years on a complex weather prediction tool, the Nonhydrostatic Unified Model of the Atmosphere or NUMA, which he and his team members hope will be adopted as the nation's preeminent multi-agency weather prediction model.

"Our work is targeted at providing weather prediction for the Navy and all of the various agencies who are looking to adopt a single model," said Giraldo.

Although the work has been ongoing for some time, NUMA has generated considerable interest and momentum in recent months. The Korean Institute of Atmospheric Prediction Systems (KIAPS) is seeking to use NUMA as a prototype for the Korea Meteorological Administration (KMA).

"KIAPS is a nine-year, project-based institution and our mission is to develop Korea's next generation operational numerical weather prediction (NWP) model," said Dr. Tae-Jin Oh group leader of KIAPS' Dynamical Core Team. "Our product will eventually be used operationally by the Korea Meteorological Administration."



After several years of advanced research, NPS Department of Applied Mathematics Professor Dr. Frank Giraldo, right, and his Nonhydrostatic Unified Model of the Atmosphere or NUMA is inching closer to possible multi-agency adoption. Over the past several months, Giraldo and Assistant Professor Lucas Wilcox, left, have been reworking NUMA to capitalize on advancements in graphic processing unit technologies, resulting in National Oceanographic Partnership Program sponsorship. (U.S. Navy photo by Javier Chagoya)

Also part of the excitement stemming from the NUMA model is its recent incorporation of research into graphic processing

unit (GPU) technology. Assistant Professor Lucas Wilcox with NPS' Department of Applied Mathematics is working with Giraldo to harness the computational power of GPUs within the NUMA model.

"I joined the department about a year ago, I worked previously at the University of Texas on applying similar mathematical techniques to GPU technology," said Wilcox. "Frank and I thought it would be interesting to apply these techniques to weather prediction."

GPUs are processors that were originally designed for graphics, but Wilcox has demonstrated that they can be exploited to conduct complex mathematical equations as well.

"Only a small portion of modern CPUs are used for the floating-point computations found in NUMA, the rest of the chip is dedicated to running serial programs such as Microsoft Word fast," said Wilcox. "The GPU is a different technology, it is designed to crunch numbers in parallel fast... We want to develop a version of the NUMA codes that can run on GPUs and then push those codes upstream into the main version of NUMA."

All of this computational power is necessary due to the complexity of what Giraldo is trying to replicate. As he increases fidelity and looks at ever-smaller swatches of atmosphere, the code becomes more complex and has to account for an increasing number of variables.

If successful, recent work with NUMA and GPU technology may lead to developments beyond the scale of weather prediction.

"We are also looking at how we can apply these same numerical techniques to model earthquakes," continued Wilcox. "We intend to publish our work open-source so that other researchers can apply it to other models."

FACULTY news & notes



Mechanical and Aerospace Engineering Professor and Chairman, **Knox T. Millsaps** has been appointed as an Associate Editor of the Transactions of the ASME, Journal of Turbomachinery. Professor Millsaps is an expert in Gas Turbines and Power and Propulsion.

NPS Department of Defense Analysis Chair, Professor **John Arquilla** recently authored three separate features in Foreign Policy magazine. He discussed U.S. foreign policy in the Middle East and abroad, the doctrine of preemption, and shared insights into the WWII era military deception that inspired the movie, "The Man Who Never Was," which Arquilla believes holds lessons for modern strategy makers.

GSBPP Professor of Accounting **Dr. Thomas Albright** was honored with the Dr. James Cashman Faculty Award. Dr. Albright, a former professor at the University of Alabama where he taught for 22 years, was chosen as recipient of this award by the Tuscaloosa-EMBA Class of 2013.

Assistant Professor of Operations Management **Michael Dixon**, was selected once again to receive the Liskin Teaching Award, this is the second time Dixon has received the honor. GSBPP students recognized him for his "energy" and the many innovations he brings to the classroom.

Professor **Clay Motz** has been named director of the Project on Advanced Systems and Concepts for Countering Weapons of Mass Destruction (PASCC). PASCC supports and awards projects that increase strategic analysis and foresight. The research links social science and technical domains to investigate and anticipate WMD capabilities, intentions and countermeasures five to 20 years out.

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



Fleet and Family Support Center staff Heather Ruppert-Cleary, left, and Katherine Chevalier, right. (U.S. Navy photo by Javier Chagoya)

Local SAPR Coordinators Provide Advocacy for Sailors in Need

By MC3 Danica Sirmans

A pillar of the Navy's comprehensive Sexual Assault Prevention and Response (SAPR) program is to provide compassionate advocacy to Sailors and civilian personnel in times of need. At the local command level, this has led to the designation of two allies for active duty and civilian personnel stationed at NPS, and all tenant activities within the Naval Support Activity (NSA) Monterey umbrella.

Heather Ruppert-Cleary, Education Services Facilitator at NSA Monterey's Fleet and Family Support Center, also serves as the installation's Sexual Assault Response Coordinator (SARC), and along with Advocacy Support Specialist Katherine Chevalier, provides the front lines of defense in combating sexual assault at the local level.

"I provide oversight and consultation to the command and its program to make sure everything is in compliance," said Ruppert-Cleary. "I train all of the victim advocates, and I provide training to the unit as well. There have been many new changes to the program."

One of the most significant changes Ruppert-Cleary pointed to is the comprehensive approach to training and accountability across all levels, from junior Sailors to senior leadership. "There is now more training for higher leadership versus just the junior enlisted," Ruppert-Cleary said. "The past training was great, because it was targeted to the core of the problem, but what about how a command deals with the problem? What about the command's climate?"

"It needs to start from higher up and be all-encompassing, it can't be

just one-sided," she continued. "We're also training civilians in sexual assault prevention. It's becoming a broader campaign, and we're holding all perpetrators accountable," said Ruppert-Cleary.

A relatively unique addition to the resources available to NSA Monterey personnel is a civilian advocate for assault victims. "I've found that some victims may be hesitant to come forward because their uniformed victim advocate may be in their chain of command," Ruppert-Cleary said, noting Chevalier provides a different perspective to the support services provided.

"For this installation, I'm the first Navy civilian victim advocate," said Chevalier. "The vision for my role is to be there for the dependents that experience this kind of trauma, as well as providing a different outlet to service members that they may be more comfortable with."

According to Ruppert-Cleary, the focus on sexual assault prevention and training has led to an improved and more comprehensive support system for the command. "The new additions to the SAPR program are more effective because it encompasses a larger scale ... It's holding people accountable and it's more relevant," she said. "Sexual assault prevention has been more emphasized by society, by the military, and by leadership. It's about changing a culture from having a negative stigma, to being supported and able to talk about it."

The bottom line, she adds, is that, "If you are a victim of sexual assault, your command and this program are going to support you."

Researcher Presents Biomedical Engineering to NPS Personnel

Dr. Ravi Vaidyanathan, a senior lecturer in bio-mechatronics with the Imperial College London Department of Mechanical Engineering recently gave a presentation on neuromechanics and nervous systems to NPS faculty, students and staff.

Vaidyanathan and his research team take a comprehensive look at mechanism sensory motor control and apply it to biological structures of human sensory motor control, all in hopes of enhancing or improving biomedical mobile applications.

"Simply put, we look at electro-mechanical systems whose archi-

ture and design are inspired by biology in medical and robotic application," said Vaidyanathan.

During his lecture, Vaidyanathan reviewed related projects, including research into biologically-inspired robots that are designed and fabricated like human body parts to serve as advanced prostheses.

"Medically, we are looking at novel micro and macro devices that can substitute parts of the body, augmenting human beings in surgery, mostly in prosthetics and personal assistance," he said.

Strategic Studies Group Director Fellows Announced

By MC2 Chablis J. Torrence

The Chief of Naval Operations Strategic Studies Group (CNO SSG) Director, retired Adm. James Hogg, recently welcomed newly-selected CNO SSG Director Fellows and alternates to the CNO SSG in a meeting at Herrmann Hall's Elster Conference Room.

The mission of the CNO SSG is to generate revolutionary naval warfare concepts at the direction of the Chief of Naval Operations. The group focuses its efforts on high-potential tactics and innovative procedures that have yet to be exploited by the Navy.

"I consider it a true honor to be selected for the CNO SSG," said U.S. Army Capt. Mohamed Massaquoi. "This opportunity to be a part of naval innovation will be a welcome experience that I intend to draw upon for years to come."

NPS Interim President Rear Adm. Jan E. Tighe, who joined Hogg and Dean of Students Capt. Tom MacRae in the final selection process, congratulated the fellows on their selection during her weekly portico address.

"Adm. Hogg, the Dean of Students and I were challenged to select only six CNO Strategic Studies Group Fellows. Based on the great candidates and their diversity of experiences, we picked seven and three alternates! Congratulations to the selectees," Tighe wrote.

This year's CNO SSG selectees are Lt. Cyrus Anderson, Lt. David Camp, Lt. Ryan Hilger, Army Capt. Mohamed Massaquoi, Lt. Peter Norgaard, Lt. Cmdr. Christopher O'Connor, and Lt. j.g. Barry Scott.

Human Research Program Reviewed by Navy's Chief of Medical Research

By Javier Chagoya

Navy Medicine Research and Development Commanding Officer, Rear Adm. Bruce Doll recently met with students and faculty conducting research with human subjects during a campus visit, Aug. 6.



Capt. Alan Nordholm, Director of the Navy's Human Research Protection Program (HRPP), left, and Rear Adm. Bruce Doll, Commanding Officer of the Navy Medicine Research and Development Command, second from left, meet with NPS HRPP Institutional Review Board (IRB) Chair Dr. Larry Shattuck, far right, during the program's update briefings, Aug. 6. (U.S. Navy photo by Javier Chagoya)

Doll traveled to NPS as the senior oversight official for the Department of the Navy's Human Research Protection Program, directed by Capt. Alan Nordholm, which is responsible for monitoring the conduct of

human subject research in the Navy.

While it was Doll's first visit with NPS' HRPP officials, it is not his first exposure to the school. He completed NPS' Executive Master of Business Administration program in 2012.

All research involving human subjects at NPS must be reviewed and approved by the Institutional Review Board (IRB) and the NPS President. NPS IRB officials note they receive approximately 22 submissions per month, which are reviewed by the IRB within six days, a performance both officials praised.

"Your review times are exceptional compared to other program administrators," said Doll.

"You folks are conducting your program exactly how it should be, and as the [Navy's] seasoned group, you will be getting phone calls on how it's done," added Nordholm.

CAMPUS news & notes

NPS said farewell to Ships Cook 2nd Class Harold Mulnix who passed away suddenly in his Central Valley Home, Aug. 20. Mulnix was a guest of honor during this year's annual Submarine Birthday Ball, held in the Barbara McNitt Ballroom. He was the Navy's longest qualified submariner and was a member of the "greatest generation." He will be deeply missed.

Recently, NPS leaders attended a focus group meeting with local community leaders. The gathering was the fifth in a series of focus groups designed to maintain open lines of communication between the university and its local and regional partners from government, business and higher education. Organizers established the community engagements to increase opportunities for dialogue between NPS and its key local and regional community stakeholders.

The Fleet Numerical Meteorology and Oceanography Center sent off NPS alumna, Commanding Officer, Capt. Erika Sauer. 17th District Representative Congressman Sam Farr and Naval Meteorology and Oceanography Commander, Rear Adm. Brian Brown attended Sauer's change of command ceremony. Brown thanked Sauer for her "exemplary leadership" and Farr voiced his commitment to FNMC and its continued presence on the Monterey Peninsula.

THIS MONTH ON

INSIDE NPS

- Interview with Col. Fred Meyer with The U.S. Military Academy at West Point's Department of Civil and Mechanical Engineering with an introduction to the Structured Insulated Panel Hut.
- Interview with Adam Macdonald with AeroVironment INC. about the PUMA Unmanned Aerial Vehicle.
- Interview with Jeffrey Waugh on "DIRT OPS," a water-based solution that makes dirt as hard as concrete.

"INSIDE NPS" AIRS WEEKLY ON THE PENTAGON CHANNEL

NPS, Hartnell College Intern Program Leads to Increased Opportunity for Regional Students

By Kenneth A. Stewart

When the Naval Postgraduate School recently joined regional leaders, educators and students at the Hartnell College Internship Symposium, Aug. 24, the inner workings and broad impact of an ambitious program to partner local college students with leading researchers at the Navy's prestigious graduate school began to shine.

"NPS is one of the key partners for Hartnell in providing STEM internship opportunities for their students... They are an inspiring group of young future leaders, whose educational and life experiences have been enriched by their time spent at NPS," said university Interim President Rear Adm. Jan E. Tighe, one of the symposium's key speakers.

"The Hartnell program is one of many feeder programs to our summer STEM internship activities run out of the Cebrowski Institute," Tighe continued. "My hat's off to the faculty and staff members who gave so generously of their time to make a difference in the lives of these young future leaders."

In total, NPS hosted 93 STEM interns over the past summer comprised of high school, community college and university students selected through several intern partnerships and programs. Collaborative partners include Hartnell College, as well as California State University Monterey Bay, and the Monterey Bay Regional Academy of Computing Education. In addition, NPS is an active participant in the Science and Engineering Apprentice Program (SEAP) and the Naval Research Enterprise Internship Program (NREIP).

Participating NPS faculty members mentor interns as they work

on unclassified research projects for eight-weeks each summer. Research areas include computer security, space systems, renewable energy, humanitarian assistance and disaster response, and the modeling of virtual environments.



NPS Interim President Rear Adm. Jan E. Tighe speaks with a summer intern at the annual Hartnell College SUMMER Science Technology Engineering and Mathematics Internship Symposium, Aug. 24. NPS recently hosted 93 summer interns comprised of local high school, community college and university students. (U.S. Navy photo by MC2 Chablis J. Torrence)

According to NPS STEM Internship Coordinator Alison Kerr, the goal of the internship program is to prepare the next generation of young people to replace aging scientists in the STEM fields.

"NPS and the nation at large recognize that there is a decline in young STEM professionals that are U.S. citizens," said Kerr. "It's a national crisis... We want to help, inspire and educate these young people on their trajectory toward the STEM disciplines."

NPS Dean of Research Dr. Jeff Paduan agrees. "Part of what we are doing here is recruiting the next generation of STEM professionals," said Paduan. "Our Navy leadership recognizes the need for young people like these that are critical to the future success of the Navy."

Working with youth, and the time commitment that comes with it, may pose a challenge to NPS researchers, but Paduan notes that voluntary participation in the program produces results that more than validate the effort.

"The internship program is self-regulating. Our faculty are not required to take on interns, but those that do get value and inspiration out of the program and inevitably bring interns back," said Paduan.

Focus On ... Second Language Instruction

A Monthly Look at Names and Faces on Campus

International students struggling with English as a Second Language (ESL) will find comfort in knowing that there is at least one person at NPS that is looking to teach them the complexities of our diverse language and culture.

ESL instructor Richard Cook volunteered to leave his position at the Defense English Institute in San Antonio Texas to teach at NPS. He is driven by a desire to help his students communicate and receive the recognition their

academic work deserves.

"I enjoy teaching as much as I enjoying learning," said Cook. "After traveling through Western Europe I decided that it would be interesting and beneficial to teach English to other cultures.

"When I teach, we talk about everything, except for politics, and we get to see how cultures handle things, how they differ and how they are parallel each other," continued Cook.

Cook teaches ESL classes focused on speaking and writing, class sizes vary, as do the needs of students that attend his class. Cooks works with his students on both conversational English and the challenges of academic writing in the English language.

Sometimes the barriers to communication are cultural not linguistic. "Some of my students come from learning environments that are different from ours in America. I have to help them to speak up and ask ques-



English as a Second Language instructor Richard Cook

tions," said Cook.

Cook interviews all international students at NPS and grades their functional speaking ability according to Oral Proficiency Interview standards, which tests the student's ability to function in class.

Any Day at NPS ...



Naval Academy Midshipmen Daniel Fallon, left, and Jonathan Driesslein, right, send each other text messages via QR (quick response) codes. The service academy interns are wrapping up a summer on campus exploring communications tools in tactical environments. (U.S. Navy photo by Javier Chagoya)

NPS Police Officers Sal Araujo, left, and Zachary Reiner, right, were the first in line to order their favorite beverages when NPS welcomed its latest edition — a Starbucks café. (U.S. Navy photo by Javier Chagoya)



The latest cohort of 42 Executive Master of Business Administration (EMBA) students gather outside NPS' Herrmann Hall. The students spent a week on campus in preparation for their two-year EMBA distance learning program. They will spend the next 24 months working together, and in smaller teams, on a variety of business and management coursework, projects and activities. (U.S. Navy photo by Javier Chagoya)

Naval Support Activity Monterey Commanding Officer, Capt. Gerral David, and Chaplain, Lt. Cmdr. William Riley, collect cans of food with NPS sailors to support Feds Feed Families. The Department of Defense provides support to American families by collecting non-perishable food and household goods through the program. (U.S. Navy photo by MC2 Shawn Stewart)



Commander Naval Air Forces Command, Vice Adm. David Buss, right, tours the Segmented Mirror Telescope facility at NPS' Spacecraft Research and Design Center. NPS civilian doctoral candidate Travis Axtell, left, of Space and Naval Warfare Systems Command described the manner in which micro-actuators on a mirror assembly help align and focus images taken from space. (U.S. Navy photo by Javier Chagoya)



STUDENT voice

By Lt. j.g. Barry Scott, Chairman President's Student Council



The student council is the voice of the student body. The new leadership for the President's Student Council is pursuing two objectives: awareness and participation. We want students to know the student council exists for them, and if they have an issue that is not being addressed, to reach out to us. Already in the past three weeks, more students have stopped us to share an idea or a problem. The capacity for the student council to be responsive, however, is lacking. Perfectly understandable as the NPS student life is hectic, but the student council desires your participation.

The interests of the student body are diverse. To enhance thoughtfulness and productivity, we want to establish a variety of positions dedicated to the most frequent issues. For example, an events coordinator to focus on projects such as the Navy Ball, Midway Dinner, or Pearl Harbor Dinner; an outreach coordinator to organize and announce community volunteerism; and a facilities coordinator to track the various questions on parking, lockers, or maintenance. We want to establish a student liaison for each department simply to attend student council meetings, speak the concerns from their respective cohorts, and report back on progress.

These tasks are manageable if broken down into small enough chunks, but it requires participation. The collective effort of only a small few would be capable of making the student body voice much louder.

Lt. j.g. Barry Scott is the Chairman of the President's Student Council. Visit the PSC on the intranet at <http://intranet/psc/index.html>.

On Campus this Month



September 11
Patriot Day



September 17
Summer Quarter Awards Ceremony
POC Student Services, (831) 656-3816

(U.S. Navy photo by Javier Chagoya)



September 19
Naval War College Graduation Ceremony
Barbara McNitt Ballroom
POC Rose Drake, (831) 656-2118

(U.S. Navy photo by Javier Chagoya)



September 23-26
Warfare Innovation Workshop
POC Lyla Englehorn. (831) 656-2615

(U.S. Navy photo by MC3 Shawn Stewart)

September 23
Robo-Ethics Continuing Education Series
POC Lyla Englehorn, (831) 656-2615



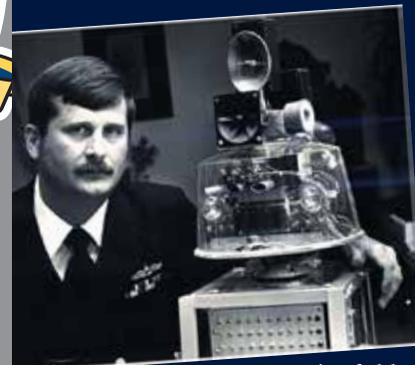
September 27
Summer Quarter Graduation Ceremony
Commencement Speaker
Vice Adm. Richard W. Hunt
POC Student Services, (831) 656-3816

NAVAL POSTGRADUATE SCHOOL
NEWS CENTER
Stay informed. Stay connected.
www.nps.edu/news



Historical Highlights

NPS hosted field experiments at Camp Roberts (*see story on page 1*) offered a glimpse into technological innovations that have been a hallmark of NPS since its inception.



Today's collaborative field experimentation program enables students and faculty to interact with teams from military commands, the defense industry and representatives from federal, state and local agencies. Many of the technologies and programs being tested focus on autonomous systems.

The field experiments are a far cry from the early days of robotics research in the NPS laboratories and classrooms, like the thesis project called Robart I, developed by Lt. Cmdr. Bart Everett in the early 1980's. Robart I was one of the first behavior based robots ever built. It now resides in a museum at the SPAWAR Systems Center in San Diego where Everett is technical director for robotics.

Historical Highlights are provided by the Dudley Knox Library.