



RESEARCH AT NPS



December graduate **CDR Charles W. Hewgley IV, USN** (left), will receive a doctorate in electrical engineering for his work in autonomous, aerial-delivery systems, contained in his dissertation, "Autonomous Parafoils: Toward a Moving Target Capability."

Over the last decade, research has intensified in the area of autonomous, aerial-delivery systems (ADSs), vehicles

that are deployed in the air from an aircraft, rocket, or balloon and descend under a steerable, round parachute or rectangular, parafoil canopy. Modern ADSs have achieved high accuracy in guiding themselves towards a fixed target on land. Advanced guidance algorithms being developed at the NPS Aerodynamic Decelerator Systems Center (<http://www.nps.edu/adsc>) under the direction of **Professor Oleg Yakimenko** strive to enable an ADS landing on a moving platform such as a ship at sea.

With the goal of demonstrating the utility of precision aerial delivery in the maritime domain, Hewgley's research focuses on the challenges

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BROWN-BAG SEMINAR SERIES

WA-302, 1200-1300

- Tuesday, October 11th, Counterintelligence Support Plan (CISP)
- Tuesday, November 8th, NRC Postdoctoral Program

RESEARCH BOARD UPDATE

The Research Board, chaired by the vice president and dean of research, is one of the longest-standing faculty committees at NPS. The board comprises representatives from each school, department, group, and institute, plus two representatives from the Faculty Council. The assistant dean of research co-chairs and the director of research and sponsored programs is a non-voting member.

Over the past year, the Research Board renewed its charter (posted with current membership at <http://www.nps.edu/Research/rspa.html#ResearchBoard>) and formed two important subcommittees:

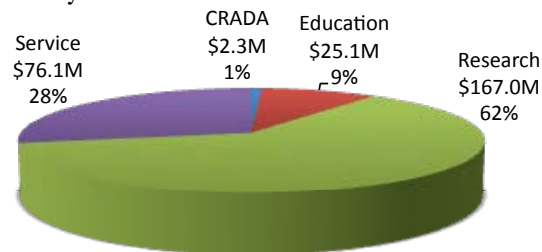
- **Who Can Be a PI?** Members: Research Professor Tim Stanton (OC), Professor Phil Pace (EC), Associate Professor Chris Twomey (NS), and Director Danielle Kuska, RSPO. The draft recommendation on PIs is completed and will be circulated for comment.
- **Concerns of the Non-Tenure-Track Faculty:** Members are Research Associate Professor Amela Sadagic (MOVES), Research Professor Tim Stanton (OC), Research Professor Wieslaw Maslowski (OC), Assistant Research Professor Sandra Leavitt (NS), Professor Phil Durkee, Interim Dean GSEAS, and Director Danielle Kuska, RSPO. The Non-TT committee should report to the board by December.

Your Research Board representatives are the voice of NPS's unique constituencies and provide an invaluable resource in setting research policy and bringing forth issues of importance to the researcher. Comments to the Research Board can be sent to research@nps.edu.

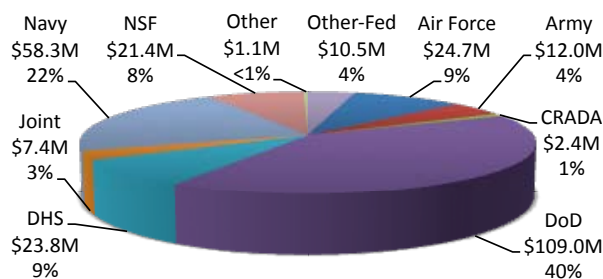
SPONSORED PROGRAMS STATUS, SEPTEMBER 2011

FUNDS AVAILABLE: \$270.5

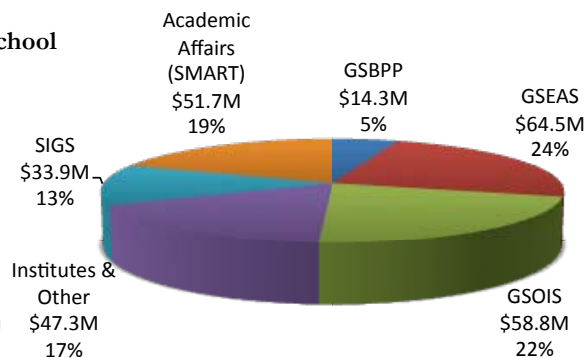
By Type of Activity



By Sponsor



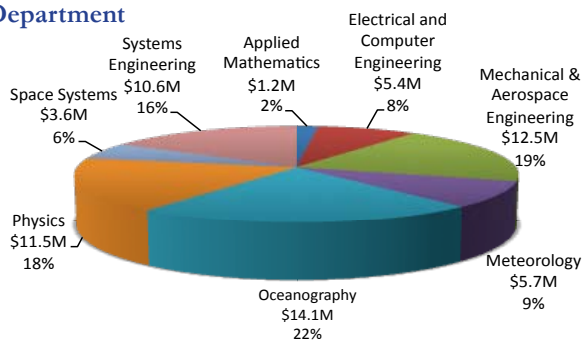
By School



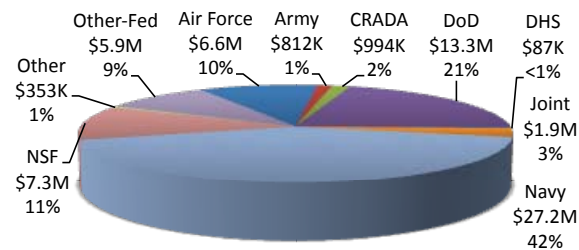
Graduate School of Engineering and Applied Sciences

Funds available to date: \$64.5M

By Department



By Sponsor



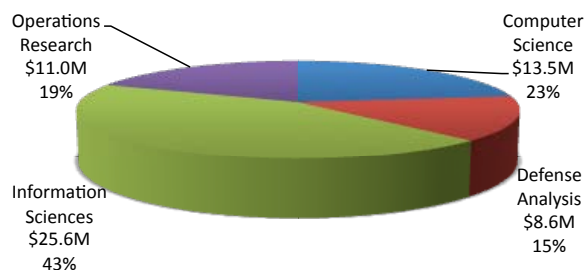
Projects funded in September

- Railgun Power Supply, *Alex Julian, EC* (ONR)
- Cross-Domain, Multi-Institute Research Project, *Jim Scrofani, EC* (SAF)
- Ground-Vehicle Survivability, *Chris Adams, MAE* (DOT&E)
- Vortex-Dominated, Tip-leakage and End-Wall Losses in Transonic Splintered Rotor Stage, *Garth Hobson, MAE* (ARO)
- Advanced Marine Gas-Turbine Technology Programs, *Knox Millsaps, MAE* (NSWC–Carderock Division)
- Improved Automation and Performance of VORTRAC Intensity Guidance, *Michael Bell, MR* (NOAA)
- Improved Environment Characterization for AREPS EM Performance Predictions, *Paul Frederickson, MR* (SPAWAR)
- Improving Decadal Prediction Using Regional Arctic System Model (RASM), *Wieslaw Maslowski, OC* (DOE)
- Improved Decadal/Centennial Prediction of Arctic Sea Ice State and Climate Change, *Wieslaw Maslowski, OC* (NSF)
- Spatially Resolved Optical Imaging of Solar-Cell Structure, *Nancy Haegel, PH* (Spectrolab)
- Target Signatures, *Chris Olsen, PH* (OSD)
- Premature Capacity Loss in Valve-Regulated, Lead Acid Batteries, *Sebastian Oswald, PH* (NSWC–Crane Division)
- MSSO Cohort 316-092, *Rudy Panholzer, SP* (Various)

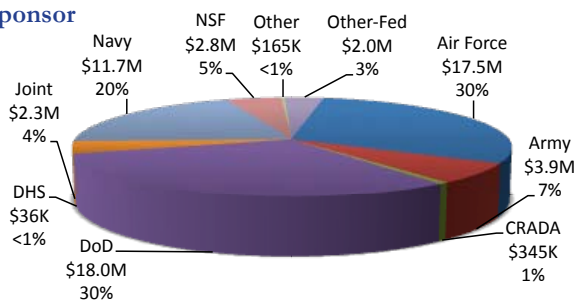
Graduate School of Operational and Information Sciences

Funds available to date: \$58.8M

By Department



By Sponsor



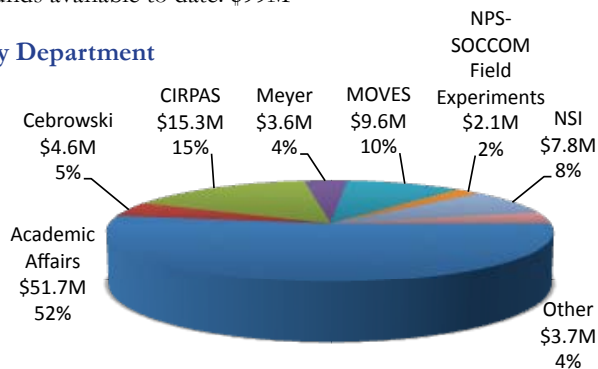
Projects funded in September

- OCI-Software Development for CI, *Robert Beverly, CS* (NSF)
- DARPA Insider Project, *Simson Garfinkel, CS* (DARPA)
- Gaming Systems Monitoring and Analysis, *Simson Garfinkel, CS* (SSC-PACIFIC)
- Eager: Health Wave-Secure, Federated Protocols for Electronic Medical Records, *Zachary Peterson, CS* (NSF)
- Education and Collaboration Community Online (ECCO) Website for CTFP Alumni, *Michael Freeman, DA* (OSD)
- Red-Teaming Vulnerability at System Seams: Modeling User Acceptance of New Technology, *Mike Jaye, DA* (USMA)
- Core CRS Development, *COL Greg Wilson, USA, DA* (OSD)
- Flexible Architecture and Sensor Topology License-Plate Recognition II, *James Ehlert, IS* (NSWC–Dahlgren Division)
- Field Information Reporting Support Tool (FIRST), *James Ehlert, IS* (NSWC–Dahlgren Division)
- FDA Optimization Support, *Lee Ewing, OR* (Army Deputy Chief of Staff, G8)
- Center for Army Analysis Optimization Support, *Lee Ewing, OR* (CAA)
- Counter-IED Analytical Support to JIEDDO J9, *Tom Lucas, OR* (JIEDDO)
- MCEA Program Cohort 379-11, *Greg Mislick, OR* (Various)
- Human-Systems Integration DL Certificate Program, *Larry Shattuck, OR* (Various)

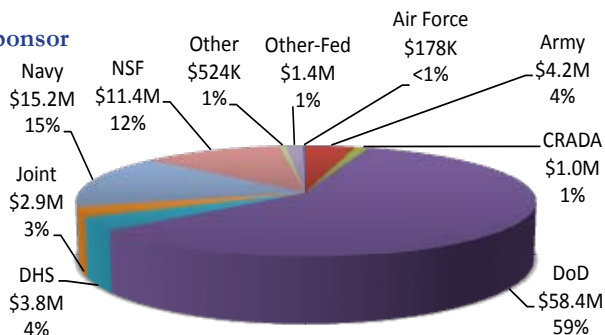
Research and Education Institutes, Centers, and Other

Funds available to date: \$99M

By Department



By Sponsor



Projects funded in September

- Civil–Military Operations and Rule of Law: Curriculum and Pilot Course, *Karen Guttieri, GPPAG* (USACAPOC)
- Test and Evaluation Support for Jordanian Border Security System, *Dan Boger, NSI* (Yuma Proving Ground)
- Mini-Max Experiments: Test Design and Analysis Consultation, *Mike Melich, Meyer* (DTRA)
- DMEA Development and Experimentation, *Cliff Whitcomb, Meyer* (OSD)

- Medical Modeling and Simulation Certificate Program, *CDR Joe Sullivan, USN, MOVES* (USAMRAC)
- High-Definition Aerial Photography Payload Development, *Bob Bluth, CIRPAS* (Innovative Automation Tech)
- Sentry UAS Assessment and Flight Test, *Bob Bluth, CIRPAS* (U.S. Army Operations and Technology Office)
- Collaborative Research: Next-Generation Storm-Penetration Research, *Haflidi Jonsson, CIRPAS* (NSF)

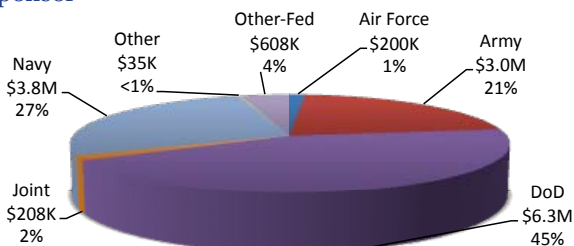
Graduate School of Business and Public Policy

Funds available to date: \$14.3M

Projects funded in September

- Advanced Acquisition Program, *John Dillard* (CECOM)
- Flight-Hour Program Analysis, *Larry Jones* (COMNAVAIRPAC)
- Factors of Organizational Resilience, *Ned Powley* (BUMED)
- Support Graduate Student and Acquisition Research, *Keith Snider* (OASA)
- Chair of Acquisition and Research Program, *Keith Snider* (PEO–T)
- FY11 Acquisition Research, *Keith Snider* (DACM)

By Sponsor



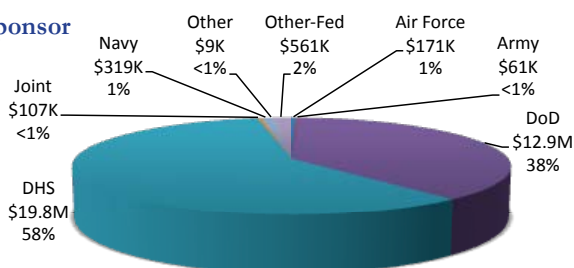
School of International Graduate Studies

Funds available to date: \$33.9M

Projects funded in September

- The Next Decade of Nuclear Learning, *Feroz Khan* (DOE–NNSA)
- Battlefield Nuclear Weapons and Deterrence Strategies, *Feroz Khan* (DOE–NNSA)
- Global Trends and the Future of Warfare 2025, *Daniel Moran* (DNI)
- Analytic Tradecraft Training for the Laboratory Analyst, *Daniel Moran* (DOE)

By Sponsor



“I am among those who think that science has great beauty. A scientist in his laboratory is not only a technician: he is also a child placed before natural phenomena that impress him like a fairy tale.” —Marie Curie

NPS BATTLEFIELD TELEMEDICINE ADVANCES

The investigations of **Associate Professor Alex Bordetsky** (Information Sciences) and his Center for Network Innovation and Experimentation (CENETIX) research team into a battlefield medical network were the subject of a recent article carried by the American Forces Press Service.

The goal of his research is to deliver first aid on the battlefield via

small nano patches developed at the MIT Institute for Soldier Nanotechnology. The patches are worn on body or uniform and, in case of casualty, monitor vital signs for transmission to a tactical medical network that includes robots and unmanned, aerial vehicles.

Data is received by medics nearby or anywhere in the world, and medication can be administered to the patient via implanted drug-delivery systems or unmanned vehicles.

The proposed system extends the reach of field medics and corpsmen under heavy caseloads or when troops are inaccessible, and helps identify casualty locations and decide triage. Besides delivering medical supplies, unmanned vehicles deployed to the scene may be able to move the warfighter from the line of fire.

Conducting studies in conjunction with TNT-USSOCOM experimentation, NPS has joined with MIT ISN Salinas Valley Memorial Healthcare System in California and U.S. Air Force pararescue teams assigned to Air Combat Command to evaluate the concept. While the system cannot yet equal the speed and performance of human operators, it promises to fill a critical gap by providing timely care under difficult circumstances.



Testing at Camp Roberts: Bordetsky (third from left) and research team gather around dummy casualty and robots that have traveled to its aid.

NPS RESEARCH LOOKS AT THE EFFECTS OF HEALTH-PLAN CONCENTRATION



Associate Professor Shen

Work by **Yu-Chu Shen**, associate professor in GSBPP, and colleagues at the University of Southern California recently appeared in the policy journal, *Health Affairs*. Their collaboration addresses the effect of increased health-plan concentration on hospital prices.

With the continuing long-term trend of consolidation among U.S. health plans, the American Hospital Association, American Medical Association, and other providers have voiced growing concern that health plans will acquire market power to depress the prices paid to providers.

The motivation behind this study is that lack of competition in insurance markets was cited as a main culprit behind rising health-insurance premiums during the recent debate over health reform, yet there is limited empirical evidence regarding the relationship between concentrated health-plan markets and provider prices.

Using linked databases among multiple data sources (American Hospital Association annual surveys, health-plan data from

Interstudy, area resource files, the U.S. Census Bureau, etc.), the researchers analyzed all general, acute, non-federal hospitals located in metropolitan statistical areas in 2001 and 2004 (approximately 2000 hospitals). Linear regression models that control for a variety of hospital and market characteristics were employed to analyze data. To measure health plan and hospital concentration, the researchers used a standard concentration index, with values ranging from close to 0 (perfectly competitive market) to 10,000 (monopoly market). The authors find that while greater health-plan concentration can lead to lower hospital prices, greater hospital-market concentration leads to higher prices paid to hospitals.

For every 1000-point increment in the hospital-concentration index, hospital price goes up by 8.3 percent; whereas for every 1000-point increase in health-plan concentration index, hospital price goes down by 2.5 percent. The second analysis shows that health-plan concentration reduces hospital prices at a much greater rate in those areas where health-plan markets are the most concentrated (12 percent in markets with concentration index above 3200) compared to the rate in less concentrated health-plan markets. They also find that, despite continuing consolidation among health plans, very few hospitals in the U.S. operate in markets that are dominated by a few health plans and that hospital-market concentration exceeds health-plan concentration in most markets.

These study findings suggest that consumers would benefit from policies to restore competition to hospital markets in the U.S. and that, contrary to reports in the media, increased health-plan concentration can benefit consumers as long as health-plan markets remain price competitive and do not result in lower quality or outcomes.

APPLIED MATHEMATICS

Professor **Francis X Giraldo** was plenary speaker at a workshop for multiscale modeling. The University of Hamburg KlimaCampus Workshop on Numerical Methods for Scale Interactions, September 21–23, brought together glaciologists, meteorologists, oceanic modelers, and mathematicians to tackle problems through scale interactions.

Professor **Francis X Giraldo** organized a joint workshop of the National Science Foundation and Society for Industrial and Applied Mathematics, in Washington, D.C., Sept 16–17. The purpose was to propose a new program, “Collaboration in Mathematics with the Geosciences,” to NSF.

Del Pozo, M., Manuel, C., Gonzalez-Aranguena, E., **Owen, G.** (2011). “Centrality in Directed Social Networks. A Game Theoretic Approach.” *Social Networks*, 33(3), 191–200.

COMPUTER SCIENCE

Jansen, E., & Gallenson, A. C. (2011). Practitioner response to “Beyond Smokestacks and Silos: Open-Source, Web-enabled Coordination in Organizations and Networks.” *Public Administration Review*, 71(5), 694–696.

CENTER FOR DECISION, RISK, CONTROLS, AND SIGNAL INTELLIGENCE (DRCSI)

M. Tadi, **S. S. Sritharan** and A. K. Nandakumaran, “An Inverse Problem for Helmholtz Equation,” *Inverse Problems in Science and Engineering*, Vol. 19, (6), pp. 839–854 (2011).

S. S. Sritharan and Meng Xu, “A Stochastic Lagrangian Model and Nonlinear Filtering for Three-Dimensional Euler Flow with Jumps,” *Communications on Stochastic Analysis*, Vol. 5, No.3, (2011), pp. 565–583.

Professor **S. S. Sritharan** presented a series of invited lectures on mathematical advances in control and statistical inference of turbulent fields at the National Chiao Tung University in Taiwan, September 19–23.

DEFENSE ANALYSIS

Roberts, N. (2011). “Beyond Smokestacks and Silos: Open-Source, Web-enabled Coordination in Organizations and Networks.” *Public Administration Review*, 71(5), 677–693.

ELECTRICAL AND COMPUTER ENGINEERING

G. Oriti, A.L. Julian, and **D. Zulaica**, “Doubly Fed Induction Machine Drive Distance-Learning Laboratory for Wind Power and Electric Ship Propulsion Applications,” *Proceedings of the IEEE 3rd Energy Conversion Conference and Expo*, 2011, Phoenix, AZ, Sep 2011.

Arvizo, M. R., **Calusdian, J.**, Hollinger, K. B., & **Pace, P. E.** (2011). “Robust Symmetrical Number System Preprocessing for Minimizing Encoding Errors in Photonic Analog-to-Digital Converters.” *Optical Engineering*, 50(8), 084602.

Walker, T. Owens III, Tummala, M., McEachen, J. [ECE], **Michael, J. B.** (2011). “Flow-Specific Medium Access for Networked Satellite System,” *IEEE Systems Journal*, 5(3), 427–434.

GRADUATE SCHOOL OF BUSINESS AND PUBLIC POLICY

Ferrer, G., Heath, S. K., & Dew, N. (2011). “An RFID Application in Large Job Shop Remanufacturing Operations.” *International Journal of Production Economics*, 133(2), 612–621.

INFORMATION SCIENCES

Nelson, C. B., **Steckler, B. D.**, Stamberger, J., (2011), “The Evolution of Hastily Formed Networks for Disaster Response: Technologies, Trends and Case Studies.” IEEE Global Humanitarian Technology Conference, Seattle, WA, Oct 30–Nov 1, 2011.

Chaturvedi, A. R., **Dolk, D. R.**, Drnevich, P. L. (2011). “Design Principles for Virtual Worlds.” *MIS Quarterly*, 35(3), 673–684.

MECHANICAL AND AEROSPACE ENGINEERING

Mike Ross and **Mark Karpenko** of the TRACE Optimum Maneuver Flight Experiment Team received the NASA Group Achievement Award for their work on minimum-time spacecraft maneuvering. The award is for outstanding accomplishment through the coordination of individual efforts contributing substantially to NASA’s mission. See <http://nasapeople.nasa.gov/awards/nasamedals.htm>.

METEOROLOGY

Distinguished Professor Chih-Pei Chang chaired an international committee commissioned by the World Meteorological Organization (WMO), a UN agency, to review current of the research and forecasting of monsoon weather and worldwide climate. The report became the basis of a book, *The Global Monsoon System: Research and Forecast*, published by the World Scientific Publishing Company in April 2011. In the foreword, WMO Secretary General M. Jarraud thanked Chang and noted the influence of the monsoon on nearly three-quarters of the world population. The 608-page book contains 34 chapters written by 90 international experts. Chang’s co-editors are Y. Ding of the National Climate Center of China, R. Johnson of Colorado State University, G. Lau of Princeton University, B. Wang of University of Hawaii, and T. Yasunari of Nagoya University.

Elsberry, R., Jordan, M., and Vitart, F. (2011). “Evaluation of the ECMWF 32-day Ensemble Predictions During 2009 Season of Western North Pacific Tropical Cyclone Events on Intraseasonal Timescales.” *Asia-Pacific Journal of Atmospheric Sciences*, 47(4), 305–318.

MOVES

Sullivan, J., Yang, J. H., Day, M., Kennedy, Q. (2011). “Training Simulation for Helicopter Navigation by Characterizing Visual Scan Patterns.” *Aviation Space and Environmental Medicine*, 82(9), 871–878.

NATIONAL SECURITY

Porch, D. (2011). Revolutionary Social Change in Colombia. The Origin and Direction of the FARC-EP. *Bulletin of Latin American Research*, 30(4), 515-516.

Springborg, R. (2011). Economic involvements of militaries. *International Journal of Middle East Studies*, 43(3), 397–399.

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2011 DISTINGUISHED PROFESSORS NAMED

Four outstanding NPS faculty were awarded the title of distinguished professor at the September graduation, in recognition of their exceptional and outstanding contributions to the NPS mission. The recipients are professors **Peter C. Chu** (OC), **Lawrence R. Jones** (GSBPP), **Douglas Porch** (NSA), and **Xiaoping Yun** (ECE).

Professor Chu is an accomplished researcher and scholar working across a broad swath of ocean sciences, modeling, applied mathematics, and mine countermeasure applications. He has published 141 peer-reviewed journal articles, three books, and 18 book chapters and serves as co-chief editor of the *Journal of Atmospheric and Oceanic Technology* and editor-in-chief of the *Open Remote-Sensing Journal*.

Professor Jones has created an international reputation in public budgeting and public sector management. He has published 20 books and over 125 refereed journal articles, edited two book series, and served as co-editor of the *International Public Management Journal*, one of the top public administration journals.

Professor Porch is recognized for major contributions during a lifetime of research, teaching and service. His dedication to scholarship is evidenced by the nine major books he has published on such diverse topics as European and U.S. military history, intelligence, and civil-military relations. Porch is writing a book on the theory and practice of counterinsurgency warfare.

Professor Yun has made substantial contributions to the field of robotics and its application to important Navy problems. He is the author of five book chapters, 37 refereed journal papers, 75 refereed conference papers, and two licensed patents. He has been the general chair or co-chair of three recent important Institute of Electrical and Electronic Engineering conferences. He was elected IEEE Fellow for contributions to robotic control and human body motion tracking systems in 2005.

Recipients receive an NPS medal to be worn with their academic regalia. Congratulations to all.



Lawrence Jones, Douglas Porch, Peter Chu, and Xiaoping Yun display their medals.

OCEANOGRAPHY

Laudier, N. A., Thornton, E. B., **MacMahan, J.** (2011). "Measured and Modeled Wave Overtopping on a Natural Beach." *Coastal Engineering*, 58(9), 815–825.

Orzech, M. D., Reniers, A. J. H. M., **Thornton, E. B., MacMahan, J. H.** (2011). "Megacusps on Rip-Channel Bathymetry: Observations and Modeling." *Coastal Engineering*, 58(9), 890–907.

OPERATIONS RESEARCH

Wilson, K. E., **Szechtman, R., & Atkinson, M. P.** (2011). "A Sequential Perspective on Searching for Static Targets." *European Journal of Operational Research*, 215(1), 218–226.

PHYSICS

Senne, J., Song, A., Badiy, M., and **Smith, K.B.**, "Parabolic Equation Modeling of High Frequency Acoustic Transmission with an Evolving Sea Surface," *J. Acoust. Soc. Am.*, 2011 [submitted].

Dossot, G.A., Badiy, M., **Smith, K.B.**, Miller, J.H., Potty, G.R., and Lynch, J.F., "Evidence of Escalating Acoustic Intensity Preceding a Strong Internal Wave Event During the Shallow Water '06 Experiment," *J. Acoust. Soc. Am.*, 2011 [submitted].

Smith, K.B., Badiy, M., and Senne, J., "Three-Dimensional Surface Scattering Using a Parabolic Equation Model," *J. Acoust. Soc. Am.*, 2011 [submitted to 162nd Meeting of the Acoustical Society of America, 31 Oct–4 Nov 2011, San Diego, CA].

Barton, R.J., Moss, G.R., and **Smith, K.B.**, "Characterization of Scattered Acoustic Intensity Fields of Finite Cylinders in the Resonance Region," *J. Acoust. Soc. Am.*, 2011 [submitted to 162nd Meeting of the Acoustical Society of America, 31 Oct–4 Nov 2011, San Diego, CA].

Song, A., Senne, J.M., Badiy, M., and **Smith, K.B.**, "Underwater Acoustic Communication Channel Simulation Using Parabolic Equation," *J. Acoust. Soc. Am.*, 2011 [submitted to 162nd Meeting of the Acoustical Society of America, 31 Oct–4 Nov 2011, San Diego, CA].

Senne, J.M., Song, A., **Smith, K.**, and Badiy, M., "An Investigation of the Effects of Rough Seas and Bubble Injections on High Frequency Propagation Using a Parabolic Equation Method," *J. Acoust. Soc. Am.*, 2011 [submitted to 162nd Meeting of the Acoustical Society of America, 31 Oct–4 Nov 2011, San Diego, CA].

Barton, R.J., Dossot, G.A., and **Smith, K.B.**, "Variations in the Active and Reactive Intensity Components of the Sound Field Due to Nonlinear Internal Waves," *J. Acoust. Soc. Am.*, 2011 [submitted to 162nd Meeting of the Acoustical Society of America, 31 Oct–4 Nov 2011, San Diego, CA].

Burnett, K. O., **Crooker, P. P., Haegel, N. M.**, Yoshioka, Y., and MacKenzie, D. (2011). Temperature-Dependent Kinetics of Printed Polymer Light-Emitting Electrochemical Cells, *Synthetic Metals*, 161(15-16), 1496–1499.

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DOCTORAL STUDENTS, *continued from page 1*

CDR Hengley attaches sensors to Snowflake ADS.

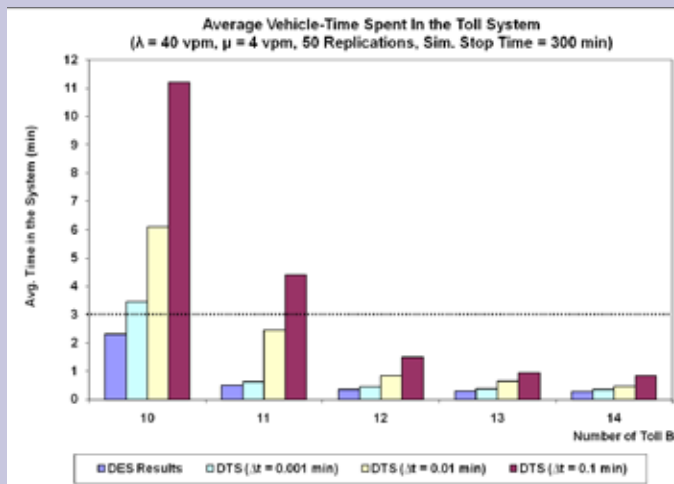
of shipboard landing, including estimating position and velocity of the landing platform, which is a moving target. Wind-modeling techniques and visual target tracking and guidance methods are investigated and tested, with results enabling a Snowflake ADS to land within five meters of a target moving with constant speed and direction. **Professor Roberto Cristi** (ECE) served as committee chairman.



Abmad Ali Alrowaei

The dissertation of **Maj Ahmed Ali Alrowaei, Royal Bahraini Air Force**, entitled “The Effect of Time-Advance Mechanism in Modeling and Simulation,” explores time-advance mechanisms in modeling and simulation (M&S). Alrowaei’s doctorate is in modeling, virtual environments, and simulation. **Research Assistant Professor Arnold Buss** (MOVES Institute) served as advisor.

As M&S becomes more complex, modelers face many challenges in simulation design and analysis. Understanding



Results from simulation of vehicle time spent in a toll system

time-advance mechanisms (TAMs) is essential to advances in the design and use of M&S across a wide variety of domains. Alrowaei performs a series of empirical studies to characterize and compare the influence of discrete-event simulation (DES) and discrete-time simulation (DTS) approaches and describes the effects of changes in time-step sizes across simulation areas such as queuing and combat systems and human behaviors of military significance. Results illustrate that the choice of TAM can have a significant effect on modeled behavior, the output obtained from simulation tools, and recommendations that are likely to result. Alrowaei describes inconsistencies and the emergence of unintended behaviors from the use of different TAM approaches and DTS time steps. The research concludes that the DES approach is more likely to produce trustworthy simulation results for decision-making applications and that the time-step approach carries inherent risks that are often invisible to modelers of complex systems.



Maj Paul Brister, USAF

Maj Paul Brister, USAF, recently earned his PhD in security studies, focusing on domestic right-wing terrorism. His dissertation, “Ku Klux Rising: Understanding American Right Wing Terrorism,” seeks to refine models which explain campaigns of Ku Klux Klan terrorism since 1866, investigating which commonly cited factors and conditions were associated with the KKK.

Numerous histories have been written about the Klan, but none has performed a systematic comparison in an effort to explain why, where, and when the Klan was capable of stringing together terrorist violence into a sustained campaign.

Brister finds that four factors—the presence of a safe haven, organizational structure, leadership, and recruitment techniques—are necessary and jointly sufficient to explain Klan campaign emergence. By combining these factors in a manner which better reflects their interplay, a model offering greater explanatory value emerges. The first significant set of correlates is the presence or absence of safe havens and their relation to the organizational structure chosen by Klan leadership. The second set of correlates is the ability of the Klan to downplay its core ideology and effectively frame a recruitment message which resonates with a pre-existing dominant social narrative—a narrative usually based on mythologized history or an unfalsifiable belief system. As will be explained in concluding chapters, the probabilistic model that emerges when these factors combine proves more effective in explaining and predicting campaigns of Klan terrorism than simply listing these factors as if they are not consciously combined for effect. **Maria Rasmussen**, Department of National Security Affairs, is advisor.

TECHNICAL SERVICES AGREEMENTS (TSAs)

High Definition Aerial Photography Payload Development- Partner: Innovative Automation Technologies, LLC
PI: Robert Bluth, CIRPAS

Summary: NPS/CIRPAS will provide pre-flight coordination, flight coordination, range management, flight safety and facility management of customer’s testing activities at the CIRPAS facility.

MEMORANDA OF UNDERSTANDING/ AGREEMENT (MOUs/MOAs)

Office of Small Business Programs, Chair of Acquisition
Partner: Office of Small Business Programs
NPS POC: Keith Snider, Graduate School of Business and Public Policy

Summary: The agreement establishes a relationship between the Office of Small Business Programs (OSBP) and the Naval Postgraduate School (NPS) to conduct and manage relevant research supportive of OSBP requirements and provide opportunities for professional development of both faculty and students in Acquisition Management and related curricula at NPS.

NPS Research Opportunities at Jet Propulsion Laboratory
Partner: California Institute of Technology
NPS POC: Douglas Fouts, Department of Electrical and Computer Engineering

Summary: The agreement is for the purpose of providing education opportunities for NPS graduate students, by allowing them to work in an embedded fashion on JPL projects. The JPL projects will benefit from the work activities of the NPS graduate students.

PATENT-LICENSE ROYALTY PAYMENTS

In a university milestone, two patents awarded to a team of NPS faculty have begun paying royalties to the inventors. Patents 6,820,025, “Method & Apparatus for Motion Tracking of an Articulated Rigid Body” and 7,089,148, “Method & Apparatus for Motion Tracking of an Articulated Rigid Body,” were licensed by PNI Sensor Corporation for use in the SpacePoint 3D Sensor System.

The inventors, Eric Bachmann, Robert McGhee, Xiaoping Yun, Michael Zyda, and Douglas McKinney, will share equally in 66% of the royalties, with the balance invested in the NPS research enterprise. As NPS’ patent portfolio grows, so does the opportunity to license inventions, resulting in increased awareness of our technology and financial gain for the inventors and institution.

TECHNICAL REPORTS PUBLISHED

NPS- CS-11-006	A Comparative Analysis of File Carving Software	T. Courrejou, S. Garfinkel
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