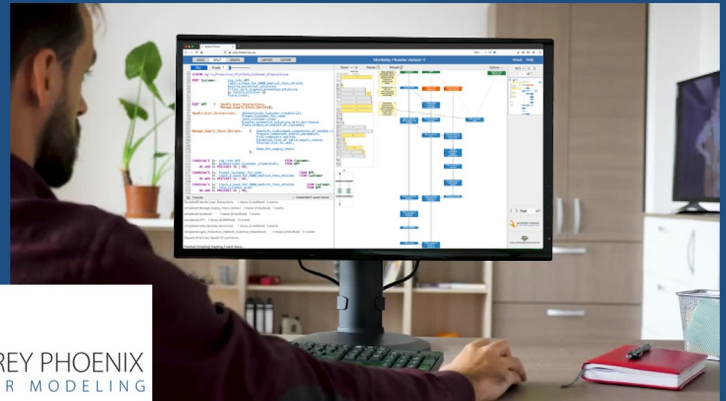


In This Issue:

- ◆ SE Spotlight
- ◆ Faculty News
- ◆ Student Stories
- ◆ Alumni news
- ◆ Summer Quarter Awards and Graduations

Your system or process may be primed to behave in ways you never imagined or intended. Find and fix unexpected behaviors lurking in your design with Monterey Phoenix (MP), a user-friendly, NPS-developed language, approach and tool for modeling and reasoning about behavior.



<https://nps.edu/mp>

Letter from the Chairman

Welcome to the Systems Engineering Newsletter for the Summer quarter of the 2023 Academic Year!

This quarter, the SE Department graduated 24 Master of Science in Systems Engineering students, 1 Master of Science in Engineering Systems student, 1 Master of Science in Systems Engineering Analysis student, and 35 Master of Science in Systems Engineering Management students.

Seventeen of these students graduated with individual theses and one of these theses was recognized as outstanding theses (Mr. Christopher Scott Ritter, Idaho National Laboratory). The remaining students graduated upon successful completion of team capstone projects (eight in total). Two capstone teams received outstanding capstone project certificates (Matthew Grant, Matthew Hunter, Kathleen Nuzzo, Eric Toth, Michael Darnell, Joshua Kejsar, Wesley Kenyon, and Christine Norton).

Five students (Mrs. Erin M Gardner, Army Civilian, Mr. Wesley Abbott Kenyon, Army Test and Evaluation Command, Army Evaluation Center, Mr. Jared L McCallum, Assistant Secretary of the Army for Acquisition, Logistics, and Technology, Ms. Suzanne L Onesti, Naval Systems Warfare Center Philadelphia Division, and Mr. Christopher Scott Ritter, Idaho National Laboratory) graduated with distinction, three students (Mr. Matthew Hunter, Program Executive Office – Soldier, Mr. Christopher Scott Ritter, Idaho National Laboratory, and Ms. Ellen Huang, Naval Surface Warfare Center, Philadelphia Division) were recognized with the Meyer Award for Outstanding DL Student in Systems Engineering.

Don Muehlbach and Kristin Giammarco were recognized with the Meyer Award in Systems Engineering for DL teaching.

On September 22th, the quarter's 210 graduates, their families, faculty, staff, and guests attended the Summer Quarter Graduation Ceremony in King Hall. The commencement address was given by U.S. Marine Corps Maj. Gen. Roberta Shea, Legislative Assistant to the Commandant. Earlier this day the SE department held a Summer Quarter SE hybrid (in-person and virtual) Student Reception.

In the Summer quarter, SE faculty taught 25 resident and DL sections and kept advising 17 capstone project teams. They also continued guiding research of SE's Ph.D. students, serving on a variety of departmental and schoolwide committees, participating in scientific conferences, and working on completing the FY23 reimbursable research projects.

Earlier in the quarter, our students and SE faculty participated in the 33rd Annual INCOSE International Symposium, and a AY24 kick-off event for the Joint Executive Systems Engineering Management Product Development for the 21st Century program (SEM-PD21) in Honolulu, HI. In the beginning of September, SE faculty participated in the 2023 NPS INDOPACOM Alumni Symposium in Singapore, engaging with over a hundred of NPS' graduates; leadership and colleagues from the Temasek Defence Systems Institute, and ONR Global Singapore.

I would like to thank all members of the SE department for their contributions and congratulate our summer graduates and their families once again. Please, spread the word about NPS and SE Department, and stay connected with your alma mater!



Systems Engineering Chairman
Dr. Oleg Yakimenko

Systems Engineering Students and Faculty Participate in the Annual Industry Trip

Dr. Warren Vaneman, ESEP

The Systems Engineering Distance Learning Program, led by Dr. Wally Owen, hosted the Annual Joint Executive Systems Engineering Management (PD-21) Industry Trip, 17-21 July 2023, in Honolulu, HI. The primary focus for the 19 students and seven faculty, who attended the Industry Trip, was the 33rd International Council of Systems Engineering (INCOSE) International Symposium (IS). The IS is INCOSE's flagship event where several thousand systems engineers gather to discuss the latest developments and trends in the discipline.

In addition to attending the INCOSE IS, the students and faculty had traditional Industry Trip visits to Matson, Inc. and the U.S. Coast Guard.

Matson, Inc. is a major U.S. shipping company that have been servicing Hawaii with goods from the Continental United States, and Asia, for more that 140 years. Mr. Kam Chun, from Matson, provided the PD-21 students and faculty with a tour of the Matson Honolulu facilities, and facilitated a discussion about Matson's operations in the Pacific. This discussion was insightful given that 50% of all goods shipped to the State of Hawaii arrive on Matson Ships.

The PD-21 students and faculty spent a day with the Coast Guard. The day started at the Coast Guard Air Station Barbers Point. Commander Alex Barker provided an overview of Coast Guard aviation operations in the Pacific, and led a tour of the facilities, including access to one of the C-130 aircraft. The vast size of their operational area, including most of the Pacific Ocean, is unfathomable given that the command has only four C-130 fixed-wing aircraft, and four SH-65 helicopters.

The PD-21 group spent the second half of the day at the Coast Guard Base at Sand Island. Master Chief Phil Kibby, USCG (Retired), discussed the Coast Guard surface fleet operations in Pacific. He showed the students and faculty several Coast Guard vessels ranging from a 26 foot search and rescue boat to 418 foot National Security Cutter.

The PD-21 course of study includes both the business (leadership, marketing, organizational processes, finance & managerial accounting, project management, manufacturing, operations management) and the technical (systems engineering, systems architecture, engineering risk analysis, systems optimization) aspects of services, systems, or product development. By integrating both engineering and management elements, the program strives to develop a new kind of leader with a holistic perspective and knowledge of systems, services, and product development. Students acquire the fundamental skills and strategic perspective required of effective innovators and change agents in their organizations.

For more information about the PD-21 program, please contact Dr. Wally Owen, wowen@nps.edu or Dr. Warren Vaneman, wvaneman@nps.edu.

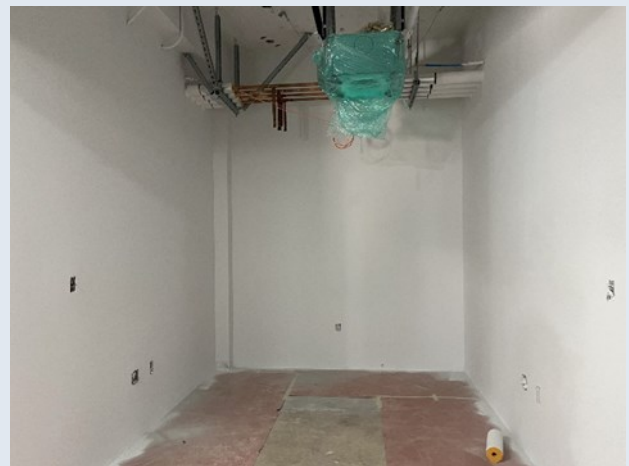


PD-21 Students and Faculty in front of a C-130 at Coast Guard Air Station Barbers Point.

Bullard Hall Renovation Status



Lab Space



Faculty Office



Reconfigurable Capstone Team Spaces



Computer Lab



SE “Inspection” Team

At the end of the quarter, the SE Team was given a chance to walk through the Bullard Hall to see the current status of the renovation and learn about some recent modifications to the design. Replacement and repair of the roof is 98% complete with only some minor work around the skylights remaining. Windows remain the primary constraint on the critical path, but interior work is proceeding with temporary window closures to make the building weather tight. The new layout is starting to emerge in many areas of the building as they complete interior wiring, drywall, and painting. The contractors and NPS project manager advised that the project is on the verge of making considerable progress and suggested we come back in two months for another tour. The current projection is that the Bullard Hall renovation will be finished in late Summer of 2024 and acceptance and occupancy can proceed in the fall quarter of AY25.

SE Visit Tesla Factory

The Systems Engineering Management (SEM) students and Systems Engineering students went on a factory tour of Tesla in Fremont, CA. The SEM students are members of the Army Acquisition Workforce and will continue after their studies at NPS as program managers and/or contract officers. The SE students are mostly Navy EDOs. For both groups of students, it was a great opportunity to observe and understand how an innovative organization such as Tesla operates; witness the high levels of automation and robotics; as well as observe the production processes and identify bottlenecks in production. The tours of Silicon Valley companies such as Tesla is an important and valuable component of the overall graduate education experience. Being close to Silicon Valley is a benefit the Systems Engineering department leverages for enriching the educational experience. The students are able to learn how leading companies develop new products and how these practices could potentially be adapted within the military and defense sectors.

The tour was especially valuable to the SEM students who are currently taking a course in production systems. During the tour they were able to observe the implementation and execution of many of the concepts they are reviewing in the classroom. For instance, they were able to see how Tesla has applied design for manufacturing and design for assembly heuristics to make the production process easier, more efficient, and drive down the cost of each vehicle. These concepts embody important means to reduce costs, and these concepts are directly applicable to military procurement programs. The students were also able to experience the organization's culture and understand how it is part of the greater Silicon Valley work culture. The tour ended with a close up examination of Tesla's latest Model S Plaid version.

The Tesla facility in Fremont was previously the NUMMI factory jointly operated by GM and Toyota. It now has over 10,000 workers and hundreds of robots making the Model S, Model X, Model Y, and Model 3 cars. The factory currently manufactures about 1800 cars per week.

SE Faculty Recognized by ASME for Service

Associate Professor Dr. Douglas L. Van Bossuyt was recognized in August at the 2023 American Society of Mechanical Engineers International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (ASME IDETC/CIE) for his contributions to the Computers and Information Engineering Division. He was the 2023 Systems Engineering and Information Knowledge Management (SEIKM) Technical Committee (TC) Chair. As SEIKM TC Chair, Douglas worked with the TC to organize the 2023 SEIKM sessions at ASME IDETC/CIE including organizing session tracks, soliciting manuscript submissions, organizing peer review coordinators, overseeing nomination of best paper and journal quality nominations, and other duties.

Douglas has volunteered with ASME IDETC/CIE, the CIE Division, and the SEIKM community since 2009. He along with his students and his research collaborators have published 4 journal articles with the companion ASME Journal of Computing and Information Science in Engineering (JCISE), 23 conference papers at ASME IDETC/CIE, and 4 conference papers at the CIE Division sessions at the ASME International Mechanical Engineering Congress and Exposition (ASME IMECE). He has been active in conducting peer-review for the ASME IDETC/CIE and ASME IMECE conferences, and the JCISE for well over a decade. For the past two years, Douglas has served as a Digital Media Board Member for JCISE. In the future, Douglas plans to work with the CIE conference organizing committee and to continue his deep, long-term involvement with the SEIKM community. In particular, he is eager to welcome new early career and student members to SEIKM, and expand diversity, equity, and inclusion activities in the community.

The Latest Emeritus Member of the SE Department

Fotis Papoulias was born in the village of Gargalianoi in the southeast of Greece. Following graduation from high school he attended the National Technical University of Athens, Greece where he graduated with a degree in Mechanical Engineering and Naval Architecture in 1983. He pursued graduate studies at the University of Michigan, Ann Arbor with Master's degrees in Aerospace Engineering and Naval Architecture. Fotis obtained his Ph.D. in Naval Architecture in 1987. He worked as a post-doctoral researcher at the University of Michigan for one year and then he was hired at the Department of Mechanical Engineering at NPS as an adjunct professor in 1988.

During his tenure at NPS he has served in multiple roles, including MAE Department Associate Chair and Academic Associate, SEA Academic Associate, TSSE Director and NAVSEA Chair of Total Ship Systems Engineering, Board of Directors of the Electric Ship Research and Development Consortium, and the NPS Temasek Defense Systems Institute coordinator. He has participated in a large number of interdisciplinary projects and he has been thesis or capstone advisor of hundreds of engineering students.

After 35 years of service for the Department of Defense, Dr. Papoulias has retired on September 30th receiving Civilian Service Commendation Medal and Presidential Letter of Appreciation prepared by the White House and signed by the President of the United States. Dr. Papoulias will remain being a part of the SE department as Emeritus faculty.



Fighting at Light Speed

Fighting at light speed: NPS Systems Engineering faculty member Dr. Bonnie Johnson will present research on "Optimizing the Effectiveness of Directed Energy Warfare with Complimentary Artificial Intelligence" at the Directed Energy Symposium, Sept. 13-14 in National Harbor, Md.

“Directed energy research is rapidly leading to fielded systems, and our naval forces need to be prepared to operate at a pace beyond human speed alone,” said Johnson. “The future Hybrid Force will be AI-enabled, including shipboard defenses with directed energy, and there is no better source than my graduate students for understanding the technical challenges and realities of naval operations at sea.”

Johnson’s work is supported by the Office of Naval Research. Her latest paper, "Counter Directed Energy Weapons and the Defense of Naval Unmanned Aerial Vehicles," was co-authored with six NPS students and can be read in the Journal of Directed Energy: <https://lnkd.in/dFJzHvuv>.

* Learn more about AI and the “The Hybrid Force” in this issue of Naval Engineers Journal, featuring Johnson as guest editor and more than 40 NPS faculty, students and alumni authors: <https://lnkd.in/d97SydBn>.

[US Navy](#) | [Office of Naval Research](#) | [Defense Strategies Institute](#) #USNavy #NPS #experts #DirectedEnergy



Dr. Bonnie Johnson

SE Lecturer Continuing with Education



While working for the Air Force at Hanscom Air Force Base, Corina White was nominated to participate in the Air Command and Staff Program. She began the journey in October of 2020 and in September of 2023, she recently completed the Air Command and Staff College (ACSC) distance learning program. In completing the program, she has also received Joint Professional Military Education (JPME) phase I credit.

The ACSC distance learning program emphasizes the application of air and space power in joint campaign planning and the operational art of war. Students explore national security issues, strategy and war theory, airpower and space power history and theory, expeditionary Air Force employment concepts, and the capabilities and limitations of air forces and space forces, and its sister services contributions to joint force commanders.

The program’s student-centered approach for learning is focused on measuring a student’s ability to think critically, analyze, and apply knowledge, often to real-world situations. She also had the opportunity to engage with peers and instructors and discuss and debate the ideas presented in the curriculum and develop overall mastery of the course and higher-order thinking.

A High Energy Laser Lab is in The Works at NPS!



ONR transferred two 5kW single-mode fiber lasers to NPS this summer from the USMC Ground Based Area Defense program. The NPS Physics Department is taking the lead in developing and maintaining the lab which will be located at the off-campus research annex.

A kick-off workshop was held at NPS in July. Peter Morrison, our long-time ONR sponsor for directed energy research, attended, and brought directed energy experts from Dahlgren, USMC, USNA, West Point, and ONR. Two systems engineering capstone teams presented their projects at the workshop.

The laser lab will be used to support laser lethality, propagation, and counter directed energy warfare studies. The laser lab will provide hands-on student education and research in cooperation with our NPS-developed directed energy modeling and simulation capability.

The picture shows Dr. Bonnie Johnson (front row in red pants) and the workshop attendees in the laser lab space that is currently under construction.

Faculty receives the Wayne E. Meyer Award



CAPT, USN (ret) Don Muehlbach, PhD was selected to receive two prestigious Wayne E. Meyer awards for Excellence in Systems Engineering instruction for cohorts 311-221O and 722-221G September 2023 graduation. This was the fifth time he was so honored, with previous double awards in 2011, 2012, 2013 and 2017. He joined the NPS SE department faculty as a Professor of Practice in February 2009.

Student Stories

Nordic Pine 2023



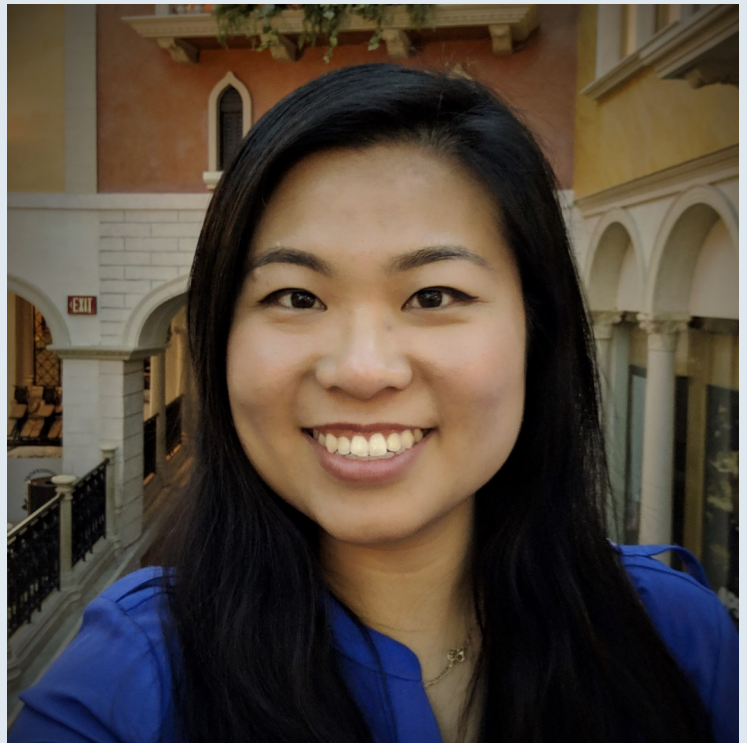
This September, CPT Abigail Staffnik, an Army Systems Engineering student, participated in the Nordic Pine '23 event, a NATO Table-top Exercise (TTX) held in Sweden and Finland. The exercise centered on hybrid threats that target renewable energy systems. During the event, CPT Staffnik presented on Zero-Trust in Energy Systems and National Defense, based on collaborative research conducted by Associate Professor Dr. Douglas Van Bossuyt of the NPS Systems Engineering Department, Assistant Professor Dr. Britta Hale of the NPS Computer Science Department, and researchers from the VTT Technical Research Centre of Finland and Denmark Technical University. This TTX was organized by NATO STO SAS-183, a research group investigating the relationship between energy-hybrid warfare and its impact on civilian and military infrastructure. Michael Davis and Alan Howard from the Energy Academic Group (EAG), along with Dr. Britta Hale, founder of NPS's Applied Cryptographic Engineering (ACE) group, led NPS's participation in Nordic Pine 23 as subject matter experts and as part of the Joint Exercise Control Group (JECG). They collaborated with international counterparts to oversee and coordinate various training objectives, including cyber threats to SCADA systems, risks in supply chains, and malign influence operations aimed at renewable energy sources.

Nordic Pine '23 serves as a platform for simulating real-world energy security and hybrid warfare scenarios. The exercise involved a series of table-top scenarios, discussions, and simulations to foster a multi-disciplinary approach to complex challenges. It drew the attention of various NATO bodies and other international organizations, including the Swedish and Finnish governments, Finland's National Cyber Security Centre, and industry leaders.

CPT Staffnik, who is an Acquisitions Officer, will continue her career post-graduation in the Abrams program at Program Executive Office Ground Combat Systems. Her participation in Nordic Pine '23 has provided her with valuable insights and experiences that will benefit her future work in systems engineering and acquisitions.

Students receive the Wayne E. Meyer Award

Ellen Huang is an in-service engineering agent (ISEA) at the Naval Surface Warfare Center, Philadelphia Division (NSWCPD) for Ballast Water Management (BWM) and Uniform National Discharge Standards (UNDS). She is a Professional Engineer (PE) with a background in civil and environmental engineering.



Ellen Huang



Matthew Hunter

Matthew Hunter is the lead systems engineer for Program Executive Office (PEO) Soldier's Product Manager Small Arms Fire Control at Fort Belvoir Virginia. Mr. Hunter graduated with a BS in Electrical Engineering from Old Dominion University in 1997 and is graduating this term with an MS Systems Engineering with a System of Systems focus.

He has supported the Army's acquisition community for 20+ years in various technical capacities procuring and fielding night vision, thermal imaging, and laser products for warfighters. Over his career, Mr. Hunter has seen programs become increasingly complex with more and more interoperability requirements for historically standalone equipment to establish a system of systems that provides capabilities greater than the sum of the individual products.

Mr. Hunter will apply his newly acquired knowledge to provide better technical leadership and management, better influence technical plans, policies & procedures, and establish new fundamental ways of integrating and developing products and standards for future expansion for PEO Soldier. His ultimate goal is providing the warfighter with the equipment they need to successfully complete their mission.

News from Naval Surface Warfare Center Philadelphia Division

One of the former students of our late Anthony Pollman, Christopher Girouard, shared a good news with us that on July 4th of 2023, Nicholas Bailey and Christopher Girouard, and Anthony Pollman were awarded a U.S Patent No. US11,692,508 B2 “Dual Stirling Cycle Liquid Air Battery” ([Home - Patent Center - USPTO](#)). This invention relates to a liquid air energy storage system. The storage system includes a cryocooler, a dewar, and a Stirling engine. The cryocooler cools a tip of a cold head to cryogenic temperatures, the cryocooler further includes a heat sink to reject heat from the cryocooler and a cold head that protrudes into a dewar through a cryocooler cavity, the cold head to condense ambient air to create liquified air in the dewar. The dewar holds the liquified air at low temperatures, the dewar having the cryocooler cavity and a Stirling cavity. The Stirling engine drives an electric generator, the Stirling engine further including a cold finger protruding into the dewar through the Stirling cavity, the cold finger to move the liquified air from the dewar to a Stirling heat sink; the Stirling heat sink to expand the liquified air; and the electric generator to generate output electricity.

Christopher Girouard’s current duty station is at Naval Surface Warfare Center Philadelphia Division where they are building a land-based test site for the next generation guided missile frigate (FFG 62). USNI recently came and did an article on these efforts ([Frigate Land-Based Engineering Site Taking Shape in the Philadelphia Navy Yard - USNI News](#)). This is a huge amount of engineering, particularly SE that gets them to build a “ship in a bottle.” Christopher tells us that he uses his education every day to help manage the project and ensure communication between groups: “This is an awesome project to be on and NPS helped prepare me for it!”

Awards and Graduations

Awards

Meyer Award for Outstanding DL Student in Systems Engineering

311-221O: Mr. Matthew Hunter, Program Executive Office - Soldier

721-221: Mr. Christopher Scott Ritter, Idaho National Laboratory

722-221G: Ms. Ellen Huang, Naval Surface Warfare Center, Philadelphia Division

Meyer Award in Systems Engineering for DL Teaching

311-221O and 722-221G: CAPT Don Muehlbach, PhD

721-221: Kristin Giammarco

Outstanding Thesis

Mr. Christopher Scott Ritter, Idaho National Laboratory

Outstanding Capstone

Cohort 311-221O Team CUEE

Capstone Title: COMMAND AND CONTROL OF UNMANNED SYSTEMS FOR EMISSIONS CONTROL EXPEDITIONARY ADVANCED BASE OPERATIONS

Members: Matthew Grant, Matthew Hunter, Kathleen Nuzzo, and Eric Toth

Advisors: Britta Hale and Douglas Van Bossuyt

Cohort 311-221O Team High Value Unit Autonomous System Defense Unit

Capstone Title: HIGH VALUE UNIT SELF-ESCORT AGAINST UNMANNED AERIAL AND SURFACE THREATS

Members: Michael Darnell, Joshua Kejsar, Wesley Kenyon, and Christine Norton

Advisors: Douglas Van Bossuyt and Britta Hale

Recommendation for Graduation with Distinction

Mrs. Erin M Gardner, Army Civilian

Mr. Wesley Abbott Kenyon, Army Test and Evaluation Command, Army Evaluation Center

Mr. Jared L McCallum, Assistant Secretary of the Army for Acquisition, Logistics, and Technology

Ms. Suzanne L Onesti, Naval Systems Warfare Center Philadelphia Division

Mr. Christopher Scott Ritter, Idaho National Laboratory

Graduations

Master of Science in Systems Engineering

ME5 Yan Yan Grace Chng, Republic of Singapore Navy

Mr. Chun Ngee Alvin Koh, ST Engineering

MAJ Jian Hao Charles Loh, Singapore Army

MAJ Aaron Seow, Singapore Army

Mr. Lianquan Thng, ST Engineering

Mr. Albert S Apaloo, NAVAIR Metrology, Patuxent River MD

Mr. Jarod Alan Beasley, US Army PEO Aviation PM FLRAA

Mr. Rockford Dean Beassie, U.S. Army Combat Capabilities Development Command, Aviation and Missile Center

Mr. Jake Brown, Naval Undersea Warfare Center Division Newport
Mr. Michael Hunter Darnell, Naval Surface Warfare Center, Dahlgren Division
Mr. Aaron Elijah Dupree, USMC
Mr. Matthew Alan Grant, Naval Air Warfare Center Aircraft Division
Mr. Andrew Alexander Herold, Naval Surface Warfare Center, Division Crane
Mr. Matthew Hunter, Program Executive Office - Soldier
Mr. Edgar Hurtado, Army Test and Evaluation Command
Mr. Joshua Mason Kejsar, Naval Undersea Warfare Center, Division Keyport
Mr. Wesley Abbott Kenyon, Army Test and Evaluation Command, Army Evaluation Center
Ms. Christine Norton, Naval Information Warfare Center - Pacific
Ms. Kathleen Nuzzo, Army Test and Evaluation Command, Army Evaluation Center
Mr. Matthew Frank Scudder, Naval Surface Warfare Center - Corona Division
Mr. Eric Toth, Naval Surface Warfare Center - Dahlgren Division
Mr. Ryan A Ussing, Army Test and Evaluation Command, Dugway Proving Ground, Utah
Mr. Casey R. Yeary, U.S. Army Combat Capabilities Development Command, Aviation and Missile Center

Master of Science in Engineering Systems

CAPT Jeffrey A Brown, USN

Master of Science in Systems Engineering Analysis

MAJ Justin Jing Ming Kwan, Republic of Singapore Navy

Master of Science in Systems Engineering Management

Maj David Beard, USMC

LT Thomas Henry Routt, USN

Mr. Jay P. Ball, USN

Mrs. Nicole E Bernier, Army Contracting Command - Aberdeen Proving Ground, Natick Division

Mr. Kevin P. Buchanan, Naval Air Warfare Center, Aircraft Division

Mr. Scott Butler, U.S. Army Combat Capabilities Development Command, C5ISR Center

Mr. Luis Contreras Cerda II, Naval Facilities Expeditionary Warfare Center

Ms. Tawana E. Davis, Naval Air Warfare Center Aircraft Division Webster Outlying Field

Mrs. Nouha E. Elwarraki, USA

Mrs. Michelle Elise Fleming, U.S. Army Tank-automotive and Armaments Command

Mrs. Yolanda T. Friendly, Program Manager Office Defensive Cyber Operations, Product Support Division

Mrs. Erin M Gardner, Army Civilian

Ms. Rachel Gerstein, Assistant Secretary of the Army (Acquisition, Logistics & Technology)

Mr. Richard Anthony Hammond Jr., U.S. Army Redstone Test Center

Ms. Ellen Huang, Naval Surface Warfare Center, Philadelphia Division

Mrs. Laura A. Huntington, Naval Sea Systems Command

Mr. Thomas L Jiang, USN

Mr. Eric Victor Kline, Naval Air Warfare Center, Aircraft Division - Lakehurst

Mrs. Laurie M Lehman, Naval Surface Warfare Center, Dahlgren Division

Ms. Ashley Ann Lochetto, U.S. Army Test and Evaluation Command, Yuma Proving Ground

Mr. Jared L McCallum, Assistant Secretary of the Army for Acquisition, Logistics, and Technology

Mr. John McKenna, US Army Acquisition Support Command

Mr. Andrew L. Nolen, US Army, Joint Munitions Command
Mr. Brock Oakes, U.S. Army Combat Capabilities Development Command, Aviation and Missile Center
Ms. Suzanne L Onesti, Naval Systems Warfare Center Philadelphia Division
Mr. Vikram Pandurangan, Naval Facilities Engineering and Expeditionary Warfare Center
Mr. Christopher Scott Ritter, Idaho National Laboratory
Mr. Ronald Rizzo, Program Executive Office Intelligence, Electronic Warfare and Sensors
Mr. Gerardo Rodriguez Melo, Naval Air Systems Command
Ms. Sandra Saldivar-Valles, Army Test and Evaluation Command, White Sands Missile Range
Mr. Michael J. Schartung, U.S. Army Redstone Test Center
Mr. Henry N. Sulca, Naval Surface Warfare Center, Corona Division
Ms. April C White, Naval Surface Warfare Center, Crane Division

Theses

ME5 Yan Yan Grace Chng, Republic of Singapore Navy

Thesis Title: DIGITAL TWIN DEVELOPMENT AND ITS EFFECTIVENESS

Advisor: Douglas Van Bossuyt and **Co-Advisor:** Mark Rhoades

Mr. Chun Ngee Alvin Koh, ST Engineering

Thesis Title: A MODEL-BASED SYSTEM ENGINEERING APPROACH TO REQUIREMENTS MANAGEMENT

Advisor: Eugene Paulo and **Second Reader:** Paul Beery

MAJ Jian Hao Charles Loh, Singapore Army

Thesis Title: SYSTEMS ENGINEERING APPROACH TO ALLOCATE ACTIVE PROTECTION SYSTEMS FOR ARMORED COMBAT VEHICLES

Advisor: Eugene Paulo and **Second Reader:** Paul Beery

MAJ Aaron Seow, Singapore Army

Thesis Title: ANALYSIS OF A MULTI-LAYER SYSTEM OF SYSTEMS TO COUNTER-UAS

Advisor: Douglas Van Bossuyt and **Co-Advisor:** Britta Hale

Mr. Lianquan Thng, ST Engineering

Thesis Title: INCORPORATION OF MODEL-BASED SYSTEMS ENGINEERING INTO THE VEE MODEL TO AID IN REDUCING THE TIME REQUIRED FOR THE DESIGN CYCLE OF A MILITARY TANK

Advisor: Paul Beery, **Co-Advisor:** Douglas Van Bossuyt, and **Second Reader:** Mark Rhoades

MAJ Justin Jing Ming Kwan, Republic of Singapore Navy

Thesis Title: SEA 32 MULTI-DOMAIN, MANNED-UNMANNED LITTORAL DENIAL SYSTEM

Advisor: Jefferson Huang and **Co-Advisor:** Fotis Papoulias

Maj David Beard, USMC

Thesis Title: EXAMINING EMERGENT BEHAVIOR IN SUPPORT OF CYBER OPERATIONAL PREPARATION OF THE ENVIRONMENT

Advisor: Kristin Giammarco and **Co-Advisor:** Logan Mailloux

CAPT Jeffrey A Brown, USN

Thesis Title: NEURAL NETWORK MODELS TO PREDICT AIRCRAFT READINESS

Advisor: Mike Green and **Co-Advisor:** Raymond Madachy

LT Thomas Henry Routh, USN

Thesis Title: EVALUATION OF CURRENT AIRBORNE MINE COUNTER MEASURES MISSION PLANNING, MESSAGE TRAFFIC, POST MISSION ANALYSIS AND POTENTIAL ALTERNATIVES

Advisor: Eugene Paulo, **Co-Advisor:** Paul Beery, and **Second Reader:** Wally Owen

Mr. Jay P. Ball, USN

Thesis Title: MACHINE LEARNING IN SAFETY-CRITICAL MILITARY SYSTEMS – MIL-STD-882, LEVEL OF RIGOR, AND RISK

Advisor: Bonnie Johnson and **Second Reader:** Bruce Nagy

Mr. Kevin P. Buchanan, Naval Air Warfare Center, Aircraft Division

Thesis Title: OPTIMIZING THE COST-EFFECTIVENESS OF EXTENDING EFFECTIVE MILITARY AIRCRAFT SERVICE LIFE

Advisor: Daniel Eisenberg and **Co-Advisor:** Douglas Van Bossuyt

Mr. Luis Contreras Cerda II, Naval Facilities Expeditionary Warfare Center

Thesis Title: SYSTEM ARCHITECTURE FOR SEA FLOOR SURVEILLANCE AND DATA COLLECTION SYSTEM

Advisor: Mark Rhoades and **Second Reader:** Kristin Giammarco

Ms. Tawana E. Davis, Naval Air Warfare Center Aircraft Division Webster Outlying Field

Thesis Title: UTILIZING SYSTEM ENGINEERING TECHNIQUES TO CONVERT RAW DATA INTO REQUIREMENTS FOR THE CAMPUS OF THE FUTURE INITIATIVE

Advisor: Raluca Gera, **Co-Advisor:** Douglas Van Bossuyt, and **Second Reader:** Wally Owen

Mr. Thomas L Jiang, USN

Thesis Title: DESIGN OF A SELF-SUSTAINABLE AFFORDABLE MASS-SCALE OPEN-WATER ENERGY HARVESTER CAPABILITY FOR NAVAL OPERATIONS

Advisor: Bonnie Johnson and **Second Reader:** Wally Owen

Mrs. Laurie M Lehman, Naval Surface Warfare Center, Dahlgren Division

Thesis Title: CONSIDERATIONS FOR ADOPTING ZERO TRUST PRINCIPLES AND USER AND ENTITY BEHAVIOR ANALYTICS INTO DEVELOPMENT, SECURITY, AND OPERATIONS (DEVSECOPS) FOR PROTECTION AGAINST INSIDER THREATS

Advisor: Logan Mailloux and **Second Reader:** Kristin Giammarco

Mr. Eric Victor Kline, Naval Air Warfare Center, Aircraft Division - Lakehurst

Thesis Title: A PROBABILISTIC APPROACH TO JOB-SHOP MANUFACTURING ESTIMATION AND PERFORMANCE FORECASTING

Advisor: Timothy Anderson and **Second Reader:** Douglas Van Bossuyt

Ms. Suzanne L Onesti, Naval Systems Warfare Center Philadelphia Division

Thesis Title: A METHOD FOR OPTIMAL U.S. NAVY FLEET COMPOSITION FOR A HYPOTHETICAL IMMINENT MAJOR CONFLICT DEMONSTRATED USING OPEN-SOURCE DATA

Co-Advisors: Daniel Eisenberg and Douglas Van Bossuyt

Mr. Vikram Pandurangan, Naval Facilities Engineering and Expeditionary Warfare Center

Thesis Title: ENHANCING SAFETY-BASED DECISION MAKING IN CONCEPT DESIGN: INTRODUCING THE L.E.A.D.S PROCESS

Advisor: Mark Rhoades and **Co-Advisor:** Wally Owen

Mr. Christopher Scott Ritter, Idaho National Laboratory

Thesis Title: GRAPHICAL REPRESENTATION APPROACH TO REASONING ABOUT COMPLEX SYSTEMS BEHAVIOR FOR BROAD APPLICATIONS

Advisor: Kristin Giammarco and **Second Reader:** Warren Vaneman

Mr. Gerardo Rodriguez Melo, Naval Air Systems Command

Thesis Title: LEVERAGING MODEL BASED SYSTEMS ENGINEERING TO DEVELOP A RE-USABLE VALIDATION, VERIFICATION AND ACCREDITATION (VV&A) FRAMEWORK AND PROCESS FOR MODELING AND SIMULATION (M&S) MODELS

Advisor: Douglas Van Bossuyt and **Co-Advisor:** Mark Rhoades

Mr. Henry N. Sulca, Naval Surface Warfare Center, Corona Division

Thesis Title: DIGITAL TEST AND EVALUATION FOR NAVAL SYSTEMS

Advisor: Bonnie Johnson and **Co-Advisor:** Mark Rhoades

Ms. April C White, Naval Surface Warfare Center, Crane Division

Thesis Title: RADIATION-HARDENED MICROELECTRONICS WORKFORCE DEVELOPMENT GUIDELINE

Advisor: Joseph Sweeney, **Co-Advisor:** Matthew Gadlage, and **Second Reader:** Wally Owen

Capstone Team

Cohort 311-2210 Team CUEE

Capstone Title: COMMAND AND CONTROL OF UNMANNED SYSTEMS FOR EMISSIONS CONTROL EXPEDITIONARY ADVANCED BASE OPERATIONS

Members: Matthew Grant, Matthew Hunter, Kathleen Nuzzo, and Eric Toth

Advisors: Britta Hale and Douglas Van Bossuyt

Cohort 311-2210 Team Mobile Fuel Generation in Contested Environments

Capstone Title: MOBILE FUEL GENERATION IN CONTESTED ENVIRONMENTS

Members: Albert Apaloo, Jake Brown, Aaron DuPree, Andrew Herold, and Ryan Ussing

Advisors: Paul Beery and Eugene Paulo

Cohort 311-2210 Team High Value Unit Autonomous System Defense Unit

Capstone Title: HIGH VALUE UNIT SELF-ESCORT AGAINST UNMANNED AERIAL AND SURFACE THREATS

Members: Michael Darnell, Joshua Kejsar, Wesley Kenyon, and Christine Norton

Advisors: Douglas Van Bossuyt and Britta Hale

Cohort 311-2210 Team Superiorem Militum

Capstone Title: HYBRID NAVAL AVIATION OPERATIONS: COLLABORATIVE MANNED/UNMANNED ROTARY-WING MISSIONS WITH AIR LAUNCHED EFFECTS

Members: Jarod Beasley, Rockford Beassie Jr., Edgar Hurtado, Matthew Scudder, and Casey Yeary

Advisors: Bonnie Johnson and Scot Miller

Cohort 722-221G Team Burnt Fuses

Capstone Title: EFFECTS OF INTERNET OF THINGS (IOT) INTEGRATION ON ENERGY EFFICIENCY, PERFORMANCE, AND RELIABILITY AT NAVAL INSTALLATION MICROGRIDS

Members: Scott Butler, Jared McCallum, Andrew Nolen, Brock Oakes, and Michael Schartung

Advisors: Douglas Van Bossuyt and Ronald Giachetti

Cohort 722-221G Linchpin Group

Capstone Title: THE GROUND AWARENESS WARFIGHTING DECISION SYSTEM: A CONCEPT FOR A FUTURE INTELLIGENT DECISION AID FOR DISMOUNTED SOLDIERS

Members: Erin Gardner, Rachel Gerstein, Ashley Locketto, and John Mckenna

Advisors: Bonnie Johnson and Mike Green

Cohort 722-221G Team Robotic Army Analysts

Capstone Title: ROBOTIC COMBAT VEHICLE MULTI-MISSION PAYLOAD INTEGRATION REQUIREMENTS ANALYSIS

Members: Nicole Bernier, Michelle Fleming, Laura Huntington, Sandra Saldivar-Valles

Advisors: Joel Hagan and Fotis Papoulia

Cohort 722-221G Team Methane Mariners

Capstone Title: ANALYTICAL MODEL OF GREENHOUSE GAS EMISSIONS FOR THE NAVAL WARFIGHTER

Members: Nouha Elwarraki, Yolanda Friendly, Richard Hammond Jr., Ellen Huang, and Ronald Rizzo

Advisors: Ronald Giachetti, Giovanna Oriti, Daniel Reich, and Douglas Van Bossuyt

Systems Engineering Distance Learning Graduation Photos



Request for Alumni News!

The SE Department is interesting in hearing how our alumni are doing.
Please feel free to send the [editor](#) news items for inclusion in future newsletters.

If you would like to subscribe to the Systems Engineering Newsletter, please click [here](#).

Dr. Oleg Yakimenko, Department Chair - ooyakime@nps.edu

Dr. Andy Hernandez, Associate Chair for Operations - ahernand@nps.edu

Mark Stevens, Associate Chair for Instruction - mstevens@nps.edu

Dr. Wally Owen, Associate Chair for Distributed Learning & Outreach - wowen@nps.edu

Dr. Warren Vaneman, Deputy Associate Chair for Marketing, Outreach and Engagement - wvaneman@nps.edu

Mark Stevens, Academic Associate 308 Systems Engineering Analysis & 580 Systems Engineering - mstevens@nps.edu

Joel Hagan, Academic Associate 522 Systems Engineering Management - joel.hagan@nps.edu

Dr. Ray Madachy, Academic Associate 311 Systems Engineering (DL) - rjmadach@nps.edu

Dr. Katy Giles, Academic Associate 312 Aviation Systems Engineering (DL) & 711 Systems Engineering Management (DL) - kgiles@nps.edu

Dr. Kristin Giammarco, Academic Associate 721 Systems Engineering Management (DL) & Program Officer 581, 582 - kmgiamma@nps.edu

Dr. Paul Beery, Academic Associate 722 Systems Engineering Management (DL) - ptbeery@nps.edu

Dr. Douglas Van Bossuyt, Academic Associate 581 Systems Engineering PhD & 582 Systems Engineering PhD (DL) - douglas.vanbossuyt@nps.edu

CDR Caleb MacDonald, Program Officer 380, 580, 522 - caleb.macdonald@nps.edu

Joseph Sweeney, Program Officer 311, 312, 711, 721, 722 - jwsweene@nps.edu

Kathie Cain, Faculty Associate- Education - kmcain@nps.edu

Heather Hahn, Ed Tech Systems Engineering (DL) - hlahahn@nps.edu

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