SYSTEMS ENGINEERING
Established 2002

Accredited ABET — Engineering Accreditation Commission

In This Issue . . .

DEPARTMENT OF SYSTEMS ENGINEERING

ESTABLISHED 2002

SYSTEMS ENGINEERING, NAVAL POSTGRADUATE SCHOOL

Summer Graduations and Awards

Curriculum 308 –Systems Engineering Analysis

♦ Paul Beery, Department of Defense Civilian

Curriculum 311 –Systems Engineering (DL)

Cohort 311-101A:

Belleavoine, David	Kennedy, Erin	Prince, Megan
Bullock, Altonio	Kesting, Karen	Smith, Jeremy
Chinn, Marcio	Lee, Gregg	Whitty, Brian
Gordon, Brent	Lilly, Benjamin	Yen, Kent
Hovanec, Timothy	Noble, Charles	
Johnson, Brian	Perko, David	

Cohort 311-101O:

Bidigaray, Stefan	Kemmey, Whitney	Seab, Joshua
Brar, Jaspal	Lee, Paul	Thomas, Jacob
Fiery, William	McKinney, Janet	Wareham, Jeffrey
Hory, Dixon	Montes, Jose	Williams, Benjamin
Jarabak, Eric	Nguyen, Megan	

Cohort 311-101S:

Alano, Brian	Halt, Troy	Shawcroft, Bruce
Barker, Adam	Lawson, Larry	Smith, Raymon
Blair, Andrew	Le, Zena	Thies, Russ
Brackett, Katherine	Leonard, Jason	vonWahlde, Scott
Brown, Kyle	Manga, Dawn	Wagner, Cody
Burkart, Joseph	Pereira, Ivan	Zipes, Lori
Chastain, Matthew	Radigan, Steven	
Fatnassi, Saber	Roth, Benjamin	

Cohort 311-103A: Palermo, William

Awards:

Student Recipients for the Wayne E. Meyer Award for Excellence In Systems Engineering for Outstanding Academic Achievement:
♦ 311-101A: Erin Kennedy
♦ 311-101O: Benjamin Williams
♦ 311-101S: Andrew Blair and Russ Thies

Faculty Recipients for the Wayne E. Meyer Award for Excellence in Systems Engineering for Teaching Excellence:
♦ 311-101A: Paul Montgomery
♦ 311-101O: Brigitte Kwinn and Donald Muehlbach
♦ 11-101S: Kristin Giammarco

Graduation with Distinction:
♦ 311-101S: Jason Leonard
♦ 311-103A: William Palermo
♦ 311-101O: Joshua Seab
♦ 311-101S: Lori Zipes

Photo of Heather Hahn, Education Technician for Curricula 311 & 721, at the SE graduation reception

Student News

Summer Graduations and Awards

Curriculum 580 –Systems Engineering (Resident)

- LT Savannah Gill Welch, USN

Award:

Naval Sea Systems Command Award for Excellence in Systems Engineering

Curriculum 721 –Systems Engineering Management

Cohort 721-101:

Bogdan, Kenneth	Ginn, Robert	McKenzie, Scott
DeFilippo, Robert	Grogan, Glen	Panhorst, David
Fingerholz, Mark	Lam, Phuong	
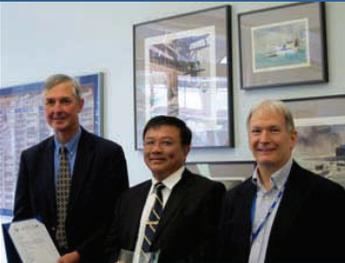
Cohort 721-061:

Cervi, Joseph
McDougall, Francis
Rogers, Claiborne

Cohort 721-081:

Willcox, Travis

Cohort 721-091:

Gerhart, Charlotte

Awards:

Student Recipients for the Wayne E. Meyer Award for Excellence In Systems Engineering for Outstanding Academic Achievement:
- 721-101:   Phuong Lam

Faculty Recipients for the Wayne E. Meyer Award for Excellence in Systems Engineering for Teaching Excellence:
- 721-101:   Gary Langford

Graduation with Distinction:
- 721-101:   Phuong Lam
- 721-101:   Kenneth Bogdan

**********CALLING ALL ALUMNI**********

If you would like to continue receiving the SE Newsletter and also contribute to the "ALUMNI NEWS" section in our next issue, please send your email address to

SEDepartment@nps.edu

SE Lessons Learned Conference

The 2nd Annual NPS SE Lessons Learned Conference was held in Seaside, California on September 20 & 21, 2011. The conference theme was Integration and Interoperability (I&I). Presentations on I & I perspectives and challenges were presented by NAVAIR, NAVSEA, and SPAWAR representatives. Keynote presentations were made by RADM Dunaway (COMOPTEVFOR), RDML Rodman (SPAWAR Chief Engineer), MG Justice (RDECOM Commanding General), Mr. Carl Siel (NAVSEA NSWC DD Technical Director), Dr. Bill Lucas (MIT), RDML Penfield (NAVAIR COMFRC Commander), RDML Mahr (NAVAIR Chief Engineer) and graduate students from PED-21 and the MSSE 580 programs presented their thesis research results. The conference presentations are available on the NSERC website. Thanks goes to Joe Sweeney for coordinating this meaningful event.

NAVAIR Graduates

Nineteen NAVAIR employees graduated from the Naval Postgraduate School's Systems Engineering Non-Resident Master's Degree Program Sept. 28. The program awards master's degrees in systems engineering and engineering systems to military officers and civilians.

This year's graduates were David Belleavoine, Altonio Bullock, Marcio Chinn, Brent Gordon, Timothy Hovanec, Brian Johnson, Erin Kennedy, Karen Kesting, Gregg Lee, Benjamin Lilly, Paul Meyer, Paul Mitchell, Charles Noble, William Palermo, David Perko, Megan Prince, Jeremy Smith, Brian Whitty and Kent Yen.

Rear Admiral Randy Mahr, NAWCAD commander and assistant commander for research and engineering for NAVAIR, praised the graduates for the critical skills they bring to the warfighter. Mahr said every defense program is under scrutiny and that the graduates will need to help find ways to reduce costs. "Your big picture skills will determine whether or not NAVAIR can deliver," he said.

SEA-17B Capstone Project
Written by LT Jim Drennan

In June 2011, the students of Systems Engineering Analysis Cohort 17, Team B (SEA-17B), completed their degree requirements and graduated from NPS, but their Capstone Project "Advanced Undersea Warfare Systems (AUWS)" did not end there. As the SEA-17B Capstone Project Lead, I had the unique opportunity to continue advancing and promoting the finished product well after graduation. During the months that followed, I presented the project results to several conferences and senior US Navy staff, helped introduce cutting edge modeling and simulation software to NPS and integrated it with the AUWS project, and was tasked to brief the project to my next command.

In an effort to publicize our findings and recommendations, SEA-17B submitted an abstract of the AUWS Capstone Project to three defense and industrial conferences, all of which accepted our submission. In July, I presented AUWS at the Institute for Defense and Government Advancement Mine Warfare Symposium in Washington, DC. In August, I presented the project at the Association for Unmanned Vehicle Systems International (AUVSI), North America Conference in Washington, DC. Finally in September, I presented at the National Defense Industrial Association Joint Undersea Warfare Technology Conference in Groton, CT. My participation in these conferences generated interest in the project and even more requests for the presentation. While in Washington, DC for AUVSI, I was asked to brief two departments of the Chief of Naval Operations staff (OPNAV N81 and N852) at the Penta-

gon. The Oceanographer of the Navy, RADM David Titley, and Dr. Tom Swean of the Office of Naval Research also attended these briefs.

The scope of AUWS research after graduation was not limited to simply publicizing our results. RADM Rick Williams, NPS Chair of Mine and Expeditionary Warfare and one of SEA-17B's advisors, introduced me to a software package called General Analytical Minefield Evaluation Tool (GAMET), a modeling and simulation tool designed to analyze traditional and advanced Mine Warfare concepts, from both the mining and countermeasures perspectives. I spent a day with one of the program's developers and learned enough to share GAMET with faculty and students across the NPS campus. Before I left NPS, I "passed the torch" for GAMET to Professor Tom Hamrick of the Operations Research Department to ensure GAMET would continue to benefit student learn-

ing, thesis and faculty research, and potentially real-world operations in the long term. Unfortunately, I obtained GAMET well after SEA-17B had completed our modeling and simulation for the AUWS project, because the program would have easily saved us over 100 hours of programming work. Even so, I was able to use our work to provide feedback to GAMET's developers on how the program could be enhanced to accommodate emerging technology and advanced operational concepts in Undersea Warfare.

Although it has been several months since SEA-17B completed our Capstone Project, it is clear that the Navy's interest in Advanced Undersea Warfare Systems has not waned. As a result of my most recent presentation, Naval Warfare Development Command (NWDC) has renewed collaboration with NPS's

Consortium for Robotics and Unmanned Systems Education and Research (CRUSER) on topics related to AUWS. In August, I was selected as a Director Fellow on the CNO Strategic Studies Group (SSG). When I met the Deputy Director of the SSG, we discussed my background and I mentioned the AUWS project. He immediately expressed interest in the project and told me my first assignment would be to brief AUWS to the rest of the SSG! It has been truly rewarding to see the high level of interest in our project and to know that we have contributed, in at least a small part, to the development of the Navy's future warfighting capabilities.

Three of our NPS Test Pilot students at the Tailhook Convention

Lieutenant Kellen Smith, Lieutenant Matt O'Connor, and Lieutenant Casey Thompson (from left to right) , did a great job helping Craig Turley from the San Diego Distributed Programs Office, and Kari Miglaw, Director of Alumni Relations, man the NPS Booth; particularly Lieutenant Matt O'Connor. All are in the MSSE program for 12 to 15 months followed by Test Pilot School in Pax River. The commander of NAVAIR said during the Flag Panel at Tailhook, that we (NAVAIR) needs more Navy Test Pilots.

Meet the Faculty

This section features newer faculty members, highlighting their unique expertise and commitment to excellence.

Ronald E. Giachetti, Professor

Ron Giachetti earned his B.S. degree from Rensselaer Polytechnic Institute in Troy, NY in 1990. After graduation he worked as an engineer for Airborne Instrumentation Laboratories (AIL) Systems, a defense contractor, on Long Island. He supported the B1-B, EF-111, and EA-6B programs and designed and developed an electronic process planning system. While at AIL Systems, he attended part-time the Polytechnic Institute of New York University to earn his MS in 1993. He left AIL Systems to move to Raleigh, NC and studied full-time to earn a Ph.D. in industrial engineering from North Carolina State University in 1996.

He was a National Research Council Postdoctoral Researcher in the Manufacturing Systems Integration Division at the National Institute of Standard and Technology (NIST) in Gaithersburg, MD. While there he helped develop interoperability standards between design systems and manufacturing systems. In 1997, he joined Florida International University (FIU) in Miami, FL as an Assistant Professor in the Department of Industrial and Systems Engineering. At FIU, he developed a MS degree track in Information Systems and taught extensively in the external programs division in Mexico, Jamaica, Colombia, and Peru. He completed over $1M in externally funded research projects at FIU and published more than 50 technical papers and one book.

His area of expertise is in enterprise systems, systems architecture, and system integration. He combines systems theory with mathematical modeling to develop new methods and tools to support systems engineering.

Ron and his wife Silvia have three daughters (ages 5, 8, and 10) and now live in Carmel Valley, CA. In his free time, he likes to go sailing and he also plays soccer.

Associate Prof. Alejandro "Andy" Hernandez, pictured with his modeling and simulation class, has returned to the place that he is most comfortable – the classroom. Hernandez has returned to NPS to teach in the Systems Engineering Analysis department.

U.S. Navy photo by Javier Chagoya

A Familiar Face Returns to Campus
By Javier Chagoya

Associate Prof. Andy Hernandez believes that coming back to Naval Postgraduate School (NPS) was the best decision and the best fit for what he says is important work, teaching future Systems Engineering Analysis (SEA) professionals.

It wasn't that long ago that Col. Hernandez served as the Graduate School of Operational and Information Sciences Associate Dean. He also served as lecturer in Operations Research (OR), all the while pursuing a Ph.D. in Operations Research (OR). Well schooled in OR/Systems Analysis, he has just completed a 26-year Army career as the Chief of the Warfighting Analysis Division, which included a tour in Iraq as Director, Analysis and Assessments, Strategic Communications, J9, U.S. Forces Iraq.

"As I looked around for what I was going to do next in my life I had some other opportunities to work in industry but I really wanted to teach and to work with students," he says. Coincidentally, Prof. and SEA [Systems Engineering and Analysis] Chair Clifford Whitcomb had an opening in the department, which would eventually reunite Hernandez with his colleague and friend, Associate Prof. Gene Paulo. They currently co-teach a modeling and simulation course.

Recently during an Army Officer's promotion ceremony, a resounding testimonial from one of Hernandez's former students exemplified exactly what Andy's underpinning philosophies is about ... taking care of your troops. NPS Operations Re-

Meet the Faculty

search alumnus Major Richard Brown ('06), who currently works at U.S. Army Training and Doctrine Command (TRADOC) Monterey, personally thanked Hernandez during his promotion ceremony. Brown said the then GSOIS Associate Dean and one-time Senior Army Representative took interest in him when there seemed to be no one else that could help in his dilemma.

"He took time to ensure that I could do the best work possible for the Army and that I was doing something that I really enjoyed. I will appreciate this for the rest of my life because I thought I was in a tough spot in regards to my education and military career. The Army had sent me to NPS to pursue a master's degree in Middle Eastern Studies but I had a numerical and computational background. I had made some calls about changing my master's program, and was denied several times over. I told Col. Hernandez this, and he effectively made it his mission, along with whatever else he needed to do, to ensure that I had the opportunity to do what I really enjoyed. I have no idea who he contacted or what he said, but in the end, I got the opportunity that I needed and wanted. He is a phenomenal individual, at least to me he is," said Brown.

Others in the OR department echo the same sentiments. "Col. Hernandez was all about taking care of the students," adds GSOIS Administrative Management Specialist Janet Borchardt who has worked with four previous associate deans.

Hernandez not only connects with his students but also has the ears of diplomats. Last week, he briefed Assistant Secretary General for Field Support Anthony Banbury at the U.N. "Within the U.S. Partnership for Peace Training and Education Center, we have the opportunity to bring proven modeling developed at NPS which will increase efficiency and effectiveness in the role of peacekeeping missions," said Hernandez. "We have taken case studies from Kurdistan "peacegaming" taskings and have developed a unique tool that provides socio-economic approach to peace support doctrine. We can assist by conducting game analysis and computational expertise with analytical rigor," added Hernandez. This week he and Whitcomb are attending and presenting their Peacegaming model at the International Association of Peacekeeping Training Centers in Carlisle, Penn.

Back in the classroom Hernandez believes that his own field experience adds to the student's vitality for learning. Hernandez asks his students to have flexibility in their thinking. "I want to see intellectual agility and not so much muscle memory, which we get from drilling," Hernandez says about his teaching style. "Also I want to be effective and I'm drawn to systems engineering because of its solid foundation in simulations and the department is populating the faculty pool with some very talented people with diverse backgrounds," he added.

Hernandez says that he looks forward in building a good research foundation that supports the Warfighter and student education. "If I do that I'll chalk myself up as successful," he notes.

Faculty and Staff News

Congratulations **Jean Johnson, Lecturer**, and family! Colby Mitchell joined the world on Wednesday, 26 October, at 9:54 p.m. Central European Time. He weighed in at 8 lbs 10 oz and is 21.6 inches long. Jean sent the department a note stating that the whole family is doing great and feeling extremely blessed!

We bid a very fond farewell to **Ed Kujawski, Associate Professor,** after six years of dedicated service to the systems engineering department. In a note to friends and colleagues he expressed that the past six years were the most meaningful of his professional career. Ed will return to his residence in Berkeley with his wife Judy.

The department would like to welcome **Barbara Berlitz, Research Associate,** to her new position. Though she continues to work in Meyer/SE, Barbara has been assigned new duties and her office now resides upstairs in Bullard Hall, Room 201G.

Education Technicians, Academic Associates (AA), & Program Officers (PO)— A list of all mentioned can always be found on the sidebar of page 2 of this newsletter. A BIG thanks goes out all of the AA's and PO's who are taking this task on as an additional duty! The most recent changes are the following:

- **Joseph Sweeney, Program Officer,** Curricula 311 & 721
    - ◆NAVAIR Cohort, **Ron Carlson, Professor of Practice**
    - ◆Army Students, **Brigitte Kwinn, Lecturer**

- **Mark Stevens, Academic Associate,** Curriculum 580

- **CDR Jonathan Vanslyke, Interim Program Officer,** Curriculum 580

Systems Engineering & the Wayne E. Meyer Institute Integrate Administrative Operation Duties— Over the last few years, it has been suggested (by the Provost, Dean of Research, and others) that the Wayne E. Meyer Institute of Systems Engineering and the Department of Systems Engineering integrate their operations and way of doing business. With the current stability of the SE academic programs – ABET accreditation has occurred and the Navy sponsors are happy – we are at a good point to take on such an integration. Towards that end, we have begun the process to integrate Meyer Institute and SE Department administrative support with the goal that the SE Department will be the administrative support provider for both organizations.

As we transition to a combined Meyer Institute and SE Department administrative structure, various issues will arise and are unavoidable, but we are standing ready to quickly resolve any as they occur. Any of our SE Department administrative staff: **Susan Wood, ASA; Mellissa Goldman and Sara Murawski, Office Assistants; and Lori Wilson, ABET Administrative Support**, are available to assist or point you in the right direction**.**

Mark Stevens, SEA and SE (Resident) Academic Associate and USMA '80 graduate, arrives to his office on Tuesday, 6 December, to find it gift wrapped in the holiday spirit and for Army/Navy Week. Congratulations to the spirited "Navy" team that pulled this off!! And unfortunately for Mark (and other Army supporters), the 112th edition of the annual Army versus Navy football game ended in the 10th straight victory for Navy, scoring 27-21!

SE INTERNS
Juan Gonzalez, Lab Coordinator

Angelica Romero

1. *Please describe your project for the summer.* My project for the summer was to present a robot using the Lego Mindstorms kit and the Vernier temperature probe. I had to think of a task that could be done by a robot using the tools given to me. I came up with the idea of a robot checking the temperature of a cup of coffee and it would signal if the coffee was too cold, too hot or ready to drink. As that was only a single function we decided to have it act based on the temperature reading. The robot would cool down the coffee if it was too hot since we didn't have a way of warming it up if it was too cold. From there we thought of ways to cool down the coffee; I could make a fan, drop ice cubes, or put something in the coffee and stir it. I decided to use a fan instead of putting a stirring stick in the coffee for sanitary reasons. After that I began to build my robot. I made a lot of changes to the base because I was making it too complex for what it was. I also ended up adding a lot to the base because the robot needed a wider base than I had anticipated.

2. *Describe challenges encountered in accomplishing your project.* A big challenge for me during this project was the mechanical aspect of it. In the beginning I was making the base too complex, I was using too much material. Then I had some trouble with the base of the robot due to the lack of balance at the top. I had to change the position of the motors because their weight was making the robot tilt. One motor wasn't hard to place because it was at the top and its weight was towards the back, but the motor in the middle was a bit difficult since it is only attached to one side of the structure and all its weight is on

Summer Interns

that part of the robot. That motor was also difficult to add on to the robot because of the way it was being used; the attachment holes were in a different direction than the rest of the holes on the structure. I also had problems holding up the temperature probe because the probe appeared to almost tip the cup over. I made a box to hold it, and I made some adjustments during the testing phase so the robot could work better. The problem with that was finding the right pieces to use so that the robot could function properly. Another issue I had was with the distance of the temperature probe and the fan. First, they were too far apart to complete the tasks entirely, but in the end they were so close they got in each other's way. The fan wouldn't allow the probe to go down to the cup or the temperature probe would be in the way of the fan.

3. *What have you taken away from the project so far?* I have learned a lot about software programming in the Lego Mindstorms program. I had no idea how to use the program, and now I can create a program to make a robot move, check temperatures and flash lights. From this project I learned to not make thing s too complicated. It is easier to make adjustments or additions to the structure when they are kept simple. I also learned to experiment with different designs, and how to use the different Lego pieces for different situations.

Itzel Pinon

1. *Please describe your project for the summer.* My project for the summer consisted on developing a robot that could determine the temperature of water. In order to develop this robot I used the Vernier Surface Temperature Sensor. This sensor was able to go in the water and tell me whether the water was hot or cold. Apart from the Surface Temperature Sensor, I used two other sensors which are the NXT light sensor and the NXT ultrasonic sensor. I used the light sensor to warn me about the temperature of the water. It showed the color red if the water was hot and the color blue if the water was cold. I used the ultrasonic sensor so it would sense the cup. The cup had to be set to a certain distance away from the sensor. I created a program using the LEGO MINDSTORMS NXT Software. This software is complex to use because you really have to understand clearly the function of each block. Since I'm using the ultrasonic sensor in my program, I don't have to keep pushing the start button, but just put the cup closer to the sensor and it will immediately sense it. I decided
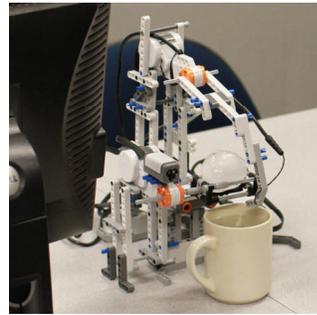
to include a time block before the sensor starts checking the water temperature because the ultrasonic sensor is very sensitive. Once something gets close, it will start the program .I don't want the program to run if the cup is not even there yet. The Surface Temperature Sensor is going to check the water temperature. The sensor is going to take a few seconds before determining the temperature. If the water is hot, the robot will proceed by dropping an ice cube in the water. The sensor is going to wait for about 50 seconds before checking again. Once the time is up, the sensor is going to check again and this time is going to determine the final temperature. My robot has only one shot at getting it right because it is only going to drop one ice cube. The overall purpose of my robot is to cool down the water, so it would be drinkable.

2. *Describe challenges encountered in accomplishing your project.* First of all, since the Vernier Surface Sensor kept bending whenever it touched the cup, it was not able to go in the water. I had to stop the program and fix the sensor every time it bent while going in the water. This was a waste of time. That's why I used less power. I didn't use all the power; it had to kind of slow so the sensor would not bend. Another problem I kept having was that whenever the sensor went too fast, the base where the motor was standing kept moving out of place. In other words, it was not steady enough to hold all the force. I fixed this problem by placing some legos diagonally. Also, I could not find a way to hold the sensor in one place; I just ended up putting it through the holes of the legos.
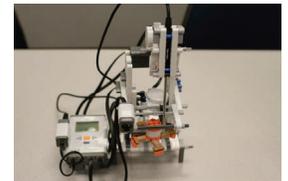
3. *What have you taken away from the project so far?* When I first came here, I didn't know anything about software programming, but look at me now. I was able to create two useful programs. One was when I programmed my robot to search for a known target using the ultrasonic sensor, and the other one was when I programmed my robot to cool down water. I am not saying that I am an expert, but I did learn a lot about software programming. Even though I felt very frustrated because I couldn't figure out how the software worked, I never gave up. I just kept trying and trying until I was able to accomplish my task. Engineering is all about making mistakes in order to learn and develop something that would benefit everybody. I had fun building both robots, especially the Shooterbot. I felt frustrated while building the Vernier robot because I had to invent my own design. I just kept building and destroying the robot, but in the end I did it and it worked okay.

Ruben Telles

1. *Please describe your project for the Summer.* The project was to learn about R.O.S and develop software for a variety of

NXT adaptable sensors for it. Along with this came the development of a tutorial for the students in the software engineering class to allow them to use R.O.S instead of Lego Mindstorm.

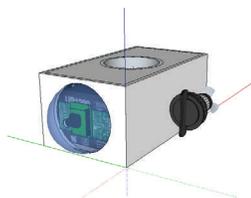**2. *Describe the challenges encountered in accomplishing your project*.** R.O.S had many features such as RVIZ which allowed for 3D renderings of your NXT robots. This would allow students to see what their robots see making it possible to correct any sensor errors. However, this posed a problem due to the fact that it required a sufficient graphics card. I tried running RVIZ on three different systems using different methods. One method was on an old laptop with standard installation, another was on a desktop through a virtual box, and the last was on a desktop dual booted. The last attempt was successful because it had better hardware capabilities.

3.*What have you taken away from the project so far?* The project has taught me a lot in such a short time. I now know how to operate in a Linux environment. I've learned multiple ways to install a new operating system, refreshed my memory with the Python programming environment, and have been exposed to electrical and hardware.

Brian Hardoin

1. *Please describe your project for the Summer.* I'm working with David Brookshier to develop a low cost autonomous underwater vehicle (AUV) that could be recreated by a high school level student. We researched suitable parts, and have decided to use an Android phone for the brain of the AUV, and we are learning to write Android applications. We hope to eventually have a capable contestant in the AUVSI foundation's RoboSub competition.
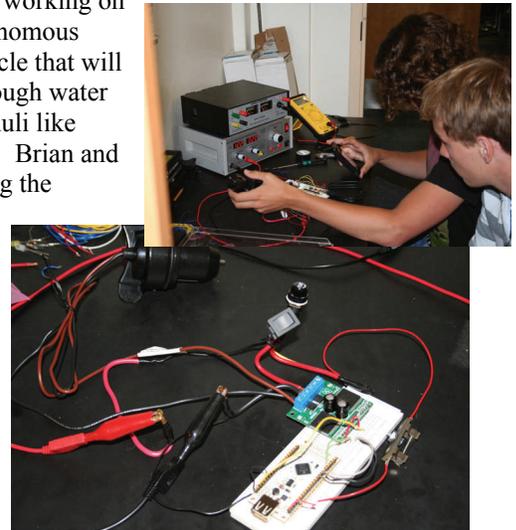
2. *Describe the challenges encountered in accomplishing your project.* Learning Java is a big challenge riddled with smaller challenges. Familiarizing ourselves with the Android specific commands while also learning the basics of Java is a difficult task. In addition to general programming difficulties, we will have the hard task of managing sensor data on the limited processing power of an Android phone.

3. *What have you taken away from the project so far?* I've taken away a better understanding of the design process – starting with the very basics of hardware compatibility to the importance of prototyping through possible configurations and solutions to specific problems. Also, I've learned a significant

amount about programming. Before this project my programming experience was limited to playing with sample code on a Basic kit. But learning to understand and write Java for a cell phone app is a significant and broadly applicable skill that I'm quickly picking up through this internship.

Aaron Miller

1. *Please describe your project for the summer.* Brian, David, and I are working on creating an autonomous underwater vehicle that will propel itself through water and react to stimuli like color and sound. Brian and David are writing the JavaScript application for the phone, and I'm responsible for designing the vehicle in a way that all of the parts fit together as efficiently and hydrodynamic as possible.

2. *Describe the challenges encountered in accomplishing your project.* The first immediate issue I met was using the program Google SketchUp, which is a 3D modeling program. It's supposed to be user-friendly, but I only found this to be true after a week of using it and learning. During that week, I struggled to make any sort of progress.

The design that the team created before I came onboard was a crude jumble of the parts that resembled to bricks and a few ballasts, which was functional, but nowhere near as hydrodynamic as it needed to be. My design put the pieces in a rectangular tube with two domes at the end, but this too proved a challenge. Although my design looked and swam better, we had no idea what to make it out of. Luckily, with a little redesigning, the parts could easily be ordered online or manufactured.

3. *What have you taken away from the project so far?* Currently, the most significant experience I've taken away from the project is my knowledge of Google SketchUp, but I've also learned a lot from Brian and David about how JavaScript and Android phones work, as well as a general knowledge of concepts like amperage, voltage, and caliber usage.

David Brookshier

1. *Please describe your project for the Summer.* I am designing and programming an AUV (autonomous underwater vehicle) that utilizes an android phone for most primary func-

tions. It should be cost-effective and fairly easy to replicate, with the ability to perform simple missions.

2.***Describe the challenges encountered in accomplishing your project.*** The first and largest problem was my complete lack of experience with java. Android phones are programmed in java, so it was difficult trying to write programs at the beginning. We also ran into some issues trying to design an enclosure that would be very space efficient as well as hydrodynamic. We found that it was usually one or the other.

3.***What have you taken away from the project so far?*** I have gained a basic understanding of the workings of java and programming in general.

DAVE'S (BKCASE) INTERNS

Dave Olwell, Professor

Zoey Moses

Summer to me had always been waking up in the afternoon, long days at the beach, and endless interaction with friends. This summer, however, involved a series of activities that did not involve lazy lounging, lengthy slumbers, and social gatherings. This summer, I joined the thousands who set their alarm clocks and functioned on a daily basis according to a prescribed schedule.

Actually, I never used the words "summer" and "work" in the same sentence. Thus, it was an extraordinary feeling when, in the middle of June, I found myself sitting in an office typing away at tedious tasks, responding to email after email, and creating nine page spreadsheets without any prior knowledge of Excel. Now, on a windy day in August, reflecting back on my summer, I can truly say working as a hire at The Naval Postgraduate School has easily made for a summer I will never forget.

Working in the Systems Engineering Department for Professor Olwell has taught me responsibility, discipline, and professionalism. During my time I collaborated with a great team on the BKCASE (Body of Knowledge and Curriculum to Advance Systems Engineering) Wiki project. The Wiki is a search engine within systems engineering based off the world renown research engine, Wikipedia. My office mate Sarah and I worked on the multi-author document correcting the Wiki's format and documenting changes as well as updating information regarding the site. We also spent time editing and organizing the NPS Faculty Handbook, which describes the rules and policy governing Faculty at NPS. In addition to learning the

basics of Excel and having the privilege to work with a superb team of intelligent individuals, I was able to improve my skills as a young worker and get my first taste of the demanding but rewarding life as an "adult." As an intern, you jump into the world of responsibility, a world of which I knew very little. Being here has taught me how to work in an office and academic environment. It showed me the advantages and disadvantages of independence. Although I managed to jam the shredder twice, and take over an hour to figure out how to print labels, the office skills I learned here will be useful in any career path I choose. While working here I was able to meet several other interns working in various departments at NPS. We created an intern family and took advantage of the self-determined hour lunches venturing off to different restaurants in Monterey every day.

I would have to say that my summer experience as a bona fide member of the work force had its downs; however, the positives that came with it overwhelmed the negatives. For example, waking up at seven every morning during the summer only to get to your office precisely at eight and to realize that no one was there to open the door was frustrating. I also developed an unhealthy habit of adding two shots of espresso to my everyday diet just to stay awake the entire day. Needless to say, this probably won't help the waistline. Albeit, being a part of the internship program at NPS was an experience I will always cherish; in fact, I may just be back here next summer and do the whole thing over again.

Sarah MacKinnon

For the past summer I have been an intern for the Department of Systems Engineering at the Naval Postgraduate School under the guidance of Dave Olwell, Nicole Hutchison, Stephanie Enck, and Lori Wilson. During my internship I have helped with the editing and creation of a multi author document called The Body of Knowledge and Curriculum to Advance Systems Engineering (BKCASE). The majority of my time was spent on updated matrices showing the percentage of completion of the BKCASE wiki as well as editing its pages. Apart from the wiki, I also worked on other various admin tasks such as filing, scanning, jamming shredders, etc... Not only was the work at NPS interesting, it was also very enjoyable and unforgettable. In the fall I will return to Notre Dame High School to be a junior. Working at The Naval Postgraduate School has been a wonderful and rewarding experience, and I look forward to continuing my work here over the next school year (I have an extension to my contract!).

Upcoming Conferences

January 21-24, 2012
INCOSE International Workshop (IW2012)
Jacksonville, FL

January 24-27, 2012
T&E of SoS Conference, ITEA
El Paso, TX

February 9-10, 2012
ASNE Day 2012: Naval Warfare - Critical Engineering Challenges
Arlington, VA

March 19-22, 2012
Conference on Systems Engineering Research (CSER)
St. Louis, MO

March 26-27, 2012
ASNE Combat Systems Symposium - Balancing Capability & Capacity
Arlington, VA

April 19-21, 2012
2012 ABET Symposium
St. Louis, MO

May 14-16, 2012
1st Annual Systems Engineering in Washington, DC (SEDC)
Washington, DC

July 9-12, 2012
22nd Annual INCOSE International Symposium
Roma, Italy

October 22–25, 2012
15th Annual Systems Engineering Conference
Sponsored by the National Defense Industrial Association (NDIA), Systems Engineering Division
San Diego, CA

SE Newsletter Editor

Lori A. Wilson

Please direct any comments or questions to lawilson@nps.edu