

THE CATHOLIC UNIVERSITY OF AMERICA

Fall 2016 Issue

cuaengineer



GAME-CHANGER:
An Interdisciplinary
Approach to
Solving Problems

Table of Contents

New Faculty and Staff	Inside front cover
Dean's Message	1
Faculty Profile: Arash Massoudieh	2
Faculty Profile: Otto Wilson	3
Cover story: Xiaolong Luo	4
School Explores Educational Opportunities in the Philippines	5
Student's Invention Could Prevent Football Concussions.....	6
School Receives Grant from USAID to Conduct Training in Vietnam.....	7
Help for Holographs in Nehmetallah's New Book	7
Ozlem Kilic Receives Prestigious ACES Fellow Award for Contributions	8
Neuroscience at CUA – A Vibrant and Growing Community.....	8
Seniors Soar at Coulter College	9
Academic Training of Brazilian Students in the School of Engineering.....	9
It's Rocket Science: Students Present Papers at AIAA Conference	10
School of Engineering Named to Grand Challenge Scholars Program.....	10
CUA Researchers Propose Seismic Investigation of the Satellite Europa	11
School of Engineering Celebrates E-Week	11
Engineering Student Recognized for Her Leadership	12
John Judge Elected ASME Fellow and Appointed Associate Dean	12
CUA Dual-Degree Programs Founded with Liberal Arts Universities	13
EECS Undergraduate Students Excel in Research	13
Students Reestablish Chapter of AIAA.....	14
Students Shine on Senior Design Day.....	15
Intelligence Director Honored with Engineering Award	15
School Honors Faculty for Excellence	16
Alumni Corner	17
Faculty Awards, Grants, Presentations, Publications, and Activities	18
2015-2016 Honor Roll of Donors	26
Student Activities, Honors, and Awards	27
Congratulations, Class of 2016.....	28

New Faculty and Staff

Bismark Agbelie, Ph.D.

Bismark Agbelie joined the Department of Civil Engineering as an assistant professor in September 2016. Before joining CUA, he was a postdoctoral researcher and a visiting instructor at the Lyles School of Civil Engineering at Purdue University, West Lafayette. He received both his Ph.D. and M.S.C.E. in transportation engineering and infrastructure system management from Purdue, where he also received an M.S. in economics. He earned his undergraduate degree in Civil Engineering from the Kwame Nkrumah University of Science and Technology, in Kumasi, Ghana. His interests include transportation systems analysis; transportation infrastructure economics, finance, and management; and transportation safety, policy analysis, and costs analysis of engineering systems.



Blanka Bell

Assistant to the Dean for Administration Blanka Bell joined the School of Engineering in September 2015. Prior to that she was a recruiter in the Department of Electrical Engineering at The Catholic University of America. She has worked in multiple banks, administrative positions, and radio and television. Blanka earned her Bachelor of Arts in Journalism, PR and Business Communication in 2007 from University of Political Science in Sarajevo, Bosnia-Herzegovina, and is currently pursuing an M.A. in International Affairs at Catholic University.



Diane Miranda

Assistant to the Dean for Academic Affairs Diane Miranda joined the School of Engineering in February 2016. She first came to Washington from Long Island, N.Y., in 2001, to attend Catholic University, where she earned her B.A. in Liberal Studies in 2005. After working in book-keeping for a sand and gravel mine in New York, Diane joined the continuing education department at Trinity Washington University. There, she spent over seven years helping adult learners meet their certification needs as K-12 educators. In 2008, Diane also joined the staff of Silver Stars Gymnastics in Silver Spring, Md., where she teaches gymnastics to children, including those with special needs. She is excited to be working with engineers since she has both a civil and mechanical engineer in her family.



J. Claiborne Gayden

Director of Development J. Claiborne Gayden joined the School of Engineering in May 2015. Gayden was a key executive in starting up the Governor's Books from Birth Foundation, a unique statewide public-private partnership for literacy in Tennessee, raising \$2.5 million for the program. In 2010, he joined George Mason University's business school as a development officer. There, he supervised a team of development and alumni relations staff and built a strong portfolio of major donors, who were instrumental in increasing giving totals by 1,000%. He is particularly proud of leading the charge to seed the school's signature Innovation & Entrepreneurship Lab. After a recent consulting engagement with the Boy Scouts of America Foundation, Gayden is excited to help the CUA School of Engineering reach its full potential. He earned his M.A. at Tennessee State University and a B.A. from the University of Colorado.



Dean's Message

As I am about to start the fourth year of my fourth term in September 2016 as dean of the School of Engineering, I have the opportunity to reflect on the school's progress and success in 2015-2016, and I am very happy to summarize them below.

- In the fall semester 2015, we welcomed 150 new undergraduate students including freshmen, joint-degree students, and transfer students. This number of new students continues to manifest the school's ability to successfully recruit new students. The school also welcomed 64 new graduate students. During the academic year 2015-2016, we granted 132 bachelor's degrees, 72 master's degrees, and 14 doctoral degrees. The graduates' names and their degrees are listed on pages 28 and 29 of this issue.
- The "Faculty" section of this issue shows that our faculty continued to be actively involved in publishing, submitting research proposals to government agencies and industries, participating in technical conferences, and providing service to professional societies. A total of 62 proposals for research funding were submitted to agencies including the National Science Foundation (NSF), National Institutes of Health, and NASA, for a total amount of \$13.5 million. Fifteen new proposals were funded for a total amount of about \$2 million. It is worth mentioning that the NSF granted Xiaolong Luo, Assistant Professor of Mechanical Engineering, a prestigious NSF CAREER Award for \$500,000 to develop artificial cell membranes in microfluidic devices.
- The school started to explore educational opportunities in the Philippines. Through an introduction by Hilda Gigioli, B.E.E. 1983, I was able to meet the Ambassador of the Philippines, Jose Cuisia, at the Philippine Embassy in Washington D.C. to discuss the establishment of our international programs in the Philippines. In April 2016, through a strong endorsement of Ambassador Cuisia and arrangements made by his office, I went with a delegation from Catholic University to Manila and signed memoranda of understanding with several prominent Philippine universities. Several memorandums of agreement were subsequently signed with the above universities to establish 3+2 dual degree programs and 4+1 programs. A detailed report of this new global outreach to the Philippines is given in an article in this issue on page 5.
- During the 2015 Homecoming Luncheon, the school recognized Letitia Long, M.M.E 1988, with its Distinguished Alumni Award. Long served in senior positions in the intelligence community as deputy director of the Defense Intelligence Agency, deputy undersecretary of defense for intelligence, and director for intelligence community affairs at the CIA. More details about this honoree can be found in an article on page 15 of this issue.
- The School received a two-year subcontract from the United States Agency for International Development (USAID) through Arizona State University (ASU) to train educational leaders of Vietnamese universities

for institutional quality assurance as part of the new USAID project "Building University-Industry Learning and Development through Innovation and Technology" (BUILD-IT). This new subcontract from USAID will enable our school to send faculty to provide quality assurance services to our existing partner universities in Vietnam. During a 14-day trip to the Philippines and Vietnam in April 2016, I participated in the kickoff of the BUILD-IT project in Ho Chi Minh City as one of its activity leaders. During this trip I also attended the 2016 Vietnam Engineering Education Conference (VEEC) in Ho Chi Minh City and moderated a VEEC panel on international accreditation. These activities will definitely enhance the reputation of our school in Southeast Asia, which could open up more educational opportunities in this area for us.



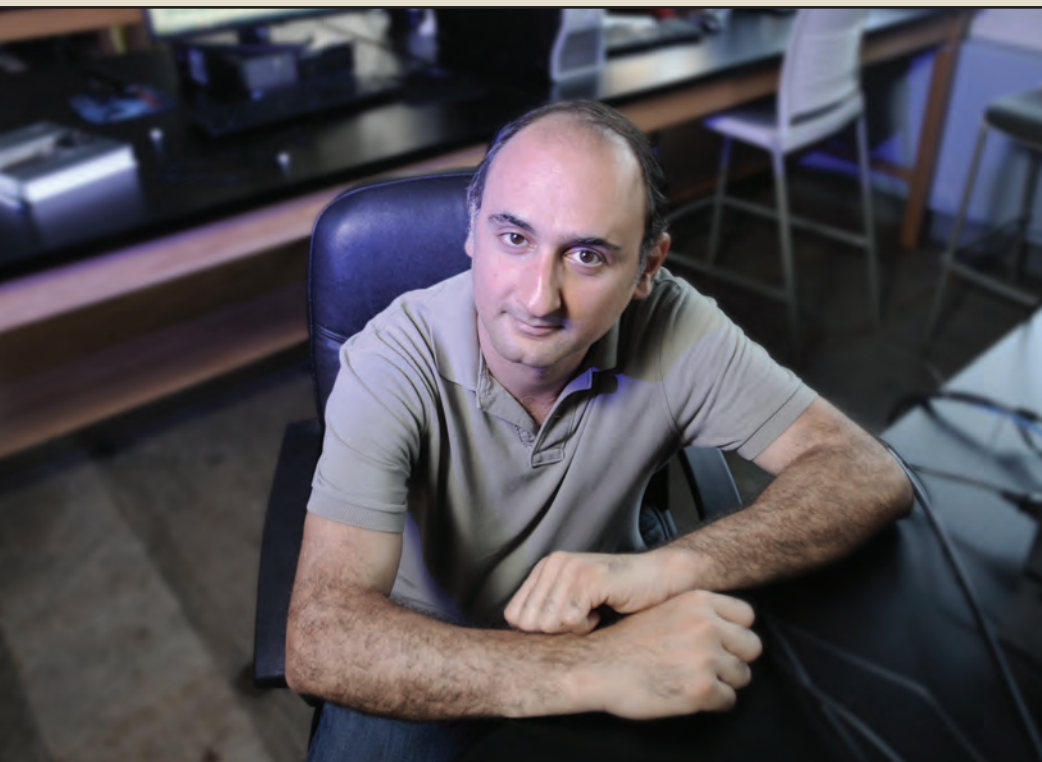
- Regarding development activities, I have been on the road frequently, visiting engineering alumni around the country to cultivate donors. I am very happy that we were able to recruit Claiborne Gayden, who joined us in May 2016 as the first director of development for the School of Engineering. He and I will work on expanding the development activities of the school and we ask for your full support.

I am very proud of the progress and success the school achieved in 2015-2016, especially in the expansion of our global outreach to the Philippines. With our strong track record, I look forward to reporting another successful year in 2017. Please enjoy reading this issue of CUA Engineer.

Regards,

Charles Cuong Nguyen, D.Sc.
Dean, School of Engineering
nguyen@cua.edu

"...our faculty continued to be actively involved in publishing, submitting research proposals to government agencies and industries, participating in technical conferences, and providing service to professional societies". —Dean Nguyen



Associate professor Arash Massoudieh knows the value of protecting Earth's resources. That's why he spends his time researching ways to better understand the effectiveness of water treatment methods over time. By carefully compiling and examining climate and environmental data, he works to develop models that predict how efforts taken today will improve the quality of water in decades to come.

"Water is probably going to be the most important resource we have in the future as our population continues to grow," he said. "The ecosystem depends on how much water we have, the quantity of water, and the quality of water. It's absolutely important that we protect the water around us."

Massoudieh, who has taught civil engineering at Catholic University since 2008, first began studying water quality while working toward his doctorate in civil and environmental engineering at the University of California in Davis, Calif. There, his research involved looking at the mercury levels left in the water after the California Gold Rush, when miners used mercury to extract gold and dumped leftover chemicals into the river.

By researching the processes that affect movement of mercury, Massoudieh developed a modeling program that would mimic the transportation and

spread of mercury in the water stream over the next fifty years.

"The purpose of a mathematical model is to resemble things that happen in nature," he said. "In a lot of areas, we can't do experiments in nature, but I can create a program on a computer that can resemble what would happen."

Massoudieh, after completing his doctorate in 2006, held a postdoctoral fellowship at U.C. Davis, during which time he built a life-cycle model for striped bass in the San Francisco Bay. In 2008, he joined the Catholic University faculty. Soon after coming to Washington, D.C., Massoudieh began researching the factors affecting water quality in the Potomac River and the Chesapeake Bay — especially the dangerous effects of surface runoff from impervious surfaces like city streets and parking lots.

"In densely urbanized areas like D.C., this is an important issue because surface runoff can lead to more floods, more erosion, and the need to spend a lot of money on water collection," Massoudieh said. "Plus, there are lots of pollutants accumulating on these surfaces, so when it rains that goes off into the receiving water surrounding the city."

The city has taken steps to reduce surface runoff, including low-impact development like the installation

of green roofs, rain gardens, or bio-retention cells. There are also more costly plans to build reservoirs that could store surface runoff water and later pump it into a water treatment facility. By developing models, he hopes to provide a tool city planners can use to make wise decisions about the most effective steps they can take to clean the local water.

"We're developing a tool people can use before installing these green infrastructures so they can evaluate it in a computer and see how it will work in the long run," Massoudieh said.

Massoudieh also works closely with the Blue Plains Advanced Waste Water Treatment Plant in D.C. to ensure that the treated waste water meets standards in terms of organic matter and nutrients to keep the Potomac River oxygen-rich and life sustaining. Often, the plant uses methanol to help remove nitrogen and phosphorous from the water levels, but methanol is very expensive.

Thanks to funds provided by the D.C. Water and Sewer Authority, Massoudieh is working on modeling systems that will determine the optimal amount of methanol needed to keep nutrient levels healthy. Eventually, Massoudieh believes the system could be better managed using artificial intelligence.

"We're hoping to help them optimally control their operation," he said. "If you can reduce the amount of methanol purchased by ten percent, that's a lot of savings for taxpayers."

In his years studying water quality, Massoudieh said, he has been surprised by how multi-disciplinary the field can be. His research draws on a diverse array of subjects, including chemistry, biology, ecology, and sometimes even geography and political science. But even the largest amount of data can never predict all of the environmental changes or surprising weather events the future may have in store.

Even though Massoudieh knows his models will never be 100% accurate, he still believes they are an important way to help others make the best possible decisions in cleaning up the water supply. In the future, he hopes to make his models more user-friendly and adaptable to ensure that more people will use them.

"Modeling, with all these uncertainties, is always a simplification of reality and an abstraction of reality," he said. "But it is the only tool we have in predicting what will happen in the future. As engineers, we need to use all the tools we have to answer questions."

Professor Researches Origami for Tissue, Organ Growth

Faculty Profile

Ask Otto Wilson about his field of study and you might be surprised. An associate professor of biomedical engineering, Wilson is passionate about merging creative thinking with engineering. His research inspiration is derived from an unlikely source: origami, or the ancient Japanese art of paper folding.

Wilson finds aspects of origami everywhere, from cars designed to bend on impact in a way that protects the occupants; to deployable NASA telescopes that unfold after their launch; to structures in nature that enhance their structural integrity and strength through intricate folds.

“Over the last fifty years or so, there’s been an explosion in the level of complexity of things people can create using origami design principles,” Wilson said. “A couple of years ago I asked a key question that lead to a unique idea — can we actually fold paper to make organs for the body?”

In his research, Wilson studies how to make biologically-inspired origami paper, paper that is specifically designed to be a platform for tissue and organ growth. So far, he and his students have used the paper to grow bone with future plans for muscle, and cardiac cells and tissue. By using the techniques of origami, he believes that strategically folded paper can be transformed into fully-functioning bones and organs for the human body.

Wilson first became interested in bone and tissue structure while pursuing his doctoral studies in Ceramic Science and Engineering at Rutgers University in New Brunswick, New Jersey.

“I didn’t realize it until later, but there is a nice link between ceramic engineering and biology,” Wilson said. “I got really excited about hydroxyapatite and bone tissue. Teeth and bone have calcium phosphate based reinforcing phases which are ceramic materials. The most important one is hydroxyapatite.”

While in graduate school, Wilson became interested in biomimetics, a field in which scientists gain insights from nature to solve high-tech problems. By learning more about the fascinating mechanisms that control the nucleation and growth of hydroxyapatite crystals in bone and teeth, Wilson was able to develop methods to improve the synthesis and processing of nanomaterials used in electronics and computers.

After completing his doctorate in 1995, Wilson held two postdoctoral fellowships in which he

studied dental materials and polymer ceramic composites for bone implants. After teaching for several years at the University of Maryland, he joined the Catholic University faculty in 2003.

After coming to the University, Wilson began work on a research project to stimulate bone healing using chitosan, a biomaterial found in crab shell.

“We’re close to Maryland which has an abundance of crab shells, so we could literally dream of ‘turning trash into treasure,’” Wilson said.

After determining that he could grow bones and tissues using chitosan-coated cotton-based materials, Wilson began to hypothesize about possible uses for origami to bring those materials to life.

“A simple model we’re working on now could be used for bone tissue synthesis,” Wilson said. “You roll a tube and grow bone on the outside and grow marrow tissue on the inside and you could literally have a femur.”

In 2007, Wilson’s work was boosted by a National Science Foundation Faculty Early Career Award, which funded his research in bone growth. The award also reflected another of Wilson’s passions: improving education. The \$459,000 grant included money to fund bone-inspired educational programs for graduate, undergraduate, and K-12 students in the Washington and Baltimore metropolitan areas.

In his educational outreach to local schools, Wilson uses lessons about bone structure as a metaphor for developing strong and independent young scholars. He has also conceived a number of ideas for children’s book series that will inspire young people to learn about health and science. By helping students better understand science and engineering at a young age, Wilson hopes he can lay the framework for success in life.

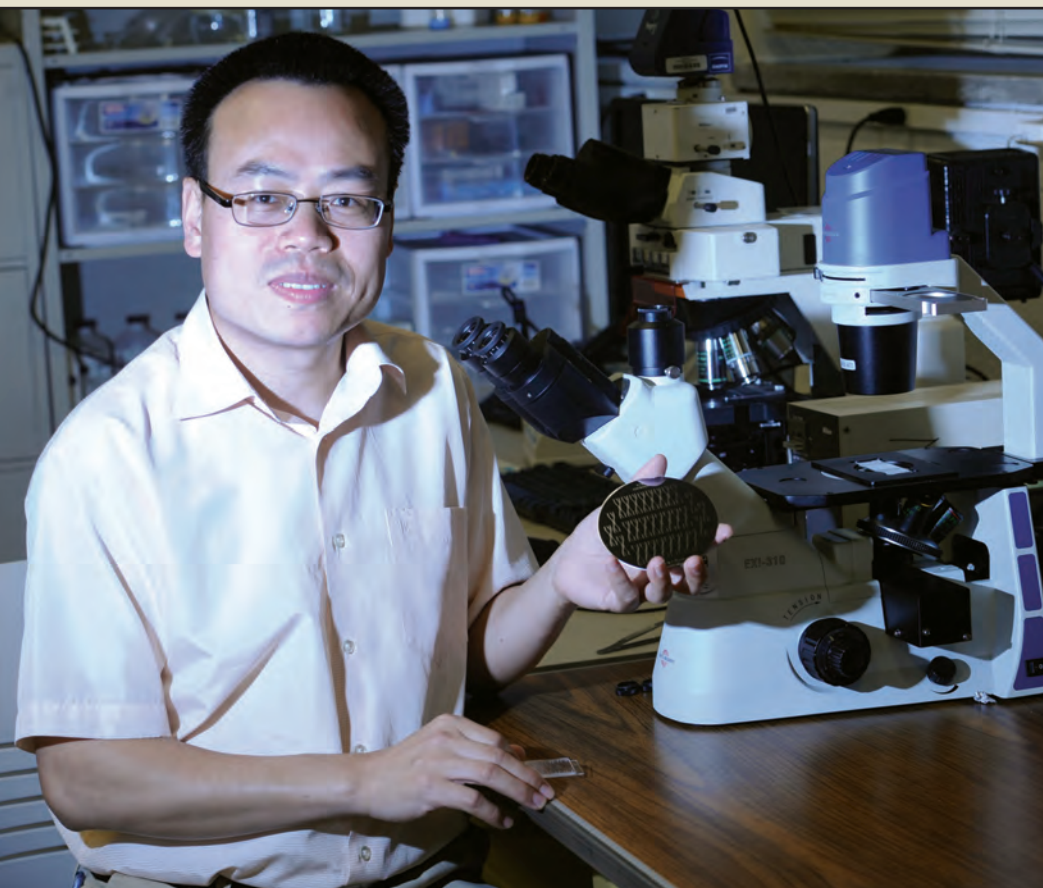
“What I like about biomedical engineering is that you can directly see how what you’re doing can impact or improve the quality of a person’s life,” Wilson said. “Similarly, by taking a student who doesn’t understand a concept and explaining it with patience and compassion, you can open up a whole new world of opportunities for them.”

In his own research, Wilson plans to continue using origami techniques to build more complex structures out of muscle and cardiac cells. His ultimate goal is to one day fold a fully-functioning human heart.

“You can actually fold hearts already in origami. One of my favorite origami artists designed a heart with an arrow coming out of it. We’re just taking it to another level by asking the question, ‘Can we actually mimic the structural development of the heart and fold a scaffold that can become a real heart?’”



Cover Story **GAME CHANGER:** An Interdisciplinary Approach to Solving Problems



If there's one thing Xiaolong Luo has learned over his years of studying mechanical engineering, it's that inspiration can be found in unexpected places.

"As I tell my students, you often have different ideas," he said. "Sometimes they're crazy, but sometimes those ideas can link what you learn to something new you can apply it to. Find new ideas and then you might be able to make that crazy idea into something really useful."

In his own research, Luo has often found engineering inspiration from the natural world. Though he originally received his bachelor's degree in mechanical and electrical engineering at the Zhejiang University in China, he became interested in the newly developing field of bioengineering during his time as a graduate student at Temple University.

There, Luo's department worked on various research projects in collaboration with the medical school. Luo found it fascinating to watch scientists approach the same problems using the "different languages" of engineering and biology.

"Bioengineering was a new field for me, but it was a way to bridge the gap between the engineers and

the doctors," he said, "and I decided that I wanted to build the bridge".

While pursuing his doctoral degree in bioengineering at the University of Maryland, Luo became interested in studying microfluidics — the study of fluids in microscale that have dimensions similar to individual human hairs. Microfluidics has many applications in engineering and biomedical diagnostics. It can replicate, study, and analyze bodily processes — like how blood transports nutrients — on a significantly smaller scale.

Luo has researched how microfluidics can be used to build microscopic versions of tissues to mimic organs in the body. He hopes to one day recreate the metabolic passageway in this way, to be able to observe the many reactions that take place as the human body tastes, eats, and digests food. By doing so, he believes, scientists can learn more about the body's reactions to certain behaviors, which can be helpful in developing treatments for certain sicknesses.

"When you shrink the equipment and processes down to that dimension, it can really save costs and

allow you to do things more rapidly," Luo said. "It's a very promising field because research can be cheaper; it can be faster; it can be disposable; and it can help the field of biomedical engineering a lot."

Since coming to Catholic University three and a half years ago, Luo has continued to research microfluidics and its applications. Two years ago, he came up with an idea to build a lipid bilayer, an artificial cell membrane that replicates the properties of cells in the human body.

Luo's fabricated membrane will be highly valuable for scientists who study how drugs or waste transport through cell membranes in the body. Normally, scientists struggle with standalone lipid bilayers, which are similar in texture to a soap bubble. Those membranes are extremely delicate and difficult to work with, and can only last for a day at the most.

By using materials he acquired from the shells of blue crabs, the wings of insects, and seaweed algae — biopolymers like chitosan and alginate — Luo has been able to make his lipid bilayer supported with a biopolymer membrane. The polymer layer acts as the skeleton of lipid bilayer, which is much easier to work with and durable enough to last for several weeks or even months.

"This would be widely used by the pharmaceutical companies for fundamental biological study," Luo said. "It could be game-changing when successfully established."

In January, Luo was awarded a prestigious Faculty Early Career Development Program (CAREER) Award from the National Science Foundation. The award, which totals more than \$500,000, will fund five years of research for Luo's lipid bilayer membrane. Five graduate students and three undergraduate students are working with him on this and related projects.

For Luo, this is the fulfillment of a lifelong goal. He originally decided to study engineering because he wanted to build something that would solve problems and be useful to the world. He loves the interdisciplinary nature of his research, and the surprising solutions that have been the result.

"As engineers, we are trying to build a platform that is useful and important to the field of biology," Luo said. "This is a really good example for students, that they can use the techniques of engineering they learn in the classroom in a different field to create something new."

School Explores Educational Opportunities in the Philippines

The School of Engineering has established international programs in several Asian countries in the last ten years, including Vietnam, India, China, and Taiwan. The school was especially active in arranging educational programs with several top universities in Vietnam, enabling Vietnamese students to join The Catholic University of America yearly to participate in our 2+2 and 4+1 programs. The school has hoped for several years to expand its international programs to the Philippines, and now with the experience gained from working in the countries mentioned above and a strong recruitment structure, the school is ready to move forward.

Encouraged by one of his former students, Hilda Gigioli, B.S.E. 1983, who is of Philippine descent, Dean Charles Nguyen went to meet with the Philippine Ambassador to the United States, Jose Cuisia, at the embassy in Washington, D.C., to discuss educational opportunities in the Philippines. Ambassador Cuisia was enthusiastically supportive of helping the school expand its global outreach to his country. He sent letters with his strong endorsement to the presidents of several prominent universities in Manila and asked them to host the school at their institutions to explore collaboration.

As a result of the ambassador's effort, a delegation consisting of Dean Charles Nguyen, Hilda Gigioli, her

husband George Gigioli, B.E.E. 1983, and Uyen Nguyen, director of International Programs in Asia, traveled to Manila in April 2016. The delegation members met with leaders and officials of the University of the Philippines (UP), Mapua Institute of Technology (MIT), De La Salle University (DSU), and University of Santo Tomas (UST). They visited the facilities and laboratories of these institutions and discussed curriculum and scholarship programs with prospective students. Dean Nguyen signed a memorandum of understanding (MOU) with MIT, DSU, and UST to establish the framework for the School of Engineering to explore establishing educational programs with these institutions. The three-day trip to the Philippines ended with a meeting with Ambassador Cuisia in Manila, where the delegation informed him about its trip progress and thanked him for his support.

After coming back to campus, with the assistance of Uyen Nguyen, who resides in Ho Chi Minh City, Vietnam, and travels frequently to Manila to meet with leaders of the Philippine universities, Dean Nguyen worked actively with university administrators and leaders of the Philippine universities to complete memoranda of agreement (MOA) to establish educational programs at these institutions. Catholic University signed an MOA with UST to

establish a 3+2 dual program for undergraduate students from UST to join CUA after 3 years and graduate with degrees from CUA and UST after two years. A 5+1 program was also established, enabling qualified students to pursue a master degree at Catholic University after receiving a bachelor's degree from UST. The Pope Francis Scholarship Program was established to grant tuition support to UST students. Memorandums of agreement are being considered for similar educational programs for students of MIT and DSU. In the meantime, an MOU was recently signed by UP as a result of the Catholic University visit. We expect to receive the first group of students from UST to join us in the fall 2016.

The school has actively worked with local Philippine organizations, including the Philippine Association of Metropolitan Washington Engineers (PAMWE), to assist students when they come to study our campus in terms of immersion into American society and subsidy of housing and living expenses. Some local Philippine families have already expressed their willingness to provide housing to the students when they come to the D.C. area. The University of Santo Tomas has expressed its intention to subsidize the tuition expenses for some of its faculty members to come to pursue a master's degree in engineering at CUA through its established 5+1 program.

MOU signing ceremony with Mapua Institute of Technology (MIT).



From left, Dean Nguyen and Mrs. Nguyen pose with Philippine Ambassador Jose Cuisia and his wife.





From left to right: Fatmah Aldossary, Michael Weldon, Victoria Sudjian, and Kevin Nader.

Student's Invention Could Prevent Football Concussions

When he first began studying biomedical engineering at The Catholic University of America, 2016 graduate Michael Weldon never expected that he would incorporate his love of football into his research.

But Weldon, who played on the Catholic University football team throughout his four years of college, did just that, as part of his senior design project — a football training device meant to teach young players how to avoid concussions.

The project was the idea of engineering Clinical Assistant Professor Gregory Behrmann, who was inspired to build the device, which is unique on the market, after attending his nephew's football game. Weldon worked on the project with three other 2016 graduates: Kevin Nader, a member of the University's baseball team; Victoria Sudjian, a CUA lacrosse player; and Fatmah Aldossary, an international student from Saudi Arabia.

"Right now concussions in football are obviously a huge issue. It all starts at a young age so we really tailored this to that," Weldon said. "We wanted to

make a device that would be easy and successful for kids as a teaching device to help promote safe tackling and prevent head injuries."

The goal was to promote a safer tackling method known as heads-up tackling. When football players tackle with their hands at their sides and their heads in an upright position, they are far less likely to incur serious head or neck injuries.

To do this, the students built a small device that attached to a standard football helmet. Inside the device is a wireless inclinometer attached to a speaker that emits a high-pitched noise. As the person's head drops below a certain angle, the pitch gets louder, alerting them of dangerous behavior.

The device also contains a wireless transmitter that send data to a smartphone app. Using the app, coaches watching from the sidelines can see real-time data about a player's head position.

Since finishing their prototype in the fall, the team spent the spring months testing the effectiveness of the device's audio signal and app.

Behrmann, who previously worked as an industrial

engineer for much of his career, said the purpose of senior design projects, which are required of all engineering students during their senior year, is to prepare them for the kinds of experiences they might face in real-world engineering situations. On this project, he said, the students developed ideas, faced setbacks and a strict deadline, and had to develop workarounds.

"It really covered a lot of what you hope for," he said. "It starts with a problem, finding a solution, and then using what they've learned in four years to make an impact."

As student athletes, Weldon and Sudjian said they enjoyed working on a project designed to keep other athletes safe. In the future, the graduates say they hope to continue working on their device by making it smaller and more durable. They would also like to try testing the helmet with youth football leagues.

"Everybody keeps telling us to keep pursuing this device because there's such a need," Sudjian said. "It's good to hear that it could make a difference."

School of Engineering Receives Grant from USAID to Conduct Training in Vietnam

Dean Charles Nguyen has collaborated with Arizona State University (ASU) in Tempe in the last several years in numerous global activities, including the Vietnam Engineering Education Conference (VEEC) as panelist and panel moderator. Through this working relationship, Catholic University was invited by ASU to submit a subcontract proposal to the United States Agency for International Development (USAID) to fund a project called “Building University-Industry Learning and Development through Innovation and Technology” (BUILD-IT). As a result, in March 2016 the School of Engineering received a grant from USAID for five years to participate in the project through a subcontract with ASU.

Aiming at producing graduates who can pursue inclusive, technology-based careers, BUILD-IT links science, technology, engineering, and math (STEM) curricula to the needs of industry partners. More than 20 partners currently support this project. The main role of the School of Engineering in this project is to co-lead one of BUILD-IT’s key activities, dealing with quality assurance systems

and accreditation. The grant will enable Catholic University to send members of its faculty to Vietnamese universities to train senior academic leaders, including rectors, presidents, and deans, for quality assurance at the program level and institutional level.

In April, during a 14-day trip to Southeast Asia, Dean Nguyen attended the 2016 VEEC in Ho Chi Minh City and moderated one of its main panels on accreditation. During this trip he participated in the kickoff of the BUILD-IT project as an activity leader. In September 2016, Dean Nguyen will return to Vietnam to conduct the first workshop for Vietnamese senior academic leaders for institutional quality assurance and accreditation in Ho Chi Minh City and Hanoi.

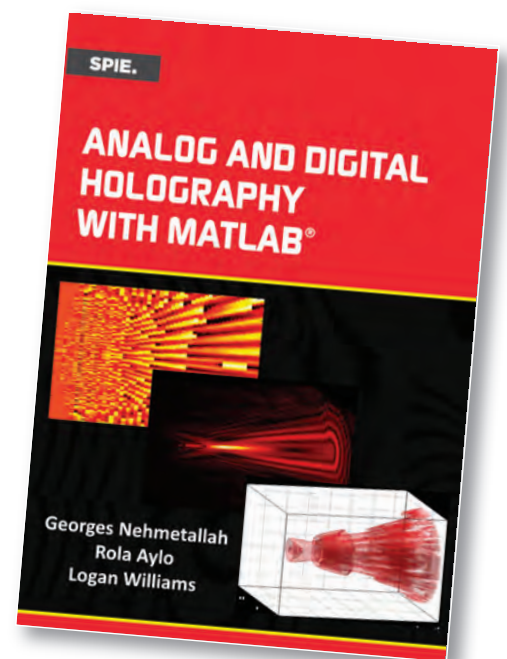
This new grant from USAID will enhance the reputation of Catholic University in Southeast Asia and open up more opportunities for the School of Engineering to further expand its global outreach. More information about the BUILD-IT project can be found at www.builditvietnam.org/.

Dean Nguyen was a panelist at the Vietnam Engineering Education Conference in Da Nang, Vietnam.



Help for Holographs in Nehmetallah’s New Book

Georges Nehmetallah, assistant professor of electrical engineering and computer science, has published a new book entitled Analog and Digital Holography with MATLAB®. The book is published by SPIE. Holography is the only truly three-dimensional imaging method available, and MATLAB has become the programming language of choice for engineering and physics students. Whereas most books solely address the theory behind these 3-D imaging techniques, this monograph concentrates on the exact code needed to perform complex mathematical and physical operations. The text and the included CD-ROM spare students and researchers from the tedium of programming complex equations so that they can focus on their experiments instead. Topics include a brief introduction to the history, types, and materials of holography; the basic principles of analog and digital holography; a detailed explanation of famous fringe-deciphering techniques for holographic interferometry; holographic and non-holographic 3-D display technologies; and cutting-edge concepts such as compressive, coherence, nonlinear, and polarization holography.





Ozlem Kilic, center, accepts her award.

Ozlem Kilic of EECS Receives Prestigious ACES Fellow Award for Contributions

Ozlem Kilic has been awarded the prestigious ACES (Applied Computational Electromagnetics Society) Fellow Award for her contributions to the field of applied computational electromagnetics. She has been serving ACES since 2005 in a number of capacities, including as a member of the board of directors (2009-2012), associate editor of the ACES Journal (2012-2014), chair of the membership committee (2009-2012), founding

editor-in-chief of Express Journal (January 2016-present), and chair of the student paper contest in March 2016. She has been a special session organizer at the annual ACES conference since 2005, and is serving as a member of the international advisory board for the 2017 ACES Conference to be held in Florence, Italy. Kilic has published six journal papers and 16 conference proceedings in ACES.

Neuroscience at CUA – A Vibrant and Growing Community

This academic year, Catholic University has made great strides in developing an academic and social foundation to support the University's neuroscience community. Neuroscience is a collaborative field focused on the study of the structure and function of the nervous system. For the first time, students and faculty across disciplines interested in this burgeoning field of study have a home at CUA.

In December 2015, CUA's Academic Senate approved the creation of a new interdisciplinary minor in neuroscience for undergraduate students. This is a unique minor that draws together courses and

research opportunities from multiple schools across the university. It was cofounded and is co-advised by Sahana N. Kukke (assistant professor of biomedical engineering) and Nancy E. Adleman (assistant professor of psychology). The neuroscience minor is open to all students, and requires completion of six neuroscience-related courses in two or more departments. The student response has been very encouraging! Eleven students signed up in the minor's first semester in operation.

The birth of the neuroscience minor coincided with that of the CUA Neuroscience Club, a student-

run organization created to promote awareness about the brain and brain health. The club's elected officers are students in the Schools of Engineering (vice president Courtney Nelson and treasurer Noor Aamer) and Arts and Sciences (president Nicole Tudor and secretary Abigail Nolan). The club's student membership is 35 strong and growing. Recent popular events included "Board Games and Brain Games" and a showing of the 2015 film *Inside Out*, which portrays the neuro-science of emotions.

Please contact kukke@cua.edu for more information on neuroscience at CUA.

From left: Sahana Kukke (advisor), Nicole Tudor (club president), Noor Aamer (treasurer), Courtney Nelson (vice president), Abigail Nolan (secretary), and Nancy Adleman (advisor).



Seniors Soar at Coulter College



From left to right: Christopher B. Raub (co-mentor), Louis Simpson, Darius Kodjo, Kolby Faria, Lily Del Valle, Brooke Petery, Paul Goebel, Sahana N. Kukke (co-mentor), Christine Matheson (Coulter College).

Six biomedical engineering seniors represented CUA at the highly selective Coulter College competition in Coral Gables, Fla., from August 13-16, 2015. The student team, composed of Lily Del Valle, Kolby Faria, Paul Goebel, Darius Kodjo, Brooke Petery, and Louis Simpson, was one among only 20 teams selected to participate in the three-day intensive program. Coulter College, supported by the Wallace H. Coulter Foundation, provides training on a variety of topics relevant to biomedical design, including idea generation, market research, regulatory concerns, and graphic design.

Although the event was conducted in August, the design team began preparing months beforehand under the mentorship of Christopher Raub and Sahana N. Kukke, assistant professors of biomedical engineering. The team's assignment was to find a solution to the challenges associated with the manual drainage of cerebrospinal fluid in patients with elevated intracranial pressure who must remain immobilized. Through literature review and interviews with neurosurgeons and nurses at the National Rehabilitation Hospital, Children's National Medical Center, and the University of Maryland, the team developed preliminary design ideas.

At Coulter College, the teammates crystallized their ideas with the help of a series of enriching lectures, intense working group meetings, and consultations with experts in entrepreneurship. On the final day of the competition, the student team made a pitch to a panel of judges on their design of an automated, continuous, noninvasive, and mobile intracranial pressure-monitoring device to help prevent patients from ever requiring cerebrospinal fluid drainage. The team represented the CUA School of Engineering in an excellent presentation!

Academic Training of Brazilian Students in the School of Engineering

This summer semester, the School of Engineering is hosting 43 Brazil Scientific Mobility Program (BSMP) students who are conducting research projects with the guidance of Jandro Abot, Ujjal Bhowmik, Chanseok Jeong, Sahana Kukke, Min Liu, Gunnar Lucko, Peter Lum, Arash Massoudieh, Georges Nehmetallah, Masataka Okutsu, Patricio Simari, Zhaoyang Wang, and Erion Plaku. This year, the BSMP summer program was organized and managed by the team at the Center for Global Education led by Associate Provost for International Affairs, Mario Ortiz.

The BSMP students study at a university in the United States of America during the fall and spring semesters and conduct academic training during the summer. More than 70 BSMP students have studied engineering at CUA for one year since 2012 and more than 120 students conducted academic training during the summer since 2015. The BSMP students return to Brazil to complete their undergraduate studies and some return to the U.S. to conduct graduate studies. BSMP is a program developed and administered by CAPES, a federal

agency in Brazil. The program was named "Ciência sem Fronteiras" (Science without Borders) and has sponsored about 93,000 students who studied in the U.S. and other countries around the world. In the U.S., BSMP is administered by the Institute of International Education (IIE), which provides logistical support to the universities to host the students.

At CUA Engineering, BSMP students have contributed to the research projects of many professors, bringing a significant level of research activity to the school during the summer. Several journal and conference proceeding papers resulted from the research of BSMP students under the guidance of faculty members Lucko, Okutsu, and Abot. Many of the BSMP students have remained in communication with their research advisors and worked on publications while in Brazil. This year, the BSMP students are conducting research projects in all five engineering programs in the school, including high-performance computing, drone programming and design, building in a Martian environment, and many other exciting topics.

This summer, Gunnar Lucko mentored engineering students from Brazil.



IT'S ROCKET SCIENCE: Students Present Papers at AIAA Conference

In ME554 Aerospace Design, taught by Masataka Okutsu, students launched model rockets to verify their trajectory calculations. To be successful, everything that affects the motion of the vehicle must be understood.

These rockets were propelled by off-the-shelf motors widely used by hobbyists. During the semester, students needed to calculate the theoretical limit of the “boosts” these motors could produce. (Rocket motors may be thought of as fireworks designed for thrusts, rather than visual effects.) Unfortunately, the manufacturer did not disclose the exact makeup of the propellant, information necessary for the analysis.

John Brewer, a mechanical engineering student, had a thought. “If no one could tell us what this propellant is made of, perhaps we could find out ourselves.”

Brewer dissected the motor casing and took out a sample of the propellant, presumed to be a kind of black powder — a generic name given for some combination of potassium nitrate, carbon, and sulfur. In addition to performing an infrared spectroscopy that could detect the presence of certain molecules, Brewer subjected the sample to multiple chemical reactions in order to extract one substance at a time.

Due to Brewer’s work, the class was able to not only confirm that the propellant was black powder, but also identify the exact amount of each substance it contained.

Analysis of propellant was but one of many activities carried out for the model rocket project. Some students spent weeks writing trajectory code, while others climbed up to the rooftop of Pangborn

Hall to test the parachutes that their rockets deploy at high altitudes.

The project leader of this multidisciplinary endeavor was T.J. Campbell, an accelerated master’s student in mechanical engineering. His responsibilities included orchestration of rocket launches on the day of the flight tests.

Campbell and Brewer, each working with their classmates and the instructor, wrote papers about their project. Both papers were accepted for presentations in the education track at a conference hosted by the American Institute of Aeronautics and Astronautics (AIAA), a premier organization for aerospace engineers.

In early January, a week before the spring semester began, Campbell and Brewer flew to California to attend the AIAA Science and Technology (SciTech) conference, held in a luxury hotel overlooking San Diego Bay. More than 4,000 researchers and professionals were discussing recent breakthroughs in aviation and spaceflight.

“It was inspiring to see the cutting edge of research in the aerospace industry,” said Campbell. “I was honored to be a part of this event.”

Campbell and Brewer said that their learning experience came not just from the conference, but also from the preparation before the trip.

“Writing a conference paper was a great learning experience for me,” said Brewer. “After spending many hours perfecting the manuscript at the professional standard, I am now more prepared to take on a new project in the future.”

For their achievements, Campbell and Brewer received the Mary Ann Sestili Ph.D. Award.

School of Engineering Named to Grand Challenge Scholars Program

The Catholic University of America School of Engineering was recently accepted into the National Academy of Engineering (NAE) Grand Challenge Scholars Program, which is “designed to prepare students to be the generation that solves the grand challenges facing society in this century.”

Dean Charles Nguyen petitioned the NAE in March for CUA to be recognized as the 20th college and university with an approved Grand Challenge Scholars program. Catholic University is the only school in the Washington, D.C., area and the only Catholic institution in the country to be recognized with the honor.

According to Nguyen, the program is a way to raise the profile of the engineering school while better preparing students to face real-world challenges. Undergraduate students who complete the program will receive the distinction of Grand Challenge Scholar, as endorsed by the NAE.

The program will operate like an honors program for the top 20 to 30 students in the engineering school. Students who participate will receive interdisciplinary training focused on entrepreneurship, global dimensions, and service learning.

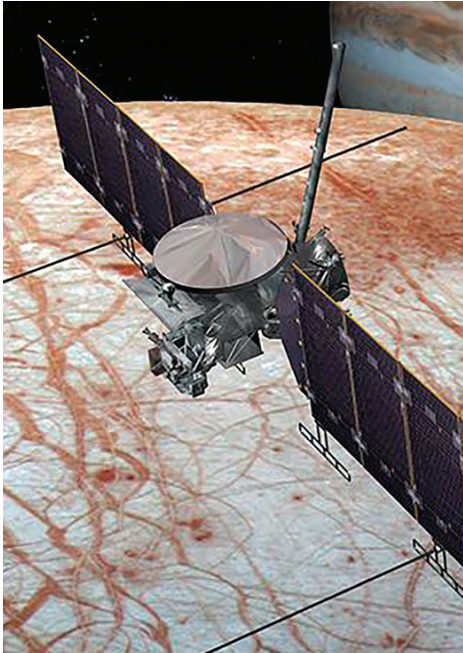
They will also be required to complete a hands-on project related to one of the 14 grand challenges for engineering in the 21st century, as identified by the NAE. Those challenges include issues related to solar energy, clean water, urban infrastructure, cyberspace security, and preventing terrorism.

“This is an exciting, challenging time for society, our nation, the world, and higher education,” said Nguyen. “We are excited to be afforded the opportunity to be on the forefront of educating today’s scholars to solve tomorrow’s problems and challenges by participating in the NAE Grand Challenge Scholars Program.”



From left, T.J. Campbell and John Brewer each made a presentation during the AIAA SciTech conference in San Diego, Calif., in January.

CUA Researchers Propose Seismic Investigation of the Satellite Europa



Jupiter's satellite Europa is believed to harbor a global ocean beneath its ice-covered surface. The thickness of the ice, despite its implication of the habitability of this moon, is currently unknown; estimates range from as thin as a mile to as thick as tens of miles.

To investigate the extraterrestrial ice, NASA is planning the Europa Multiple Flyby mission for launch between 2022 and 2025.

Some scientists point out, however, that the proposed instruments for this mission may be insufficient to measure the ice's thickness.

Inspired by the potential challenge, researchers at The Catholic University of America proposed a hypothetical experiment: a method to study European ice by observing its response to an artificial impact.

The team consists of students and professors including Masataka Okutsu and Chanseok Jeong from the Department of Civil Engineering and Joseph Vignola and Diego Turo from the Department of Mechanical Engineering.

"The impactor assumed in this study is a spent rocket structure, with the mass of an SUV," said Okutsu.

Aline Franqui, a civil engineering student, was the lead author of a paper presented at an American Institute of Aeronautics and Astronautics (AIAA) conference in January 2016. After receiving a scholarship from the Brazilian government, Franqui spent a summer doing research with Okutsu.

"It was interesting to apply my knowledge from

geotechnical engineering and other civil engineering courses to a problem of space mission," said Franqui.

Spencer Seufert and Matheus Cosenza, both mechanical engineering majors, were coauthors of the study. Their calculations showed that the impactor could slam into Europa at 15.7 km/s, blast off the ice, and generate shock waves that propagate through the ice.

That impact velocity is 60 times the flight speed of a Boeing 747 aircraft, one science reporter noted.

To detect the vibration, the team assumed a seismometer to be placed on the moon's surface prior to the impact.

But if the wave response were large enough, it may be possible for a spacecraft performing a flyby to remotely detect the vibration using state-of-the-art image rendering techniques.

T.J. Campbell and John Brewer, both mechanical engineering students, decided to investigate this problem as their senior design project. In addition to Okutsu, who has a research background in space missions, they enlisted Vignola and Turo — mechanical engineering professors with expertise in acoustics and vibration — to advise their project.

During the course of the year, Campbell and Brewer made significant progress. Their senior design project received the Best Presentation and Poster Award in the Mechanical Engineering category.

The findings from their senior project were also presented during the Acoustical Society of America conference in Salt Lake City, Utah, in May.

When Campbell made a presentation on behalf of the team, a reporter from Science News was in the audience. A news article came out next day featuring Campbell and his work on the Europa mission.

But there are many other aspects of the proposed concept that warrant further investigation.

"One of the challenges is identification of the complex topography of the interface between solid ice sheet and underlying ocean of Europa," said Chanseok Jeong, assistant professor in the Department of Civil Engineering. "Solving this problem would require advanced wave-propagation modeling and robust high-performance computing."

Jeong and his doctoral student Stephen Lloyd employed "inverse wave modeling" — a technique used in civil engineering in such applications as detection of oil fields underground. Their study on the Europa mission concept was recently published in *Journal of Aerospace Engineering*.

School of Engineering Celebrates E-Week

Each year, our School of Engineering at CUA celebrates Engineers Week (E-week) with a series of events including lab demonstrations, competitions, and seminars. This spring semester, the engineering students celebrated E-Week with a Jeopardy event. Two seniors in the Department of Biomedical Engineering, Lily del Valle, president of the Society of Hispanic Professional Engineers student chapter, and Cristina Butrico, organized the event, which was held in the lobby of Pangborn Hall. Many engineering students from all classes had the opportunity to answer questions on math, science, and engineering subjects and check their knowledge about them (or lack thereof!).

In addition, an E-week seminar hosted an alumnus of the School of Engineering, Tom Conway, President of the Virginia Society of Professional Engineers, who gave a seminar in the Scullen Room about the importance of licensure and the profession of engineering. This seminar also had the goal of raising awareness among engineering students about the importance of succeeding in the Fundamentals of Engineering (FE) exam.



Engineering Student Recognized for Her Leadership

If you were a student at The Catholic University of America in the past four years, you might have known Lexie.

Alexa “Lexie” Mayewski-Staab, senior in civil engineering, has been a leader in many activities on campus. One of the hats she wore was being a cardinal ambassador.

By corresponding with prospective Catholic University students and by giving campus tours to them, cardinal ambassadors serve as liaisons between the prospective students and the university.

After three years in the cardinal ambassador program, run by the Office of Admission, Lexie was promoted to be in charge: with 90 tour guides under her umbrella, Lexie helped countless high school seniors make their journeys to becoming CUA students.

Cardinal ambassadors need to be good role models, because prospective students form their opinions about the university, in part, through their interactions with those ambassadors.

“I loved being the leader of such an awesome group,” said Lexie, referring to other students who served in the program.

These ambassadors never actually clock out completely, either — an aspect of the job Lexie liked.

“Occasionally someone would come up to me on campus and say ‘You gave me my tour!’” said Lexie. “Nothing is as rewarding as that.”

Once these students arrive to campus housing,

Lexie continued to be part of their life — this time as a resident assistant. To build a sense of living community, she would organize a variety of activities for the residents. One of her favorite memories was “midnight monument hopping.”

When not busy being an engineering student, cardinal ambassador, or resident assistant, Lexie would visit President Garvey’s office as a member of President’s Society, consisting of 20 seniors. These selected members of the University community also volunteered their time to enable the visit of Pope Francis, a special event that was covered by the national and international media.

“That experience is something I will never forget,” said Lexie.

On April 19, the Cardinal Leadership Celebration was held in the Great Room of the Edward J. Pryzbyla University Center. In front of a large crowd, Lexie was presented with the Martha Comiskey Memorial Award, given to a student with a high level of dedication to University activities.

As a graduate of May 2016, Lexie is now pursuing her career in civil engineering at The Whiting-Turner Contracting Company. She said that four years of learning technical lessons as well as interpersonal skills prepared her for the real world.

“Attending CUA was the best decision I have ever made,” Lexie said.

John Judge Elected ASME Fellow and Appointed Associate Dean



John Judge, associate professor of mechanical engineering, has been appointed the associate dean of the School of Engineering. Judge will assist Dean Nguyen with the administration of the School, including working with the department chairs and program directors to coordinate all undergraduate and graduate programs, implementing new initiatives and improvements, coordinating appointment and promotion of faculty, and meeting with current and prospective students, faculty, staff, and administrators, and visitors to answer questions, address concerns, and in general promote the School of Engineering.

Judge was also recently elected a fellow of ASME. The citation for this award is as follows: “Dr. Judge has made significant contributions in research and education, while providing exceptional service and leadership to the mechanical engineering community. Dr. Judge is an expert in vibration and dynamics, with a research focus on mistuned rotors, micro-resonator arrays, and laser vibrometry. He is an author of 19 archival journal publications. He has served ASME in the capacity as a conference program chair, symposia organizer, and active member of multiple technical committees. He is a recipient of the CAREER Award from the National Science Foundation.”

From left, Masataka Okutsu introduced Alexa Mayewski-Staab at the Cardinal Leadership Celebration event.



CUA Dual-Degree Programs Founded with Liberal Arts Universities

The School of Engineering has made great effort in establishing collaborative educational programs with other liberal arts Catholic universities that do not offer an engineering degree. Following up a visit by a delegation including the president and provost from Franciscan University of Steubenville (FUS) in April 2015, CUA and FUS have worked together intensively since September 2015 to review and evaluate the curricula, admission requirements, and financial aid issues of the two institutions. In January 2016, CUA and FUS signed an Articulation Agreement (AA) establishing a 2+2 transfer arrangement for FUS students to transfer seamlessly to CUA after two years at FUS in order to complete their final two years of studies. Provided that all stipulated criteria are met, a student will receive an associate of arts degree in general studies from FUS at the time of satisfaction of FUS requirements and a bachelor of engineering from CUA at the time of satisfaction of the CUA degree requirements.

Associate Dean J. Steven Brown visited FUS in late April to meet with a group of approximately 10 FUS students interested in CUA Engineering. Brown commented, "I hope this small beginning will yield much fruit in the years to come for both programs. The FUS students are of high quality and we look forward to welcoming our first transfer students from there in the near future. I believe the program will be successful because of the dedicated, hardworking staff and faculty at FUS who are committed to making this program work and be beneficial for their students."

In September 2015, Dean Charles Nguyen traveled to New Orleans, Miss., and visited with Maria Calzada, dean of Humanities and Natural Sciences of Loyola University-New Orleans (LUN) and its faculty to explore establishing similar transfer programs. Since Nguyen's visit, CUA has worked with LUN to cooperatively develop a 3-2 engineering program which consists of three years of instruction at Loyola followed by two years of instruction at The Catholic University of America. An AA to establish the above program with LUN is in the final stage and is expected to be signed by both institutions at the beginning of the 2016-2017 academic year.

Undergraduate Students Excel in Research

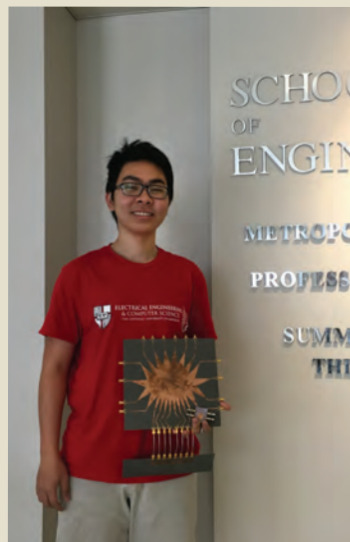
The Department of Electrical Engineering and Computer Science (EECS) was proud to graduate high-caliber seniors this year. A few of them have far surpassed expectations by publishing work in highly prestigious conferences, and presenting in international settings. Three of these students deserve special recognition:



Christopher Gordon was accepted into the College Qualified Leaders program at the Adelphi, Md., campus of the U.S. Army Research Laboratory (ARL) in May 2015, during his senior year. He worked under the

Signal and Electron Devices Directorate (SEDD) as part of the Signal and Image Processing (SIP) branch. His work was centered around computer vision research, specifically thermal and polarimetric thermal face detection/ recognition. Over just a few months, he was able to achieve significant improvements in face-detection performance of a known object detection framework using image preprocessing and retraining of object classifiers. As a result of this work, he produced a technical report for ARL, an abstract of which was sent to the SPIE Defense and Commercial Sensing (DCS) conference. An extended manuscript has been accepted for publication by SPIE DCS.

Tuan Nguyen is currently a senior student in the EECS department, working on projects related to the electromagnetic field of study under the guidance of Ozlem Kilic. As part of his senior design he has designed, fabricated, and measured high-frequency circuits and electronic components to be used to develop a multiple-input multiple-output (MIMO) antenna system for high-speed 5G communications.



He is continuing his work in Kilic's lab in the summer. He has published a paper: Nguyen, Tuan, Vo Dai, Toan, and Kilic, Ozlem. "Rotman Lens-Fed Aperture Coupled Array Antenna at Millimeter Wave," in the IEEE Antenna and Propagations Society International Conference, and will be presenting his findings this July 2016 in Puerto Rico.

Andrew Wells has been accepted as a doctoral student in the Department of Computer Science at Rice University, where he received the K2I Computational Science and Engineering Fellowship. While at CUA, Andrew worked under Erion Plaku to develop motion-



planning algorithms for mobile robotic systems. The algorithms combine discrete and continuous planning to solve challenging problems, yielding significant improvements over state-of-the-art motion planners. The work resulted in a paper entitled "Adaptive Sampling-Based Motion Planning for Mobile Robots with Differential Constraints," which was published by Springer LNCS Towards Autonomous Robotic Systems, vol. 9287, pp. 283-295. The paper won the award for best student paper. In recognition of his contribution to research, Andrew also received the CUA EECS Undergraduate Research Award and an Honorable Mention for the Computing Research Association's Outstanding Undergraduate Male Researcher Award for Ph.D.-granting institutions in 2016.



Photo: Bruce Cranford (AIAA Emeritus Associate Fellow, CUA Class of 1967) gives a tour of the Smithsonian Air and Space Museum to CUA students. Danielle Caruccio (with pink sweater) is the president of the student organization.

Students Reestablish Chapter of American Institute of Aeronautics and Astronautics

Ever since Albert Zahm built a wind tunnel here in 1901 — the very first such facility among universities in the United States — The Catholic University of America has played an important role in the country's advancement in aviation and spaceflight.

Now, a group of students has launched a new student club based on their shared interests in airplanes and spaceships. They elected Danielle Caruccio and Robert Taylor, both mechanical engineering majors, as their leaders. The faculty advisor of the newly founded group is Masataka Okutsu, an assistant professor with a doctorate in aerospace engineering.

After getting the club officially recognized by the University, the group contacted the American Institute of Aeronautics and Astronautics (AIAA) — the world's largest professional organization for aerospace engineers. The CUA students are aiming to establish a student chapter of AIAA here.

One of the people who assisted this effort was

Bruce Cranford, emeritus associate fellow of AIAA and an alumnus of CUA. Cranford received his Bachelor of Science in engineering from the Department of Space Science and Applied Physics in 1967.

Back then, a significant amount of research and development efforts in the United States were directed to the space program. Even before Neil Armstrong set his foot on the moon, NASA was already working on a plan to upgrade its Saturn V moon rocket with a nuclear rocket engine, so that the vehicle would be made powerful enough to send astronauts to Mars.

While a student at CUA, Cranford's class work would include such an assignment as simulation of fuel flow inside nuclear rocket engine. "My senior design project was 'space rescue system,'" he added.

At that time, CUA had an active student chapter of AIAA, Cranford said.

Now, a new generation of students are reestablishing CUA's tie to AIAA. On April 22-23, 2016, two CUA groups made their presentations during the AIAA Region I Student Paper Competition, held in Worcester, Mass.

The activities of the new club are not just serious technical work. A visit to the Smithsonian Air and Space Museum was one of the examples of fun things they did. When the students contacted Cranford to join the event, he offered to give them a tour of the museum.

Cranford told them about all kinds of flying machines, from the space shuttle Discovery to the spy plane Blackbird (shown behind students in photo). Listening to Cranford, the students developed an appreciation for the historical breakthroughs made by their predecessors.

"It was amazing to see the progression of aircraft throughout the years," said Caruccio. "I hope we can make this tour an annual event."

Students Shine on Senior Design Day



Dean Nguyen and Vice Provost Nakas with one of the winning teams.

On Monday, May 2, the eighth annual Senior Design Day was held in the Great Room of the Edward J. Pryzbyla University Center. This day, dedicated to the projects seniors had been working on in conjunction with various faculty members and collaborators over the course of the academic year, was a great success. A total of 132 seniors from four departments and five programs, including biomedical engineering

(25 students in six teams), civil engineering (33 students in seven teams), electrical engineering and computer science (24 students in six teams), and mechanical engineering (50 students in 11 teams) were divided into 30 teams. The teams displayed their completed projects with presentations and posters, illustrating the final products of a year-long process.

Associate Dean J. Steven Brown remarked, "I am proud of the students for a job well done. They and their advisors should be proud of their accomplishments. I also am struck by how, each year, this day matures and grows into something more stable and impressive. I look forward to the 10th edition and would welcome any of our alumni and friends to consider joining us in early May 2017 for what promises to be another exciting edition of Senior Design Day."

Over 50 faculty members and visitors attended the event to judge the presentations and poster sessions. Each of the four winning teams was chosen from a different department. Among the eleven mechanical engineering groups, the judges selected "An

Impactor Mission to Europa: A Vibrometric Approach for Estimating the Ice's Thickness" whose members were John Brewer and Thomas Campbell. The winning biomedical engineering group composed of members Nouf Alharthi, Mohammad Bagatadah, Cristina Butrico, and Frances Anne Tosto, were recognized for "Comparing Nanoparticle Uptake and EGFR Expression of Breast Cancer Cell Lines Using Polarized Light, Dark Field Microscopy, and Spectral Analysis."

The electrical engineering/computer science winners were William Clingerman, Angela Grippo, Michael Grossane, Erik Hyland, William Lash, Austen San Nicolas, and James Young, for "Solar Splash Team: Design and Development of a Solar-Powered Boat." The civil engineering group chosen by the judges included Matthew D'Antonio, Noah Donoghue, Ian Moss, Christopher Papp, and Edward Rivera, for "Terraforming Mars." The day concluded with an awards ceremony where Vice Provost for Administration Victor Nakas and Dean Charles Nguyen honored the winning teams.

Intelligence Director Honored with Engineering Award

The School of Engineering recently honored Letitia Long with its 2015 Distinguished Alumni Award.

Long, who earned her Master of Science in Mechanical Engineering in 1988, has spent her career in senior roles in the intelligence community. She has served as deputy director of the Defense Intelligence Agency, Deputy Under-secretary of Defense for Intelligence, and director of Intelligence Community Affairs at the CIA.

Long became the first female head of a major U.S. intelligence agency when she started her position as the fifth director of the National Geospatial-Intelligence Agency (NGA) in August 2010. A combat support agency within the Department of Defense, the NGA informs customers ranging from the President of the United States to the Director of National Intelligence, as well as military leaders on the ground who plan day-to-day combat and special operations missions.

The agency is one of several that played a critical role in the operation against Osama bin Laden, as well as disaster relief efforts after the typhoon in the Philippines and Hurricane Sandy.

Dean Nguyen presented Long with the award during a recent luncheon for alumni of the school. He said Long was selected for the honor by a "unanimous vote" from the executive committee.

Long said she was "humbled and very pleased" to accept the award, adding that she had "only good memories" of her time as a part-time CUA graduate student.

"My master's degree was very important because it was directly applicable to the work I was doing at the time in underwater research for the Navy," she said. "There's a very strong connection between the Navy and Catholic University, particularly in engineering and in underwater acoustics. Back then, Catholic had one of only three or four such programs in the country for underwater acoustics, which is very important for our nation's security."

Long said she was inspired to pursue engineering at the suggestion of her high school guidance counselor. Now she enjoys working with young women to encourage them to enter the engineering field.

"There still aren't enough women in engineering and there aren't enough women in senior positions

in the government or private industry," Long said. "I want to show young people that they can do it, that yeah, there's still a little bit of a glass ceiling, but that there are more cracks in it, and to help them develop the confidence to succeed."

"It has been shown over and over again that the more diverse a group of people working on a set of problems, a better solution you're going to get," she said. "That diversity has to include women."



School Honors Faculty for Excellence

Each year, the School of Engineering's Award Selection Committee identifies recipients for awards established to honor faculty members for outstanding performance during the academic year.

The Kaman Award for Excellence in Teaching was given to Patricio Simari, assistant professor in the Department of Electrical Engineering and Computer Science. He was recognized for consistently receiving glowing evaluations from students, many of whom have gone out of their way to provide comments regarding his approachability, passion, engagement, dedication, and depth of knowledge. He also was recognized for his curricular developments including

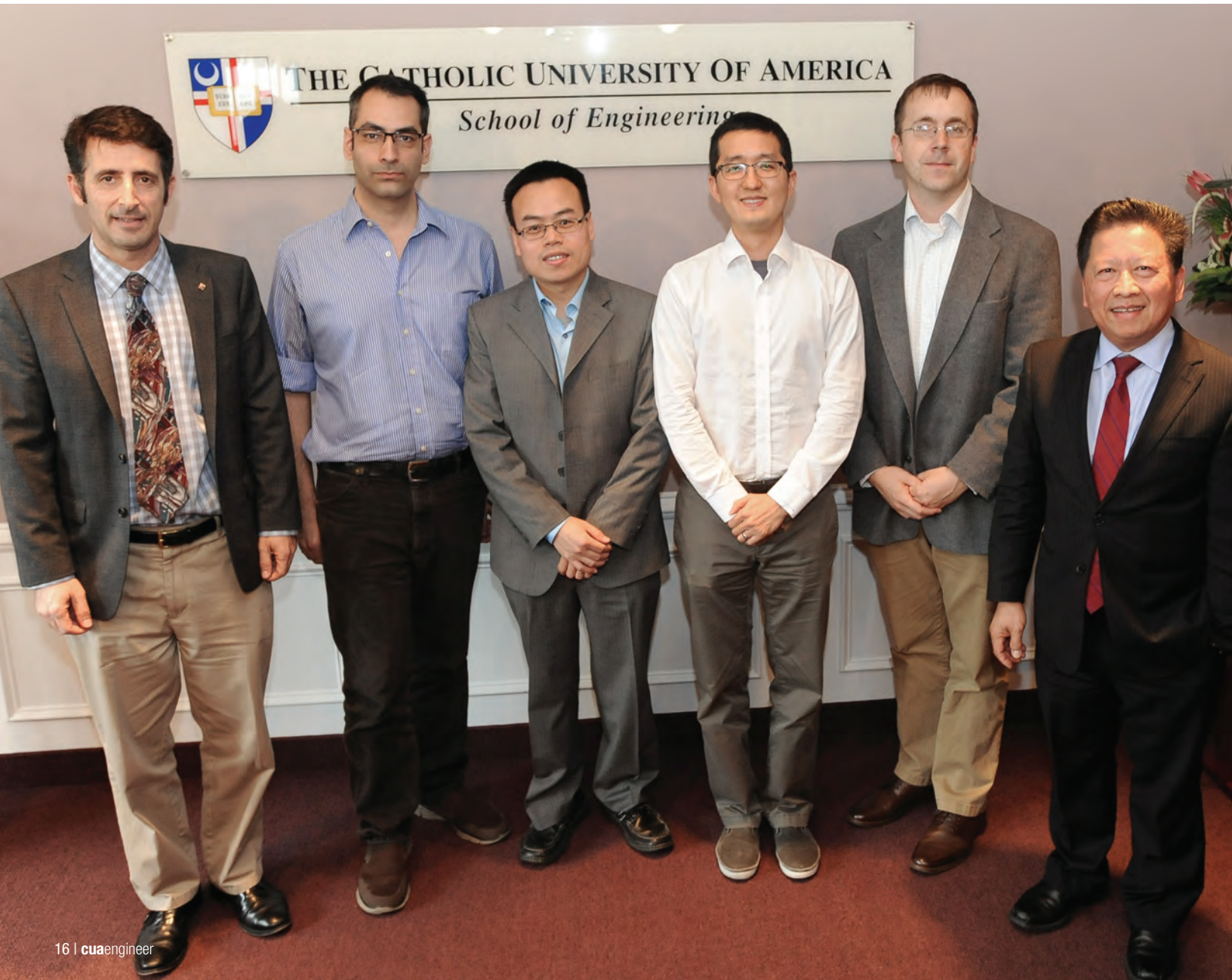
adding several new courses in game programming, geometry processing, and machine learning.

The Kaman Award for Excellence in Research was given to Xiaolong Luo, assistant professor of mechanical engineering, who has established a state-of-the-art laboratory for microfluidics, lab-on-a-chip, and biofabrication sciences and technologies, with the first ever microfabrication-outside-cleanroom facility in the School of Engineering. His research has been recognized with the reception of two research grants, one of which was a highly competitive and prestigious 5-year CAREER Award from the National Science

Foundation. He published one journal paper and has delivered or is scheduled to deliver six conference papers.

Two faculty members were named Burns Faculty Fellows: Chanseok Jeong, assistant professor of civil engineering, for his proposed work on the reconstruction of acoustic sources in complex, dynamic systems., and Eric Kommer, assistant professor of mechanical engineering, for his proposed work on microscale heat transfer dynamics during single droplet evaporation in microgravity environments.

From left to right: Provost Andrew Abela, and faculty members Patricio Simari, Xiaolong Luo, Chanseok Jeong, Eric Kommer, and Dean Charles Nguyen.



Alumni Corner

1940s

Edmund Habib, B.E.E. 1949, over his prolific career helped change how we communicate today. After serving in World War II, Habib was instrumental in the creation of the first U.S. satellite called "Project Vanguard" and methods of tracking satellites including the "Tracking and Data Relay Satellite System" in a career with Navy Research Labs, the Goddard/ NASA Space Center, and several global engineering firms. He has been around the world multiple times. His favorite trip was to Russia purchasing one of their satellites. He has four children, nine grand-children, and two great grandchildren, and is now working on his autobiography with the encouragement of his family.

1960s

J. Michael Suraci, B.S.E.E. 1962, is currently a lead ISO 17025 assessor with ANAB and president of Suraci Consulting Services. He retired in 2002 after 32 years at Lockheed Martin. He is a past president of the National Conference of Standards Laboratories International (NCSLI) and managed Calibration Laboratories at NASA KSC in Florida; NASA Electronics Research Center in Cambridge, Mass.; NASA JSC at Houston, Texas; and NAVAL Sub-marine Base at Silverdale, Wash. He started his career at the National Bureau of Standards in Washington, D.C.

Jude Eric Franklin, B.E.E. 1965, M.E.E. 1968, Ph.D. 1980, had a terrific and satisfying career, thanks to CUA Engineering. He chased Russian submarines around the world, was vice president of applied engineering at Mar Inc., first manager of the Navy AI Center at NRL, vice president and CTO for PRC Inc, principal engineering fellow and CTO at Raytheon. He retired in 2012 and is very busy cooking, volunteering, serving on boards, traveling, and seeing the grandchildren in swimming, soccer, and choral activities. He is married to Mary Fran Bizot Franklin, B.A. 1965, B.S.N. 1980.

1970s

Arturo C. Hosh, B.M.E. 1976, is a managing partner in Agencia Maritima Martin SRL (maritime shipping). He is also owner of Valhala SRL (cattle ranch); Honorary Consul for Denmark — Knight of 1st Class Order of Dannebrog; and Honorary Consul of Norway — Knight of Royal Norwegian Order of Merit.

1980s

William Harry Gordon, Ph.D. 1981, is currently a fellow engineer at Northrop Grumman Undersea Systems in Annapolis, Md.

Mark Giarratana, B.M.E. 1982, is a partner in McCarter & English, LLP.

Nabil Abdul-Rahim, B.C.E. 1986, is a senior project manager working for CH2M, which is an American consulting engineering firm. I am based in the Middle East and currently working on the Jebel Ali Port Container Terminal 4 project.

1990s

Devi P. Rathod, B.B.E. 1993, is the integrated logistics engineering manager at Ultra Electronics - ICE, Inc., and owner of Devi Wilbur Fine Arts Studio.

Mamoun Alaoui, B.M.E. 1993, M.M.E. 1995, is head of Acoustics and Video Analyzes and Research Department at the Moroccan Royal Gendarmerie, actual military rank: Major. He had to put in place both an acoustics laboratory and a video laboratory that are now under the same department. The first one deals with speaker ID, speaker profiling, and speech enhancement as well as regional phonetics analysis. The second one deals with video forensics and photographic/video comparison. The two main challenges were the architectural acoustics design of the facilities and training a team of assistants who respectively have a bachelor's in linguistics and a bachelor's in electronics. He still holds this position and visits the U.S. approximately once a year for transfer of technology.

Joseph T. Kider Jr., B.C.S. 1999, is joining the Institute for Simulation and Training at the University of Central Florida as an assistant professor in Fall 2016.

2000s

Melissa (Currie) Impastato, B.C.E. 2002, has been with Clark Construction for 14 years and is currently serving as its corporate director of scheduling at Clark's headquarters in Bethesda, Md. In addition, she is a member of Leadership Arlington and was named one of Arlington's Top 40 Under 40. She serves on the board for Elizabeth Seton High School in Bladensburg, Md., and is active in the development of their STEM program. She lives with her husband (Jon Impastato '02) and daughter Juliette in Washington, D.C.

Jillian B. Bauer, M.S. in Engineering, 2005, started a new job in Millennium Construction, LLC as a project manager.

Jonathan Gravina, B.B.E. 2009, M.B.E. 2010, is currently a senior field service engineer and product specialist for the Omnis Immunohistochemistry (IHC) platform at Dako, a subsidiary of Agilent Technologies. He and his wife Brianna, a 2009 graduate of the CUA School of Nursing, are expecting their first child in November.

2010s

Andu Nguyen (Dung Nguyen), B.E.E. 2010, M.S.E.E. 2011, graduated with a Ph.D. in Engineering Sciences from the MAE department at UC San Diego with the thesis on the integration of solar energy in March, 2016. Currently working as a senior engineer in the Grid Engineering Solutions (GridX) department at SolarCity from March, 2015.

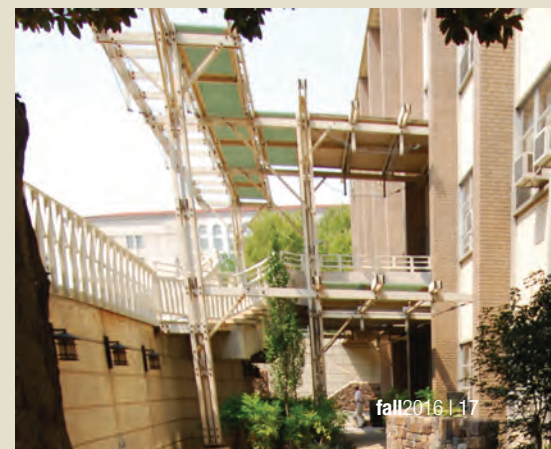
Evan Heisman, B.C.E. 2010, earned his M.S. in Civil Engineering in 2012 from University of Colorado at Boulder and works for the U.S. Army Corps of Engineers in Walla Walla, Wash., as a hydraulic engineer modeling reservoir operations and water quality for the Columbia and Snake River basins. In 2015 he received his Professional Engineer license in the state of Washington.

Margaret Keller, B.C.E. 2011, after five years with GEI Consultants, Inc., moved in June 2016 to AEW Capital Management, L.P. as a project manager on the Architecture and Engineering Group.

Rachael Vizzi McHugh, B.B.E. 2011, M.S. 2013, is Field Service Engineer for Biosense Webster, a Johnson and Johnson Company.

Sean Michael Cooke, B.M.E. 2011, left the U.S. Army, where he worked as an Engineering Captain, in July 2015. He is currently working as a senior design assurance engineer for Medtronic, Inc.

Dante J. DeAnnuntis, B.C.E. 2015, recently joined Amtrak as an engineering management associate.



Faculty

Awards and Honors

- **Abot, J. L.**, Fulbright U.S. Scholar, 2014-2015.
- **Bhowmik, U. K.**, Kaman Award for Excellence in Teaching, 2015, School of Engineering.
- **Jeong, C.**, Burns Faculty Fellow Award, School of Engineering, May 2016.
- **Judge, J.**, Mechanical Engineering, was elected Fellow of ASME, 2016.
- **Kilic, O.**, Fellow, Applied Computational Electromagnetics Society (ACES), 2016.
- **Kommer, E.M.**, Burns Junior Faculty Fellowship, Catholic University, 2016.
- **Liu, M.**, Burns Faculty Fellow, School of Engineering, 2015.
- **Luo, X.**, Faculty Early Career Development (CAREER) Award, National Science Foundation, 2016.
- **Nehmetallah, G.**, Elected to the grade of Senior Member of SPIE in June 2015.
- **Plaku, E.**, Kaman Best Researcher Award, School of Engineering, May 2015.
- **Simari, P.**, Charles H. Kaman Award for Excellence in Teaching, School of Engineering, April 2016.
- **Sun, L.**, Best Paper Award, *China Journal of Highway Engineering*, 2016.

Grants

- **Abot, J. L.**, (PI), “Miniature Piezo-Impedance Sensors for Structural Health Monitoring Using Carbon Nanotube Yarn,” Fulbright-Brazil Scientific Mobility Program, Summer 2015, \$30,458.
- **Abot, J. L.**, (Co-PI), and Belay, K., (FAMU) (Co-PI), “Strain Monitoring and Damage Detection in Polymers and Composite Materials Using Carbon Nanotube Fiber Sensors,” Air Force Office of Scientific Research, 06/15/2015-06/14/2017. Abot’s share: \$135,000.
- **Brown, J.S.**, “Advanced Information Models and Software Tools for Smart Manufacturing and Model Based Design,” National Institute of Standards and Technology, April 1, 2015-March 31, 2018, \$383,913.
- **Brown, J.S.**, “Development of STEM Workforce in Mechanical Engineering at The Catholic University of America in Support of NASA’s Strategic Goals,” D.C. Space Grant Consortium (NASA), May 1, 2015–August 26, 2016, \$28,500.
- **Chang, L-C.**, (PI), “Investigation of TBI in the Ferret Using Advanced MRI and Histopathology Technique,” Henry M. Jackson Foundation for

the Advancement of Military Medicine, Award No. HU0001-09-2-0004, January–December 2016, \$37,000.

- **Chang, L-C.**, (PI), “Computer Software Programming Support for NHLBI Cardiac Magnetic Resonance Image Processing, Visualization and Quantification Tools,” National Heart, Lung, and Blood Institute, National Institutes of Health, Award No. HHSN2682015-00119P. June 2015–May 2018, \$123,354.
- **Judge, J. A.**, (Co-PI), **Vignola, J. F.**, (PI), and **Turo, D.**, (co-PI), “Modeling Acoustic Propagation in Littoral and Surf-Zone Regions,” Office of Naval Research, July 2015-June 2016, \$121,962.
- **Kukke, S. N.**, “Does enhanced tactile-motor feedback improve manual dexterity in the non-dominant hand of young adults with no neurological injuries,” CUA Grant-in-Aid, June–October, 2015, \$1,650.
- **Lee, S.W.**, (PI), “Development of a biomimetic hand exoskeleton for effective rehabilitation of stroke survivors,” National Institute of Health, July 2013–June 2016, \$154,138.
- **Lee, S.W.**, (PI), “CAREER: Neuromechanics of functional impairment of upper extremity following stroke and its effective restoration by retraining muscle activation patterns,” National Science Foundation, April 2015–March 2020, \$500,445.
- **Liu, H.**, (PI) and **Kilic, O.**, (Co-PI), “An Architecture for Future Configurable Millimeter Wave Cellular Networks,” National Science Foundation, May 2015-April 2017, \$100,000.
- **Liu, H.**, (PI) and **Kilic, O.**, (Co-PI), “Multi-Input Multi-Output (MIMO) Aware Cooperative Dynamic Spectrum Access,” National Science Foundation, January 2015-December 2017, \$299,998.
- **Liu, H.**, (PI), **Namazi, N.**, (Co-PI), **Chang, L.**, (Co-PI), and **Kilic, O.** (Co-PI), “Planning Grant: I/UCRC for Broadband Wireless Access and Applications Center Site at the Catholic University of America,” National Science Foundation, April 2014-March 2016, \$13,000.
- **Liu, H.**, (PI), “Architecture and Control Protocols for Mobile Edge Computing,” InterDigital Communications, Inc. (NSF IUCRC Center Industry Sponsor), February 2016-January 2018, \$40,000.
- **Liu, M.**, (PI), “Performance evaluation of critical building structures against progressive collapse,” CUA Grant-in-Aid, October 2015–April 5, 2016, \$2,000.
- **Lucko, G.**, (PI), “Drawing on Concepts in Finance for Construction Schedule Performance Measurement,” National Science Foundation, September 15, 2015–August 31, 2017, #CMMI-1536005, \$175,002 + \$83,840 tuition remission.
- **Lum P.S.**, (PI), “Robot therapy for rehabilitation of hand movement after stroke,” National Institutes of Health R15 Award, September 2013-September 2016, \$457,954.
- **Lum .P.S.**, (PI), “Biomechanics of Upper Extremity Function following Stroke,” VA Merit Review Award, April 2012-October 2015, \$300,000.
- **Lum P.S.**, (PI), “Task-specific upper-extremity robotic training for stroke neurorehabilitation,” VA Merit Review Award, March 2016–March 2020, \$718,786.
- **Luo, X.**, “CAREER: Highly stable lipid bilayers on freestanding cytoskeleton-like membrane,” National Science Foundation, June 1, 2016-May 31, 2021, \$504,671.
- **Luo, X.**, “Resistance measurement of model bilayer membranes (BLM) in microfluidics,” Catholic University of America Grant-in-Aid, February 6, 2016-August 5, 2016, \$4,275.
- **Massoudieh, A.**, “Multi criteria model predictive control (MPC) of nitrification-denitrification Processes,” DC Water, October 2015-September 2016, \$73,762.
- **Massoudieh, A.**, (PI), “Technical Support for SWMM-SWAT GI Modeling GAP and Analysis,” U.S. EPA, October 2014-May 2016, \$165,230.
- **Massoudieh, A.**, (PI), “Evaluating Long-term water quantity and quality performance of Bioretention systems in Washington, DC using monitoring and modeling,” United States Geological Survey through DC Water Resources Research Institute, March 2015–February 2016, \$9,920.
- **Nguyen, C.C.**, (PI), “Building University Industry Learning and Development through Innovation and Technology (BUILD-IT),” subcontract to Arizona State University, USAID, Award Number AID-440-A-15-00007/16-966, March 15, 2016-March 15, 2018, \$109,223.
- **Nieh, S.**, (PI), “Cassini Composite Infrared Spectrometer Mission Support and Planetary Instrument Development,” NASA/NSSC Grant # NNX16AG19A, March 9, 2016–March 8, 2019, \$487,471. Total funded in first increment: \$80,505.
- **Plaku, E.**, (PI), “A Synergistic Framework for Motion and Task Planning in Mixed Continuous and Discrete Spaces,” National Science Foundation, August 2015-August 2017, \$99,924.
- **Plaku, E.**, (PI), “Adaptive Mission and Motion Planning to Enhance the Autonomy of Underwater Vehicles,” U.S. Naval Research Laboratory, May 2015-May 2016, \$55,298.
- **Sun, L.**, (PI), “Traffic Information Collection, Analysis and Dissemination for Transportation Systems Management Operations,” American Association of State Highway and Transportation Officials, July 2015-June 2017, \$75,000.
- **Tran, B.Q.**, (Co-PI) and Vossoughi, J., (PI), “Development of Fall Detection System for mHealth Applications,” National Institutes of Health SBIR Grant (Submitted).

- **Tran B.Q.**, (PI), "Wearable Sensors for Detecting Falls in Low Income and Vulnerable Seniors." AARP Foundation (Submitted).
- **Vignola, J.F.**, (PI), **Judge, J.A.**, **Turo, D.**, and Ryan, T. J., "Modeling Acoustic Propagation in Littoral and Surf-Zone Regions," Office of Naval Research, June 2015-July 2016, \$121,692.
- **Wilson Jr., O.C.**, (PI), "STREAM Primary Source Inquiry to Cultivate Excellence in Education by Design (SPICED) NGSS Aligned Curriculum Development," Library of Congress, April 2015-September 2016, \$20,000.
- **Wilson Jr., O.C.**, (PI), "Teacher Quality Improvement Grant: PIQUED Curiosity K-12 Teacher Professional Development," D.C. Office of State Superintendent for Education/ Department of Education, April 2015-September 2016, \$100,000.
- **Abot, J. L.**, and Punnakattu Rajan, C., Book Chapter "Carbon Nanotube Yarns," *Carbon Nanomaterials Sourcebook*, edited by Klaus Sattler, Taylor & Francis, ISBN 978-14-822527-2-9 (2016).
- **Bhowmik, U. K.**, Cork, T., and Hudyma, Nick, "Polynomial regression, Area and Length based filtering to remove misclassified pixels acquired in the crack segmentation process of 2D X-ray CT images of tested plaster specimens," *IEEE CPS - CSCI 2015 Int'l Conference*, Las Vegas, Nev., Dec. 7-9, 2015.
- Duong, K., Tran, D., and **Bhowmik, U. K.**, "A VHDL Based Controller Design for Photo-plethysmography-Based Heart Rate Monitoring System," *IEEE CPS - CSCI 2015 Int'l Conference*, Las Vegas, Nev., Dec. 7-9, 2015.
- Akasaka, R., Higashi, Y., Miyara, A., **Brown, J. S.**, and Koyama, S., "A Preliminary Equation of State for 3,3,3-Trifluoroprop-1-ene (R-1243zf)," *19th Symposium on Thermophysical Properties*, Boulder, Colo., June 2015.
- **Brown, J. S.**, Fedele, L., Di Nicola, G., Bobbo, S., and Coccia, G., "Compressed Liquid Density and Vapor Phase PvT Measurements of Cis-1,2,3,3,3-Pentafluoroprop-1-ene (R1225ye(Z))," *19th Symposium on Thermophysical Properties*, Boulder, Colo., June 2015.
- **Brown, J.S.**, "Simulation Models for Well-Described and Not-So-Well-Described Working Fluids," *The 24th IIR International Congress of Refrigeration*, Yokohama, Japan, August 2015.
- **Brown, J.S.**, Brignoli, R., and Quine, T., "Parametric Investigation of Working Fluids for Organic Rankine Cycle Applications," *Applied Thermal Engineering*, 90: 64-74, 2015.
- **Brown, J.S.**, Fedele, L., Di Nicola, G., Bobbo, S., and Coccia, G., "Compressed Liquid Density and Vapor Phase PvT Measurements of Cis-1,2,3,3,3-Pentafluoroprop-1-ene (R1225ye(Z))," *Journal of Chemical & Engineering Data*, 60(11): 3333-3340, 2015.
- Fedele, L., Di Nicola, G., **Brown, J. S.**, Colla, L., and Bobbo, S., "Saturated Pressure Measurements of Cis-Pentafluoroprop-1-ene (R1225ye(Z))," *International Journal of Refrigeration*, <http://dx.doi.org/10.1016/j.ijrefrig.2015.10.012>, 2016.
- McLinden, M.O., **Brown, J.S.**, Kazakov, A.F., and Domanski, P.A., "Hitting the Bounds of Chemistry: Limits and Tradeoffs for Low-GWP Refrigerants," *The 24th IIR International Congress of Refrigeration*, Yokohama, Japan, August 2015.
- Fedele, L., Di Nicola, G., **Brown, J. S.**, Colla, L., and Bobbo, S., "Saturated Pressure Measurements of Cis-Pentafluoroprop-1-ene (R1225ye(Z))," *The 24th IIR International Congress of Refrigeration*, Yokohama, Japan, August 2015.
- Zilio, C., Mancin, S., **Brown, J. S.**, and Longo, G.A., "Saturated Pressure Measurements of Cis-Pentafluoroprop-1-ene (R1225ye(Z))," *The 24th IIR International Congress of Refrigeration*, Yokohama, Japan, August 2015.
- Brignoli, R., and **Brown, J.S.**, "Vapor Compression Cycle Model Capable of Simulating Well-Described and Not-So-Well-Described Refrigerants," *The 24th IIR International Congress of Refrigeration*, Yokohama, Japan, August 2015.
- Jacobs, M., Benovoy, M., **Chang, L.-C.**, Arai, A. E., and Hsu, L.-Y., "Evaluation of an Automated Method for Arterial Input Function Detection in First-Pass Myocardial Perfusion Magnetic Resonance Images and Its Impact on Quantitative Perfusion," *Journal of Cardiovascular Magnetic Resonance*, Vol. 18 (in press), 2016.
- Walker, L., **Chang, L.-C.**, Nayak, A., Irfanoglu, M. O., Botteron, K. N., McCracken, J., McKinstry, R. C., Rivkin, M. J., Wang, D. J., Rumsey, J., Pierpaoli, C., and the Brain Development Co-operative Group, "The Diffusion Tensor Imaging (DTI) Component of The NIH MRI Study of Normal Brain Development (PedsDTI)," *NeuroImage*, Vol. 124, 1125-1130, January 2016.
- Jacobs, M., **Chang, L.-C.**, Pulkinen, A., and Romano, M., "Automatic Analysis of Double Coronal Mass Ejections from coronagraph images," *Space Weather*, Vol. 13(11), 761-777, November 2015. Paper has been selected as the journal cover article.
- Dao, L., Glancy, B., Lucotte, B., **Chang, L.-C.**, Balaban, R. S., and Hsu, L.-Y., "A Model-Based Approach for Microvasculature Structure Distortion Correction in Two-Photon Fluorescence Microscopy Images," *Journal of Microscopy*, Vol. 260(2), 180-193, November 2015.
- Makki, E., and **Chang, L.-C.**, "E-commerce Acceptance and Implementation in Saudi Arabia: Previous, Current and Future Factors," *International Journal of Management Research and Business Strategy*, Vol. 4(3), 29-44, July 2015.
- Kirnosov, V., **Chang, L.-C.**, and Pulkinen, A., "Automatic CME Front Edge Detection from STEREO White light Coronagraph Images," *Space Weather*, Vol. 13(8), 469-483, August 2015.
- Makki, E., and **Chang, L.-C.**, "Understanding the Effects of Social Media and Mobile Usage on E-Commerce: An Exploratory Study in Saudi Arabia," *International Management Review*, Vol. 11(8), 98-109, April 2015.
- Bui, V., and **Chang, L.-C.**, "Explore Real-time Big Data Processing with Apache Storm using Twitter Public Stream Data," in *Proc. 2016 IEEE Computational Intelligence Society (CIS) Winter School on Big Data in Computational Intelligence*, Washington, D.C., February 2016 (first place of student oral presentation competition).

Presentations and Publications

- Bajar, A., Anike, J., and **Abot, J. L.**, "Hysteresis and time-dependent effects on the coupled mechanical-electrical response of unconstrained carbon nanotube fiber subjected to uniaxial tensile loading," *Proceedings of 30th American Society for Composites Conference*, Lansing, Mich., 2015.
- **Abot, J. L.**, Wynter, K., Mortin, S. P., Le, H. H., Borges de Quadros, H., and Casarotto, V. A., Burns, J., Leo, A., Belk, A. and Belay, K., "Localized damage detection and strain measurement in laminated composite materials using integrated carbon nanotube yarn sensors," *Proceedings of 20th International Conference on Composites Materials*, Copenhagen, Denmark, 2015.
- **Abot, J. L.**, "Integrated and Distributed Sensing Using Carbon Nanotube Yarns: A New Paradigm in Structural Health Monitoring," *Laboratory of Mechanics and Technology at École Normale Supérieure de Cachan*, Université de Paris-Saclay, France, July 17, 2015.
- Anike, J. C., Bajar, A., and **Abot, J. L.**, "Time-dependent effects on the coupled mechanical-electrical response of carbon nanotube yarns under tensile loading," *J. Carbon Res.* 2(1), 3 (2016). doi: 10.3390/c2010003.
- Esteves, F. M., Nehmetallah, G., and **Abot, J. L.**, "Low-cost attitude determination system using an extended Kalman filter algorithm," *Proceedings of SPIE: Signal Processing, Sensor/Information Fusion, and Target Recognition XXV*, Baltimore, Md., 2016.
- **Abot, J. L.**, Kiyono, C. Y., Thomas, G. P., and Silva, E. C. N., "Strain gauge sensors comprised of carbon nanotube yarn: Parametric numerical analysis of their piezoresistive response," *Smart Mater. Struct.* 24 (7): 075018 (2015).

- Liang, X., Lu, N., Maghrebi, M., Nguyen, H. T., **Chang, L.-C.**, and Massoudieh, A., "A Copula-based Model to Identify the Parameters of Run and Tumble Bacterial Motility," in *Proc. 2016 IEEE Computational Intelligence Society (CIS) Winter School on Big Data in Computational Intelligence*, Washington, D.C., February 2016 (second place of student oral presentation competition).
- Liang, X., **Chang, L.-C.**, Massoudieh, A., Lu, N., and Nguyen T. H., "Quantitative Inference of Bacterial Motility Behavior," in *Proc. 2015 International Conference on Computational Science and Computational Intelligence (CSCI)*, Las Vegas, Nev., 268-373, December 2015.
- Bhatta, R P., Henderson, M., Eufrazio, A., Pegg, I.L., and **Dutta, B.**, "Properties of p- and n-type PbTe Microwires for Thermoelectric Devices," *Journal of Electronic Materials*, 43, 11, 4056-63, 2015.
- Eufrazio, A., Pegg, I.L., and **Dutta, B.**, "Effect of Alkaline Earth Substitution on the Thermoelectric Properties of Barium Plumbate," American Physical Society Conference, Baltimore, Md., March 2016.
- Lloyd, S., and **Jeong, C.**, "Reconstruction of acoustic sources in a heterogeneous elastic solid, Society of Photographic Instrumentation Engineers (SPIE)," *23rd Annual International Symposium on Smart Structures, Nondestructive Evaluation and Health Monitoring*, Las Vegas, Nev., March 2016.
- Lloyd, S., and **Jeong, C.**, "Reconstruction of acoustic sources in a heterogeneous elastic solid," *Engineering Mechanics Institute Conference 2016 (EMI 2016)*, Nashville, Tenn., May 2016.
- **Jeong, C.**, Kallivokas, L.F., Huh, C., and Lake, L.W., "Maximization of pore fluid motions in poroelastic formations for wave-based enhanced oil recovery (EOR)," *Engineering Mechanics Institute 2015 Conference*, Stanford, Calif., June 2015.
- **Jeong, C.**, "Reconstruction of acoustic sources in a heterogeneous elastic solid," *Computational Seismology Group, Department of Geoscience*, Princeton University, May 2016.
- Lloyd, S., and **Jeong, C.**, "Reconstruction of acoustic sources in a complex, dynamic system," *Research Day, CUA*, April 2016.
- Herman, K., Solace, M., and **Jeong, C.**, "Identification of Multiple Moving Wave Sources in a Reverberating System Using Inverse Modeling and Uncertainty Quantification," *Research Day, CUA*, April 2016.
- Lloyd, S., **Jeong, C.**, and Okutsu, M., "Numerical investigation on the feasibility of estimating the thickness of Europa's ice shell by a planned impact," *ASCE Journal of Aerospace Engineering*, 2016 (in press).
- Esmaeilzadeh Seylabi, E., **Jeong, C.**, and Taciroglu, E., "On numerical computation of impedance functions for rigid soil-structure interfaces embedded in heterogeneous half-spaces," *Computers and Geotechnics*, Vol. 72, 15-27, 2016.
- Turo, D., Glean, A.A., Vignola, J.F., Ryan, T., and **Judge, J.A.**, "Characterization and design of sound absorber materials," *170th Meeting of the Acoustical Society of America*, Jacksonville, Fla., Nov. 2-6, 2015.
- Guan, S., Vignola, J. F., **Judge, J. A.**, Turo, D., and Ryan, T.J., "Inter-pulse noise field during an Arctic shallow-water seismic survey," *169th Meeting of the Acoustical Society of America*, Pittsburgh, Pa., May 18-22, 2015.
- Ryan, T.J., Turo, D., Vignola, J.F., and **Judge, J.A.**, "Using acoustics and vibrations to teach experimental concepts and technical communications," *169th Meeting of the Acoustical Society of America*, Pittsburgh, Pa., May 18-22, 2015.
- Hall, H.S., Vignola, J.F., **Judge, J.A.**, Turo, D., and Ryan, T.J., "An improved two-microphone transfer function method for measuring oblique absorption coefficient in the free field using numerical modeling," *169th Meeting of the Acoustical Society of America*, Pittsburgh, Pa., May 18-22, 2015.
- Vignola, J.F., Ryan, T.J., Turo, D., Guan, S., and **Judge, J.**, "A historical perspective: Frank Andrews and acoustics at The Catholic University of America," *169th Meeting of the Acoustical Society of America*, Pittsburgh, Pa., May 18-22, 2015.
- Sterling, J., Vignola, J., **Judge, J.**, Glean, A., and Ryan, T., "Effects Of Fabrication Error In The Performance Of A Subordinate Oscillator Array," *ASME 2015 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Boston, Mass., August 2-5, 2015.
- Guan, S., Vignola, J.F., Turo, D., **Judge, J.A.**, and Ryan, T.J., "Inter-pulse noise field during an Arctic shallow-water seismic survey," *Oceanoise 2015 Conference*, Villanova I la Geltru, Barcelona, Spain, May 2015.
- Guan, S., Vignola, J. F., **Judge, J. A.**, and Turo, D., "Characterization of marine seismic survey reverberant sound field in an Arctic shallow-water environment," *IEEE/OES China Ocean Acoustics Symposium*, Harbin, China, January 2016.
- Guan, S., Vignola J., **Judge J.**, and Turo, D., "Airgun inter-pulse noise field during a seismic survey in an Arctic ultra shallow marine environment," *Journal of the Acoustical Society of America*, Vol. 138(6), 3447-3457, 2015.
- Guan, S., Lin, T.-H., Vignola, J., Chou, L.-S., **Judge, J.**, and Turo, D., "Dynamics of soundscape in a shallow water marine environment of Indo-Pacific humpback dolphin (*Sousa chinensis*)," *Journal of the Acoustical Society of America*, Vol. 137(5), 2939-2949, 2015.
- **Kommer, E.M.**, "Unmanned vehicle systems competitions program overview in 2016," *Office of Naval Research Reserve Component Winter Program Review*, Arlington, Va., January 2016.
- Guzman, C., Brownell, C., and **Kommer, E.M.**, "The Magnus effect and the American football," *Sports Engineering*. Vol 19, 13-20, Sept. 2015.
- **Kommer, E.M.**, "Numerical modeling of flow boiling instabilities using TRACE," *Annals of Nuclear Energy*, Vol. 76, 263-270, 2015.
- **Kukke, S.N.**, "Abnormalities of motor coordination and cortical activation in individuals with dystonia due to hemiplegic cerebral palsy," *National Institutes of Health Rehabilitation Medicine Grand Rounds*, Bethesda, Md., May 2015.
- **Kukke, S.N.**, "Making sense of our senses: Exploring touch," *Women in Science public lecture*, Washington, D.C., March 2016.
- Lee, P.J., Huynh, R., and **Kukke, S.N.**, "Electroencephalographic correlates of tactile vs. visual guidance during a tracing task," *Society for Neuroscience Annual Meeting*, Chicago, Ill., October 2015.
- Geed, S., Silva, G.G., Rodrigues, M., and **Kukke S.N.**, "Tactile-enhanced motor practice improves dexterity over visually-guided practice," *International Stroke Conference*, Los Angeles, Calif., February 2016.
- Lee, P.J., and **Kukke, S.N.**, "Practice order effects of tactile and visual guidance during movement on tracing performance and cortical activation," *Catholic University Research Day*, Washington, D.C., April 2016.
- Lee, P.J., and **Kukke, S.N.**, "Practice order effects of tactile and visual guidance during movement on tracing performance and cortical activation," *Society for the Neural Control of Movement Annual Meeting*, Montego Bay, Jamaica, April 2016.
- **Kukke, S.N.**, de Campos, A.C., Damiano, D., Alter, K.E., Patronas, N., and Hallett, M., "Cortical activation and inter-hemispheric sensorimotor coherence in individuals with arm dystonia due to childhood stroke," *Clin Neurophysiol.* 126(8), 1589-98, August 2015.
- Thirugnanasambandam, N., Khera, R., Wang, H., **Kukke, S.N.**, and Hallett, M. "Distinct interneuronal networks influence excitability of the surround during movement initiation," *J Neurophysiol.*, 114(2), 1102-8, August 2015.
- Shields, J., Park, J.E., Srivaniachapoom, P., Paine, R., Thirugnanasambandam, N., **Kukke, S.N.**, and Hallett, M., "Probing the interaction of the ipsilateral posterior parietal cortex with the premotor cortex using a novel transcranial magnetic stimulation technique," *Clin Neurophysiol.* 127(2), 1475-80, Feb. 2016.
- **Kukke, S. N.**, Curatalo, L., de Campos A., Hallett, M., Alter, K., and Damiano, D., "Coordination of

- reach-to-grasp kinematics in individuals with childhood-onset dystonia due to hemiplegic cerebral palsy," *IEEE Trans Neural Syst Rehabil Eng*. [Epub ahead of print], July 2015.
- Vermillion, B.C., Kamper, D.G., and **Lee, S.W.**, "Modifying multi-muscle coordination by targeted assistance of hand muscles," *45th Annual Meeting of Society for Neuroscience*, Chicago, Ill., 2015.
 - Vermillion, B.C., Fasano, A., Park, H.S., and **Lee, S.W.**, "Superposition of mechanical action of muscles during multi-joint finger movements," *40th Annual Conference of American Society of Biomechanics*, Raleigh, N.C., 2015.
 - **Lee, S.W.**, and Kamper, D.G., "A novel computational modeling explains postural effects on strain distribution in finger extensor apparatus," *40th Annual Conference of American Society of Biomechanics*, Raleigh, N.C, 2015.
 - Vermillion, B.C., Lum, P.S., and **Lee, S.W.**, "Proximal arm kinematics affect grip force-load force coordination," *Journal of Neurophysiology*, vol. 114, 2265-2277, 2015.
 - Xing, X., **Liu, H.**, Cheng, X., Zhou, W., and Chen, D., "Cooperative Spectrum and Infrastructure Leasing on TV Bands," *10th International Conference on Wireless Algorithms, Systems, and Applications (WASA'15)*, Qufu, China, August 2015.
 - **Liu, H.**, and Smith, K., "Improving the Expected Quality of Experience in Cloud-Enabled Wireless Access Networks," *IEEE MASS'15*, Dallas, Texas, October 2015.
 - **Liu, H.**, Luo, L., Wu, D., Yu, J., and Chen, D., "Routing, Spectrum Access, and Scheduling in Multi-hop Multi-channel Wireless Networks with MIMO Links," *EURASIP Journal on Wireless Communications and Networking*, vol. 65, 1-12, May 2015.
 - Zhang, F., Zhang, Y., Reznik, A., **Liu, H.**, Qian, C., and Xue, C., "Providing explicit congestion control and multi-homing support for content-centric networking transport," *Elsevier Journal of Computer Communications*, vol. 69, no. 9, 69-78, September 2015.
 - Xing, X., **Liu, H.**, Cheng, X., Zhou, W., and Chen, D., "Cooperative Spectrum and Infrastructure Leasing on TV Bands," *Springer LNCS Wireless Algorithms, Systems, and Applications*, vol. 9204, 623-633, August 2016.
 - **Liu, M.**, "Comparison of pulldown analysis and pushdown analysis for nonlinear static evaluation of building potential for progressive collapse," *ASCE Geotechnical & Structural Engineering Congress*, Phoenix, Ariz., February 2016.
 - **Liu, M.**, "Fast procedure for practical member sizing optimization of steel moment frames," *ASCE Practice Periodical on Structural Design and Construction*, Vol. 20, 04014042, November 2015.
 - **Liu, M.**, "Discussion of 'Alternate path method in progressive collapse analysis: variation of dynamic and nonlinear load increase factors,'" *ASCE Practice Periodical on Structural Design and Construction*, Vol. 21, 07016001, May 2016.
 - **Lucko, G.**, and Su, Y., "Who should own float? Mitigating delays by float-preallocation." *Construction CPM Conference*, New Orleans, La., February 2016.
 - **Lucko, G.**, and Su, Y., "Modeling early payment discounts and late payment penalties with singularity functions," *CSCE International Construction Specialty Conference*, Vancouver, B.C., Canada, June 2015.
 - Su, Y., and **Lucko, G.**, "Comparison and renaissance of classic line-of-balance and linear schedule concepts for construction industry," In *Proc. Creative Construction Conference*, Kraków, Poland, 411-417, 2015.
 - Said, H.M.M., and **Lucko, G.**, "Construction space float definition, quantification, and analysis," In *Proc. CSCE International Construction Specialty Conference*, Vancouver, B.C., Canada, 1629-1638, 2015.
 - **Lucko, G.**, and Su, Y., "Modeling early payment discounts and late payment penalties with singularity functions," In *Proc. CSCE International Construction Specialty Conference*, Vancouver, B.C., Canada, 1743-1752, 2015.
 - **Lucko, G.**, and Thompson, R.C. "Simulated schedule delay mitigation via float allocation," In *Proc. CSCE International Construction Specialty Conference*, Vancouver, B.C., Canada, 1186-1195, 2015.
 - Holley, R.J., Chan, E., Dromerick, A., and **Lum, P.S.**, "Use of Accelerometers to Assess Upper Extremity Motor Performance following Stroke — A Pilot Study," *AOTA 2016 Annual Conference & Expo*, Chicago, Ill., April 2016.
 - Godfrey, S.B., Holley, R.J., and **Lum, P.S.**, "Evaluation of HEXORR Tone assistance mode against Spring assistance," *IEEE Trans Neural Syst Rehabil Eng*, Vol. 23(4), 610-7, 2015.
 - Vermillion, B., **Lum, P.S.**, and Lee, S.W., "Proximal arm kinematics affect grip force-load force coordination," *J Neurophysiol*, Vol. 114(4), 2265-77, 2015.
 - McLeod, A., Bochniewicz, E.M., **Lum, P.S.**, Holley, R.J., Emmer, G., and Dromerick, A.W., "Using Wearable Sensors and Machine Learning Models to Separate Functional Upper Extremity Use From Walking-Associated Arm Movements," *Arch Phys Med Rehabil*, Vol. 97(2), 224-31, 2016.
 - **Luo, X.**, Wolfram, C., Wu, H., Bentley, W., and Rubloff, G., "Static Gradients Generated with Biofabricated Semi-permeable Biopolymer Membranes in Microfluidics for Bacterial Chemotaxis Studies," *2015 BMES Annual Meeting*, Tampa, Fla., Oct. 7-10, 2015.
 - Laprade, A., and **Luo, X.**, "Lipid Bilayer Formation In PDMS Microfluidics Towards Highly Stable Artificial Cell Membrane," *2015 BMES Annual Meeting*, Tampa, Fla., Oct. 7-10, 2015.
 - **Luo, X.**, "Bacterial cell-cell signaling and chemotaxis enabled with biofabrication in microfluidics," *College of Chemistry and Chemical Engineering Seminar, Xiamen University*, Xiamen, China, July 25, 2015.
 - **Luo, X.**, Wu, H., Bentley, W., Sintim, H., and Rubloff, G., "Bacterial Chemotaxis in Static Gradients Generated with Biofabricated Semi-permeable Biopolymer Membranes in Microfluidics," *CUA Research Day*, Washington, D.C., April 15, 2016.
 - Pham, P.L., and **Luo, X.**, "Steering Air Bubbles in Two-layer Microfluidics Devices for in-situ Fabrication of Biopolymer Membranes," *CUA Research Day*, Washington, D.C., April 15, 2016.
 - Vo, T.H., Choy, J., and **Luo, X.**, "Microfluidics-Generated Static Gradients of Biomolecules for Studying Cell Dynamics," *CUA Research Day*, Washington, D.C., April 15, 2016.
 - Jambi, F., Choy, J., and **Luo, X.**, "Sorting Single Yeast Cells with a Microfluidic Platform," *CUA Research Day*, Washington, D.C., April 15, 2016.
 - **Massoudieh, A.**, and Gharavi, S., "A Flexible Framework for Process-Based Hydraulic and Water Quality Modeling of Stormwater Green Infrastructure Performance," *2016 National Capital Region Water Resources Symposium*, Washington, D.C., 2016.
 - Liang, X., Lu, N., Maghrebi, M., Nguyen, H.T., Chang, L., and **Massoudieh, A.**, "A Copula-based model to identify the parameters of run and tumble bacterial motility," *AEESP Conference*, Yale University, 2015.
 - Maghrebi, M., Niazi, M., and **Massoudieh, A.**, "A new framework for forward and inverse modeling of stormwater LIDs," *AEESP Conference*, Yale University, 2015.
 - Stewart, H., Al-Omari, A., De Clippeleir, H., Murthy, S., and **Massoudieh, A.**, "A. Parameter Estimation of Activated Sludge Models using Inverse Modeling," *AEESP Conference*, Yale University, 2015.
 - Alikhani, J., Al Omari, A., Murthy, S., Takacs, I., and **Massoudieh, A.**, "A stochastic calibration and uncertainty analysis of activated sludge models: A Case Study on the Blue Plains Wastewater Treatment Plant, Washington, DC," *AEESP Conference*, Yale University, 2015.
 - **Massoudieh A.**, "A new framework for forward and inverse modeling of stormwater LIDs," *GSA conference*, Baltimore, Md., 2015.
 - Alikhani J., **Massoudieh, A.**, Deinhart A. L., Visser A., Esser B., and Moran J., "Evaluating the information content of multiple groundwater age tracers in projecting nitrate vulnerability," *AGU conference*, San Francisco, 2015.

- Liang, X., Chang L. C., **Massoudieh A.**, Lu, N., and Nguyen, T. H., "Quantitative Inference of Bacterial Motility Behavior," *Symposium on Big Data & Data Science (CSCI-ISBD)*, 2015.
- Alikhani, J., Deinhart, A., Visser, A., Bibby, R., Purtschert, R., Moran, J., **Massoudieh, A.**, and Esser, B., "Nitrate vulnerability projections from Bayesian inference of multiple groundwater age tracers," in press, 2016.
- Leray, S., Engdahl, N.B., **Massoudieh, A.**, Bresciani, E., and McCallum, J., "Residence time distributions for hydrologic systems: Mechanistic foundations and steady-state analytical," in press, 2016.
- Beniam, I., **Mathews, S.A.**, Charipar, N.A., Auyeung, R.C.Y., and Piqué, A., "Laser printing of 3D metallic interconnects," *Proc. SPIE 9738, Laser 3D Manufacturing III*, San Francisco, Calif., 97380I, 2016.
- Charipar, N.A., Kim, H., **Mathews, S.A.**, and Pique, A., "Vanadium dioxide base picosecond electromagnetic pulse generator," *IEEE Photonics Conference (IPC)*, Reston, Va., 128-129, 2015.
- Charipar, N.A., Kim, H., **Mathews, S.A.**, and Piqué, A., "Broadband terahertz generation using the semiconductor-metal transition in VO₂," *AIP Advances*, Vol. 6, 015113, January 2016.
- Ghassemi, P., Wang, J., Melchiorri, A.J., Ramella-Roman, J.C., **Mathews, S.A.**, Coburn, J.C., Sorg, B.S., Chen, Y., and Pfefer, T.J., "Rapid prototyping of biomimetic vascular phantoms for hyperspectral reflectance imaging," *Journal of Biomedical Optics*, Vol. 20, 121312, October 2015.
- Auyeung, R.C.Y., Kim, H., **Mathews, S.A.**, and Piqué, A., "Spatially modulated laser pulses for printing electronics," *Applied Optics*, Vol. 54, F70-F77, November 2015.
- Leach, J.H., Chinn, S.R., Goldberg, L., and **Mathews, S.A.**, "Monostatic all-fiber rangefinder system," *Applied Optics*, Vol. 54, 7687-7692, September 2015.
- Sepantaie, M., **Namazi, N.**, and Sepantaie, A., "Identical synchronization of secure communication systems with stochastic resonance utilizing multiplicative noise," *Proceedings of SPIE*, Baltimore, Md., April 2016.
- Nguyen, T., **Nehmetallah, G.**, Tran, D., Darudi, A., and Soltani, P., "Fully Automated, High Speed, Tomographic Phase Object Reconstruction Using the Transport of Intensity Equation In Transmission and Reflection Configurations," *Applied Optics*, 54(35), 10443-10453, 2015.
- **Nehmetallah, G.**, Banerjee, P., and Khoury, J., "Simulation of adaptive defect detection in amplitude and phase structures via photorefractive four-wave mixing," *Applied Optics*, 54(32), 9622-9629, 2015.
- Williams, L. A., **Nehmetallah, G.**, Aylo, R., and Banerjee, P.P., "Application of up-sampling and resolution scaling to Fresnel reconstruction of digital holograms," *Applied Optics*, 54, 1443-1452, 2015.
- **Nehmetallah, G.**, Khoury, J., Banerjee, P.P., and Alam, M., "Photorefractive two-beam coupling joint transform correlator: performance and comparison with optimal filter correlators," *Applied Optics*, 55 (15), 4011-4023, 2016.
- **Nehmetallah, G.**, Aylo R., and Williams, L., *Analog and Digital Holography With MATLAB®* (book), SPIE Press, Bellingham, Wash., 2015.
- Soltani, P., Darudi, A., Reza Moradi, A., Amiri, J., and **Nehmetallah, G.**, "A guide to properly select the defocusing distance for accurate solution of Transport of Intensity Equation while testing aspheric surfaces," *SPIE DCS Dimensional Optical Metrology and Inspection for Practical Applications V*, Baltimore, Md., April 2016.
- Esteves, F.M., and **Nehmetallah, G.**, "Low-Cost Attitude Determination System Using An Extended Kalman Filter (EKF) Algorithm," *SPIE DCS*, Baltimore, Md., April 2016.
- **Nehmetallah, G.**, "Multi-wavelength digital holographic microscopy using a telecentric reflection configuration," *Topical Meeting in Digital Holography and Three-Dimensional Imaging (DH)*, DM3A.7, Shanghai, China, May 24-28, 2015.
- **Nehmetallah, G.**, Banerjee, P., and Khoury, J., "Analytical analysis of adaptive defect detection in amplitude and phase structures using photorefractive four-wave mixing," *SPIE DSS, Optical Pattern Recognition XXVII*, Baltimore, Md., April 21, 2016.
- **Nehmetallah, G.**, Nguyen, T.C., Tran D., Darudi, A., and Soltani, P., "SLM based tomography of phase objects using single-shot transport of intensity technique," *SPIE DCS Dimensional Optical Metrology and Inspection for Practical Applications V*, Baltimore, Md., April 20, 2016.
- **Nguyen, C.C.**, "Charles C. Nguyen: Pope Francis Has Spoken to the Engineering Profession in His Encyclical," (blog), (<http://popeindc.cua.edu/news-social/news-blog/charles-c-nguyen-pope-francis-has-spoken-to-the-engineering-profession-in-his-encyclical/>), posted on CUA website on the occasion of Pope Francis's visit to CUA, Aug. 22, 2015.
- Siebert, M., and **Nieh, S.**, "Control of an Air Siphon Atomizing Nozzle Using Hydrogen and Gases Other Than Air," *Int'l Journal of Hydrogen Energy*, Vol. 41, Issue 1, 683-689, 2016.
- Siebert, M., and **Nieh, S.**, "Comparing Hydrogen and Hydrogen-Rich Reformate Enrichment of JP-8 in an Open Flame," in *Proceeding of 47th Power Sources Conference*, Section 14.4, Orlando, Fla., June 13-16, 2016.
- Matthew, O., Nguyen, H., and **Nieh, S.**, "Analysis of Natural Gas SOFC-GT-ST-ORC Quadruple Cycle for Power Generation," in *Proceeding of 47th Power Sources Conference*, Section 13.1, Orlando, Fla., June 13-16, 2016.
- Siebert, M., and **Nieh, S.**, "Measurement of Hydrogen Enriched Combustion of Jet Fuel in Open Flame," in *Proceeding of ASME 2016 Power & Energy Conference*, pp. 1-7, Charlotte, N.C., June 26-30, 2016.
- **Nieh, S.**, (invited speaker), "Combustion and Cycle Modifications for Improved NGCC Performance," *Energy and Combined Cycle Power Generation Outlook Conference*, TaiPower Headquarters, Taipei, Taiwan, July 7, 2015.
- **Nieh, S.**, (invited speaker), "Applied Energy Systems and Environmental Impacts," *School of Engineering Seminar*, Chung Yuan Christian Univ., Taoyuan, Taiwan, July 16, 2015.
- **Nieh, S.**, (invited speaker), "Electric Power and NGCC-NGGT in Taiwan: Status and Outlook," *Gas Turbine and Combined Cycle Technology Workshop*, at South TaiPower Training Center, Kaoshiong, Taiwan, Aug. 12-14, 2015.
- **Nieh, S.**, (invited speaker), "Power/Energy of Taiwan and Radical Changes of CCP" at *Taoyuan Veteran and Military Alumni Conference*, Taoyuan, Taiwan, Dec. 30, 2015.
- Siebert, M., and **Nieh, S.**, "Hydrogen Enriched Combustion of Heavy Hydrocarbon Fuels," *Poster Presentation at CUA Provost Research Day*, Washington, D.C., April 15, 2016.
- Matthew, O., and **Nieh, S.**, "Thermodynamic Analysis of Natural Gas SOFC-GT-ST-ORC Quadruple Cycle for Power Generation," *Poster Presentation at CUA Provost Research Day*, Washington, D.C., April 15, 2016.
- Franqui, A., Seufert, S., Cosenza, M., and **Okutsu, M.**, "Impactor Missions to Europa and Ganymede: Estimation of Shockwave Energy for Measuring the Thickness of Icy Crusts," *AIAA Aerospace Sciences Meeting*, San Diego, Calif., Jan. 4-8, 2016.
- Campbell, T.A., Seufert, S.T., Reis, R.C., Brewer, J.C., Limberger Tomiozzo, R., Whelan, C.E., and **Okutsu, M.**, "Model Rocket Projects for Aerospace Design Course: Simulation of Flight Trajectories," *AIAA Aerospace Sciences Meeting*, San Diego, Calif., Jan. 4-8, 2016.
- Brewer, J.C., Reis, R.C., Limberger Tomiozzo, R., and **Okutsu, M.**, "Model Rocket Projects for Aerospace Design Course: Propellant Analyses," *AIAA Aerospace Sciences Meeting*, San Diego, Calif., Jan. 4-8, 2016.
- Lloyd, S., Jeong, C., and **Okutsu, M.**, "Numerical Investigation on the Feasibility of Estimating the Thickness of Europa's Ice Shell by a Planned Impact," *Journal of Aerospace Engineering*, 2016.
- Campbell, T.J., Brewer, J., **Okutsu, M.**, Turo, D., and Vignola, J., "Preliminary study of extraterrestrial optical vibrometry for an impactor mission to Europa," *171st Meeting of the Acoustical Society of America*, Salt Lake City, Utah, May 2016.
- Brewer, J. C., Campbell, T. A., **Okutsu, M.**, Turo, D., and Vignola, J., "An Impactor Mission to

- Europa: A Vibrometric Approach for Estimating the Ice's Thickness," 7th ASA *Mini-Conference on Acoustics*, Washington, D.C., May 11, 2016.
- Maximova, T., **Plaku, E.**, and Shehu, A., "Computing Transition Paths in Multiple-Basin Proteins with a Probabilistic Roadmap Algorithm," *IEEE International Conference on Bioinformatics and Biomedicine*, Washington, D.C., pp. 35-42, 2015.
 - McMahan, J., and **Plaku, E.**, "Autonomous Underwater Vehicle Mine Countermeasures via the Physical Traveling Salesman Problem," *MTS/IEEE Oceans*, Washington, D.C., pp. 1-5, 2015.
 - **Plaku, E.**, Rashidian, S., and Edelkamp, S., "Multi-Group Motion Planning in Virtual Environments," *Computer Animation and Virtual Worlds*, Vol. X, 1-21, 2016.
 - **Plaku, E.**, and Le, D., "Interactive Search for Action and Motion Planning with Dynamics," *Journal of Experimental and Theoretical Artificial Intelligence*, Vol. 1, 1-21, 2016.
 - McMahan, J., and **Plaku, E.**, "Mission and Motion Planning for Autonomous Underwater Vehicles Operating in Spatially and Temporally Complex Environments," *IEEE Journal of Oceanic Engineering*, Vol. PP, 1-20, 2016.
 - McMahan, J., and **Plaku, E.**, "Robot Motion Planning with Task Specifications via Regular Languages," *Robotica*, Vol. FirstView, 1-24, 2016.
 - **Plaku, E.**, and Karaman, S., "Motion Planning with Temporal-Logic Specifications: Progress and Challenges," *AI Communications*, Vol. 29, 151-162, 2015.
 - Wallar, A., **Plaku, E.**, and Sofge, D., "Reactive Motion Planning for Unmanned Aerial Surveillance of Risk-Sensitive Areas," *IEEE Transactions on Automated Science and Engineering*, Vol. 12, 969-980, 2015.
 - McMahan, J., Dzikowicz, B., Houston, B., and **Plaku, E.**, "A Hybrid Planning Framework For Autonomous Underwater Vehicles," *NRL Review*, Vol. 1, 128-130, 2015.
 - Wells, A., and **Plaku, E.**, "Adaptive Sampling-Based Motion Planning for Mobile Robots with Differential Constraints," Springer LNCS Towards Autonomous Robotic Systems, Vol. 9287, 283-295, 2015.
 - Lee, C.C., Predki, P., **Raub, C.B.**, Shibata, D., Taylor, C., and Kartalov, E., "Novel integration of genomic and morphological information reveals tumor heterogeneity," *AACR Annual Meeting*, New Orleans, La., April 16-20, 2016.
 - Correa, S.O., Garabedian, R.M., Gibbons, P.E., Huynh, R.N., Padova, D.M., and **Raub, C.B.**, "Relating Optical Retardance to Compressive Strain in Collagen Hydrogels," *Biomedical Engineering Society Annual Meeting*, Tampa, Fla., Oct. 7-10, 2015.
 - Padova, D.M., Correa, S.O., and **Raub, C.B.**, "Relating Organization and Morphology of Large Collagen Fibers to Optical Parameters from Quantitative Polarized Light Microscopy," *Biomedical Engineering Society Annual Meeting*, Tampa, Fla., Oct. 7-10, 2015.
 - **Raub, C.B.**, Lee, C., Shibata, D., Taylor, C., and Kartalov, E., "HistoMosaic Detecting KRAS G12V Mutation Across Colorectal Cancer Tissue Slices through in Situ PCR," *Analytical Chemistry*, Vol. 88, 2792-2798, January 2016.
 - **Regalia, P.A.**, Khisti, A., Liang, Y., and Tomasin, S., Guest Editors, special issue on "Secure Communications via Physical Layer and Information-Theoretic Techniques," *Proceedings of the IEEE*, vol. 104, September 2015.
 - Wheeler, P.T., Chambers, J.A., and **Regalia, P.A.**, "A Survey of Digital All-pass Filter based Real and Complex Adaptive Notch Filters," (book chapter) in: Festschrift honoring Prof. A. Constantinides, Panstanford, Germany, 2015.
 - **Regalia, P.A.**, *Basics of Secrecy Coding, Operator Theory* (DOI: 10.1007/978-3-0348-0692-3_71-1), (book chapter), Springer Basel, 2015.
 - **Simari, Patricio D.**, "Plato's Hammer: The Art, Science, and Philosophy of Computing and Where It Might Take Us," *University Research Day*, The Catholic University of America, 2016.
 - Picciau, G., **Simari, P.**, Iurichich, F., and De Florian, L., "Supertetras: A Superpixel Analog for Tetrahedral Mesh Segmentation," *International Conference on Image Analysis and Processing (ICIAP)*, Genoa, Italy, Sept. 7-11, 2015.
 - Iurichich, F., and **Simari, P.**, "Hierarchical Mesh Segmentation Editing through Rotation Operations," *International Conference on Image Analysis and Processing (ICIAP)*, Genoa, Italy, Sept. 7-11, 2015.
 - Alhashim, I., Xu, K., Zhuang, Y., Cao, J., **Simari, P.**, and Zhang, H., "Deformation-Driven Topology-Varying 3D Shape Correspondence," *ACM Transactions on Graphics*, Vol. 34, Issue 6, 236:1-236:13, November 2015.
 - **Sun, L.**, "Life-cycle reliability design theory of high-speed railway," Beijing, April 12, 2016.
 - Ou, Z., **Sun, L.**, Zhou, J., and Zhao, G., "Probability value of temperature loads for ballastless track slab of high speed railway Axial Uniform thermal actions," *Journal of the China Railway Society*, Vol. 38, No. 2, 96-104, 2016.
 - Ren, J., and **Sun, L.**, "Generalized Maxwell Viscoelastic Contact Model-Based Discrete Element Method for Characterizing Low-Temperature Properties of Asphalt Concrete," *Journal of Materials in Civil Engineering*, Vol. 28, No. 2, 2016.
 - **Sun, L.**, Abolhasannejad, V., Gao, L., and Yawei, L., "Non-Contact Three-Dimensional Stereovision Optical Sensing and Measurement of Asphalt Mixture Deformation," *Journal of Measurement*, Vol. 85, 100-117, 2016.
 - **Sun L.**, and Qian Zedong, "Multi-Scale Wavelet Transform Filtering of Non-Uniform Pavement Surface Image Background for Automated Pavement Distress Identification," *Journal of Measurement*, Vol. 86, 26-40, 2016.
 - Wang, Y., **Sun, L.**, and Zhou, J., "Pavement performance evaluation of recycled styrene-butadiene-styrene-modified asphalt mixture," *International Journal of Pavement Engineering*, 1-10, 2015.
 - **Sun, L.**, Kamaliardakani, M., and Zhang, Y., "Weighted Neighborhood Pixels Segmentation Method for Automated Detection of Cracks on Pavement Surface Images," *Journal of Computing in Civil Engineering*, Vol. 30, No. 2, 2015.
 - Ge, M., and **Sun, L.**, "Design and development of highway tunnel maintenance and management system," *Journal of Southeast University*, Vol. 31, No. 1, 137-142, 2015.
 - Zhao, Lei, **Sun, L.**, Sun, Wei, Zhao, Guotang, "Research on the Warp of CRTS II Slab Track on the Support Layer without Bonding," *Journal of Hunan University*, No. 1, 2016.
 - Ou, Zumin, and **Sun, L.**, "Simplified Calculation Method on Nonlinear Temperature Effects of High-speed Railway Ballastless Track Slab," *Journal of Railway Engineering*, No. 6, 79-88, 2015.
 - Huynh, Q.T., Nguyen, U.D., and **Tran, B.Q.**, "Power Spectral Analyses to Detect Falls Using 3-D Accelerometers," *6th International Conference on Development of Biomedical Engineering in Vietnam*, June 2016.
 - Guan, S., **Vignola, J.F.**, Judge, J.A., and Turo, D., "Airgun inter-pulse noise field during a seismic survey in an Arctic ultra shallow marine environment," *J. Acoust. Soc. Am.*, Vol. 138, 3447-57, November 2015
 - Guan, S., Lin, T.-H., Chou, L.-S., **Vignola, J.F.**, Judge, J.A., and Turo, D., "Dynamics of soundscape in a shallow water marine environment: A study of the habitat of the Indo-Pacific humpback dolphin," *J. Acoust. Soc. Am.*, Vol. 137, 2939-49, April 2015
 - **Turo, D.**, Glean, A.A., **Vignola, J.F.**, Ryan, T., and Judge, J.A., "Characterization and design of sound absorber materials," *170th meeting of the Acoustical Society of America*, Jacksonville, Fla., 2015.
 - **Turo, D.**, Glean, A.A., Good, C.E., **Vignola, J.F.**, Ryan, T.J., and Judge, J.A., "Impedance tube experiments as a tool to teach acoustics of porous media," *169th meeting of the Acoustical Society of America*, Pittsburgh, Pa., 2015.
 - Ryan, T.J., **Turo, D.**, **Vignola, J.F.**, and Judge, J.A., "Using acoustics and vibrations to teach experimental concepts and technical communications," *169th meeting of the Acoustical Society of America*, Pittsburgh, Pa., 2015.

- **Turo, D.**, Glean, A.A., **Vignola, J.F.**, Ryan, T.J., and **Judge, J.A.**, “Characterization and design of sound absorber materials,” *169th meeting of the Acoustical Society of America*, Pittsburgh, Pa., 2015.
- Guan, S., **Vignola, J.F.**, **Judge, J.A.**, **Turo, D.**, and Ryan, T.J., “Inter-pulse noise field during an Arctic shallow-water seismic survey,” *169th meeting of the Acoustical Society of America*, Pittsburgh, Pa., 2015.
- **Vignola, J.F.**, Ryan, T.J., **Turo, D.**, Guan, S., and **Judge, J.A.**, “A historical perspective: Frank Andrews and acoustics at The Catholic University of America,” *169th meeting of the Acoustical Society of America*, Pittsburgh, Pa., 2015.
- Guan, S., Lin, T.-H., **Vignola, J.F.**, Chou, L.-S., **Judge, J.A.**, and **Turo, D.**, “Acoustic Environment of the Eastern Taiwan Strait Indo-Pacific Humpback Dolphin and Its Implication in Acoustic Masking,” *21st biennial conference on the Marine Biology of Mammal Biennial*, San Francisco, Calif., 2015.
- Campbell, T., Brewer, J., **Okutsu, M.**, **Turo, D.**, and **Vignola, J.F.**, “Preliminary Study of Extraterrestrial Optical Vibrometry for an Impactor Mission to Europa,” *171st meeting of the Acoustical Society of America*, Salt Lake City, Utah, 2016.
- **Wang, Z.**, Kieu, H., Nguyen, H., and Le, M., “Digital image correlation in experimental mechanics and image registration in computer vision: similarities, differences and complements,” *Optics and Lasers in Engineering*, Vol. 65, No. 1, 18-27, 2015.
- Nguyen, H., Nguyen, D., **Wang, Z.**, Kieu, H., and Le, M., “Real-time, high-accuracy 3D imaging and shape measurement,” *Applied Optics*, Vol. 54, No. 1, A9-A17, 2015.
- **Wang, Z.**, Nguyen, H., and Quisberth, J., “Accuracy comparison of fringe projection technique and 3D digital image correlation technique,” *Advancement of Optical Methods in Experimental Mechanics*, Vol. 3, 195-201, *Conference Proceedings of the Society for Experimental Mechanics Series*, 2016.
- Quisberth, J., **Wang, Z.**, and Nguyen, H., “Acquisition of audio information from silent high speed video, Residual Stress, Thermo-mechanics & Infrared Imaging, Hybrid Techniques and Inverse Problems,” Vol. 9, 105-111, *Conference Proceedings of the Society for Experimental Mechanics Series*, 2016.
- **Wilson, Jr., O.C.**, Piskurich, N., and McRae, A., “NGSS Curriculum Design: Inquiry Learning and Food for the Mind,” *presented at the Local Education Agency (LEA) Institute III: It takes a City, DC Does it Best! DC Teacher Professional Development Event*, Washington, D.C., Convention Center, May 1, 2015.

Activities

- **Abot, J. L.**, Ph.D., guest editor of special issue on “Integrated Structural Health Monitoring in Polymeric Composites” for *Sensors (MDPI)*; guest editor of special issue on “Novel Sensing Techniques and Approaches in Composite Materials” for the *Journal of Multifunctional Composites*; chaired Multifunctional Composites sessions at the American Society for Composites technical conference; reviewer of SMART scholarships for the American Society of Engineering Education; reviewer of U.S. Fulbright Scholar applications for CIES.
- **Chang, L-C.**, Ph.D., judge of Student Oral Presentation Competition, 2016 IEEE Computational Intelligence Society Winter School on Big Data in Computational Intelligence, February 19-21, 2016, Washington D.C.; served on special emphasis panel, “Bioinformatics Support for the National Institute of Environmental Health Sciences (NIEHS) in the Division of Intramural Research (DIR) and the Division of the National Toxicology Program (DNTP),” National Institutes of Health RFP ES2015058, July 13-15, 2016, Research Triangle Park, N.C.; poster chair of Conference Organization Committee, IEEE Big Data 2016, December 5-8, 2016, Washington D.C.; reviewer, *NeuroImage* (Journal Impact Factor: 6.357).
- **Jeong, C.**, Ph.D., reviewer for *Journal of Engineering Mechanics*; *Soil Dynamics and Earthquake Engineering*; *Computational Geosciences*; and the *Arabian Journal for Science and Engineering*, 2015-2016; member of Dynamics Committee, ASCE Engineering Mechanics Institute (EMI), 2016-present; 4-week summer outreach to local high school students on introduction of sensing, dynamics, and associated Arduino programming skills via hands-on an Arduino project to develop an electronic firefly, 2015.
- **Judge, J.**, Ph.D., program chair for the ASME 28th Conference on Mechanical Vibration and Noise (part of the ASME 2016 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, Charlotte, N.C., Aug. 21- 24, 2016).
- **Kilic, O.**, Ph.D., fellow of Applied Computational Electromagnetics Society (ACES) 2016; founding editor-in-chief of *ACES Express Journal*, January 2016-present; chair of the ACES Student Paper Contest, March 2016; member of the International Advisory Board for Computational Electromagnetics International Workshop, July 2015, Izmir, Turkey; member of education committee of IEEE Antennas and Propagation Society, present.
- **Kukke, S.N.**, Ph.D., leader and manager of the Biomedical Engineering Motor Control Group, a bi-weekly journal club, since April 2014; faculty mentor to a cohort of K-8 teachers to enhance STEM education (project led by Dr. Otto Wilson and Dr. Angela McRae), since June 2015; advisor for Coulter College, a 3-day intensive undergraduate engineering design workshop hosted by the Wallace H. Coulter Foundation, Coral Gables, Fla., August 2015; co-founder and co-advisor of the new undergraduate interdisciplinary minor in Neuroscience at CUA, since December 2015; break-out group leader in the Physical Medicine and Rehabilitation Research Retreat at Children’s National Medical Center, Washington, D.C., January 2016.
- **Liu, H.**, Ph.D., program committee member of the IEEE INFOCOM, ICC, CCN.
- **Liu, M.**, gave an invited seminar titled “Progressive collapse of steel frame structures: new analysis techniques, design optimization, and retrofit strategies,” in the Department of Civil and Environmental Engineering at the University of California, Berkeley, March 29, 2016.
- **Lucko, G.**, Ph.D., member of the Technical Committee for Construction Research Congress, American Society of Civil Engineers, 2016; member of the Scientific Committee for the Creative Construction Conference, Budapest, Hungary (organized by Szent István University, Budapest, Hungary), 2016; mentor, ACE Mentor Program of Greater Washington (Career Directions for Students in Architecture, Construction, and Engineering), Laurel, Md., 2015-2016; senior specialty editor for the *Journal of Construction Engineering and Management*, 2015-2016; reviewer for *Automation in Construction*, *Journal of Construction Engineering and Management*, and *Journal of Computing in Civil Engineering*, 2015-2016.
- **Lum P.S.**, Ph.D., served on merit review panel on Musculoskeletal/Orthopedic Rehabilitation for the U.S. Department of Veterans Affairs, Washington D.C., February 2016; served on a review panel for UK Medical Research Council, December 2015; served on a review panel for NIH Musculoskeletal, Oral and Skin Sciences (MOSS) IRG, Washington D.C., July 2015; served on a review panel for Science Foundation Ireland, September 2015; served on a review panel for Swiss National Science Foundation, October 2015.
- **Luo, X.**, Ph.D., editorial board member for *Journal of Bioengineering & Biomedical Science*, 2012–present; reviewer for *Biomedical Microdevices*; Lab on a Chip and Micromachines.
- **Nehmetallah, G.**, Ph.D., session chair for SPIE Dimensional Optical Metrology and Inspection for Practical Applications V, SPIE DCS conference, April 20, 2016; committee member for OSA Digital Holography & 3-D Imaging (DH), May 24-28, 2015, and July 25-28, 2016; committee member for SPIE DCS: Dimensional Optical Metrology and Inspection for Practical Applications V, April 17-21, 2016; reviewer for *Optics Express*, *Applied Optics*, and *Optics Letters*.

- **Nguyen, C.C.**, D.Sc., taught a robotics course to a group of Taiwanese students from Fu Jen Catholic University (FJCU), Taiwan, as part of a program introducing the students to American academic experience organized by FJCU and CUA, July 1, 2015; attended the 2016 Engineering Deans of Catholic Universities (EDCU) Conference in San Diego, Calif., organized by University of San Diego, April 24-26, 2016; traveled to Manila, The Philippines to explore educational opportunities in meetings with officials of the University of the Philippines (UP), Mapua Institute of Technology (MIT), De La Salle University (DLSU), and University of Santo Tomas (UST), April 3-8, 2016; traveled to Vietnam and attended the kickoff of Building University-Industry Learning and Development through Innovation and Technology (BUILD-IT) as one of its program leaders; attended the 2016 Vietnam Engineering Education Conference (VEEC) in Ho Chi Minh City and moderated a VEEC panel entitled "Distinguished Accreditation Panel: Why is AUN-QA and ABET Accreditation important for Science and Technology Development in Vietnam?" April 10-15, 2016; invited to be an award presenter at the 14th annual Asian Heritage Award Ceremony at the Joan B. Kroc Institute for Peace and Justice, University of San Diego, San Diego, Calif., April 23, 2016; hosted a delegation of Hanoi Architectural University (HAU) visiting the School of Engineering, May 23, 2016; hosted Ambassador of the Philippines Jose Cuisia and his wife Vicky Cuisia and recognized him for his effort in helping the School of Engineering to expand its international programs in Manila, May 25, 2015.
- **Nieh, S.**, Ph.D., invited speaker, "Persecution and Anti-Persecution of Falun Gong in China", at *Commemoration of the 40th Anniversary of the Fall of Saigon*, The Vietnam Wall Memorial, Washington, D.C., April 30, 2015; invited speaker and panelist, "De-Communization while Communist Party in Power," Speech at *Identifying Crimes of Communism, Ukraine's Ban of Communist Symbols and Global de-Communization with Focus on China*, Ukraine Parliament and Roundtable Discussion at UNIAN Multimedia Center, www.unian.info/multimedia/video-1/12972-prestupleniya-kommunizma-i-protsess-dekommunizatsii-v-ukraine-kitae-i-vo-vsem-mire.html, and www.epochtimes.com/gb/15/6/12/n4456600.htm, Kiev, Ukraine, June 11, 2015; invited speaker and moderator, "Human Rights Atrocity & Bring Perpetrator to Justice," www.epochtimes.com/b5/15/9/16/n4529016.htm at *Capitol Forum on Suing Jiang*, 121 Cannon HOB, US Congress, Washington D.C., September 15, 2015; invited speaker and moderator, "State-of-Development of Nine Commentaries and Tuidang Movement in China," *Washington Forum: 11th Anniversary of Nine Commentaries of Communist Party*, Montgomery County Council Hearing Room, <http://www.epochtimes.com/b5/15/11/29/n4584498.htm> November 28, 2015; invited speaker,

"Crisis of Disintegration of CCP, an Overseas' Observation" at Capitol Forum: "*Persecution of Falun Gong and Radical Changes in China*" <http://www.theepochtimes.com/n3/1918003-capitol-hill-forum-discusses-persecution-and-torture-of-falun-gong-demise-of-the-ccp/> and <http://www.epochtimes.com/b5/15/12/12/n4593980.htm>, U.S. Capitol Visitor Center CVC-217, U.S. Congress, Washington D.C., December 10, 2015.

- **Plaku, E.**, Ph.D., associate editor for the IEEE/RSJ *Intelligent Robots and Systems*; program committee member of several robotics and AI international conferences, e.g., Robotics: Science and Systems, AAAI Artificial Intelligence, IEEE Robotics and Automation, Automated Planning and Scheduling, Cognitive Robotics.
- **Raub, C.B.**, Ph.D., reviewer for *Annals of Biomedical Engineering, Acta Biomaterialia, Analytical Methods, and Lasers in Surgery and Medicine*, CUA.
- **Regalia, P. A.**, Ph.D., technical program chair for the *IEEE Global Signal and Information Processing Symposium*, Washington, D.C., December 2016; program director and acting deputy division director within the Directorate for Computer & Information Science & Engineering of the National Science Foundation, Arlington, Va.
- **Simari, Patricio D.**, Ph.D., program committee member for the *Argentine Conference in Computer Science (CACIC)*; reviewer for the journals *Computers & Graphics* (Elsevier), *Computer Graphics Forum* (Wiley), *Graphical Models* (Elsevier), *Transactions on Visualization and Computer Graphics* (IEEE); reviewer for the conferences Eurographics Symposium on

Rendering, Graphics Interface, and the International Conference on Image Analysis and Processing.

- **Tran, B.Q.**, Ph.D., reviewer for the *IEEE Transactions on Industrial Informatics, Telemedicine and e-Health and Global Journal of Health Science*; guest editor for the *Journal of Sensors, Emerging Technologies for Biomedical Sensors in Health Informatics* (ETSI); served on NIH grant review panels *AIDS Clinical Studies and Epidemiology Study Section* (July 2015, November 2015, March 2016), NIH/CSR/ZRG1 SBIB-Q 80 Study Section (June 2015, October 2015), NIH/CSR/ZRG1-SBIB-Q(58) Technologies for Healthy Independent Living (February 2016); served on Dept. of Education's Graduate Assistance in Areas of National Need (GAANN) Grant program (June 2015).
- **Turo, D.**, Ph.D., professional demonstrator for the Acoustical Society of America at the 4th U.S. Science and Engineering Festival, Washington, D.C., 2016.
- **Wilson, Jr., O.C.**, Ph.D., Educational Policy Fellows Program (EPFP), October 2015-May, 2016. The EPFP Program is a professional development program that focuses on leadership and education policy and is coordinated by the Institute for Educational Leadership of Washington, D.C. The program was started in 1964 and has cohort sites in 17 different states. Many leaders in education with influential positions in higher education, policy groups, think tanks, and the Department of Education are alumni of this program. Tuition for Wilson's participation was provided by the School of Engineering and the Department of Biomedical Engineering.



2015–2016 Honor Roll of Donors

CUA's School of Engineering gratefully acknowledges the following alumni and friends for their generosity. This list includes donors who made gifts between May 1, 2015, and April 30, 2016. We try to recognize everyone correctly. If you find an error or omission, please contact the Division of University Advancement at 202-319-6910.

- Adeyemi Adesina, M 2005
- Ahmed Alghamdi
- Thomas H. Arendt, M 1979
- Cornelius E. Bailey, B 1975
- Joseph Bartolomeo (P 2016) and Jennifer Bartolomeo (P 2016)
- Stanley John Bazydola, B 1956
- Oscar R. Benitez, B 1986
- Nick Berg, B 2009 and Christine M. Caruso
- Erin Elizabeth Blair, B 2006, M 2006
- James Anthony Bonomo, B 1981 and Mary Jean Bonomo, B 1980
- Hugo Anthony Bonuccelli Jr., B 1974
- Elizabeth B. Brokaw, M 2009, D 2012
- James Brokaw (P) and Ann Brokaw (P)
- David P. Burke, B 1964, D 1969
- Elizabeth M. Burns (P 1980, '82, '85)
- John E. Burns, P.E., B 1985 and Marcella C. Burns
- Mark F. Burns, B 1982
- Matthew J. Burns, B 1980 (P 2014, '15) and Teresa E. Burns (P 2014, '15)
- Richard S. Burns, B 1959
- Glenn N. Byrd and Laura J. Byrd, B 1986
- Thomas Campbell (P 2016) and Lynn Campbell (P 2016)
- Joan R. Carlberg, M 1971 and James R. Carlberg
- Joseph L. Carlini, B 1984 and Christine M. Carlini, B 1986
- Justin C. Cassidy Jr., B 1988, M 1993 (P 2018) and Rosa C. Cassidy, B 1988, L 1990 (P 2018)
- Sheng-Lun Chuang, D 1969
- Jessica E. Clement, B 2012, M 2013
- Carmel A. Conaty, B 1988, M 1992
- H. Bruce Cranford, P.E., B 1968 and Mary M. Cranford
- Giles F. Crimi, B 1963
- Christopher J. Danek, B 1989 and Carolyn A. Danek, B 1992
- Cameron Daniels, B 2015
- David L. Danner, D 1982
- Diogenes Dichoso, B 2016, M 2016
- Travis J. Dichoso, B 2013, M 2013
- Trevor A. D'Souza, B 1987 and Maureen Devine D'Souza, B 1987, L 1995
- James F. Engler Sr., B 1981 and JoAnne M. Engler
- Jaime Escudero (P 2016) and Annette Leon (P 2016)
- Anne Finnegan Favo, B 1957
- Frederick R. Favo, B 1955 (P 1984, '86, '93)
- Christopher R. Flynn, B 1985, M 1991 and Leslie Bixler Flynn
- Jude Eric Franklin, B 1965, M 1968, D 1980 and Mary Frances Franklin, B 1965, B 1980
- David M. Fredette (P 2016) and Judith A. Fredette (P 2016)
- Mark J. Galvan, M 2014
- William L. Gates, B 1953
- Armand A. Giglio, B 1952 and Shirley S. Giglio
- Michael L. Good (P 2008, '10, '13, '16) and Danette M. Good (P 2008, '10, '13, '16)
- William J. Gribbin, B 1965, M 1966, D 1968 (P 2011) and Anne M. Gribbin (P 2011)
- Michael J. Hackert, B 1980 and Geraldine Ann Hackert
- John Ryan Heisse II, B 1976 and Karin Scholz
- Geoffrey Marc Hendrick, M 1998 and Laura B. Hendrick
- Louis Ting Ho, B 1953, M 1962, D 1972 and Claudine L. Ho
- Gerald L. Hoefler, M 1967, L 1976 (P 1989) and Patricia A. Hoefler (P 1989)
- Michael J. Hyland (P 2016, '18) and Colleen D. Hyland (P 2016, '18)
- Charles J. Jahne, P.E., B 1952
- Stevan Jovancevic, B 1986
- Robert A. Kavetsky, B 1975, M 1978, M 1980 and Carolyn Kavetsky, B 1974
- Kevin E. Keith (P 2018) and Maryann Keith (P 2018)
- Michael J. Kelly and Nancy A. Kelly
- Shane Michael Kelly, B 2015
- Ursula Kelnhofer
- John J. Klisch, B 1962
- Gretchen E. Krylow, B 1956
- Thomas E. Laux, B 1976, M 1979 and Joyce M. Laux
- Mark A. LaViola, B 1975
- George S. Lesiak, B 1995
- Thomas H. Locraft Jr., B 1956
- Philip A. Loretì, B 1951
- Jiping Lu, M 1996 and Henry C. Yuen
- Harry D. Ludeman, B 1953 and Helen D. Ludeman
- Thomas E. Maslen, B 1982 and Carrie Jean Maslen, B 1982
- Robert E. Matthews, B 1950
- Katherine L. McQuinn, B 2015
- Jude R. Nitsche, B 1963, M 1965 and Carol Nitsche, B 1965
- Patrick F. O'Malley, B 2006, M 2007, D 2012 and Jennifer J. O'Malley, B 2006
- John F. O'Neill (P 2015) and Estrellita Echanes-O'Neill (P 2015)
- David W. Palmer, B 1990 and Sheila C. Palmer, B 1990
- Eduardo Palmieri (P 2016) and Deborah Palmieri (P 2016)
- Michael A. Palubinski, B 1997
- Victor P. Petrolati, B 1972
- David L. Pettit, B 1965, M 1968 and Diane Italia Pettit, B 1969, M 1981
- Matthew B. Pinckney, B 2005
- James P. Quine (P 2012, '14) and Theresa Quine (P 2012, '14)
- Dean A. Rakoskie, B 1972
- Gayle A. Ray, B 2000
- Justin W. Rice, B 2011 and Suzana Rice, B 2011
- Nabil S. Saad, M 1972, D 1974 and Trudy Prince Saad, L 1974
- Gregg C. San Nicolas (P 2016) and Heidi San Nicolas (P 2016)
- Nicholas Santelli, B 1970 (P 1997)
- Louis John Scalfari, B 1980 (P) and Patricia Ann Scalfari, B 1980, M 2004 (P)
- Bill J. Sederowitz, B 1966, M 1967 and Callie Gilbert
- Ben F. Senger, B 2006 and Jamie E. Senger, B 2006
- Spencer Trent Seufert
- Franklin M. Shannahan, B 1950
- Vincent N. Sica, B 1983 and Ellen M. Sica
- Philip A. Simpson (P 2016) and Susan Simpson (P 2016)
- Thomas W. Small (P 2016) and Cindy L. Small (P 2016)
- Steven J. Smith, B 1990, M 1991
- Lawrence J. Sullivan, B 1975
- Daniel Sykes (P 2016) and Jill Sykes (P 2016)
- James N. Talley, B 1961
- Katherine M. Thomas, B 2014, M 2015
- John T. Tozzi, D 1982
- Binh Quang Tran, B 1998 and Elizabeth McGrane Tran
- Barbara C. Wagner, B 1980
- Stephen G. Walker, B 1967
- Chauncey Edward Warner, B 1951
- Bill Warren and Amy R. Warren
- Patricia M. Jaar Watson, B 1995, M 1996 and John A. Watson
- Anita Wellen, B 1980 and Robert H. Wellen
- George F. Westerman, B 1984
- Carl H. Wilhoit, P.E., M 1973
- Jeffrey A. Woller, B 1994
- Jun Yang, M 2005, D 2010
- James Yeaman, B 2007
- Jerrold Young (P 2016) and Linda Young (P 2016)
- Andrew J. Youniss, B 1983 and Mariann A. Youniss

* B: Bachelor's degree M: Master's degree
 D: Doctorate P: Parent
 L: Law degree

2016 Student Awards, Honors and Activities

- **Farah Abd**, undergraduate student in civil engineering, \$500 Associated Builders and Contractors Metropolitan Washington Chapter Scholarship Fund, 2016.
- **Paul Antonucci**, American Society of Civil Engineers National Capital Section Award
- **Razan Bahabri**, Elena Choong, Elizabeth Coyle, and Robert Goldsack, undergraduate students in Biomedical Engineering, Best Undergraduate Paper in the District of Columbia Council of Engineering and Architectural Societies (DCCEAS) Annual Paper Competition, February 2016
- **Caitlin R. Boyle**, American Society of Civil Engineers National Capital Selection Scholarship and Hummel Memorial
- **Nicole Bull**, Mechanical Engineering Chair's Service Award
- **T.J. Campbell** and **John Brewer**, seniors in mechanical engineering, Mary Ann Sestili Ph.D. Award, January 2016 and best Senior Design Award in Mechanical Engineering Category, May 2016
- **Khai Cao**, The George McDuffie Award for Excellence in Electrical Engineering
- **Elena Choong**, Biomedical Engineering Society Award
- **Diogenes (Joey) Dichoso**, The Benjamin T. Rome Award and American Society of Mechanical Engineering
- **Erica K. Good**, The C.C. Chang Award for Excellence in Mechanical Engineering
- **Tyler Keith**, Civil Engineering, American Concrete Institute National Capital Chapter Award
- **Peter Kuebler**, The John N. Welch Award for Excellence in Computer Science
- **Patrick J. Lee**, doctoral student in Biomedical Engineering, Conference and Research Related Travel Funding, CUA Graduate Student Association, October 2015
- **Robert Leeson**, **Steven Weber**, **Emily Fredette**, and **Erica Good**, seniors in mechanical engineering, CUA Research Day Most Outstanding Presentation Award in Undergraduate Category, April 2016
- **Steven M. Lukas**, undergraduate student in civil engineering, \$2,000 Construction Management Association of America National Capital Chapter Scholarship, 2016, and \$1,000 Associated Builders and Contractors Metropolitan Washington Chapter Scholarship Fund, 2016
- **Alexa Mayewski-Staab**, Dean's Service Award and Martha Comiskey Memorial Award, 2016
- **Seyedehsaba Gharavi Neisiani**, graduate student in civil engineering, \$750 Associated Builders and Contractors Metropolitan Washington Chapter Scholarship Fund, 2016
- **Christopher Papp**, Timothy Kao Award for Excellence in Civil Engineering
- **Christopher J. Papp**, undergraduate student in civil engineering, \$1,500 Associated Builders and Contractors Metropolitan Washington Chapter Scholarship Fund, 2016
- **Christopher Papp**, **Edward Rivera**, **Ian Moss**, **Matthew D'Antonio**, and **Noah Donoghue**, seniors in civil engineering, Best Senior Design Award in Civil Engineering Category, May 2016 and CUA Research Day Most Outstanding Poster Award in Undergraduate Category, April 2016
- **Mary E. Piescik**, undergraduate student in civil engineering, \$1,000 Construction Management Association of America National Capital Chapter Scholarship, 2016, and \$1,000 Associated Builders and Contractors Metropolitan Washington Chapter Scholarship Fund, 2016
- **Jordan Small**, Dennis McCahill Award for Service in Civil Engineering
- **Yi Su**, graduate student in civil engineering, \$2,000 Associated Builders and Contractors Metropolitan Washington Chapter Scholarship Fund, 2016
- **Frances Anne Tosto**, The H.B. Atabek Award
- **James P. Walsh**, American Society of Civil Engineers National Capital Selection Scholarship
- **Andrew Wells**, Electrical Engineering & Computer Science Undergraduate Research Award; Wells also received the Best Student Paper award by TAROS (Towards Autonomous Robotic Systems) for the research paper "Adaptive Sampling-Based Motion Planning for Mobile Robots with Differential Constraints" co-authored with his advisor, **E. Plaku**, and published at Springer LNCS Towards Autonomous Robotic Systems, vol. 9287, pp. 283—295; Wells also received honorable mention for the Computing Research Association's (CRA) Outstanding Undergraduate Male Researcher Award of Ph.D.-granting institutions, 2016
- **Nicholas T. Yager**, American Society of Civil Engineers National Capital Selection Scholarship; \$2,000 Construction Management Association of America National Capital Chapter Scholarship, 2016; \$1,000 Associated Builders and Contractors Metropolitan Washington Chapter Scholarship Fund, 2016
- **Tyler Zimmerman**, Anthony J. Scullen Award

Dean Nguyen and Provost Abela with honor students.



Congratulations, Class of 2016

Doctoral Degree Students

- **Ahmed Saleh Alghamdi**
Dissertation: Long-Wavelength Fluorescence Resonance Energy Transfer Based Biosensor for Glucose Sensing: Development and Interference Testing.
- **Alanoud S. Al Mazroa**
Dissertation: Security of Long Term Evolution (LTE) Mobile Networks.
- **Nicholas A. Charipar**
Dissertation: Metal-Insulator Transitions for Terahertz Generation.
- **Vinh Quang Dang**
Dissertation: Direction and Tracking of Moving Targets Behind Cluttered Environments Using Compressive Sensing.
- **Vladimir Vyacheslavovich Kirnosov**
Dissertation: Automatic Three-dimensional Reconstruction of Coronal Mass Ejection from STEREO A/B.
- **Anthony Konwea**
Dissertation: Experimental Study of the Effect of Grain Size and Grain Size Distribution Curve on Creep and Stress Relaxation in the Beach Sand.
- **Jeffrey H. Leach**
Dissertation: Monostatic all-fiber LADAR systems.
- **James William McMahon**
Dissertation: Towards Combined Task and Motion Planning for Autonomous Underwater Vehicles.
- **Quang M. Nguyen**
Dissertation: A Hybrid Method for Electromagnetic Modeling of Large Scale Structures.
- **Paul Eugene Ransom Jr.**
Dissertation: Wideband Structural and Ballistic Radome Design using Subwavelength Textured Surfaces.
- **Michael Lane Seibert**
Dissertation: Dual Firing of Hydrogen and Heavy Hydrocarbon Fuels.
- **Kristofer R. Smith**
Dissertation: An Analytical Model and Protocol for Optimizing Quality of Experience in Real-Time Communications.
- **Christopher D. Tyson**
Dissertation: Development and use of Novel Transverse Magnetic Tweezers for single-molecule studies of DNA-Protein Interactions.

Master of Science, Biomedical Engineering

- Alawiyah Al Hashem
- Gufran H. Albhkali
- Moneerah Ibrahim Almuhanna
- Hanadi Matouk Alqosiri (Walking)
- Fawaz Khalid Alshemas
- Maissa Alshenqity
- Bandar Saad Alshreef
- Razan Salem Bahabri (Walking)
- Santiago Correa (Walking)
- Jonathan Paciorek
- Hunter Seibert Steel
- Victoria A. Sudjian
- Alicia Lillian Taylor
- Tyler Raymond Zimmerman

Master of Science, Civil Engineering

- Mohammed Khaled Alotaibi
- Franklyn H. Beckley
- Brittany Rose Bennett
- Olabimpe Igho-Osagie
- Chau Thi Xuan Ngoc
- Heather Ann Stewart
- Su Sandar Wai
- Zhiguang Yu
- Ali Akbar Zamani

Master of Science, Electrical Engineering

- Iyoel Beniam
- Paul Joseph Burns
- Son Hai Dao
- Tri Nguyen
- Tung Nguyen
- Duy Hoang Pham

Master of Science, Computer Science

- Timothy Edward Danchik

Master of Science, Engineering Management

- Soraya Aisien-Ogbebor
- Ahmed Fahad Alanzi
- Salman Saud Alassaf
- Ashraf Ahmad Saeed Alghamdi
- Yousef Abdulrahman Alhusaini
- Abdullah Abdulmajed I. Alkhayal
- Rawabi Mohammed Almatar
- Naif D. Alotaibi
- Sophie Alozie
- Abdulaziz Abdullah Alreshood
- Faisal Abdulrazaq Alsaadi
- Amer Saad Amer Alsairy
- Mohammed Alosebail
- Sultan Alshemaisi
- Abrar Ali H. AL-Subki

- Faisal K. Alsudairi
- Hattan Ahmed S AlZahrani
- Rayan Ahmed S. Alzahrani
- Suliman Abdulrauf A. Feda
- Christopher Andrew Jessel
- Katherine Elizabeth Johnson
- Tony Truong Giang Le
- Maria Victoria Linares Contreras
- Sheila Ngum Njong
- Saleh Adnan Saleh Rajab
- Mohammed Khalid Mohammed I. Shafei

Master of Science, Materials Science and Engineering

- Khawla AlHamdan
- Sutapa Bhattacharya
- Semere Sades Girmehannes

Master of Science, Mechanical Engineering

- Mohammed Mustafa AlAyesh
- Hussain Abdullah Al Khawajeh
- Ali Salman Alshafai
- Luis Miguel Bautista
- Alexander Joseph Belk
- Thomas A. Campbell Jr.
- Peter Clemente
- Diogenes Andrew Dichoso
- Yao Djiekpor
- Suhail A. Jastaneiah
- Huy Huu Le
- Ernest Ponkam Lowe
- Minh Anh Ngo
- Spencer Trent Seufert
- Robel Tesfaye
- Anthony S. Thompson

Bachelor of Biomedical Engineering

- Moneerah Ibrahim Almuhanna
- Suha Saad Alqahtani
- Nadiyah Mohammed Alyamni
- Razan Salem Bahabri
- Cristina Eleonora Butrico
- Elena America Choong
- Elizabeth Anne Coyle
- Lily Marie Del Valle
- Kolby Austin Faria
- Paul R. Goebel
- Robert Michael Goldsack V
- Darius Kevin-Amouye Kodjo
- Kevin Joseph Nader
- Luke R. Palguta
- Brooke N. Petery
- Thomas Daniel Scalfaro
- Louis Philip Simpson

- Victoria A. Sudjian
- Benjamin Lee Sykes
- Frances Anne Tosto
- Michael Weldon
- Tyler Raymond Zimmerman

Bachelor of Civil Engineering

- Saleh Mohammed Alkuwaiflie
- Yaqub Mahmoud Alostath
- Paul Carmine Antonucci
- Gabriella Christine Bologna
- Alexander Matthew Buckler0
- Matthew A. D'Antonio
- Noah Michael Donoghue
- Jack Durkin
- Jaime Alberto Escudero León
- Sarah E. Fuchs
- Matthew Wayne Gallagher
- Michael Thomas Graves
- Ilexa Jo Halperin
- Kirk S Herman Jr.
- Gabrielle M. Keogh
- Kyle E. Loomie
- Alexa Marie Mayewski-Staab
- Ian McQuestion
- Ian Alexander Moss
- Joseph Luke Mulvaney
- William Fogarty Palmieri
- Christopher Joseph Papp
- Edward Daniel Rivera
- Jordan William Small
- Jaime Soto
- Nathalie Emelinda Valle

Bachelor of Electrical Engineering

- Omar Alhemimah
- Abdullah Tawfiq Almuzayn
- Fahad Farid Alsowayeh
- Khai Tien Cao
- William Joseph Clingerman
- Peter Sean Doyle
- Kiet Gia Duong
- Christopher John Gordon Jr.
- Angela Jeanne Grippo
- Michael J. Grossane
- Erik Allen Hyland
- William Lancaster Lash
- Thinh T. Le
- Khoi Nguyen
- Austen Christian San Nicolas
- Dat Tran
- Abdulkader Mohammed Turkistani
- Tho Vi
- Erik Wlasiuk
- James Joseph Young

Bachelor of Science in Computer Science

- Carlos Paolo Chiarella
- Timothy Edward Danchik
- Peter Jake Kuebler
- Brianna A. Navarro
- Cameron A. Pollock
- Philip Michael Samra
- Terrence Geovannie T. Sanchez
- Lance H. Van Arsdale
- Andrew Wells

Bachelor of Mechanical Engineering

- Saad Abdulaziz S. Aboharbah
- Rayan Talal Abualhotail
- Nassar Abdullah Alatta
- Mohammed Mustafa AlAyesh
- Mohammed Ahmed Ebrahim M Almansoori
- Ahmed S. Alomari
- Ali Salman Alshafai
- Fahad Alshaikh
- Nasser Khaled Alsofyani
- Tyler Michael Anthony
- James Daniel Ascenzo
- Mohammed Abdullah Badawood
- Abdullah Mohamed Bakhshwin
- Nico Angelo Bartolomeo
- Abdulrahman Saad Binfaris
- Christopher J. Brecken
- John C. Brewer
- Nicole Byrne Bull
- Thomas A. Campbell Jr.
- Zachary Thomas Conaway
- Jonathan P. Coyle
- Diogenes Andrew Dichoso
- James Thomas Doyle
- Tyler James Doyle
- Emily Elizabeth Fredette

- Erica Kathleen Good
- Aaron K. Hall
- Dustin D. Hanley
- Brian M. Higgins
- Joshua L. Huffer
- Christopher Kramer
- Brian T. LaCombe
- Alexander Arthur Laprade
- Huy Huu Le
- Robert P. Leeson
- James Joseph Luskin
- Jacob Langston Maclin
- Joseph W. Mascolo
- Steven Marc Mastro
- Carlos A. Mercado
- Samuel P. Mortin
- Emma Katherine Needham
- Minh Anh Ngo
- Steven Carter O'Leary
- Joshua Joseph Piepmeier
- Gordon Francis Pisani
- Alexander B. Quicksell
- John Rajnes
- Christian Matheiu Riegler
- Luc C. Sebrechts
- Robert Thomas Taylor
- James Titus Udovich
- Steven D. Weber
- Courtney Whelan
- Gabrielle Marjorie Wolff

Dual Degree, Bachelor of Civil Engineering and Bachelor of Science in Architecture

- Nathalia Lauranne N. De Vera
- Ian Francis Guay
- Ryan Connor Hall
- David Patrick Pelton
- Bridget Meadow Rogers





THE CATHOLIC UNIVERSITY OF AMERICA

*School of Engineering
620 Michigan Ave., N.E.
Washington, DC 20064*

School of Engineering

Charles C. Nguyen, Dean
202-319-5160

John Judge, Associate Dean
202-319-5127

Jeffrey Giangliuli, Director
Engineering
Management Program

Peter Lum, Chair
Biomedical Engineering

Lu Sun, Chair
Civil Engineering

Ozlem Kilic, Chair
Electrical Engineering
and Computer Science

Sen Nieh, Chair
Mechanical Engineering

Biprodas Dutta, Director
Materials Science and
Engineering



CUA Engineering: *Cutting-edge Research Driving Superb Education*