



Engineering Students and Alumni *are Making an **IMPACT*** *Around the World*

A stylized world map in light blue and white, with several purple circular location pins placed on various continents. One pin is located over North America, another over Europe, and others over South America, Africa, and Asia. A green circular icon with a white USF logo is also placed over North America.

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USF IS SET TO EXPAND ITS DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING UNDERGRADUATE PROGRAMS - by Glenn Cook

USF's Department of Computer Science and Engineering is hiring five new faculty members and additional teaching assistants as part of a multimillion dollar, state-led initiative designed to increase the number of graduates in the exploding computer science, computer engineering, and information technology fields. The department offers degrees in all three areas.

Two tenure track professors and three instructors will start teaching this fall, thanks to a Targeted Educational Attainment (TEAm) grant funded by the Florida Legislature. USF is partnering with the University of Central Florida and Florida International University on the \$4.9 million project.

"Students are flocking to the computing market because it's lucrative, and the jobs are very, very good," says Ken Christensen, computer science professor and undergraduate program director. "The TEAm grant will allow us to expand our offerings significantly and enable more students to pursue a major in computer science, computer engineering, or information technology."

With the additional faculty, the college plans to expand course offerings in the three fields, which have boomed over the past five years thanks to smart phones, cloud computing and robotics. During that period, the Department of Computer Science and Engineering has seen the number of undergraduate degrees more than double, from 70 in 2008-2009 to more than 140 in 2012-2013.

According to the U.S. Bureau of Labor Statistics, occupations such as software developers, database administrators, web developers, and systems analysts are among the fastest growing – and most lucrative – jobs in the STEM field. Starting salaries for 2013 graduates nationwide ranged from \$57,100 for information technology to \$64,800 for computer science and \$71,700 for computer engineering, according to a recent report from the National Association of Colleges and Employers.

"You cannot envision the future without software," says Rafael Perez, computer science professor and interim dean of the College of Engineering. "Everything from small sensor nodes to smart phones to manufacturing robots to cloud computing data centers run on software. A degree in computer science, computer engineering, information technology, management information systems, or information studies will provide a graduate with an array of job opportunities now and well into the future."

Industry Says the Need is There

Jeremy Rasmussen is a sixth-generation Floridian and a USF graduate. Today, he is a senior principal information security engineer for CACI, a \$3.7 billion, 15,500-employee company that provides information solutions and services in support of national security missions and government transformation for intelligence, defense and federal civilian customers. CACI's headquarters are in Arlington, Va., but Rasmussen's team is in Tampa.

"In this day and age of online collaborative development, it really doesn't matter where you are, to be honest," says Rasmussen, who is a member of the Department of Computer Science and Engineering's external advisory board. "My employees have worked on code with teams from California and Virginia over the network, using collaboration tools, but there's no way you can do that if you can't hire quality people."

The primary goal of the TEAm grant is to produce qualified graduates from Florida's universities who continue to live and work in the state. The demand for employees in the rapidly growing high-tech sector, particularly in areas such as defense and cybersecurity, is one reason many business and industry professionals supported the grant project.

Alan Brannan, director of engineering at CAE USA Inc., in Tampa, hires 10 to 20 new graduates a year for his company, which designs and delivers flight simulation devices for the U.S. military and several foreign companies.

"We get quite a few applicants, so we're not facing a shortage, but it all depends on demand," says Brannan, also a member of the external advisory board. "Having more graduates coming out of USF will give us more variety to choose from, and we have specific needs. Because we're working with the military, every engineering job we have has to work with protected data, and only U.S. citizens can work on that, so sometimes that's a constraint."

Rasmussen has hired USF students as fulltime engineers and cooperative interns and knows the importance of

"having a pipeline of talent to keep growing our organization and keep moving us forward."

"When we're looking to fill needs, we need to have people who have hard computer science skills — operating systems, programming languages, database, web and networking," he says. "They need to have the fundamentals and the foundation to do

who is fresh out of school. That's why I value these folks who have a great aptitude for learning and increasing their skills."

Rasmussen is convinced that the TEAm grant provides a great opportunity for Florida's students to learn and eventually work in their home state. Add to that the ability to work remotely, and he's convinced that more graduates will stick around.

"If you have a choice and it doesn't matter where you live, you might as well live in paradise," he says.

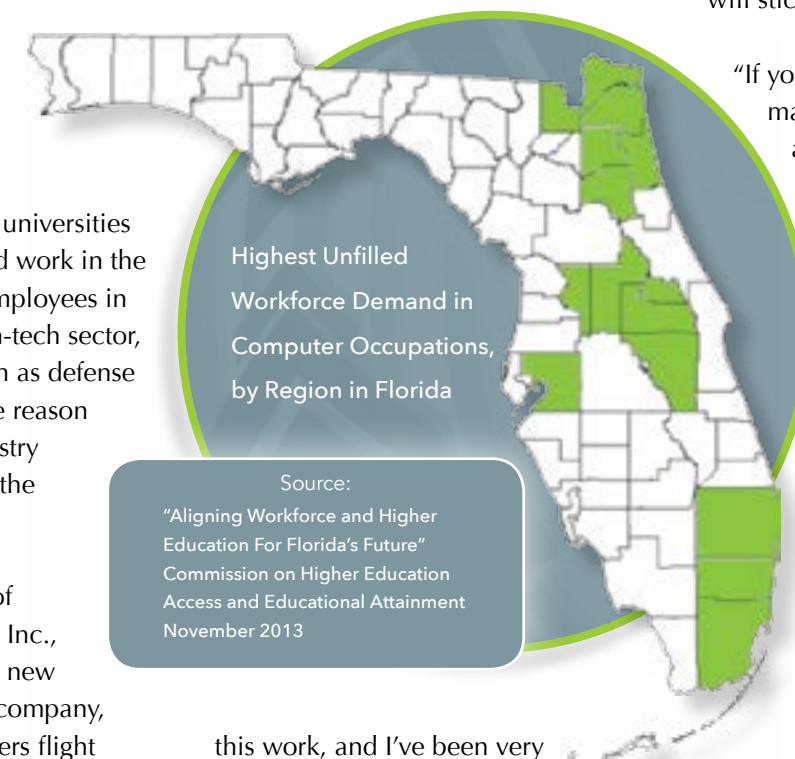
Students Like That Jobs Are Waiting

Chelsea Moyer, who is finishing her undergraduate degree in computer engineering this semester, already has a job lined up. After graduation, she will go to work for Honeywell's Clearwater branch.

That's not bad for someone who went to college undecided about her major.

"Computer engineering just grabbed me," says Moyer, who interned with Honeywell last summer. "The courses are interesting and creative. I really like the defense side, because I'm actually making things. I get to do a lot of stuff that does more than just go onto a disk or get downloaded onto someone's computer. I like the idea of developing software that will be in a helicopter or up in the air."

Moyer's aptitude, combined with her marketability as a woman in a male-dominated field, made her highly marketable in today's computer engineering field. USF professors say the department's graduates are in such demand that the jobs come to them.



this work, and I've been very pleased with the caliber of talent that I've been able to hire from USF."

Rasmussen's team at CACI audits computer systems for security flaws and is researching mobile security using commercially available technology.

"There are two types of people who do computer security related work," he says. "On one end, you have the technicians; on the other, you have those who are not highly technical, but have knowledge of policy and compliance. I can't take a person like that and teach them what they need to know on the technical side. I can do it in the other direction with someone

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MISSION STATEMENT

The mission of the College of Engineering at the University of South Florida is to improve the quality of life in our community by providing a high quality education for our students and practicing professionals; by creating new knowledge and solving real world problems via innovative research; and by engaging in effective community service and outreach.

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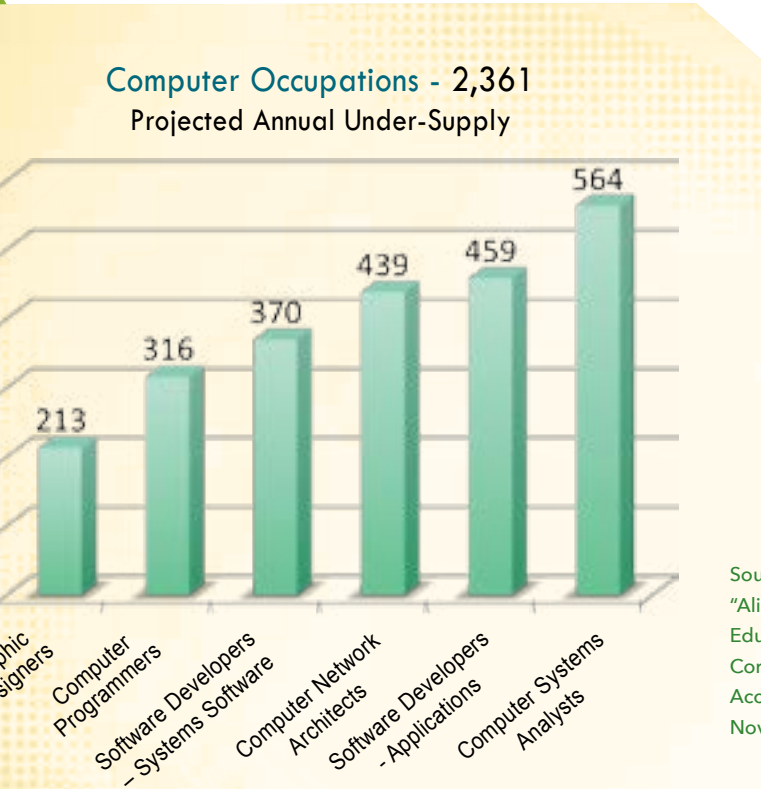
"I often have two or three companies a day calling me," says Christensen. "There are a lot of students not even trying to find a job before they graduate. They graduate knowing that the jobs are there."

Akash Patel, who will receive his bachelor's degree in computer engineering this fall, has been accepted into the five-year accelerated program and will continue to work toward a master's degree. He knows he could be hired out of school right away.

"I won't have to worry about going back to school and being one of the older people in the classes," he says. "Instead, I'll be one of the youngest in most of my classes and will be competing with people older than me. When I get a job, I'll be ready to take on whatever you're ready to throw at me."

Steven Bewarse started at USF as a physics major, planning to work as a researcher and later as a university professor. After his third year, he decided to double major in computer science. He has a job lined up at BST Global in Tampa and will start to work as a technical consultant two weeks after graduation.

"I don't think if I had stayed in physics that I would be working right away," he says. "If you want to teach at the college level you need your PhD, and it's a long time before you're in a good stable position. With any of the hard sciences, unless you're teaching, you're dependent on government funding, and that's not stable at all. By moving into computer science, I know I have security pretty much right after graduating, because there are so many work opportunities."



Source:
"Aligning Workforce and Higher
Education For Florida's Future"
Commission on Higher Education
Access and Educational Attainment
November 2013

Can it Last?

In some ways, as Christensen describes it, the latest boom feels like "1999 all over again." But there are reasons to believe that will not be replicated anytime soon. "I've seen several cycles — the PC boom, the web boom. When will it come down? Who knows?" Christensen says. "The Bureau of Labor Statistics says there is at least 10 years of growth ahead, and right now software development appears to be the skill most needed in this country. So the need for qualified graduates is not going away."

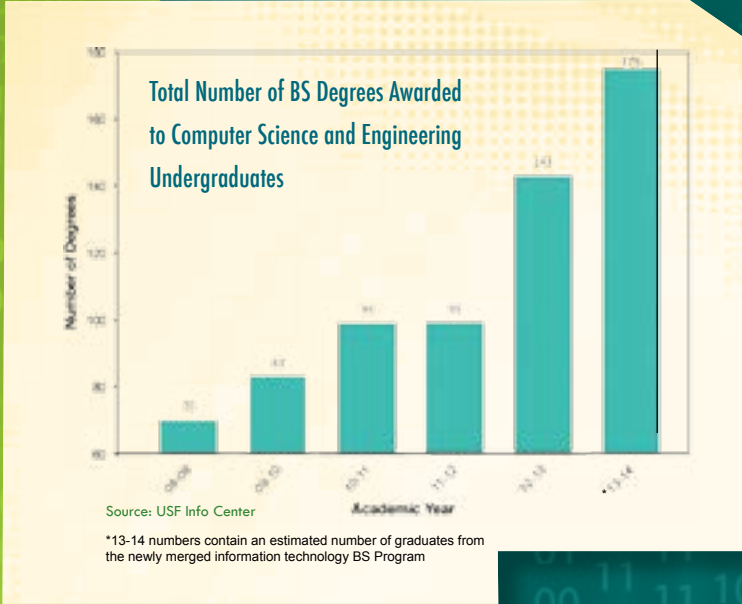
Christensen and department chairman Lawrence Hall say the collaborative nature of the TEAm grant will help the department increase graduation numbers by more than 50%.

"The additional faculty and teaching assistants will help, and we'll also be able to utilize resources at the other two universities to grow a little more," Hall says. "That collaborative nature should help us with retention so we can be sure more students go through and graduate, because we'll be able to broaden our offerings through online courses."

Hall and Christensen say they hope the grant funding will allow USF to improve its outreach to high schools, where they can get more students, especially women, interested in STEM-related careers.

"At USF we have the opportunity to increase the enrollment of women in computing related majors," Hall says. "I hope we can use this opportunity to let women know they have a chance to be collaborative, that most of the work today is in health care, business systems, the military or social networks and apps. If you study math, or if you study computer science, you can get a degree that will pay you very well and give you great satisfaction."

"The sky's the limit," Christensen says. "It really is."



USF SEEKS TO ATTRACT MORE WOMEN TO COMPUTER SCIENCE & ENGINEERING

Like many college students, Renita Singh enjoys challenging traditions and the status quo. And she's doing so on both the cultural and professional fronts.

"I wanted to step outside the box and do something completely different than everyone expects of me," says Singh, a Florida native whose parents moved to the United States from Guyana. "In my culture, you're expected to settle down, find a husband, and have children. I didn't want to do that. I wanted to leave my parents' house, start school, and major in something that was

not expected of me. Engineering is a predominantly male subject, and being a woman, I thought of it as a challenge."

It has been a challenge for USF and other universities to recruit more women into the computer science, computer engineering, and information technology fields. Only 10 to 12 percent of students in the Department of Computer Science and Engineering are women, something that the university is hoping to change with an expanded program funded by a state-sponsored Targeted Educational Attainment (TEAm) grant.

"No question. It's a priority," says department chairman Lawrence Hall. "We're hoping this grant will help us to be more inclusive for women and provide more opportunities in general to expand the department."

Junior Hannah Pate, a computer science major, is president of the Association of Computing Machinery, an official university student organization. She says she has never faced much difficulty being one of only a few women in her field, but admits it's "a bit disheartening to only have five women in a class of 100."

"I've heard plenty of stories about being a woman in the computer science field, but for me and the people I know, we honestly haven't had those experiences here," Pate says. "It's tough sometimes to be the only woman in a particular class, but from the university standpoint, it's been a very welcoming atmosphere."

Singh and Chelsea Moyer are among eight women who will graduate with degrees in computer engineering this May. Both say they were surprised by the lack of women in their major, but they managed to adjust without regrets about their chosen field.

"That was the biggest culture shock, to sit down and look around and say I'm the only girl in a class," Moyer says. "It's such a male dominated field, but I haven't had too many issues with it because I've always been kind of a tomboy who likes nerdy things and is pretty outgoing."

Singh says she didn't flinch from the challenge of blazing a trail, even though being one of only a few women in computer engineering "was rough at first."

"It definitely was not what I expected," she says. "But as I moved up and slowly completed my major, I got to know everybody and so there's a bond. Being here has definitely taught me how to learn. Every class I've taken, I've learned a different way to do something. That's how I approach everything. I look at the challenge and the opportunity to learn."



RACING AMERICA

by Glenn Cook

SIMON RESTREPO PROVES DREAMS CAN COME TRUE

It's late March, and Simon Restrepo has been working for two straight weeks. His job has taken him from North Carolina to the West Coast to Connecticut. Another trip to California looms, but first he faces an 80-hour week with little time for sleep.

"That's how it goes," he says. "It's a busy time all the time, but I love it."

The 2013 mechanical engineering graduate, a support engineer for Stewart-Haas Racing, installs and calibrates data systems on the test cars driven by NASCAR's Tony Stewart. For the Colombia native, who knew no English when he moved to Florida at age 12, the position is what he's wanted since he watched Formula 1 races with his father as a child.

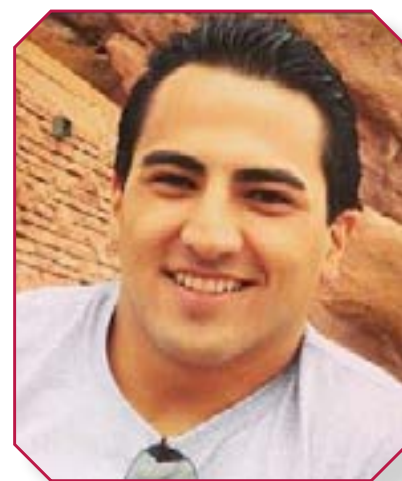
"I've been passionate about cars and racing since I can remember," he says. "I knew I wanted to be involved in racing when I started waking up at 6 a.m.

on Sunday mornings to watch Formula 1."

That passion, Restrepo says, and support from his family is what pushed him through high school and to USF, where he was president of the Society of Automotive Engineers (SAE). The organization's members design and build open-wheel race cars then compete with them against other chapters from around the world.

"I really went to USF without knowing the benefits," he says. "I just joined SAE because I wanted to work on a race car. All six years that I attended USF I was part of that organization, and it helped prepare me for now."

Balancing his academic load and his work with SAE gave Restrepo experience in time and project management. On weekends, he worked as a volunteer with race teams, which gave him a chance to network with professionals in his field.



Simon Restrepo



"Those experiences helped me apply what I learned in the classroom and how to manage constraints," he says.

"Because SAE was a volunteer extracurricular organization, only a handful of students had the time to work on these cars. I had to learn what their limitations were as well as budgets, and the stuff you have to deal with in real life in the real world."

In his current role, Restrepo works on Stewart's #14 team based in Kannapolis, N.C., to get the cars ready for the next race. On race days, he assists the engineers and the crew chief.

"You are not allowed to have sensors and data systems on actual race day cars," he says. "What we do is rent out a track for a day or two and instrument the heck out of the car so we can tell how it's behaving."

Restrepo says the simulation software and the various test rigs provide the team with data that can

improve the car's speed and overall performance. He said the data gathered prior to a race in Phoenix helped the Stewart team make significant changes that led to a trip to Victory Lane earlier this year.

"You can have more data than you know what to do with. You can have bad data," he says. "What separates you is how you analyze and use it, because data can help you win races. You don't have to rely completely on the driver to know what the car is doing."

Over the next several years, Restrepo hopes to become a primary race engineer with a NASCAR or endurance sports car team. He remains grateful to his family and his friends at USF who helped him make it to this point.

"My mom was always there to support me and push me along," he says. "She would make sure I was studying and concentrating on my classes, because there were times when I would be working on and designing race cars instead of studying as much as I should. I also had a lot of friends within and outside SAE who kept me going and supported me through the hard times."

After every race, his father calls from Colombia for a post mortem. "He's very happy and very proud and excited about what I'm doing," Restrepo says. "He's always asking me about the cars and what I did to them and stuff like that."

"My mom is very proud, too, because this is why she left Colombia and came here," he says. "She wanted to provide me and my sister with a better life, and give us a chance to follow our dreams. She fulfilled that dream of providing us with a better life."

For Evan Kroske Google is Just the First Step

by Glenn Cook

evan Kroske likes being part of a small team that can make a difference. Just a year after finishing as the top student graduate in the Computer Science and Engineering Department, he's doing just that.

Kroske, who completed his studies with a 4.0 GPA, works in the AdWords division of Google, developing tools to find and stop advertisers from misrepresenting what they're trying to sell through the ubiquitous search engine. AdWords is how Google derives the majority of its revenue, making the task that much more important.

"Although we're a small team, we have a big impact," Kroske says. "Our work affects everyone who sees Google ads and the advertisers whose livelihoods depend on AdWords."

Working for Google is a dream job for Kroske, who grew up in South Florida and was homeschooled after moving to Plantation when he was 11. The year he finished high school, he taught himself how to build websites and discovered that he loved computer programming.

"I was enchanted," he says. "This was what I wanted to do with my life."

Soon after, his uncle John hired Kroske to build a website for his business and supported his interest in programming "by buying books for me." Kroske attended Broward College for two years to satisfy his general education requirements, but says he had his eye on USF all along. He attended school on a Florida Bright Futures Scholarship and the Spain/Gillies Community College Transfer Scholarship. The latter is awarded to the top transfer student from each college in the Florida community college system.

“ I apply what I learned at USF every single day.”

- Evan Kroske

"I was excited by USF's standing as a top-tier research university and its competitive computer science program," he says.

Kroske credits USF's program for giving him "a better understanding of the technology on which our society is built and a toolbox of skills." Through his participation in the Whitehatters Computer Security Club, he learned how he can build systems



Evan Kroske

that are less vulnerable to cyber attacks.

Working with Professor Ken Christensen, he completed two research internships while enrolled at the university. The first, in the summer of 2011, took him to the University of Illinois at Urbana-Champaign to work on network security. The next summer, he went to the University of Utah to work on image processing.

As graduation approached, Kroske thought about moving to California to work for a start-up company, but a referral from a USF alumnus led him to Google.

"The knowledge of type systems, computer architecture, data mining, and more that I received from USF gives me a competitive advantage," he says. "For example, taking a class on data mining prepared me to understand the machine learning systems we use to identify bad advertisers automatically."

In his current position, Kroske describes his work as a race against time.

"Bad advertisers are always trying new things to avoid detection," he says. "We have to stay a step ahead of them while making sense of an enormous amount of data to distinguish between good and bad advertisers."

It's an important task, and Kroske sees a future for himself at Google. But over the next decade, he wants to use what he has learned and do something even bigger.

"I would like to lead a team," he says. "That's the best way to increase my impact."



This Fulbright Scholar is Looking Forward to Giving Back to her Caribbean Country

by Tom Edrington

Fulbright Scholar - the honor goes to those academic achievers who have been identified as future leaders, those who have a desire and ability to use their talents to help make the future world a more peaceful and prosperous place.

Trina Halfhide is one of them.

Trina has a Department of Education Fellowship at the University of South Florida. She came to the Tampa campus after earning her undergraduate degree at the University of West Indies in St. Augustine, a city in her native country of Trinidad-Tobago.

She is now a doctoral candidate in engineering science with an emphasis in environmental engineering. "The environment has always been my passion," Halfhide pointed out, remembering how much time she spent enjoying the incredible weather and beauty of her native land.

One might imagine that Trinidad-Tobago relies on tourism, but that is not the case. "Our economy is heavily based on the petrol-chemical industry," Halfhide

said. "That makes us different from other Caribbean countries. Her love for everything environmental was nurtured by her selection as a Fulbright Scholar.



Trina Halfhide

"Once you have gone through the Fulbright experience, you are never the same person," Halfhide said enthusiastically. "Your priorities shift; your life perspective changes." Halfhide received the award in 2012

and was one of 15 students who went to Norway in the program. Since its creation in 1946, the Fulbright program has been administered by the State Department. The program's aim is to increase mutual understanding around the world. Its recipients are often involved in critical global environmental issues.

Halfhide's research has taken her into the field of algae. In Norway, she found herself in one of the world's largest aquaculture countries. "They produce a significant amount of the world's salmon supply," she said.

She found herself fascinated by the people in Norway. "They are very humble people," she said, "boasting about achievements is frowned upon. I also loved the natural beauty of the land and it is a wealthy country."

She also discovered that Norway, like many northern countries, has seemingly endless hours of daylight. "Sometimes that makes it hard to sleep but it also allows for more time to do things outdoors."

Halfhide is a doer. She was a college swimmer who has now become a long-distance runner. She has run half-marathon and marathon races and is a member of the USF Triathlon team.

"But I haven't had time to devote to proper training," she lamented, knowing that her studies and research are her priority. Those priorities have resulted in ongoing academic achievement at USF, all of which led up to her selection as a Fulbright recipient.

She is looking forward to earning her doctorate and she has solid plans for her next phase of academic life.

"I have American citizenship but I want to go home, back to Trinidad-Tobago and give back to my alma-mater. I want to experience teaching and do research; it's all about giving back," she said, sounding every bit like the future leaders that come out of the Fulbright program.

She also wants to keep learning. "The learning process is part of my life and we all know that learning never stops,"



Trina fixing the CO2 supply in her lab in Norway.

she continued. She also knows that one day her life's path may take her beyond the classrooms of her homeland.

"I want to take classes in International Diplomacy," she declared, sounding even more like a future diplomat, an arena where Fulbright scholars have thrived over the years.

She also carries with her a strong desire to serve and make the world a better place, another Fulbright attribute.

"In 10 years, I can see myself working for something like the World Bank as a senior scientist."

For now, she is totally focused on her path to her Ph.D. She has an excellent roadmap for her immediate future and she has the determination it takes to be a swimmer, a long-distance runner and a triathlon competitor.

Put them all together and you have a future scientist and possible world leader who is today a shining example of everything the Fulbright Scholarship exemplifies.

USF Engineering Alum Devin Walker is Featured on Forbes 30 Under 30 List

by Janet Gillis

The 2014 Forbes 30 Under 30 list recognizes 450 superstars in 15 categories and one of those superstars is a University of South Florida alum. Devin Walker, a 2012 graduate with a master's degree in chemical engineering and COO of Trash2Cash, has landed on this year's list in the energy and industry category as someone to watch.

While competing last year in the Cleantech Open, a clean technology competition for startup

companies, Devin caught the attention of Forbes writer / editor Aaron Tilley who was looking for young entrepreneurs in the field of energy. A month later, he was notified that Forbes had selected him.

Started in 2012, the list features young entrepreneurs who are "re-inventing the world now." This dynamic and ambitious group of inventors are generating millions and, in some cases, billions of

dollars in revenues. For Devin and his colleagues at Trash2Cash-Energy (T2C-E), it's about turning a landfill by-product into diesel fuel. If it all works out, the millions will come.

After graduating from University of Florida with a bachelor's in biochemistry, Devin began his career as a scientist researching and designing advanced alternative fuels in the private sector.

"During those three years, I gained

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experience in the advanced biofuels industry,” said Devin. “I discovered if advanced biofuel was going to work, it needed to be derived from very cheap resources to be cost competitive.”

He chose USF for graduate school because of the biofuels research being done here by chemical engineering professor John Wolan. He began his studies in 2010 under Wolan, who died unexpectedly in 2011. Fortunately, Devin was able to join another research group headed by professors Babu Joseph and John Kuhn. Along with other chemical engineering students, Ali Gardezi ('10 MSCH, '13 PHD) and Tim Roberge ('12, '12 MSCH), T2C-E won the \$100,000 grand prize in the MegaWatt Challenge and Trash2Cash was on its way to generating diesel fuel from landfill gas.

An average-sized landfill could produce 7,000 gallons of diesel fuel a day using T2C technologies. With 2,400 landfills in the United States, the market is a large one. Initially, the company plans to focus on Florida landfills. The group is already producing smaller quantities of diesel fuel in their lab scale unit, but before they can begin to produce the fuel on a commercial scale they must construct a pilot plant unit at a cost of \$750,000. They hope to start construction in late 2014.

“Our goal is to close the loop from

feedstock to finished product by fueling the landfill trucking fleet at the same place they unload trash,” said Devin. “The average landfill goes through \$8,000 of diesel fuel a day.”

With 2014 as a pinnacle year for T2C-E starting with the pilot unit, the group expects the first commercial plant to be finished by



Devin Walker

2016 with three more in operation by 2018.

“Ten years from now I envision the T2C-E technology to be implemented globally, becoming the gold standard in waste to energy technology,” he added.

With his passion for providing an environmentally friendly solution to the world's energy needs already on the fast track, Devin sees the next step as incorporating solar

energy into the process to power the commercial plants. While a student in Distinguished University Professor Yogi Goswami's solar energy class, Devin designed a commercial plant utilizing the T2C-E process that incorporated a central solar design to power the plant. Trash2Cash has been awarded a provisional patent based on his design.

“So, the framework is already in place,” he said, “T2C-E just needs to make it happen.”

The odds of Devin making it “happen” are pretty high. If landing on the Forbes 30 under 30 list is any indication of future success, his idea could make him a millionaire and bring superstar status. Over its three-year run the list has included such notable inventors as the founders of Snapchat, Songza, Tumblr, Clinkle, Instagram, and Golden Road Brewing, just to mention a few.

Use your QR reader to view the Forbes 30 Under 30 Energy and Industry list.



Oscar Lara Yejas



Mixing Music and Computer Science is the Key to Happiness for Oscar Lara Yejas

by Tom Edrington

If there is a 21st century Renaissance Man, Oscar Lara Yejas, '10 MSCS, '12 PHD, would easily fit the billing.

He has immense musical talent. He has played the piano and guitar since the age of nine. He composes music and has played in jazz bands on and off for the past 10 years.

His music is easy to find on the internet and a quick listen would convince you that he spent his academic career studying music.

Now consider that Lara Yejas is working for IBM, the IBM Infosphere to be exact, where he is a team member of the Big Insight Group that deals in the emerging world of Big Data, and to be more specific, analytics for that Big Data to benefit the many IBM business clients.

His journey to the corporate world began in his native Colombia. He

graduated from the Universidad del Norte and it was the recommendation of a friend at the University of South Florida that set him on an interesting journey that today finds him in Silicon Valley in California.

“A friend of mine, Alfredo Perez, '09 MSCS, went to USF and got his master's in computer science,” Lara Yejas began. “Dr. Miguel Labrador was looking for another doctoral student and Alfredo recommended me.

“The deadlines to apply were almost past so everything had to happen really fast,” Lara Yejas recalled. “It was kind of crazy at the time, the application process, I had to get a visa and my English wasn't that good back then.”

It was a leap of faith but he made the life-changing decision and left the comfort zone of his native country and headed for Tampa. “In the beginning it was hard,” he continued. “I liked it but it was different from what I expected.”

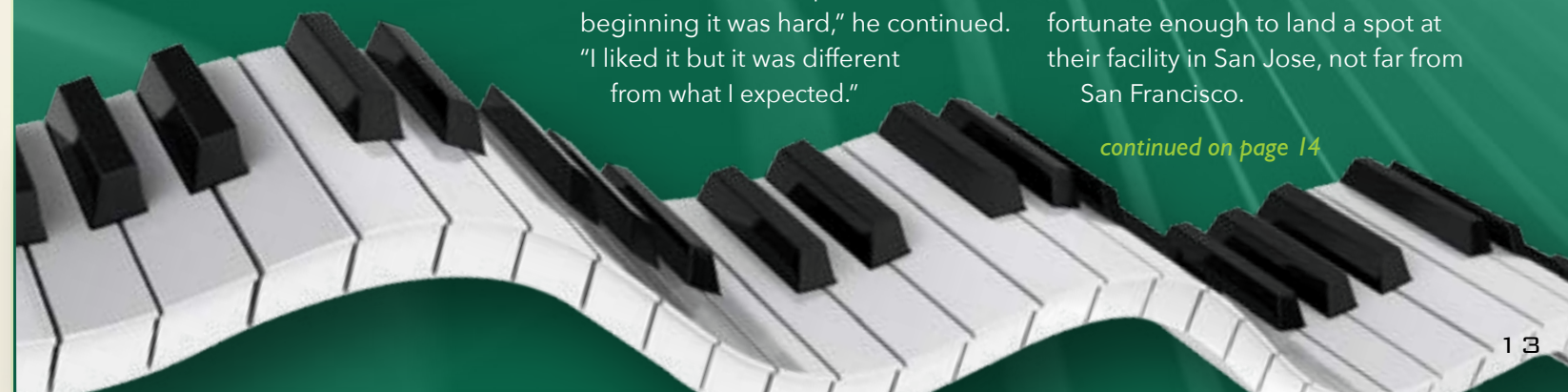
When you live in another country, you think of the United States and you think of a place like New York City, very cosmopolitan and Tampa was a long way from that. I didn't have a car and it was tough to get around and meet people.”

Lara Yejas didn't let that discourage him. He earned his MS in computer science in 2010 then dove straight into the doctoral waters. “Life got better, I got a car, I started meeting more people and there was always my music. I found a jazz band and began to settle in. I have always been a musician, I wasn't getting much time to play because of the academic load and I missed that.”

By 2012 he earned his PhD in computer science and made a big impression along the way, enough that IBM came calling.

“I was very fortunate to find a job with IBM,” he admitted. He was also fortunate enough to land a spot at their facility in San Jose, not far from San Francisco.

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"IBM is an excellent company and I have fallen in love with California. I love it, the weather is great. I love Silicon Valley. You drive around and you see companies like Google and Microsoft, they are all out here. It's really a great thing and I feel very fortunate."

His work there keeps him busy, but not to the point where he is afraid of getting burned-out. "It's a wonderful atmosphere, you're not working 60 hours a week or anything like that. It is challenging. Big Data is a new field, working with analytics. It's different from a lot of the research I did at USF but my statistical work prepared me for this. Analytics are very important," he went on. "You have all this data but it's useless unless there is an efficient way to analyze it and analyze it in a manner that is user friendly to our clients."

"Fraud detection is a big area of concentration right now," he added.

When he's not working, Lara Yejas has enjoyed getting

to know the area, especially San Francisco. "What a great city, there is so much to do, places to go, great outdoors activities, it's wonderful and I'm enjoying it."

He has also met a fellow musician, a professional musician who has his own studio recording facility. "He asked me if I would like to start recording some of my work and wow, that's a super opportunity," he said.

Renaissance man? He surely fits the bill.

Check around and see if you can find an accomplished software engineer who can crank out anything from jazz to Mozart on the piano or get on stage and perform with a band. Lara Yejas can and he does. Would he ever leave the world of computer science to become a full-time musician?

"You never know about something like that," he said with a quick laugh.

Use your QR reader to check out Oscar's music on YouTube.



USF's Diversity Prepared Alejandra Vega for Work in a Global Company - by Glenn Cook

Alejandra Vega faced barriers on her path to becoming a quality engineer at Johnson & Johnson. She knew little English when she moved to the United States at age 15. As a woman, she also is in the minority in the traditionally male world of engineering. But the Bogota, Colombia, native didn't let those hurdles deter her.

"I was challenged with my English, but I wasn't challenged academically," she says of her early experience in high school. "I was used to a strict academic program, and I knew how to do the work. The problem was how to do it in English so I could express it. At the beginning, I failed tests because I used periods instead of commas."

Vega, who moved to Bonita Springs with her family, originally enrolled in the English for Speakers of Other Languages (ESOL) program. Within two years, she was

an International Baccalaureate student at Fort Myers High School, where her grades helped her get a Florida Bright Futures Scholarship as well as college credit.

Watching the Discovery Channel show "How It's Made," she found herself drawn to the mechanical engineering field. "At the beginning, I didn't know what I wanted to do professionally, but that prompted me to pursue this field, just seeing how small things can be put together to become something great," Vega says. "I found that I was fascinated by how things worked and how things changed over time."

She applied to only two colleges — University of South Florida and the University of Florida — because they were close to home. She chose USF because of its diversity and variety of programs.

"USF gave me an appreciation of diversity," Vega says. "It's a campus with really big, diverse

communities: African American, Indian, Asian, Hispanic. Growing up in Colombia, there was not a lot of diversity, so that was a learning experience going to USF and interacting with a lot of different people. It also translates into my work area, because Johnson & Johnson is a global company and I'm working with a lot of people who are from other countries and cultures."

As an undergraduate, she worked as a housing resident assistant and spent two years doing research with Professor Ashok Kumar as well as two PhD candidates. They introduced her to Bernard Batson, the college's director of diversity programs, who helped her make the connection to Johnson & Johnson.

"Those are the two things that helped shape my university career," she says. "Working as a resident assistant taught me about leadership and interacting with different people, while the research was more about detail and problem solving. But both are helping me in my current role."

Hired upon graduation in 2011, she was accepted into Johnson & Johnson's two-year Global Operations Leadership Development (GOLD) program. Through the program, employees serve three different sectors with three different roles in eight-month rotations.

Her first position, in New Jersey, was in the quality department in

the medical device sector. She then worked in the consumer product sector in a planning role, helping to determine how much product to make and ship to different retail outlets. For her third rotation, she joined the customer logistics team in Jacksonville as a project engineer in the distribution center.

After graduating from GOLD in the summer of 2013, she took a permanent position with the Quality Engineering department in Jacksonville. Her position involves making sure "our customers are getting a quality product from what is manufactured in our plant."

"It's been amazing," she says of her experience. "The GOLD program is one of the greatest programs I've seen because of the amount of training they put you through. They focus on business skills, persuasion skills and leadership skills among others, because they require you to develop and deliver on projects within eight months."

At Johnson & Johnson, Vega says she's seeing progress in the hiring of minorities and women in the engineering fields. The company has

a leadership initiative for women and employee resource groups that support Hispanics, Asians, African Americans, etc., who want to develop in the company.

Vega says her USF experience has helped her develop "the people skills that I use in my daily life." She eventually hopes to be in a position "where I can influence people and help them navigate through their careers, their projects and their journey to become better professionals."

"The best advice I've received is that you've got to learn the most you can from any experience that is presented to you," Vega says. "It doesn't matter if it's little or big, you've got to learn from them and keep the relationships you make. You never know when someone will be able to help you down the line. You always try to be your best and influence others to be their best. That's being a leader."

Johnson & Johnson



Alejandra Vega

USF Awarded Prestigious EPA Grant for National Research Water Center in Nutrient Management

Center will develop new technologies, practices of managing wastewater and stormwater

- by Colleen Naughton

Researchers in the University of South Florida's Department of Civil & Environmental Engineering have been awarded a \$2.22 million grant from the U.S. Environmental Protection Agency to establish a national research center to tackle a dire issue plaguing waterways in Florida and across the country: nutrient pollution from wastewater and stormwater runoff.

The USF Center for Reinventing Aging Urban Infrastructure for Nutrient Management (RAINmgt) will develop integrated research and demonstration projects focused on nutrient pollution management technologies while also developing regional models that determine appropriate solutions from the household to city levels. Their work will also emphasize pollution reduction and water reuse options over treatment and disposal.

The center will be led by USF engineering professor James Mihelcic, who is joined by USF environmental engineering faculty members Jeffrey Cunningham, Sarina Ergas, Maya Trotz, Daniel Yeh, and Qiong Zhang.

The USF proposal was selected as one of four EPA Centers for Water Research on National Priorities Related to a Systems View of Nutrient Management.

"This research is much needed in urban coastal areas and will also assist efforts to restore and

improve the water quality in Tampa Bay and other impaired estuaries in Florida and the United States," Mihelcic said. "Recent news stories about poor water quality associated with Florida springs and Lake Okeechobee outflow highlight the need for more innovative and sustainable approaches to manage nutrients found in wastewater and stormwater." For example, Mihelcic said, it is estimated there are more than 600 springs in Florida with very high flow rates, which may be the greatest amount of freshwater concentration on the planet. However, where once most springs had white, sandy bottoms; countless are now murky because their bottoms are covered in green algae and plant growth.

He said this is due to a steady rise in nutrient levels from fertilizer runoff, municipal wastewater treatment plant discharge, and thousands of poorly designed and maintained household treatment systems such as septic tanks.

According to the 2010 Springs Initiative Monitoring Report by the Florida Department of Environmental Protection, 36 of the 49 springs monitored were above the set nitrogen threshold of 0.35 mg/L. This is not only a problem for visibility for tourists and the glass-bottomed boats but also for the wildlife and humans that depend on water quality. Algae that thrive in nutrient rich waters compete for limited dissolved oxygen from other fish and organisms and can cause rashes and nausea for swimmers, kayakers and tubers.

More than just environmental impact, a 2003 Florida State Study found that the springs generate significant employment and \$70 million dollars annually. Mihelcic also stated that "The research will benefit the public because poor water quality lowers the economic,

social, and environmental value of our nation's waters for current (and future) generations. In Florida, our springs, rivers, estuaries, coastal waters, and the Everglades all suffer because of nutrient pollution. Nutrient management is also a national and global issue because of food security.

Another example of the devastation wreaked by nutrients in Florida is recent releases of nutrient-rich waters from Lake Okeechobee, which happens to be the largest lake in the southeastern United States. Last summer's heavy rainfall flooded the lake with billions of gallons of freshwater polluted by run-off from farms, golf courses, homes, and septic tanks. Algae blooms have subsequently distressed this fragile ecosystem that is part of the St. Lucie River Estuary that supports over 4,000 plant and animal species, 36 of which are listed as endangered or threatened.

Researchers are now focused on developing new strategies and technologies that could manage and control these nutrients in a more sustainable manner. For example, nutrients found in domestic wastewater could be recovered and reused as fertilizer and stormwater could be better managed to reduce nitrogen loadings into local waterways.

The National Nutrient Management Center will work toward this goal by first developing and understanding the science behind nutrient management technologies and then develop and test sustainable innovations that improve community well being.

One example is the construction of a rain garden that was recently managed by a USF doctoral student at Young Middle Magnet School as a demonstration of how to better manage stormwater runoff. This rain garden averts 277,380 gallons of water and has already provided a green and aesthetically pleasing space in place of standing water that would flood and damage the school gymnasium during intense storm events.

Research and demonstration projects will also take into account political, social, economic, and environmental factors. A tool will be produced that will compare economic costs and environmental

impacts per pound of nitrogen and phosphorus recovered or removed for nutrient removal and recovery technologies. This will be scaled up to a larger nested water quality model that will quantify the impact of nutrient management and loading on Tampa Bay in Florida.

USF will be working in partnership with the University of Texas-Austin, Yale University, the University of Maryland and the University of Florida, as well as with researchers from Resources for the Future in Washington, DC; engineering practitioners from Hazen & Sawyer and Greeley & Hansen; and the Corporation to Develop Communities of Tampa.

The center additionally will train community members, future engineers and water managers, to achieve progress along a path forward for sustainable nutrient management.

The National Center for Reinventing Aging Infrastructure for Nutrient Management can be followed at: <http://usf-reclaim.org> and on Twitter @USF_Reclaim. Reclaim is a global network of researchers, students, and practitioners lead by USF students and faculty dedicated to developing geographically-appropriate and culturally relevant engineered systems to recover nutrient, energy, and water resources from waste.

Use your QR reader to visit the National Center for Reinventing Aging Infrastructure for Nutrient Management's website.



ENGINEERING PROFESSOR SPENDS A YEAR WORKING AT THE U.S. STATE DEPARTMENT

by Janet Gillis

As a Jefferson Science Fellow, Rajan Sen spent a fascinating year learning how engineering concepts become global policy.

The Jefferson Science Fellowship (JSF) at the U.S. Department of State, administered by the National Academies, is offered to about a dozen senior faculty from across the United States every year. Fellows serve their initial year in Washington, D.C., but remain a resource to the State Department for an additional five years. Last year Rajan Sen, professor of structural engineering was the first Jefferson Fellow appointed from USF and one of only three structural engineers ever chosen to

participate in this decade long program.

Assignments at JSF involve providing cutting edge expertise in science, technology, engineering and medical advances that impact policy decisions at the State Department level. Sen's broad-based experience in structural analysis and design, using both traditional materials and advanced composites was a good fit for advising policy makers on current issues in urban infrastructure. A keen advocate of good design and sustainable practices, he has returned to USF this academic year with an expanded awareness of risk-informed decisions and the global reach of engineering advances.

"It was an amazing year in Washington, D.C.," he says. "Not just with the inter-agency meetings that the position required, but opportunities to attend lectures and talks by world renowned experts in leading think-tank institutions." One of the important responsibilities of a Fellow is to represent the State Department in inter-agency committees. "Some are very high level with the objective of establishing clear national goals for science and technology which report directly to the White House," he explains.

Much of Dr. Sen's work was specifically for the Department of State's Bureau of International Organization Affairs - Office of Global Systems. This bureau interacts largely with the United Nations. One of the appointments was to the National Science and Technology Council's (NSTC) Subcommittee on Disaster Reduction (SDR). This took him to UN Geneva as a member of the multi-agency U.S. delegation to the fourth session of the Global Platform for Disaster Risk Reduction.



Rajan Sen shakes hands with Secretary of State John Kerry.

Sen gave four researched presentations during his tenure: a distinguished JSF lecture at the U.S. Department of State; lectures at the U.S. Embassy in Nairobi for UN Habitat, at UN New York for the United Nations Development Program, and at the White House Conference Center to NSTC's Infrastructure Subcommittee. The predominant theme was the strategic use of available materials and systems to make cities more resilient and future directions for infrastructure research in the new millennium.

Other projects that he participated in included the Hurricane Sandy Rebuilding Task Force. "I was able to contribute to that because coming from Florida we know a good deal more about hurricanes than people in the Northeast." He explained that good design can save billions of dollars in disaster rebuilding. And it does not have to be complicated. "In Bangkok, the subway entrances are five feet above the ground which prevents flooding." He cites the Stormwater Management and Road Tunnel (SMART) in Kuala Lumpur, Malaysia, as another example of good design. The tunnel normally carries traffic but reverts to a drain when there is severe rainfall that can lead to flooding.

As part of a review of glacial lake over burst flooding in Nepal, Sen proposed adapting a rapid repair system developed by the U.S. Army Corps of Engineers to plug leaks. In this system a balloon-like structure is filled with water and allowed to float. Water currents guide it to potential openings which are then automatically plugged. "Construction equipment is difficult to transport to remote mountainous regions and this system could be used as a temporary fix for glacial lakes in danger of failing in places like Nepal or Bhutan. The technology is inexpensive, lightweight, and can be assembled on site."

The overall experience has left Professor Sen with a deep appreciation for the work of the State Department. Witnessing the change of Secretaries from Hillary Clinton to John Kerry, and the fast pace of work

there, he observed that the Department literally runs 24/7. "Information that is three-days-old, is old. The processes in place are both rigorous and efficient. Personnel are extremely versatile and knowledgeable, many with impressive credentials." Another observation was the number of undergraduate interns at the State Department. "Our USF students should join this program," he explains. "There is a strong emphasis on written and verbal communication, and valuable experience can be gained even in the short time spent as an intern."

Of all his projects, Sen's favorite was working with disaster-recovery issues on an international scale - some of which are still ongoing. He was able to effectively contribute by translating complex engineering concepts that policy makers could understand and implement. There is a greater appreciation for the exchange of technical expertise, networking opportunities and international contacts that were made possible in one action-packed year.

"Living in the West End in downtown Washington DC, was also a privilege, and the vibrant urban lifestyle was a unique and enjoyable experience. Visits to the Library of Congress and Politics & Prose bookstore for instance, gave a real sense of the literary, political, and cultural pulse of the city. All in all this was a great year," he recalls, "and will always be memorable."

“ SCIENCE IS MORE ESSENTIAL FOR OUR PROSPERITY, OUR SECURITY, OUR HEALTH, OUR ENVIRONMENT, AND OUR QUALITY OF LIFE THAN IT HAS EVER BEEN BEFORE.”

—President Barack Obama, 2009

Auburn University's Loss is USF's Gain

by Tom Edrington

Mike Grady had heard little to nothing about the University of South Florida before that fateful night, September 8, 2007.

Grady was an undergraduate at Auburn University and was one of the thousands packed into Jordan-Hare Stadium for what most of the Auburn faithful believed would be an easy win by the Tigers over the visiting South Florida Bulls.

"At least that's what we thought," recalled Grady, who will soon receive his PhD in electrical engineering from USF.

Grady and the rest of the Auburn crowd watched in disbelief when then USF quarterback Matt Grothe hit Jessie Hester with a 14-yard touchdown pass in overtime to lead the Bulls to the stunning 26-23 upset of the Tigers. "I was in shock that they actually won and that's what put USF on my radar," Grady said with a laugh as he recalled that night nearly seven years ago.

Grady finished his undergraduate degree at Auburn in 2008 then went on to receive his masters in electrical engineering in 2010.

That completed a seven year journey for a young man from Birmingham, Alabama, who took an early interest in math and science and helped set his educational path by winning math competitions. "Even back then, I knew that I liked math and science," Grady remembered.

Auburn recognized Grady's potential and achievement and offered him a scholarship. His undergraduate and master's years were supplemented with a lot of internship experience at well-known companies such as BE&K, NorthStar Communications, Milliken and Co., a Georgia textile company and a post-master's research internship at Corning in New York.

"I really enjoyed that time with Corning," Grady pointed out. "That was a lot of fun and a great experience." It all led up to a calling from the University of South Florida.

"I learned more about USF from the IEEE WAMICON conference," Grady said. "It started at USF and has really grown in scope. It was through conferences such as WAMICON that I began to really think about USF for my doctoral studies."

He did more than think about it. Grady packed his bags and headed

to Florida. "The Tampa Bay area is really a great place and that helped me make the decision," he recalled.

"USF has a great reputation for wireless and microwave research," and that was another deciding factor Grady said of his decision to enroll.

Grady's work at South Florida has been nothing short of remarkable. The majority of his most recent research has been in the development of a biomedical radiometer, a device that will be used to non-invasively, wirelessly, and accurately measure subsurface temperatures well beneath the skin of the human body. "It will help with the early diagnosis of pressure sores," Grady explained. This USF research experience also lead to a rare opportunity with a research internship at NASA's Goddard Space Flight Center in Greenbelt, Md.

He recently was selected as one of two winners from a nationwide pool of applicants to receive the IEEE

Microwave Theory and Techniques (MTT-S) Graduate Fellowship for Medical Applications for 2014. The purpose of the prestigious award is to recognize and provide financial assistance to graduate students who show great promise in applying microwave engineering towards medical applications. Grady will be honored at the International Microwave Symposium that will be held in Tampa this coming June.

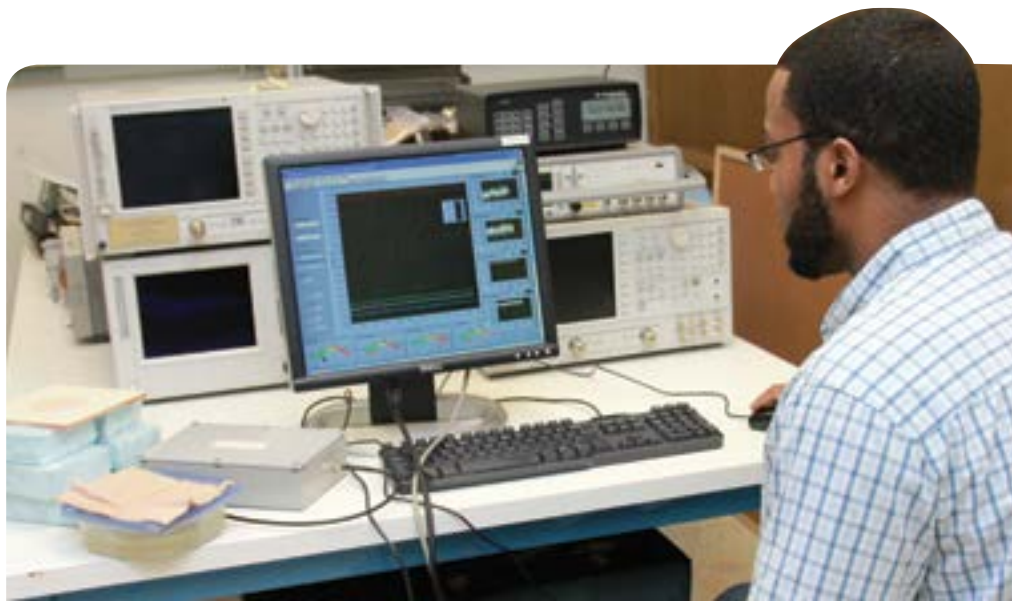
"I give a lot of thanks to Dr. Thomas Weller and Mr. Bernard Batson for all their help," Grady said, acknowledging both his USF research advisor who is a professor and chair in the Department of Electrical Engineering and his USF fellowship coordinator.

When he earns his doctorate, Grady can see himself moving on to the corporate world. "There's a good chance that will be the direction I go," Grady said. "I would like to get out there and use what I have learned," he said.

Grady also believes he can be an inspiration to minority students who aspire to higher education. He likes to speak to groups whenever he can. He enjoys showing what is possible. "It's all about paying it forward," he reminded. "A lot of people have helped me along my journey and it is important for me to do the same when I find myself in a position to help," Grady said. An example of this can be seen in an educational YouTube video titled "Mario Teaches Microwaves" which explains RF engineering to students at the high school level.

The corporate recruiters already have Grady on their radars. "I wouldn't be surprised if I ended up working for a defense contractor," he predicted. In the meantime, there is still research to perform and tasks to accomplish on the road to his Ph.D.

"Hopefully, this December or the spring of 2015 at the latest I will graduate," Grady said, looking forward to the day when he will come to the end of one journey then immediately start another. "Yes, it's been a long time since that night at Jordan-Hare," Grady said, smiling as he thought about what led him to USF. "Sorry we lost, but glad I found USF."



“USF has a great reputation for wireless and microwave research.”

—Michael Grady

Ileana Wald is Doing Something Many Wish They Could

– A Career Do-Over – by Tom Edrington

Ileana Wald is part of a new generation of University of South Florida students who are undergoing a major career makeover, or in Wald's case, a major "do-over."

Wald graduated from Tampa's Chamberlain High School in 2001 and set her educational course for the University of Florida. Five years later she had an art degree from UF and the working world called.

She traveled to Chicago to work for an upscale furniture design firm, putting her artistic side in full gear. As fate would have it, the economy began to tank and she could see the writing on the wall. "I knew that I didn't want to do that for the rest of my life," she said.

Wald found herself working at the Tampa Bay Workforce Alliance in 2010 then a year later, she made a life-changing and career-changing decision.

She enrolled at the University of South Florida in the pre-engineering program. "I was always interested in engineering," she confessed, but

when it came to the math part, I was a little lacking in confidence."

It was a drastic move, but one she made nonetheless. "Art has problems without clear solutions. Engineering has problems without clear solutions," she went on. "If I had the foresight, I would have started as an environmental engineering major."

Hindsight is indeed 20-20 but Wald began her "do-over" with enthusiasm and determination. "I don't regret it. My family was kind of baffled at first but they were very supportive."

There was still the math-confidence issue. "I wasn't sure I would get through the first semester," she said, recalling nervous times. "There was a definite learning curve. Once I got over the initial shock of how much studying I had to do, things got better."

She also found out that USF is a friendly environment for students past the "traditional" undergraduate age. "Yes, I have met other students like me who are in their 30s," she pointed out.

Based on her enthusiasm and academic performance, Wald made the right decision to take on her career "do-over."

She has earned a research internship from the National Science Foundation and will be heading to South Africa this summer to help tackle a growing world environmental problem - the lack of clean water in rural areas.

She will work for eight weeks alongside students from all over the United States. The program is coordinated by the University of Virginia.

The University of Virginia's Environmental Engineering Department has developed a technology and has created a ceramic water filter that can be used in rural areas around the world.

For Wald, it's a full-circle journey. She studied ceramics extensively as part of her art degree at Florida. "Yes, with that in mind, those studies did not go to waste," she pointed out.

"I will be paired with other researchers and will study the water

quality in rural areas of South Africa. It's not a problem in big cities over there like Johannesburg. It is a big problem in the rural areas and there are a lot of them.

"The solution for this problem could come from this filtration system," she went on. "It's an exciting time to be working in this field."

Her work will take place primarily the Limpopo province, northeast of Johannesburg. She will be there for research that will tackle the problem of water quality and sanitation. This is not her first undergraduate achievement, however. In 2012 she was a recipient of NOAA's Ernest F. Hollings scholarship and helped conduct research at NOAA's Monterey Bay National Maritime Sanctuary in California. She also

participated in NSF sponsored research internship at the University of Colorado Boulder in 2011, where she conducted research on point of use water treatment.

Earlier this year, she received a travel award for an oral presentation during the 2014 Emerging Researchers National Conference in STEM that was held this past February in Washington, D.C. She presented her research with USF's Dr. James Mihelcic and doctoral candidate Nathan Manser, on pathogen inactivation in anaerobic digestion of agricultural waste.

Following her South African field research, Wald will return home to Tampa to get herself ready for her senior year and the final work toward her degree in civil engineering with

a concentration in environmental engineering.

"In the fall I will apply to graduate schools and hopefully I will be admitted to a doctoral program in environmental engineering," Wald said, mapping out her future course.

The program would start with work toward her masters then a Ph.D.

"One day I would like to teach," she added. "But first I'd like to work in industry and work in the area of water, sanitation and hygiene for the developing world."

It is an ambitious path and a long way from where she started in the art world but Ileana Wald has made great strides on her way to that life-changing "do-over."

Alfred P. Sloan Foundation Partners with University of South Florida to Create University Center of Exemplary Mentoring

The University of South Florida is celebrating a major academic achievement with its selection by the Alfred P. Sloan Foundation to house one of just five University Centers of Exemplary Mentoring. Sloan chose USF based on its track record for educating underrepresented minority graduate students in STEM disciplines, particularly in marine science and engineering. The new partnership, which comes with a three-year grant of \$630,000, aims to help USF expand outreach to these students and support them through professional development. USF is the only university in Florida to receive this recognition, and the only non-AAU institution included nationwide, joining Cornell University, Georgia Institute of Technology, Pennsylvania State University and University of Iowa. Together the five UCEM awards total \$4.7 million.

The USF Sloan program will be led by Jose Zayas-Castro, professor and associate dean for research in the College of Engineering, Frank Muller-Karger, professor in the College of Marine Science, and managed by Bernard Batson, director of diversity programs at the College of Engineering. Professors Norma Alcantar (Chemical and Biomedical Engineering), Sanjukta Bhanja (Electrical Engineering), Nathan Crane (Mechanical Engineering), and Mark Jaroszeski (Chemical and Biomedical Engineering) will serve as members of a faculty coordinating committee to support the center's recruitment and retention efforts.

"Since the Sloan MPhD programs began in 2005, USF has been a national leader in the graduation of Latino and African American PhD students in both the engineering and marine science fields,"

according to Batson. "In addition to the fellowships, the new center calls for the establishment of student professional development and faculty mentoring initiatives to impact STEM graduate education throughout the University."

Selected through a competitive search, University of South Florida was chosen based on a number of criteria, including its historical success in recruiting and mentoring graduate students from underrepresented minorities; the quality of the departments and programs constituting the UCEM; the quality, breadth, and creativity of their planned future activities; and the strength of their institutional commitment to furthering education for underrepresented minorities in the natural and physical sciences, mathematics, and engineering.



Ileana Wald takes water samples from wood chip bioreactors in California's Central Valley summer of 2013.

PROVIDING CLEAN DRINKING WATER TO COMMUNITIES IS EMMA LOPEZ'S GOAL - by Steve Huettel

A Miami middle schooler's love for nature and helping people inspired her to pursue a career of protecting the environment that's taken her across continents. Emma Lopez graduated from Florida International University with both a bachelor's and master's of science in environmental engineering. She was born of Guatemalan descent and raised in Miami. Emma is an alumni of the Congressional Hispanic Caucus Institute(CHCI). The institute's website lists Lopez's various achievements, including her involvement with a research service project in the Amazon.

As a CHCI Alumni, she participated in a graduate Science, Technology, Engineering, and Mathematics (STEM) fellowship in Washington D.C. Experience with the STEM fellowship paid off for Lopez in 2012-2013, when she landed internships with the National Science Foundation and Texas congresswoman, E.B. Johnson. In the nation's capital, staffers with a STEM background are a hot commodity. Word got around at a Christmas party that she was one of the few with a STEM education. The next day she received a phone call offering her first internship on Capitol Hill.

The idea of becoming an environmental engineer first sprouted with a class project on future careers in her middle school. School counselors also pointed out that environmental engineers earn considerably more on



Emma Lopez

average than environmental workers. Lopez said the higher salaries were a nice bonus, but not a deciding factor in her choice to become an engineer. Engineers are problem solvers, Emma says, when asked why she became an engineer. As a child, Lopez was always building something or surrounded by tools. Her father's job as an electrician greatly influenced her career path. She knew if she became an engineer she could help people's lives.

Emma currently works on research of bioretention systems, also known as 'rain gardens', in East Tampa. These rain gardens lessen the ecological impact of stormwater runoff while providing improved groundwater infiltration. They also reduce nitrogen and phosphorous levels in stormwater. The runoff is treated by the different layers of media that make up the bioretention system. Often, excess nitrogen and phosphorous comes from residential and agricultural fertilizers as well as atmospheric deposition. Lopez explains that a high level of nutrients

promotes algae blooms. These algae blooms deplete oxygen levels and kill fish in the water. The algae also blocks sunlight from reaching plants under the surface of the water. Emma's role is to analyze water samples and measure the efficiency of the gardens. She takes samples of rain water before entering the rain garden and samples of water after it has gone through the treatment process.

The large department of environmental engineering was what attracted Lopez to the University of South Florida. She was first very excited to study and work with Professor Jim Mihelcic, the author of the textbook she used for the bulk of her work while in the Amazon. She was also attracted by the large number of grants awarded within the areas of energy and sanitation, which could support her interests in international work and research.

She hopes that her research will have a greater impact on Tampa's community. Lopez wants to improve the quality of water in Tampa Bay. Her goal is to promote the ecological, social and economic development of Tampa by improving the quality of water. Emma wishes to educate people about LID technology. LID stands for low impact development which involves using natural features to manage stormwater close to its source.

Ten years from now, Emma sees herself as a leader working on issues related

to water reuse, water quality and sanitation in developing communities. She hopes having a PhD will open doors for her to work with international organizations and contribute back to her land of heritage, Guatemala. She wants to continue research on harvesting stormwater and ways to reuse it. Emma's vision is to bring drinking water to communities without it.

THIS LEGACY STUDENT SAYS SUCCESS IS ALL ABOUT THE "SECRET SAUCE"

by Glenn Cook

Daniel Kamsler spent his entire childhood in Miami, but he knew early on that he was going to USF for college. His father, older sister, and uncle are all USF graduates, and his parents own a townhouse in Tampa.

"It had to happen," the 2013 industrial engineering graduate says of attending USF. "But I'm really glad it did."

The rest of Kamsler's college experience takes a non-traditional route, however. He married his high school sweetheart, Heisy, during his first semester in college and moved into his parents' townhouse. The two balanced a new marriage and college studies with a focused approach to the future.

"We got married so young that we were forced to mature really fast," Kamsler says. "We pushed each other to become outstanding individuals. You can't go to college and mess around, because if you mess up your life you mess up both your careers."

Messing up is not in Kamsler's professional vocabulary. An internship with Nielsen ended with a job offer, and he now is in the midst of a two-year emerging leader program in which he works on "high-impact projects."

"Every six months you move to a new project, so that gives you tremendous exposure," he says. "You get five years experience in two years, and they expect us, once we leave

the program, to take on huge leadership roles on other projects and jobs within the company."

USF prepared Kamsler for his current work by keying in to his desire for challenges and

professional success, he says.

He says the Department of Industrial and Management Systems Engineering is small enough that students can "really stand out if you push yourself to do it." And he did, becoming president of the Institute of Industrial Engineers, a student organization that became his entire into Nielsen.

"I was always in groups where we were pushing each other to do better," he says. "The classes were a good size, and the professors really knew you. They wanted to see you grow, and if you give them the effort, they'll give it back. They want you to always strive for impact."

Leading the student organization, he says, taught him the soft skills he needs to succeed in his current role.

"There are lots of connections between USF and what I'm learning here," he says. "When you think of industrial engineering you think of manufacturing physical products. Nielsen captures data for audience measurement. Where I'm fortunate is in knowing and being able to connect the theories I learned in college and translate them to the people side rather than machines."

nielsen



Daniel Kamsler

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He says the department chairman, Dr. Tapas Das, taught him to search for the “secret sauce” that will make him stand out in his career. For Kamsler, the soft skills are key.

“You have the same degree, the same GPA, but what is it that makes you stand out?” he says. “Those are the things that are really the secret sauce when you have to convince people to do things for you. If you don’t have social skills, it’s extremely difficult to do that.”

After he finishes his work in the management program, Kamsler says he plans to stay with Nielsen for at least five years so he can continue to develop his leadership skills. Eventually, however, he wants to be his own boss, either taking over management of his in-laws’ distribution company or by starting his own construction company.

“I always try to have the kind of life where I can see a plan for five years, 10 years, 15 years down the line,” he says. “I want to make an impact, and I can see that happening.”

No matter what happens, he always will remain tied to USF. He

returns to the university every chance he gets, and expects that his brother Tyler will become the third Kamsler sibling to attend USF.

“My sister (Erika) graduated at the top of her class in nursing the semester before I started my first year of college,” he says. “She set the bar high for me. I knew I couldn’t come to college and goof around.”

Erika, now a nurse practitioner, returned to Miami after graduation, but has since moved back to Tampa, where she lives in the townhouse. Kamsler and his wife have moved into a home of their own.

“We’ve worked so hard for the past few years, but my wife and I look around all the time and say, ‘How did this happen?’” he says. “We both have amazing jobs. We’ve been married for over 5 years. We’ve bought our dream home. I went from trying to fill my sister’s shoes to the other way around. Now she’s trying to fill mine.”

He adds, with a laugh, “I’ve got to say, that feels pretty good sometimes.”

BEING A LEADER NOT A FOLLOWER IS HIS ROAD TO SUCCESS - by Steve Huettel

Al-Aakhir Rogers had a long and challenging journey from the streets of Queens Village NY, to earning a PhD in electrical engineering at the University of South Florida. “Drugs, violence and street life were an enticing and ever present reality,” Rogers writes in his 2011 memoir. These persistent threats shattered his family life in New York. Rogers moved to Stone Mountain, GA, in 1994 after his grandmother suffered from a life-threatening car accident. When Rogers was a kid, his father was incarcerated in New York, adding to the many challenges Rogers already faced. His mother, alone, stepped up as the head of the household. She would travel 2.5 hours each way to provide for the family. His mother cared enough about his school work that she would wake Rogers up at 2 a.m. to rewrite his homework because it was too sloppy. She also introduced her children to church which would have a lasting impact on Al-Aakhir.

Applying only to North Carolina Agricultural and Technical State University, Rogers seemed to have no direction. His family could not afford to put Rogers through college. As a child Rogers had a talent for science and math, but did not know how to turn these talents into a career. Rogers was accepted to North Carolina A&T where he earned his bachelor and master of electrical engineering.

Al-Aakhir Rogers

USF never crossed Rogers’ mind as a school to attend for his doctorate. The opportunity to attend the University of South Florida came when Rogers attended a graduate symposium at North Carolina A&T. There he met Professor Ashanti Johnson Turner from USF. A couple weeks later Turner introduced Rogers to Shekhar Bhansali, a professor of electrical engineering at USF. The two got along well and Rogers decided to attend USF.

Looking back, Rogers mentions several people who have been influential in his life. His dad led him to become a “leader and not a follower.” Not wanting to follow in his father’s footsteps, Rogers decided to become a leader instead. Rogers also owes his communication skills to a man named Reginald Yates. Having the experience of traveling to foreign countries, Yates taught Rogers to be prepared for any opportunity to bring change.

The lasting impact of Introducing Al-Aakhir to church, led him to Bishop Aubrey Shines of Glory to Glory Ministries in Tampa. Bishop Shines, pushed Rogers to go out of his comfort zone, allowing Al-Aakhir to grow and mature into the man he is today.

Bishop Shines has taught Rogers to be prepared at all times. Lastly, Rogers says his “technical abilities, professional and social development, academic integrity, and financial responsibility” have all been matured by his major professor and Bernard Batson, director of diversity programs at the College of Engineering. Rogers is now giving to the community in the same way his role models leant themselves to him. Rogers introduces kids from disadvantaged homes to a STEM education, which stands for Science, Technology, Engineering, and Mathematics.

Rogers’ vision is innovation when it comes to his research. From a PhD’s perspective, Rogers says that “ideas have to be studied and developed” through research. He hopes that research in all fields will result in improving our world of today and tomorrow. Traveling to multiple countries including, Taiwan, Germany and South Korea, Rogers has a global perspective on the impact research can have on our society.

To Al-Aakhir, 10 years seems very distant. What he hopes will await him, however, is his goal of “inspiring and teaching the next generation of scientists and engineers.” With his volunteer work, he sees the boy from Queens Village New York, changing the face of STEM one student at a time.



University of South Florida
COLLEGE OF ENGINEERING

50th

1964 - 2014
Anniversary

The College of Engineering Hits the Big 5-0!

Can you believe the college is turning 50 this year? On September 8, 1964, the college opened its doors to an inaugural class of 240 students. Stay tuned alumni. There will be a series of events throughout the academic year (2014-2015) to celebrate this milestone.



Drawn to USF From Her Native China, Dongping Du's Research Could Save Your Life One Day - By Steve Huettel

Dongping Du traveled across 12 time zones to get to the University of South Florida in 2010. Two years later, she earned her master's in industrial engineering. The curious young lady is now pursuing her PhD in industrial engineering at USF. Among more than a hundred Chinese students enrolled at the College of Engineering, Du stands out as a superstar. She is a nationally recognized writer, plays a key role in heart disease research and is also on a team that has the chance to win an app building competition in Montreal.



Dongping Du

Du came to the United States to get a PhD in Industrial Engineering. She invested a lot of time in her decision to attend the University of South Florida. She searched online for all the universities that offer industrial engineering. She then researched the professors of each school until she found one who shared the same interests as she did. She chose USF because she was intrigued by the many research opportunities. Du felt there was strong support for the research from the department as well.

Du's brother is an engineer and his work always had a significant impact on her. She saw how her brother worked and thought "engineering was the coolest job in the world." Wanting to do the same job as her brother, Du decided to become an engineer.

Curiosity and computers led Du down the path to Industrial Engineering. "Although I am a girl, I was born an engineer," she says. She enjoyed doing science projects over summer break from school. Du has always been interested in how things work. One day, she decided to take a clock apart. "Engineers take things apart, not destroy them," says Du. Industrial engineers want to know why things work, and how things work better; it was the perfect match.

USF is participating in the national CIS Mobile App competition in Montreal. The winners will be announced during the 2014 IIE Annual Conference & Expo on May 31-June 3. Du is part of a team which has made it to the finals of the competition. The team, successfully producing an app, called Mesh, that impressed the committee, must now create a marketing plan on how to sell their app. The competition

in May includes a 10-minute presentation demonstrating their app and their marketing plan. This first of its kind app is designed for improving cardiac healthcare by connecting doctors with patients anytime, anywhere through their mobile phone. She is very confident about the final competition, "We hope to win the first place," she says.

This competition is not Du's only accomplishment. In 2011, USF's College of Engineering hailed Du for taking first place in IBM's Best Student Paper competition. The paper's title, "Multiscale modeling

of glycosylation modulation dynamics in cardiac electrical signaling" is a mouthful considering what it actually means. In simpler terms, Du managed to model the heart using computers. Programs like the one Du was working on, allow researchers to bypass the human element of studying the heart.

Du's research utilizes data from both computer programs and actual medical readings. "Heart disease is the number one cause of death around the world," says Du. Nearly "600,000 people die each year in the U.S. alone." Du's computer model allows her to simulate different treatments of heart disease. It also allows her to see the effects of these treatments on different levels from the cellular level to the cardiac system as a whole. She uses these results to draw conclusions about how to better improve diagnosis and treatment. She hopes that her research will be used in laboratories worldwide to study different types of heart disease.

Du's research may revolutionize the way we diagnose and treat heart disease. Her ultimate goal is to become a world leading expert in her field. In ten years, she hopes to become a successful professor. What she wants more than ever is to teach her students to solve real-life problems. Continuing her research, she plans on focusing on practical issues, ones that will make a difference.

Use your QR reader to view a demo of Du's Mesh App.



USF Team Wins People's Choice Award in Science's 2013 International Science & Engineering Visualization Challenge

An image created by Anna Pyayt, assistant professor in the Chemical and Biomedical Engineering Dept., and visually enhanced by Howard Kaplan, visualization specialist at USF's Advanced Visualization Center, captured the People's Choice award last fall in Science Magazine's International Visualization Challenge.

Dr. Pyayt uses advanced visualizations as an important part of her research. They allow her to study topographies of polymer micro-structures. The way the materials are forming structures on a micro-scale is extremely complex and defined by the material properties, processing and controlling conditions and interaction between different materials. After understanding and controlling material properties on the micro-scale she wants to create smart polymer devices for lab-on-chip, cancer diagnostics and many other applications.

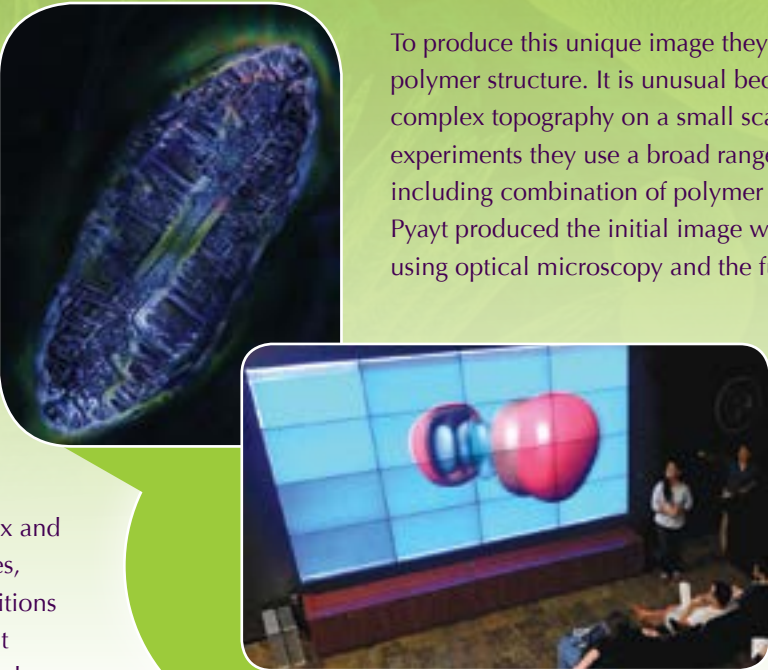
Cells can sense surface topography and align themselves along the structures. This can influence their proliferation, differentiation and motility. Therefore, this complex surface topology might be used to study complex alignment and interaction between cells.

"The image that we submitted to the competition is a representative example among hundreds of interesting images and dynamic videos that we have been recording working on the

project," said Pyayt. "Different combination of materials together with different conditions, such as temperature, humidity, control mechanisms (e.g., light activation) result in completely different textures and morphologies."

To produce this unique image they first created self-organizing polymer structure. It is unusual because it allows it to create complex topography on a small scale. Additionally, in different experiments they use a broad range of exotic polymer materials including combination of polymer materials with nano-particles. Pyayt produced the initial image while doing research in her lab using optical microscopy and the further image processing and

advanced visualization was done by Howard Kaplan at the Advanced Visualization Center – a long term collaborator with whom she is currently working on a different kind of visualization that will revolutionize education of visually impaired children.



"We are lucky to have the largest number of comments among all the entries," said Pyayt. "Many of them are from scientists such as Prof. Roger Kamm from MIT, Prof. Leana Golubchik from USC and many others."

While scientists want to know more research details, the general public finds the image fascinating and beautiful.



Use your QR reader to see all of the Visualization Challenge winners.



Civil Engineering Alumni - Do these photos bring back memories?

A thousand students throughout the Southeastern United States and Puerto Rico met on the University of South Florida Tampa campus March 27-29, as the USF Civil and Environmental Engineering Dept. hosted the 2014 American Society of Civil Engineers Student Conference.

USF Homecoming 2014

Mark your calendars for Saturday, October 11. Many events will be planned for the week of homecoming culminating in a football match-up between your USF Bulls and the Western Carolina University Pirates. Information on events will be announced over the next few months.

DONOR SPOTLIGHT

USF Professor of Computer Science and Engineering, **Anda Iamnitchi**, received the Yahoo Faculty Research and Engagement Program Grant for her proposal "Understanding and Mitigating the Social Contagion of Unethical Behavior in User-Generated Content Systems."



Thanks to these donors for establishing new scholarships:

Alvin and Jennifer Agana, along with **Bijan Barrera**, present a check to Interim Dean Rafael Perez to establish the Michael Agana Memorial Scholarship Fund.



The **American Society of Mechanical Engineers** established a scholarship for Mechanical Engineering Students.

USF Alum **Myra Cooley '72** and her husband, Dug, established the Myra and Mack Cooley Scholarship Fund



Barbara and Len McCue visited the College of Engineering to meet with their scholarship recipients **Dane Bardroff** and **Alan Bendis** pictured here with the Director of Development, **Beth Fontes** (center). Dane and Alan received the Q Motor Sports Family Student Racers Scholarships started by Len and Barbara McCue. Len and Barbara made a gift to further endow the Q Motor Sports Family Racer Scholarship.



Take me out to the Ballgame!

Left: Rocky and Katie Short

Middle: Steve Zendegui, '78 BSE & MSE and John Shearer, '73 BSE

Right: Pete, '76 BSE and Jude Danile; Connie Johnson-Gearhart, '00 BSCE & '12 MCE and husband Ken Gearhart

The College of Engineering Development office hosted a fun baseball event for donors and friends of the college on Sunday, April 6. Even Rocky made a guest appearance.

Bullarney 2014

Each spring since 1996, the USF Engineering Alumni Society hosts Bullarney - A Night at the Casino to raise funds for engineering student scholarships, conference and travel grants, and to support the EAS Conference Center in the Engineering II building. Over the past 10 years the EAS has netted more than \$350,000 through its Bullarney event. Mark your calendars for Bullarney next March 21, 2015.



Top Photo:
Chris Meares '99 engineering
Shawna Meares '98 speech
Steve Janosik '03 engineering
Scott Linteau '99 engineering
Brian Moore '05 MEVE
Janet Moore (currently enrolled at USF)

Bottom Photo:
Steve Zendegui, '78 engineering (BS & MS)
blue shirt Rudy Pein, '99 & '05 engineering (BS & MS) green shirt

Dr. Delbert Kimbler, a 1976 graduate in industrial engineering, created a \$250,000 endowment which established the Del and Beth Kimbler Lecture Series in Industrial and Management Systems Engineering. Dr. Kimbler is a professor emeritus at Clemson University. Standing with Dr. Kimbler is one of his former USF graduate students, Professor Tapas Das, who is now chair of the Industrial and Management Systems Dept.

Industrial and Management Systems Engineering DEL AND BETH KIMBLER LECTURE SERIES



USF: UNSTOPPABLE **College of Engineering**

Dear Alumni and Friends,

The College is committed to meet, engage and reconnect in meaningful ways with many of our loyal alumni and friends. Throughout the spring, we organized and conducted Meet the Dean events in various locations across the state and nation. Our alumni, including many first time volunteers, served as the events' sponsors and hosts. Alums responded very favorably to interim Dean Rafael Perez's vision of advancing our college into the top tier of public engineering colleges in the nation. "What can we do for the college?" was a common question following the dean's always energetic and compelling presentation. An important part of his message was to achieve its goals the college needs to build the strongest possible culture of alumni support. In fact, the percentage of alumni who give to the College increases our national profile. Said another way, by giving to the college you can directly influence the value of your own degree. When we compare ourselves with those engineering schools that have already attained the highest levels of recognition for their own excellence, we see a common denominator. They all share a history of high levels of private



Major Alston
Director of Development

financial support, generated by a culture among their alumni to give back in a collective effort to transform the alma mater. Although philanthropy is newer to the USF culture, we have

a strong sense of pride, loyalty and commitment among our engineering alumni. Those are the essential ingredients in nurturing a culture of giving back. Giving to the endowment remains the preferred long-term philanthropic strategy of our donors and will have the greatest impact on the College of Engineering. Of course, alumni are stepping up to offer support. Dr. Delbert Kimbler, a 1976 graduate in industrial engineering, created a \$250,000 endowment which established the Del and Beth Kimbler Lecture Series in Industrial and Management Systems Engineering. "My goal is to help students get a relevant education," said Dr. Kimbler who is a Professor Emeritus in the Department of Industrial Engineering at Clemson University. "I received more from USF than I could ever hope to give back."

Please know that we are deeply grateful to all of our alumni who continue to support the College. We remain very optimistic about the future of USF Engineering, especially given the generous level of support our alumni and friends continue to contribute to the college. To learn more about ways to give, please contact the College of Engineering Development Office at (813) 974-2541.