SPRING 2015

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MECHANICAL & AEROSPACE ENGINEERING

UF Alumnus Dedicates Career to Building Sustainability in India

MAE alumnus Dr. Anil Rajvanshi

When **ANIL RAJVANSHI** came to the United States in 1974, he had a mission: He was going to learn about how technology could help the millions of people living on $1 a day in rural India, where he vowed to return.

Rajvanshi sought to use knowledge of solar energy to increase quality of life and help provide lighting, clean water, fuel and other basic necessities.

While he was in the U.S., he went to the University of Florida to pursue a Ph.D. in mechanical engineering with a concentration in solar energy. He took every opportunity to learn, studying hard and attending lectures and presentations given by engineering scholars. Upon graduation in 1979, he even stayed and taught at UF for two and a half years.

"It was one of the most enjoyable times of my life," he said.

Florida is also where he met and married his wife, Nandini, someone who shared his desire to return to India.

"I have a very old attachment to the country," Rajvanshi said. "I was very influenced by how we gained independence and what we should do to improve this country. That was always in the back of my mind."

So in 1981, they both got on a plane and traveled to rural Maharashtra. But he reached an important realization when he arrived.

"When I returned to India," Rajvanshi said, "I saw India hadn't changed. I had changed."

He had been mistaken about how quickly he could usher in change to the country.

"In the U.S., change is very rapid," Rajvanshi said. "India is a very old society. Things change, but they change slowly."

But he's happy his "arrogance" — as he calls it — led him where he is today, working at the Nimbkar Agricultural Research Institute, where he's contributed to creating both policies and devices related to using high technology to build a sustainable India.

CONTINUED ON PAGE 5

INSIDE

3 Faculty

7 Students

11 Alumni

15 Depth of Field

UF UNIVERSITY of FLORIDA

LETTER FROM THE CHAIR

David W. Hahn

Welcome to the Spring 2015 issue of the MAE newsletter. I am pleased to provide an update on the many events and activities in the department. Great changes continue to take place on campus, and we are all pleased to welcome **DR. KENT FUCHS** as UF's 12th president. Dr. Fuchs is an electrical engineer and joins UF from his previous position as Provost of Cornell University. Dr. Fuchs will continue UF's Preeminence campaign, and I am happy to report we are well represented. Professors **RICCARDO BEVILACQUA,** with expertise in space systems, and **JONATHAN SCHEFFE,** with expertise in renewable energy, joined us last semester as part of our UF Preeminence hiring efforts, and we are actively searching for three additional hires. Dean Abernathy has been strongly supportive of MAE, and I look forward to working with her as we continue our goal of being one of the premier mechanical and aerospace departments in the nation.

It is always gratifying to share with you the notable accomplishments of our current and former students. **DR. ANIL RAJVANSHI** revisited UF last year, where he first received his Ph.D. in ME under the direction of renowned Prof. Erich Farber. Following graduation, Dr. Rajvanshi returned to India, where along with his wife Nandini, he founded the Nimbkar Agricultural Research Institute, dedicated to sustainability through energy and land use. I had the distinct pleasure of introducing Dr. Rajvanshi at the May 2014 commencement, where he received one of UF's highest honors, the **DISTINGUISHED ALUMNUS AWARD.** Anyone who spends time with Dr. Rajvanshi or reads his works will surely be inspired by his efforts. You will also read about **MAE ALUMNUS ROBERT JOHNSON,** founder of the venerable Island Packet Yachts, who has spent his career designing and building an amazing line of sailing and motor yachts. I could not be prouder to count them both among our many MAE alumni.

Moving from alumni to our faculty members, we continue the theme of preeminence, and I am always enthused to share their accomplishments and their stories. **PROFESSOR EMERITUS NICOLAIE CRISTESCU** returned to his native Romania to help celebrate the University of Bucharest's 150th anniversary. Professor Cristescu served as their first elected rector (or president) after the fall of the communist regime and is widely respected for his theoretical work in solid mechanics. I am pleased that one of his mentees, current MAE Professor **DR. OANA CAZACU,** continues the tradition of excellence, bringing international recognition to our department for her groundbreaking work on plasticity and mechanics. Our newest faculty members continue to create their own narrative, with Assistant Professors **TOMMY ANGELINI** winning the NSF CAREER award, **JOHN CONKLIN** winning a NASA Early Career award, **MRINAL KUMAR,** previous CAREER award recipient, winning the AFOSR Young Investigator award, and **SAEED MOGHADDAM** receiving the ASME ICNMM Outstanding Early Career award. Clearly the future of MAE's faculty looks bright!

It is with great sadness that we report on the passing of **PROFESSOR EMERITUS ALEX E.S. GREEN** this past year. Dr. Green's expertise ranged from nuclear physics to coal combustion, and he was a pioneer in renewable and sustainable energy. He made significant contributions to the nation's war effort during WWII and remained active in a number of areas. Alex was a true gentleman and scholar, and he will be greatly missed by the entire MAE family.

Turning to our students, I hope you will enjoy reading about their many contributions and successes, including our new community service project with UF's Wilmot Gardens and many extracurricular activities ranging from our Small Satellite club to summiting Mt. Kilimanjaro. The Gator spirit is truly alive and well! One area of current focus is our recruitment and mentoring of graduate students, the lifeblood of our research program. I am delighted that **DR. KAREN EHLERS** has joined our staff as Graduate Program Advisor, raising the bar on assisting our many graduate students through their studies and helping to launch them toward successful career paths. We recently examined our former Ph.D. graduates in an effort to better understand their next steps beyond UF, and on our back cover infographic, we explore their various career paths. Interestingly, they divide about evenly between industry, research institutes and academia, noting that **2013 GRADUATE DR. ALISON DUNN** recently accepted a faculty position at the University of Illinois, a perennial top-five ME department. Overall, I am proud to report that our MAE graduates are finding success in their many endeavors.

In our continued efforts to promote the many aspects of MAE, we have launched a new website (www.mae.ufl.edu), and I encourage you to take a tour. I believe that MAE is on a remarkable upward trajectory, and I look forward to another successful year for our students, faculty, staff, friends and alumni. Go Gators!

Company Collaborations Provide Out-of-Classroom Experience

MAE graduate student **Max Stein** runs a polishing experiment using a six-axis robot for the Zeeko project.

PROF. HITOMI YAMAGUCHI-GREENSLET loves seizing opportunities to provide students with professional experience outside of the classroom.

This is one of the positives of her collaborative work with prominent companies within her industry. It started in October 2007, when she joined the UF faculty and the Machine Tool Research Center (currently the Center for Manufacturing Innovation). Four faculty members work together as a team to create new surfaces and manufacturing technologies.

Yamaguchi-Greenslet reached out to Exactech to see if they would be willing to collaborate on a medical implants project she was working on. They accepted and have been supporting CMI activities since.

In addition to their support, they allowed Yamaguchi-Greenslet to bring her 12 students for an extensive tour of their facilities.

"These are the kinds of things I can't teach from a textbook," she said.

But now a new collaboration is blooming — a partnership with English company Zeeko, which specializes in creating precise polishing solutions for complex surfaces, including optics. Zeeko discovered UF's technology at the 2012 CIRP General Assembly. They asked if Yamaguchi-Greenslet and her team could test out their polishing technique, and Zeeko was very pleased with the result. Yamaguchi-Greenslet agreed to adapt her technology to the polishing industry.

As a result, Zeeko has opened a facility in Gainesville, where one of Yamaguchi-Greenslet's former Ph.D. students, **ARTHUR GRAZIANO**, is the manager. He was also one of the people who developed the technology being used.

"Our role will involve automating this technology," Yamaguchi-Greenslet said. "They already understand the fundamental mechanism, but now the goal is to bring the technology to their industry."

They are specifically targeting polishing tech for objects with free-form geometry. Medical implants, for example, have the sort of complicated geometry they are aiming to work with.

"There's already plenty of optical polishing tech on the market," she said. "But we're trying to do something that existing technology can't take care of."

Medical implants are currently being polished by hand — if they are able to be polished at all — and there's always the possibility for human variation.

"If we can automate it, we can hope to improve quality control, which is very important," she said.

The collaboration has many benefits, Yamaguchi-Greenslet said, including the fact that she can bring UF technology into the outside world. But there's also the student involvement factor.

"Students can work together with the research engineers," she said. "They can learn the importance of how to establish relationships in the industry, how to present and report, and how to communicate in a technical manner."

She said working with industry professionals now gives students the chance to make any mistakes early on, so when they've graduated and are working, they'll be way ahead of the curve.

"It's a priceless experience," Yamaguchi-Greenslet said.

In addition, there have been talks with Zeeko about potentially providing opportunities to UF students allowing them to intern at Zeeko's offices in the UK or Japan.

"Nowadays there are no borders in the world," Yamaguchi-Greenslet said, "so it's good for UF students to get any international experience they can get."

The commemorative plaque is unveiled.
Pictured here (from left to right) are Calin Popescu Tariceanu (president of the Senate of Romania), Patriarch Daniel (the patriarch of the Romanian Orthodox Church), Emil Constantinescu (former president of Romania), Mircea Dumitru (current rector of the University of Bucharest), Gheorghe Vlad Nistor (president of the senate of the University of Bucharest), and Prof. Cristescu.

(From left to right) Mugur Isarescu (president of the National Bank of Romania), Patriarch Daniel (the patriarch of the Romanian Orthodox Church), Emil Constantinescu (former president of Romania), Mircea Dumitru, (current rector of the University of Bucharest), Calin Popescu Tariceanu (president of the Senate of Romania), Gheorghe Vlad Nistor (president of the senate of the University of Bucharest), and Prof. Cristescu.

Professor Emeritus Honored by Romanian University

Emeritus Faculty Member **NICOLAIE CRISTESCU** had the opportunity to return to the University of Bucharest in July 2014 to celebrate the Romanian university's 150th anniversary.

He received an invitation to the event because of his previous important role with the institution — Cristescu was the first elected rector (or president) of the University of Bucharest after the end of the revolution in 1989.

Before him, every president had been chosen by the Communist regime.

"It was not easy," he said. "I had to re-organize the university entirely. But I was successful."

He had been involved with the University of Bucharest in some capacity for about 41 years, from 1951 until 1992, where he taught before becoming rector.

While a commemorative plaque was unveiled to mark the university's 150th year, Cristescu saw there were displays set up to recognize his own accomplishments. A large picture of him hangs in the main building of the Rectorate to commemorate the first rector chosen, not named. Displays showcased his professional activity through photographs, from his teaching career to his accomplishments in the field.

"I'm proud of what I've done in my life," he said.

Throughout his career, he took trips to the United States, and UF invited him on several occasions to teach for six months out of the year. After stepping down as rector, Cristescu accepted a permanent position at UF and became a citizen. He retired when he was 80 years old, and now he's able to look back on a fulfilling life and career.

IN MEMORIAM
ALEX GREEN

Professor Emeritus **ALEX E. S. GREEN,** a noted member of the University of Florida community, passed away on March 12, 2014. He was 94.

Green became a graduate research professor at UF in 1963, where he headed the Interdisciplinary Center for Aeronomy and Atmospheric Sciences. However, after the oil crisis in 1973, his focus turned to energy alternatives; his last work at the university involved converting biomass and waste to energy using special processes.

But his contributions spanned a variety of topics throughout his career. Before joining the UF faculty, Green had been a gunnery evaluation specialist and an operations analyst for the Army Air Force during World War II. He had developed specialized slide rules to solve technical issues faced by B-29 bombing raids, leading to his participation in one of the most dangerous B-29 missions that found the missing Japanese fleet, including the battleship Yamato.

Aside from his contributions to the WWII effort, he participated in many other pursuits: He initiated the Physics Ph.D. program at Florida State University, worked in industry and served on the National Coal Council. More recently, in 1996, he patented an invention that provided on-site waste to energy, which would mean savings on waste transport costs.

Prof. Alex Green discussing slide rules he developed during WWII. He remained an active member of the Oughtred Society.

Green's career encompassed 17 books, over 400 publications, and numerous patents and awards.

"Alex was a wonderful friend, mentor and colleague," said **DAVID HAHN,** chairman of the MAE department. "He remained a true innovator throughout his long academic career. He will be missed by many."

BUILDING SUSTAINABILITY IN INDIA cont. from pg. 1

His life's work was recently recognized by receiving the University of Florida's Distinguished Alumnus Award.

"It was exhilarating news," he said. "I've gotten a lot of awards, but this is the most cherished award because it's the university in which I learned the most."

He is proud to note that his daughter Noorie also received her Ph.D. from MAE in 2010.

Rajvanshi stays connected with the world online, discussing concepts and spreading ideas. He gives seven to eight lectures per year at various campuses to maintain a continuous dialogue about technology-related issues. He gains a lot of satisfaction receiving positive feedback from people.

For example, a couple of years ago, a senior researcher from Georgia Tech wrote him a thank-you note explaining that what Rajvanshi had said about solar energy had changed his life.

"When you can plant a new seed of thinking, that's how the world is changed," Rajvanshi said. "When you think of new ideas, and you see these ideas taken up by people, that is very rewarding."

Along with lectures on solar energy, he also gives talks on how to find happiness.

He's done studies on the interaction between human spirituality and technology and how people can tap into happiness. He prioritizes living a simple but meaningful life.

"We're all becoming like animals in the way we react to signals all the time," he said. "When we are acting on impulses, there's no time to reflect and think. For the youngsters, the main thing is that they should focus on one thing, on whatever they like. If you can create and focus on something wonderful, that will make you quite happy."

Rajvanshi focuses on improving the world around him, and he encourages students to travel and see the poverty themselves first-hand and consider what solutions can be found.

"There are millions of students all over the world," he said, "and UF students might come up with something wonderful."

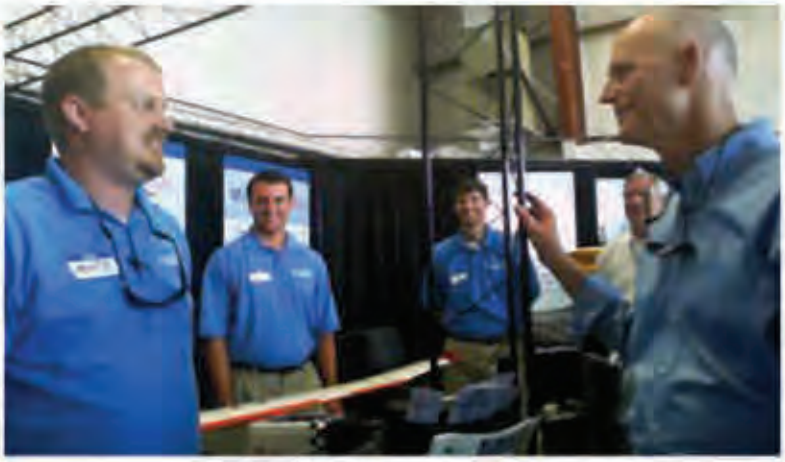
UF REPRESENTS THE FAA AT THE

Sun 'n Fun Airshow

The Federal Aviation Administration invited the University of Florida to man an informational booth at the Sun 'n Fun International Fly-in Expo and Airshow from April 1 to 6, 2014. The event highlighted how universities can conduct research within the FAA guidelines.

The FAA has established guidelines to fly Unmanned Aircraft Systems (UAS), or more commonly called drones, in the national airspace. The University of Florida (UF) interdisciplinary team, consisting of Mechanical and Aerospace Engineering Professor **PETER IFJU** and Wildlife Ecologist Dr. Franklin Percival, have closely followed the FAA's guidelines in their effort to utilize UAS for natural resource applications.

The Sun 'n Fun is the second largest airshow in the U.S. and hosted more than 500 vendors and organizations promoting aviation.



TOP PHOTO: Governor Rick Scott visits the UF exhibit with Matt Burgess (Wildlife graduate student) and MAE graduate students **Travis Whitley** and **Tyler Ward** in the background.

BOTTOM PHOTO: UF's exhibit at the Sun 'n Fun Airshow. Pictured from left to right: Michael Wilson (FAA UAS Program Manager), Franklin Percival (Wildlife Ecology), Joe DiRodio (UF Pilot), Matt Burgess (Wildlife graduate student), **Peter Ifju** (MAE).

CONGRATULATIONS TO:

Prof. **JACOB CHUNG,** who received ASME's 2014 Heat Transfer Memorial Award.

Prof. **THOMAS ANGELINI** for receiving an NSF CAREER award for his research "Stability and Dynamics of Tissue Cell Assemblies in Yield Stress Materials."

Prof. **JOHN CONKLIN,** who received the Early Career Faculty Space Tech Research Grant from NASA for his research "A Compact, Low Power Pulsed Optical Communication System for Spacecraft."

Prof. **GREGORY SAWYER,** who was elected Society of Tribologists and Lubrication Engineers (STLE) Fellow and for being named a National Academy of Inventors (NAI) Fellow.

Prof. **DAVID HAHN,** who was elected Fellow of the Society of Applied Spectroscopy.

Prof. **Z. HUGH FAN** for being named a 2014 UF Research Foundation Professor.

Prof. **GHATU SUBHASH** and Prof. **PETER IFJU** for being selected as Fellows of the Society for Experimental Mechanics (SEM).

Prof. **SAEED MOGHADDAM** for receiving ASME's ICNMM 2014 Outstanding Early Career Award.

Prof. **BILL LEAR,** who received AIAA's 2014 Energy Systems Award.

Prof. **RICCARDO BEVILACQUA** for receiving the 2014 Dave Ward Memorial Lecture Award in recognition of his contributions to the development of flight dynamics, control and guidance system technologies.

Prof. **PETER IFJU** for hosting the Southeast Graduate Student Symposium on Experimental Mechanics.

Recent Grad Interns at Renowned von Karman Institute

Recent MAE grad **SAHADEO RAMJATAN** spent the end of 2013 in a town south of Brussels, Belgium, where everything was green, KIT KAT bars were expensive and signs displayed French text.

He stayed in Belgium from August to December to intern at the prestigious von Karman Institute for Fluid Dynamics, where he worked on a project that sought to improve communications during radio blackouts experienced by space re-entry vehicles.

"The internship was the perfect mix of fluid dynamics and aerospace," Ramjatan said. "I really enjoyed the work I did there."

His study consisted of performing hypersonic computational fluid dynamics (CFD) simulations to predict how and when intersatellite communication can be achieved for small re-entry vehicles.

"This is a problem that hasn't been solved yet in the engineering community, so I was working on cutting-edge technology," he said. "It's exciting to work on a project in which no one else has come up with a solution."

MAE alumnus Sohadeo Ramjatan at VKI.

His success at the institute led to being asked to do a final presentation outlining his work step-by-step. He presented in front of VKI members, researchers, faculty members and other students.

"It was very nerve-racking," he said. "But I remembered what my mentor told me: 'Remain confident in your presentation and be proud of the work you've done.'"

And in the end, Ramjatan was proud. He looks back positively on his time at the VKI and the opportunities it awarded him.

"I enjoyed the environment," he said. "The VKI exposes you to the methodology of research in a multicultural environment. It was really neat interacting with engineers from other countries."

And it just so happened that while he was at the institute, a big international project involving the launch of 50 small satellites in 2016 was in progress, and Ramjatan's boss was the project manager.

"When I was there, I was part of that," Ramjatan said. "It was really amazing being the president of the Small Satellite Design Club at UF and then being a part of a big international space project. It was a very unique opportunity."

The MAE Small Satellite Design Club is where Ramjatan developed his interest in space-related systems and fluid dynamics. He said the experience helped him learn about professionalism and provided him with more technical knowledge.

His time at UF, coupled with his experience at the VKI, encouraged him to go back to UF in the fall to pursue an aerospace master's degree.

Ramjatan was appreciative of his mentors, Dr. Thierry Magin, Dr. Jan Thoemel, Thorsten Scholz, and Vincent; MAE faculty members Prof. David Hahn, Prof. Subrata Roy, and Prof. Bruce Carroll; and everyone else who made this unique opportunity possible.

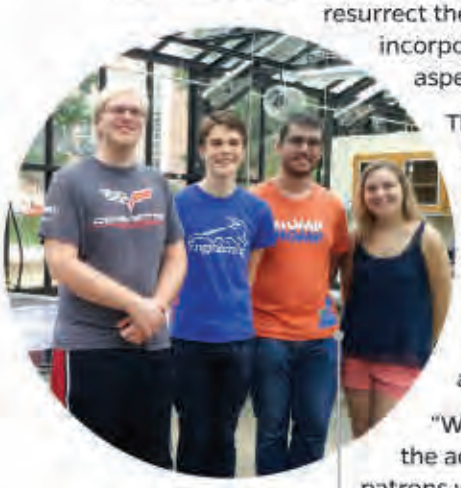
"The university made the VKI opportunity happen," Ramjatan said, "and I want to give back somehow."

MAE Department Supports Wilmot Gardens Restoration Initiative

The Director of the Wilmot Gardens Greenhouse Leah Diehl and MAE faculty member **MIKE GRIFFIS** work on one of the tables.

MAE STUDENTS AREN'T JUST USING THEIR SKILL SETS IN THE CLASSROOM — THEY'RE USING THEIR KNOWLEDGE TO BENEFIT THE COMMUNITY.

MAE Lecturer **MIKE GRIFFIS** advises MAE students participating in the Wilmot Gardens project, an initiative launched by the former dean of UF's medical school to resurrect the campus gardens and incorporate a rehabilitative aspect.



The students who participated in the Wilmot Gardens project include (from left to right) Robert Orth, Tim Ewing, Ryan Buchenhorst and Kristen Petela, as well as (not pictured) Keyon August, Terra Gurley and Tejas Parekh.

They've since built a state-of-the-art greenhouse that focuses on the idea of therapeutic horticulture. MAE students have contributed by designing and developing tables that are wheelchair accessible.

"We're trying to maximize the access and experience for patrons with disabilities," Griffis said. "It's sort of a new field that we're involved in."

So far, the engineering team has created five tables that can be adjusted to move up or down. They're now working on developing new prototypes, enhancing the current tables, and discussing how to approach the intellectual property process.

"The students are getting a lot of valuable experience out of it from all kinds of standpoints," Griffis said.

One of these students is MAE junior **TIM EWING**, who stepped up to manage the group in the fall semester. He said the team will be asking, "How can we better serve the visitors? How can we promote more accessibility and usability?"

Ewing estimated that the original five tables took about 35 hours of work each to create from start to finish. The team of four is looking to expand to up to 10 people.

"I think it's really great to apply what I've learned in classes to help the greater Gainesville community," Ewing said. "At the end of the day, the patients are the ones benefitting from this, and that's what keeps me on the project."

In addition to giving back to the community, Ewing has learned a lot from the project. The teamwork involved has helped him prepare for manufacturing classes and develop valuable soft skills.

"I've made a handful of mistakes, and it's taught me a lot of lessons about preparation, being more patient with my work, and being more cognizant of what I'm doing," he said. "It's crucial that when you make a mistake, you own the responsibility and move to correct it. In the real world, the quality of your work isn't just your technical knowledge but the soft skills you develop."

Ewing found out about the project through former project lead **KRISTIN PETELA,** who had told him it was a combination of engineering and community service.

"That's my passion," Ewing said. "I want to find that cross-section. That's what I really want to be able to do in the future."

When Petela went up to Gainesville over the summer, she saw the tables all set up with plants already on them, signifying their use.

"It's nice to be able to help the people who use the tables," she said. "It'll make the lives of a lot of patients a little bit better. It's really beautiful."

Two Gators Graduate with Honors from UVI Dual Degree Program

During his graduation commencement, MAE student **ODARI THOMAS** sat on the floor of the Stephen C. O'Connell Center, calling various restaurants around town to make dinner reservations for his family, who had flown in from the Virgin Islands to see him graduate.

Thomas, along with his long-time friend **MOHAMMAD MUSTAFA**, attended UF as part of the UVI Dual Degree Engineering and Applied Math Program. They were the first two from the program to successfully graduate from the MAE department, and they did so with honors.

They both agreed the classes and coursework were much harder at UF than at their university in St. Thomas, but in the end, they said it was absolutely worth it.

As part of the program, students at The University of the Virgin Islands could complete their degrees at one of UVI's partner schools when they met a certain set of credit requirements. Thomas and Mustafa chose UF and spent three years completing their degrees.

Everything felt surreal to Thomas as he called restaurants and gazed around at the people he wouldn't see again for years.

"I remember thinking, 'Oh my gosh, we're done. I'm going to miss the people I met here. I'm going to miss being in this environment. And I'm going to miss this school,'" Thomas said.

When friends Thomas and Mustafa came to the University of Florida three years ago, they weren't sure they were going to make it all the way to graduation. People had told them the curriculum was much harder than what they were used to.

"But I love when someone tells me I can't do something," Thomas said. "Then I really get inspired to go out there and prove them wrong. Once I was willing to put in the hard work, God took care of the rest."

"I *really* learned things — not just memorized them to pass a test or complete an assignment," Thomas said. "I think it was a really good decision to go to UF."

His first positive experience with UF started before his official transfer. He had participated in a summer research opportunity in 2010. Research and lab work continued to be his favorite parts of his education.

"I didn't just learn the theory — I actually got the opportunity to apply the theory to different, real-world situations, which was instrumental in preparing me for my current position."

After graduating, Thomas got a job in June at the Virgin Islands Water and Power Authority, where he manages capital projects for the water distribution portion. He looks back on his MAE years fondly.

"I had a great group of friends, and it was really awesome to see that we came in with a chip on our shoulders because we were transfer students, but all of us made it through and thrived."

Thomas and Mustafa lived together for three years and supported each other throughout that time.

"We motivated each other every step of the way," Mustafa said. "When we didn't know if we would make it, I'd say, 'Man, we've come this far. Let's do this.'"

Odari Thomas reviews plans for new water distribution system.

Mustafa agreed that UF had a rigorous academic program and that professors had extremely high expectations, but he appreciated the structure of the courses.

"A professor at UVI highly recommended what UF has to offer, because unlike other schools, UF offers separate specialty courses rather than combining them. You were able to focus more on that subject in comparison to forcing everything in one course."

He also had a deep appreciation for the diversity and openness at the university.

"I always felt I could talk to anyone," he said. "Before the professor arrived to class, I could easily turn to the person next to me or behind me. That's how I met some of my best friends — friends I consider brothers and sisters."

It was with his friends that Mustafa would study and in the classroom all night cracking problems, creating their own problems and making sure they were prepared.

And it worked. Mustafa is now at the American University Washington College of Law studying international and intellectual property law. He said his mechanical engineering degree will allow him to have a greater understanding of the material he'll be dealing with as an intellectual property lawyer in the future. While he's currently in D.C., he appreciates his years in Gainesville like Thomas does.

"I'll be back, hopefully to attend a football game," Thomas said. "Who knows — I may even choose to go to grad school there. But God willing, I'll definitely be back in Gainesville."

The UF Small Satellite Design Club competed against about eight Florida universities in a satellite design competition called FUNSAT. The UF team's SwampSat II received first place in the competition. A portion of the team poses with their FUNSAT award. (From left to right: Erica Jenson, Ralen Toledo, Dan Miner, Stephanie Hardy, Martha Risedorf, Dakota Santana, Jackson Cagle, and Joe Kleespies.)

CONGRATULATIONS TO:

NICHOLAS DUNBAR and **DANIEL FRANK** for being awarded the 2014 Graduate Student Mentoring Award, for recognition of taking the time to help others succeed as graduate or undergraduate students or in a K-12 classroom.

DAVID TRONER and **SARANYA CANCHI** for receiving 2014-2015 Attributes of a Gator Engineer Awards.

BRIAN DAVIS, who was named one of SME'S 30 under 30 in Manufacturing Engineering magazine.

DANIEL BLOOD, whose team won the $25,000 grand prize in the Gator Business Plan Competition, and the team of **ALAN J. HAMLET** and **MATTHEW BELLMAN,** who won the $10,000 second-place prize.

MAE'S SUBJUGATOR TEAM participants, which came in second place at the 2014 RoboSub Competition, as part of the Machine Intelligence Lab team.

GREGORY PARSARD, who took second place at the Society of Experimental Mechanics Annual International Student Paper Competition.

PHILLIP JANNOTTI, who took third place at the Society of Experimental Mechanics Annual International Student Paper Competition in addition to being given a 2013-2104 Attributes of a Gator Engineer Award for Integrity.

CODY KUNKA, who won the Four-Year Scholar Award representing the entire UF College of Engineering.

NICHOLAS BAGLEY and **ANDREW COOPER** for being named Anderson Scholars.

Former TA Launches Startup Inspired by MAE Lab Work

A decision MAE alumnus **TIM MARTIN** made when he became a TA for the Intelligent Machine Design Lab would change the course of his career.

TAs of the course usually created the hardware on their own that was optional for students to buy. When Martin became TA after graduating in 2011, he formed an entire legitimate company around creating the hardware.

"I just kind of pulled the carpet out under what they had been doing and created my own design with all of the resources students use in one circuit board," he said.

This was the first product for Out of the Box, Martin's startup electronic equipment provider.

While working on the company and TAing, he was also pursuing his graduate degree. The following summer, he was hired at a startup robotics company, which he worked at through 2013. Since then, Out of the Box won its first contract with UF selling the microprocessors course hardware.

Now his company has contracts with the geology, mechanical engineering, electrical engineering, and agriculture departments at UF. But one of his main offerings is the Out of the Box DAQ board, a data acquisition product that communicates over USB. The Mechanics of Materials course uses DAQs for the instrumentation and measurement of sensors, and the Mechanical Controls Lab uses DAQs as a physical interface for the software controllers students create.

"I've always been extroverted and willing to jump into things, but I never expected that I'd be able to quit my day job and make all of my income on stuff I used to do for fun to help promote education," Martin said. "It's just — wow."

He said he found out about the Machine Intelligence Lab (MIL) through Senior Lecturer **MIKE BRADDOCK**. Martin spoke to Braddock about opportunities to explore the software aspects of robotics.

"When he pointed me in the direction of the MIL, that became my home away from home," Martin said. "He was a really good influence in pointing me in the right direction."

Martin said all of the oppportunities MAE offered involving real-world experience benefited him greatly.

He gives particular credit to Master Lecturer **ERIC SCHWARTZ (MAE '84),** who Martin says was the most influential person to his success.

"Between the labs and all of the people I've met — they've basically been the pillars of Out of the Box," Martin said. "I wouldn't have been able to make the business without the people I was friends with and worked with at UF."

CONTINUED ON PAGE 13

MAE alumnus **PHILIP BREAW** (right) and his father, Rich Breaw (left), reached the Uhuru Peak of Mt. Kilimanjaro in 2013. Philip said they enjoy climbing mountains because it allows them to travel around the world, spend time outdoors, and challenge themselves.

"The timing of the climb represented a significant milestone in my life — completing college and moving into my professional career," he said. "The climb gave me an opportunity to look back on the challenges I have been through in life and inspire me to continue to face the challenges each new day holds with the confidence that no matter what it is, I can overcome it."

Jeri and Bob Johnson

"It's still my favorite moment when the sails are hoisted and the engine has been turned off. It suddenly gets quiet, and all you hear are the waves going by the boat."

Jeri and Bob Johnson sail their company's Blue Jacket 40 model.

ALUMNUS SAILS INTO SUCCESS

CEO OF ISLAND PACKET YACHTS DESCRIBES THE PATH TO HIS DREAM JOB

When **ROBERT JOHNSON** was 14 years old, he bought a set of plans for a 12-foot sailboat.

His Florida home was on a canal, so he decided to build the wooden boat with some help and guidance from his family.

But on launch day, the mast and sails weren't ready, so Johnson and his brother used a garden umbrella instead.

"While heading out, I'm sure both my brother and I realized we had a long paddle home," Johnson said, "but this was the first time I had ever sailed, and it was such a delight having the wind pushing the boat along. We just kept going for miles. My parents were probably concerned because it was after dark and we hadn't gotten home. But it was everything I had hoped it would be."

This adventure reinforced Johnson's interest in sailing — an interest that helped define the rest of his life.

That was in 1958. More than 20 years later, Johnson became the founder and CEO of Island Packet Yachts, a major producer of high-quality, seaworthy yachts. The company has created about 2,300 boats, dozens of which have circumnavigated the globe.

Many experiences contributed to Johnson's success. For one, his passion for sailing was lifelong and unrelenting.

"I've never been able to pinpoint exactly how that interest started," Johnson said. "It's definitely something that was in my makeup from an early age."

But his ability to develop a trifecta of skills — designing, building and sailing the boats — was bolstered by his education and professional experiences.

He started at Palm Beach Community College, where he had summer jobs working as an engineering aide at Pratt and Whitney, where his father worked at the time. He recalls it being a sea of desks, white shirts, gray ties and hundreds of bright engineers. Being around this intelligent group inspired him to become a better student.

After two years he transferred to the University of Florida, where he earned his degree in Mechanical Engineering and graduated with high honors. He spent a lot of time working in the metallurgy lab and made lifelong friends in the department.

Bob continued his post-graduate education at MIT, where he earned a master's degree in Naval Architecture and Marine Engineering.

After finishing graduate school, he relocated to southern California where he started work doing missile analysis and eventually moved on to designing and manufacturing surf boards using aerospace technologies. But after years of doing this, he and his wife realized he was getting further away from the marine industry, so they packed up and moved to Florida, where he worked as a designer at an established sailboat building company and then eventually at a startup.

But the opportunity arose for him to start his own business when he bought an existing set of molds of a boat he liked, which he manipulated to create the first Island Packet and the beginning of a major brand.

Now he hears stories of what sailors have accomplished on Island Packet boats. The company's newsletter features images of their boats all over the world, from being anchored off Tahiti to being tied up to an iceberg.

"It's a very warm experience to know how much people are enjoying the boats and the confidence they have in what we've built for them," Johnson said. "It's the realization of my childhood goal."

The hallmark of his brand is that all of the ideas are based on sound engineering principles, which he learned from his teachers over the years. He calls this set of knowledge his "toolbox" and gives UF credit as being a major player in the creation of that skill set.

He recalls recently going back to visit UF's campus to receive one of MAE's Outstanding Alumnus Awards and seeing MAE students building a race car, their hands covered in grease. He was instantly impressed by the hands-on nature of the project.

"This is the future of our technical trust going forward," Johnson said. "UF is still doing the job they did when I was a student. I was really pleased to see that."

His years of education and experience allowed Johnson to realize his dream. Now he's able to pass on one of his favorite experiences to sailors around the world.

"It's still my favorite moment when the sails are hoisted and the engine has been turned off, it suddenly gets quiet, and all you hear are the waves going by the boat," he said.

AGRI PHOTO BY TYLER JONES

UF student Kadeghe Fue (middle) speaks with his UF faculty adviser Prof. **JOHN SCHUELLER** (left) and his supervisor from Sokoine University (right) about his experimental drip irrigation plot located in Tanzania. Schueller visited the country in 2014 to see the plot and give a keynote address at the 2014 Plant Factory Conference. Schueller hopes to help improve vegetable production in Tanzania through better irrigation control.

STARTUP CONTINUED FROM PAGE 11

For engineering students who might be considering starting their own companies, Martin recommends getting some practical work first to gain some business sense and a better idea of how it all works.

"If I were to do it again, I probably would have gotten five years of experience first, but that's not always in the cards," he said.

But things seem to be going well, anyway, as his company has focused its mission on the educational sector.

"If I wanted to, I could go off and work for a big company, and I would be OK with it and be making twice as much," Martin said, "but what I really enjoy is creating something that's used to teach and pass on the information I've learned to the next generation of engineers."

He loves working with UF, especially now that he gets to work with students one-on-one to help them utilize Out of the Box technology to its full extent.

"I really enjoy facilitating their learning — encouraging them to go out and create cool things. University of Florida has been my home to do that."

MAE Annual Honor Roll 2013–14

The Department would like to extend a very special thank you to all of our donors who gave to our annual fund, endowments and to support research or facilities. In this 18 month period, we received 160 gifts totaling $605,541 from alumni, friends, corporations and foundations. These gifts have a significant impact on the quality of our academic program and the resources we can provide to our students and faculty. The listings in this Honor Roll reflect gifts received between July 1, 2013 and Dec. 31, 2014. If you would like to support the department, please contact Kent Studer, Senior Director of Development, at 352-392-6795 or kstuder@eng.ufl.edu.

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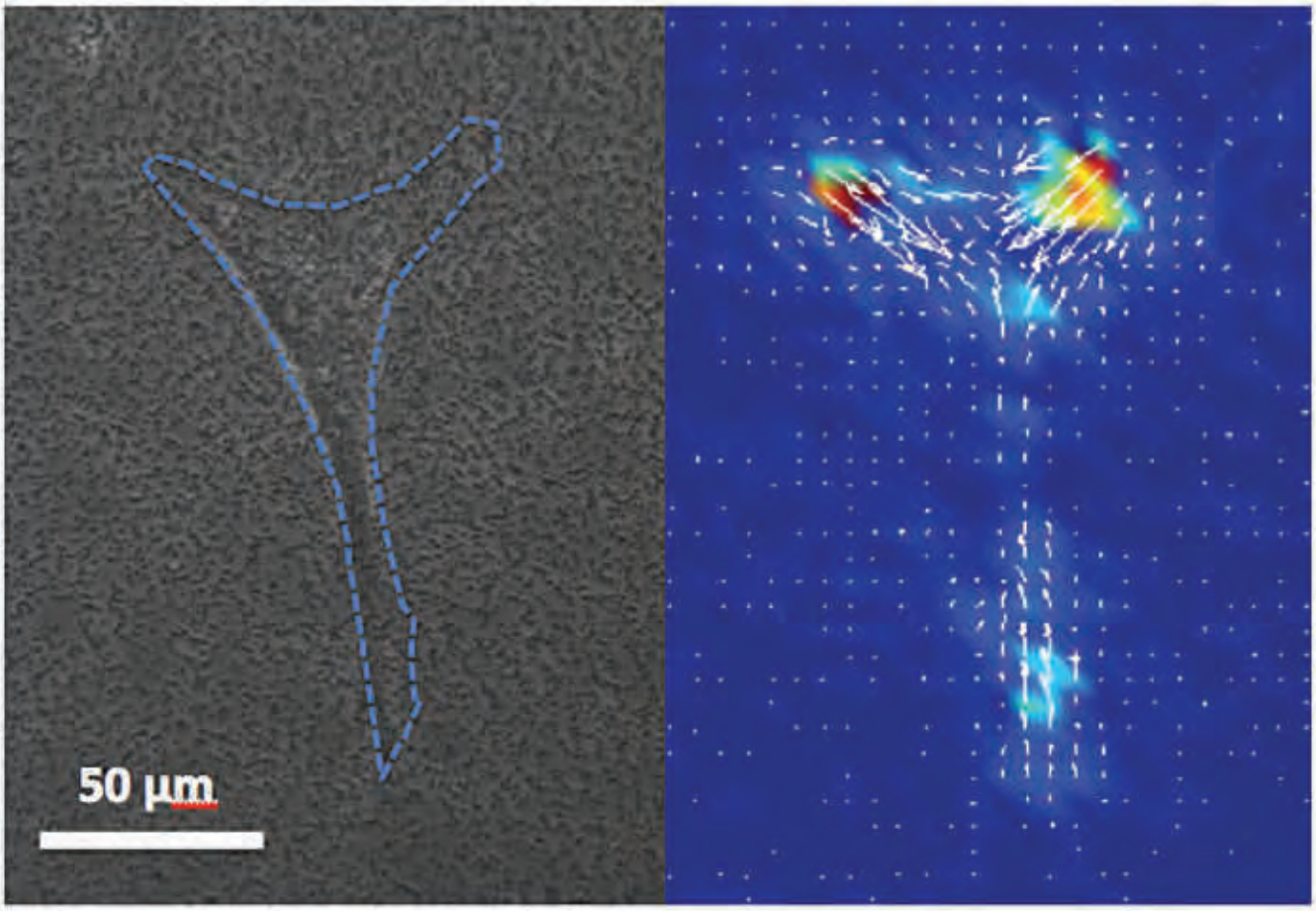

MAE Prof. Chelsey Simmons' group is working in collaboration with stem cell biologists and pharmacists to turn microphotographs of muscle cells from individual patients (left) into maps of strain energy (right) quantifying the effect of different drugs on contractile function.

Acknowledgements

Scott Banks
Faculty Coordinator

Amanda Milligan
Managing Editor

David Hahn
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JS Design Studio
Production & Layout

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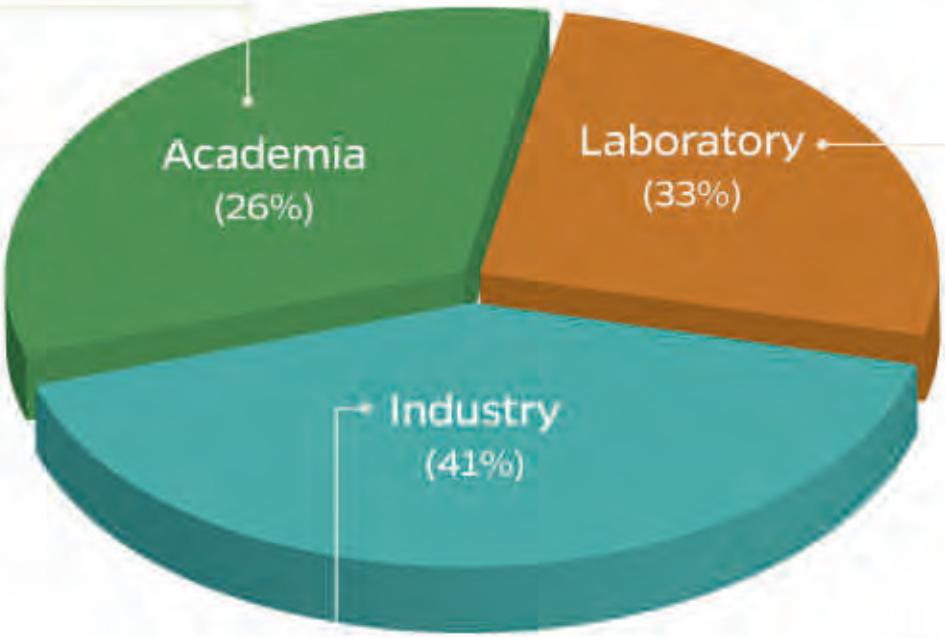

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