

THE FLORIDA

ENGINEER

spring 2010

volume 97

A man with a beard and glasses, wearing a blue Hawaiian shirt and plaid shorts, sits on a pink inflatable ring in a swimming pool. He has a thoughtful expression, resting his hand on his head. The pool is light blue, and a drain is visible in the water. A ladder and a light fixture are also visible in the pool.

STOP THE DRAIN

Unfilled pools and dead lawns may be Florida's future if we don't become responsible water consumers.

LOW VELOCITY TUNNEL



CELEBRATING 100 YEARS OF GATOR ENGINEERING The Engineers Fair (circa 1955)

"The low velocity wind tunnel is demonstrated by aeronautical engineering student, Shirley Van Patten. Miss Van Patten is also on the staff of the student publication, The Florida Engineer." (This caption was taped to the back of this photograph)

Each February Engineers Week is celebrated across the country to showcase the efforts, talents and contributions engineers make to our society — and our campus is no different. Every E-Week event is coordinated by engineering students, led by the Benton Engineering Council, for the enjoyment and education of the public. E-Week is celebrated during the week of George Washington's birthday to honor the engineering contributions made by our first president who was a military engineer and a land surveyor. The College has been a part of E-Week for more than six decades.



Watch footage from the 1957
(we think) **ENGINEERS FAIR**
floridaengineer.eng.ufl.edu

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Every four years Americans are caught in the political-campaign he-said she-said crossfire. Ever wonder why more engineers aren't more politically active? Well, we did too, and you'll be surprised what we found.

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More than hundreds of miles apart, two Gator Engineers were irrevocably defined by heartbreak, frustration and loss on January 12, when a broken country suffered and crumbled under its most devastating earthquake.



p.30
NOT LEFT BEHIND
"It took 33 days to find him in the rubble," said civil engineer Forrest Masters.



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IT DOESN'T GET ANY MORE ENGAGING Star Wars inspired engineering, five places to get your engineer on, mind-bending bedside reading, must see student success and a peek into the College's ground-breaking restructuring — it's all here.

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It's official. We're the best! The FE wins Best Magazine award.

CONTRIBUTORS



SARAH WILSON explores issues of community and culture through environmental portraiture. She currently lives in Austin, Texas, where she enjoys working as an editorial and commercial photographer. Her work has been acquired by the University of Texas and the Museum of Fine Arts Houston. SARAHWILSONPHOTOGRAPHY.COM



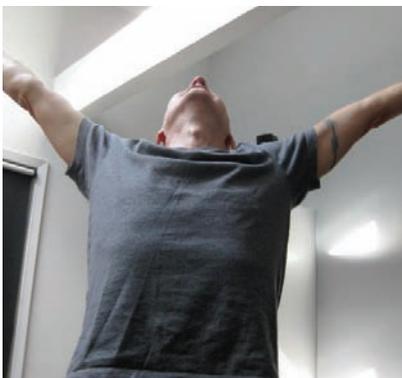
JOHN RITTER began his career in 1993 and has developed a client roster that spans the American cultural spectrum. He has been a regular contributor to the New Yorker for the past fifteen years and is producing magazine covers for the American Prospect and Internazionale Magazine in Rome, Italy. RITTERILLUSTRATION.NET



CRAIG PITTMAN won state & national awards covering environmental issues for the St. Pete Times. He is the co-author of "Paving Paradise: Florida's Vanishing Wetlands and the Failure of No Net Loss" and author of "Manatee Insanity: Inside the War Over Florida's Most Famous Endangered Species." MANATEEINSANITY.COM



SHANNON KALAHAR is a third year fine art student at UF and a business owner specializing in natural light portraiture. When she's not in the darkroom (yes, she still uses a darkroom) she can be found cooking or running rampant through Payne's Prairie. WAKINGHOURSPHOTOGRAPHY.COM



STEVE MILLER is an auto reporter, driven Lamborghinis and Bentleys, covered BMW Championship golf tournaments and hung out with some of the top auto execs. He is editor of the book, "Touch and Go: The Hardcore Punk Fanzine, 1979-1983" (Bazillion Points), which comes out this summer.



WAYNE GARCIA spent the past six months taking time out from his newswriting career to teach investigative reporting, editing and political reporting at UF. He just received the Irene Miller Vigilance in Journalism Award from the Pinellas County chapter of the American Civil Liberties Union for covering Florida politics.

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Bringing Back Memories

From 300 Weil Hall stirs up strong memories. I was a member of the technical staff at Murray Hill from 1952 to 1956 reporting to J. R. Pierce. News about declassification of the proximity fuse work is very exciting. I have suspected for many years that my sister, Lynn Rogers (10-yrs my senior), was a technician on that project. Any inquiry however always brought back a snapped “We don’t talk about that!” from her. When I was a GI-Bill student, from 1946-50, some of my professors told me she had left me some very large shoes to fill. I always read and enjoy the magazine.

RENE ROGERS
B. E.E '50

A Happy Customer

Congratulations on your successful effort to update the readability and content of *The Florida Engineer*. I get quite a number of college magazines and your new look places you right up there with the best.

JEFF PERLS
UF B.S. ISE '63 Harvard MBA '67
Yale MMSc '99

Rocket Man

I enjoy reading each issue of *The Florida Engineer*. It’s come a long way since my time at the U of F. I was just back for the Grand Guard Reunion. I remember I had an article in the FE in the spring of 1959. It was on using nuclear reactors as rocket engines. Strangely enough, my first job after graduating was with Pratt & Whitney Aircraft at the Connecticut Aircraft Nuclear Engine Laboratory (CANEL) working on aspects of a nuclear engine for an aircraft. The program never produced an actual engine, but a lot of really great technology in materials and high temperature heat exchanger design came out of the program.

Keep up the great work on *The Florida Engineer*.

DR. FRED L. ROBSON,
B.A. NE '59, Principal Engineer
KraftWork Systems, Inc.

Not a Fan

I have found the last two issues to be nearly unreadable and the prolific use of acronyms is a contributing factor. I am active in the commercial and government nuclear business, as I have been since 1973, and I find this publication nearly a waste of my time. I am not sure to whom this

publication is intended, but it is certainly not me. Thank you very much.

ROBERT M. SHEPARD, JR.
B.S. NRE '73
Vice President - Commercial Nuclear Projects

Our Roots

I became the 2nd editor of *The Florida Engineer* in 1951. If that was 69 years ago, as the caption on p.44 states, I would have been 10 years old. I will assert that I am not that precocious. It’s interesting that I got involved in publishing and took courses from John Paul Jones in the Journalism Department while an engineer at UF. Being able to write a coherent sentence was a useful asset all through my academic career. Writing research grants, reports, and papers played a big part of being an engineer right up until I retired from Clemson University more than 10



years ago. Now I enjoy being a book publisher while retired. I encourage you to urge engineers to learn to write. Writing ability may be as important as math.

FRED R. SIAS, JR.
B.S. EE '54, M.S.E '59



WRITE US (WE WILL BEG IF NEEDED):
letters@eng.ufl.edu

We welcome your comments, suggestions and ideas. We reserve the right to publish any submission to the FE. While we will do our best to keep your submission intact, we may edit for length, style and clarity.

A’HEM... IS THIS THING ON?

Seriously. Getting feedback from you helps THE FLORIDA ENGINEER hone its message and deliver stories you want. We know you’re busy. We have mounting to-do lists, too, not to mention deadlines, bosses, families to attend to and, of course, preseason Gator football to study. But drop us a line. Let us know what you like, what you need and want from the FE. And don’t be afraid to tell us when we make a mistake (Thank you Fred Sias, Jr. for keeping us honest). letters@eng.ufl.edu —THE FLORIDA ENGINEER STAFF

BY THE NUMBERS *Entrepreneurship*

Entrepreneurship is more than a 21st-century post-economic-squeeze buzzword. It's something the College takes very seriously — and is committed to nurturing. Part of fostering Gator Engineering entrepreneurs is giving them the freedom and resources to creatively approach today's challenges. This enterprising marriage of drive and creativity continues to produce fruitful results. *In the College's past five years, there has been:*

541

INVENTION DISCLOSURES SUBMITTED

FEDERALLY FUNDED EXPENDITURES

\$296,215,263.00

112

PATENTS LICENSED WITH OPTIONS

897

U.S. AND FOREIGN PATENT APPLICATIONS SUBMITTED

TOTAL RESEARCH EXPENDITURES

\$518,200,466.00

29

START-UP COMPANIES
— THE RESULT OF GATOR ENGINEERING PATENT WORK

4

164

ISSUED U.S. AND FOREIGN PATENTS

\$372,719,724.00

CONTRACTS AND GRANTS EXPENDITURES



from **300**
Weil Hall

This year marks the 30th anniversary of the passage of one of the most influential pieces of legislation ever to affect the modern research university. It was called the Bayh-Dole Act and it allowed universities to financially benefit from their breakthroughs developed from federal research funding. Prior to 1980, the federal government retained the patent rights to technology developed with its money and was required to grant a license to anyone who wished to apply. Because companies could not guarantee an exclusive window on the market, only five percent of these government owned patents were ever used in industry. Thanks to the Bayh-Dole Act, universities were allowed to grant exclusive licenses and retain the revenue from those licenses. This change meant that faculty, through their universities, were now free to profit from their ideas through licensing to existing companies or by participating in the creation of new ones. Though the Act is not without critics, who fear that the impartiality of university research can be compromised by the promise of future payoffs, it is undeniable that the Act has led to

an explosion in the amount of technology transferred from academia to the market place. Since its passage, more than 6,000 companies have sprung up as a result of patents made under the law. Today more than \$30 billion of economic activity per year and more than 250,000 jobs can be attributed to technologies born in academic institutions. Our college has become one of the examples of how a strong college of engineering can help create economic activity as the numbers on this page attest. The data (on the adjacent page) clearly shows how important Gator Engineering is to the local and state economy. We must expand upon these types of activities as a society if we are to rebuild our economy. More than ever, America needs a vibrant, and strongly linked entrepreneurial academic community. We are working diligently to nurture such a culture at UF by beginning a new initiative in Engineering Entrepreneurship. The program is aimed at providing training to students in the basics of technology entrepreneurship and entrepreneurial thinking, technology-based company formation and growth, engineering innovation, and innovative thinking in larger entities, whether in the private, public, or academic sectors. In parallel, we are also developing new criteria for evaluating and rewarding faculty who successfully transition their ideas into the economy. The University shares our vision of the College as an innovation engine. Construction of a new 45,000-square foot technology incubator has begun at the former location of Alachua General Hospital. This, combined with existing incubators around Alachua County, provides a local outlet for tech development. Our goal is to make Gator Engineering the destination of choice for innovative faculty, students and alumni who want to change the world, and the economy, through creative thinking.

Sincerely,

Cammy Abernathy
Dean

 Want to write to **DEAN ABERNATHY**? Send her an e-mail: thedean@eng.ufl.edu



TOP: SHANNON L. KALAHAR; ISTOCK PHOTO

ENgAGE



JUST BREATHE

The most complex engineering often brings about the most seemingly simple solution. Gator Engineers are revolutionizing the way some diseases — like breast cancer and diabetes — are detected. BY AARON HOOVER

Gator Engineers have designed and tested versions of a tiny sensor capable of monitoring diabetics' glucose levels via their breath to detecting possible indicators of breast cancer in a patient's saliva. Early results are promising — particularly considering that the sensor can be mass produced inexpensively.

"This uses known manufacturing technology that is already out there," said Fan Ren, a professor of chemical engineering and one of a team of engineers collaborating on the project.

Team members report integrating the sensor in a wireless system that can detect glucose in exhaled breath, then relay the findings to health care workers. Sensor tests contradict long-held assumptions that glucose levels in the breath are too small for accurate assessment, Ren said. That's because the sensor uses a semiconductor that amplifies the minute signals to readable levels, he said.

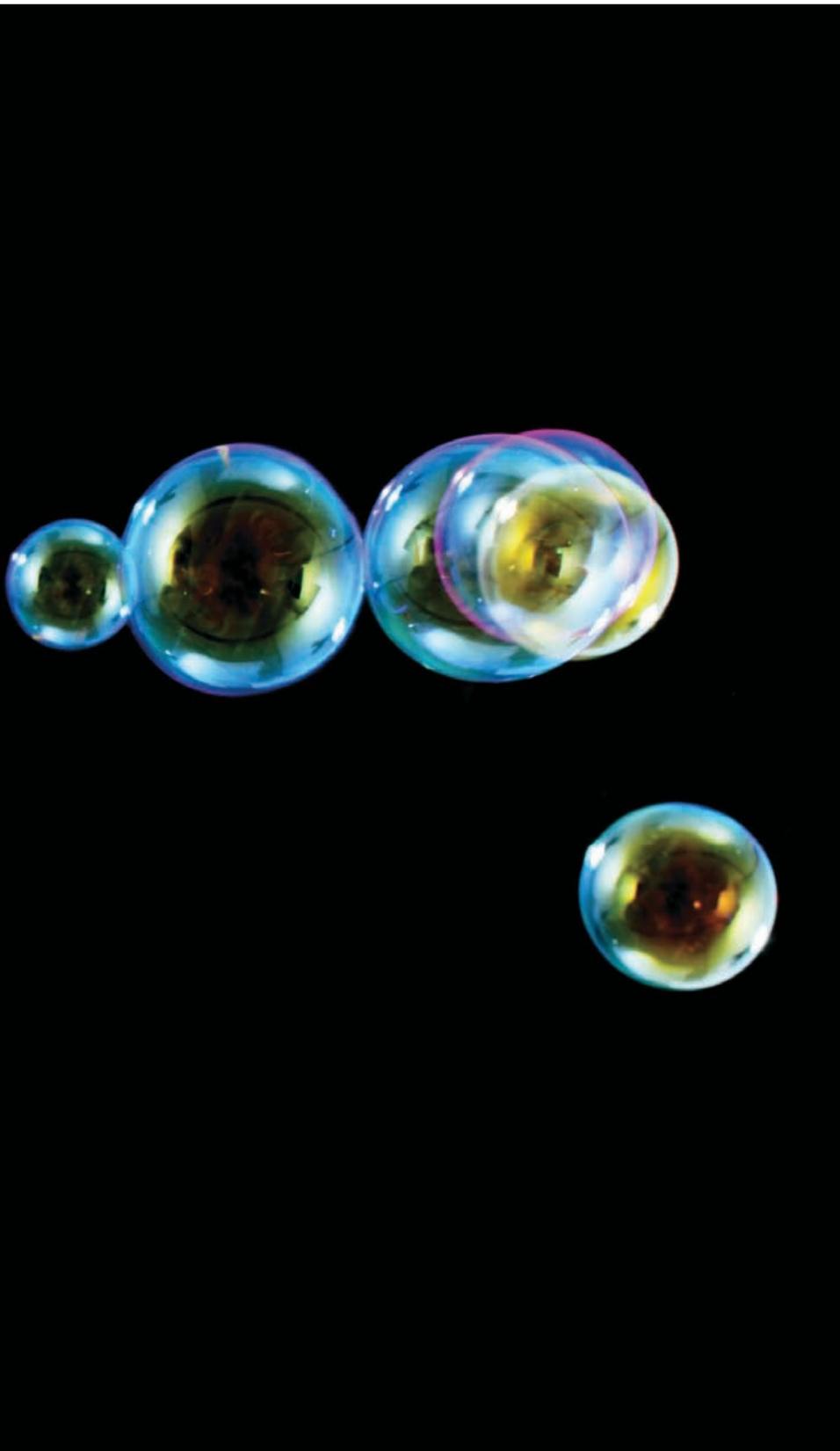
The team published 15 peer-reviewed papers on different versions of the sensor and have used other versions to experiment picking up indicators of breast cancer in saliva, and pathogens in water and other substances. For example, the current technique for measuring pH in a patient's breath requires the patient to blow into a tube for 20 minutes to collect enough condensate for a measurement. At 100 microns, or 100 millionths of a meter, the UF sensor is so small the moisture from one breath is enough to get a pH or glucose concentration reading — in under five seconds, Ren said.

The sensors work by mating different reactive substances with the semiconductor gallium nitride commonly used in amplifiers in cell phones, power grid transmission equipment and other applications.

If targeting cancer, the substance is an antibody that is sensitive enough to certain proteins identified as indicative of cancer. If the target is glucose, the reactive molecules are composed of zinc oxide nanorods that will then bind with glucose enzymes.

Once the reaction happens, "the charge on the semiconductor devices changes, and we can detect change," Ren said.

While the sensor is not as acutely sensitive as those that rely on nanotechnology, the manufacturing techniques are already widely available, Ren said. And that's a very good incentive when it is time to produce the sensors. The cost is as little as 20 cents per chip. But the cost does go up considerably when combined with the applications needed to transmit the information wirelessly to computers or cell phones. The entire wireless-chip package might cost around \$40, he said, although that cost could be cut in half if they were mass produced. □



PARTY ON GARTH

Although engineers aren't typically considered big-time party animals, we do like to cut loose on occasion. Want to get in on the action? Check out this list of engineering-friendly holidays you might be missing out on. BY CHRIS TOWER



MOLE DAY

(OCTOBER 23RD)

Although the small blind mammal is a frequent mascot of this holiday, the day actually commemorates Avogadro's Number (6.02×10^{23}), a basic measuring unit in chemistry. Originated in the 1980s as a way for science teachers to raise interest in chemistry, the holiday is now celebrated in high schools and colleges across the globe. The party kicks off at 6:02 a.m. and runs until 6:02 p.m., during which time participants engage in wild acts of debauchery like rocking out to the Mole Day Song, sending Mole Day greeting cards, and playing marathon games of Whack-a-Mole.

SOFTWARE FREEDOM DAY

(THIRD SATURDAY OF SEPTEMBER)

Founded in 2004 by the non-profit organization Software Freedom International, this holiday was created to celebrate and promote free and open-source software. Celebrants worldwide gather each year to rebel against the commercial establishment by promoting the benefits of free software through speeches, program demos and open-source music jam sessions.

GEEK PRIDE DAY

(MAY 25TH):

This international holiday was started in 2006 to honor those who aren't ashamed to let their geek flags fly. The inaugural event was launched in Spain, where hundreds of *frikis* (Spanish for geeks) got their geek on by forming a massive human Pac Man in Madrid. The *frikis* fiesta stormed American shores in 2008, and by 2009 even the Science Channel joined the party with a day of geek-friendly programs. The date was selected for its historic value as the anniversary of the 1977 premiere of Star Wars.

NATIONAL ENGINEER'S WEEK

THIRD FULL WEEK OF FEBRUARY

U.S. engineers got their very own week back 1951, when the National Society of Professional Engineers founded this event to promote young people's interest and raise awareness of engineers' contributions to society. Today, especially at UF, the week-long revelry is a cross-country variety of fun and educational activities. □



Check out pictures from this year's **ENGINEERS FAIR** thefloridaengineer.eng.ufl.edu

ACTION FIGURES GONE WILD

What better way to celebrate geek pride than to build a cast of the geek chic?

SQUARE ROOT DAY

DATE VARIES

Occurring just nine times every century, Square Root Day falls on dates when both the month and day are the square root of the last two digits of the year. High-school teacher Ron Gordon of California got the party started on 9/9/81 and has been the event's leading promoter ever since. The day's traditional merriment includes gnawing on root vegetables, square dancing and guzzling root beer. If you missed 3/3/09, mark your calendar for the next one on 4/4/16.

PI DAY MARCH 14TH

Founded in 1987 by physicist Larry Shaw, this holiday pays tribute to the first three digits (3.14) of a circle's circumference divided by its diameter. For the first Pi Day, Shaw and colleagues at San Francisco's Exploratorium erected a Pi Shrine (a brass plate engraved with pi out to 100 digits), walked 3.14 circles around it, and ate apple pie. Math lovers celebrate 3/14, also Einstein's birthday, by eating fruit and pizza pies, beading pi strings, and writing Pi-Ku (pi-based haiku) poems at 3:14 a.m. and 3:14 p.m.



YOU'RE GOING TO PUT THAT WHERE?

More than 55 million procedures were performed with GI endoscopic devices in 2009, nearly 50 percent of them colonoscopies.

IN THE NEWS 11.09

FULL INSPECTION AHEAD

Traditional endoscopes provide a peek inside patients' bodies. Now, an engineering researcher is designing one that is capable of a full inspection. **BY AARON HOOVER**

Right now, endoscopes just take pictures of the surface tissue. So, if you see some injury, or abnormality, on the surface, that's good," said Huikai Xie, associate professor of electrical and computer engineering. "But most of the time, particularly with cancer, the early stages of the disease are not so obvious. The technology we are developing is basically to see under the surface, under the epithelial layer."

Experiments with Xie's scanning "micro-endoscopes" on animal tissue have been promising, although his devices have yet to be tested in people. These endoscopes use infrared scanners smaller than pencil erasers and the heart of his scanner is a microelectromechanical system, or MEMS, device: A tiny motorized MEMS mirror that pivots back and forth to reflect a highly-focused infrared beam. By itself, the beam only strikes a period-sized dot of tissue. But the MEMS mirror allows it to move methodically back and forth, scanning a fingernail-sized piece of tissue row by row, like a lawnmower moving across a yard. The resulting image is high resolution: Xie said his scanners have achieved resolution of 10 microns, or 10 millionths of a meter, in laboratory tests. That's more than 10 times higher resolution than the only other non-camera-

based endoscopes on the market, which use ultrasound technology, he said. The high-resolution image also includes depth information, so the risky biopsy can be more specific to avoid mistakes, or even completely avoided.

Computers process the return signal from the endoscopes, transforming it into a three-dimensional image of the surface tissue and the tissue beneath. One scanner even produces a 360-degree-image of all the tissue surrounding the endoscope. Doctors or other trained observers can then search the image for abnormalities or suspicious growth patterns.

Xie said doctors could also use the endoscopes for treatment and surgery. He said during operations doctors must rely on static MRI or CT images of tissue obtained before the operation begins. But his scanners make images available in real time.

"We are trying to couple this imaging probe with cutting tools, so that when surgeons begin cutting, they know exactly what's in front of them," he said.

Xie's research is supported with more than \$1 million in grants, primarily from the National Science Foundation. He also recently launched a small company, the Gainesville-based WiOptix Inc., to speed commercialization of his scanning technology. □

SWEET SUCCESS

For the first time in nearly 15 years, UF's chapter of Tau Beta Pi won the 2008-2009 R.C. Matthews Outstanding Chapter Award, given annually at the Tau Beta Pi convention. UF's chapter of the national engineering honor society has won the award seven times since the award was established in 1956.



► **ABE** Agricultural and biological engineering graduate student, Gaurav Ghai, won first place in the Institute for Thermal Process Specialists' 2009 Charles R. Stumbo Student Paper Competition.



► **BME** Biomedical engineering Ph.D. student Chelsea Magin received the \$10,000 Clare Boothe Luce Scholarship.

ECE In October 2009, the UF chapter of the Association for Computing Machinery, a scientific computing society, participated in the IEEXtreme 24-hour online programming competition. The electrical and computer engineering students placed seventh and 13th out of 697 teams from 40 different countries.

EES Environmental Engineering Sciences students won the Florida and national design competitions of the Water Environment Federation for the fourth consecutive year (2006-2009).



► **EES** Master's student Jennifer Apell won the Best Student Paper Award at the 2009 American Water Works Association Water Quality Technology Conference for her piece on "Simultaneous Removal of Dissolved Organic Matter and Hardness by Combined Ion Exchange."

MSE The Society for Biomaterials was awarded third place in the National Student Chapter competition.

NRE Nuclear and radiological undergrads won the 2009 American Nuclear Society Student Design Competition. Design and analysis reports included reactor physics, shielding, instrumentation and control, thermal hydraulics, regulations and economics.



Need more? Check out **HEADLINES** www.eng.ufl.edu

IT'S COMPLICATED

When the National Academy of Engineering speaks, engineers listen, especially when they promote the Grand Challenges for Engineering the 21st Century. The College saw this as an opportunity to leverage its strengths. So, six committees noodled their prospects for prominence last semester and honed the engineering research agenda. BY AARON HOOVER

Zero Impact Everything

Cities everywhere clarify cloudy drinking water with aluminum sulfate. It's how it's done.

But the stuff has to be mined, manufactured, transported and landfilled. Environmental Engineering Associate Professor David Mazyck's goal: Figure out how to use a sun-energized catalyst to convert the organic compounds that stain the water brown into carbon dioxide and more water. No holes in the ground, no belching trucks, no factories, no pollution...crystal drinkability.

It's one example of "net-zero-impact infrastructure," the green research distillate rendered by the 11 civil engineers, environmental engineers, UF's sustainability director, and other members of the Sustainable Infrastructure & the Environment committee.

"The idea is that we would construct things that would not only consider the environment up front," says Kirk Hatfield,

committee co-chair with Mazyck and interim chair of Civil & Coastal Engineering. "We would also consider how this new structure would act on the environment, and how the environment acts on it."

So: Build with less concrete, which contributes five percent of atmospheric CO₂, or make concrete differently. Try to place new houses or factories where they will last. Keep tabs on their condition with sensors and fix rather than demolish them. Design urban landscapes to minimize travel, traffic and congestion. Rethink civilization with sustainability at the top of the list.

The two engineering departments have researchers known for progressive work in transportation, coastal engineering, hurricane mitigation, water purification and wetlands ecology. "Net-zero-impact infrastructure" brings them together and points them in a single direction.

"We would be a national leader if we develop this thing," says Mark Brown, professor of environmental engineering sciences.

Empowering Energy

One of the College's overarching strategic planning goals is to lay the groundwork for bringing home the biggest grants. With so much federal support for energy research, the Energy committee is in the spotlight.

James Klausner, professor of mechanical and aerospace engineering and the committee co-chair, says researchers need to routinely collaborate with those outside their department or discipline. The committee compared the National Academy of Engineering's recently released "grand challenges" in energy research with strengths at UF. It winnowed UF's focus areas to solar and thermal fuel storage, nuclear fuels, photovoltaics and solid-state lighting, catalysis, electric storage and systems analysis and process control.

"Securing access to abundant clean energy will be the single most important technological, environmental, economic and national security challenge of the next half century," says committee co-chair Simon Phillpot, professor of materials science and engineering. "The needs for greater understanding in energy research span the range from fundamental physical and chemical properties, to individual energy technologies, to energy systems as large as the electrical grid..."

It sounds like a big list, but the most important element is the most open-ended.

"As a committee we want to see these groups operate together," Klausner says. "If you want to be successful in getting a research center for your program, the first thing you have to do is act like a center."



Flexible Hardware

Apple's iPad may be latest incarnation of the personal computer, but far more sweeping transformations lie ahead.

That is the impression left by the Information Technology committee's plan to enhance computer and information science research at UF. Researchers should pursue virtual reality, simulation and cyber security as the next

fronts in the information technology, college officials say.

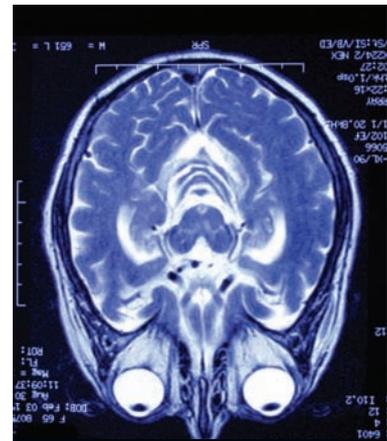
"That anyone could search all public documents in the world by typing a few words on a mobile phone keypad seemed impossible twenty years ago," says Jose Fortes, professor of electrical and computer engineering and committee co-chair. "UF researchers...are uniquely positioned

to invent the algorithms, simulation approaches, software, cyber infrastructure and databases to make virtual reality technologies as common and effective as Internet search twenty years from now."

"Cyber physical systems" are also ripe for development, says Ahmed Helmy, committee co-chair and professor of computer

and information science and engineering. These include computer-controlled collision avoidance systems in automobiles, robots for search-and-rescue operations and other marriages of the latest advances in computing with other major elements of modern life.

"Information technology needs to evolve as a core scientific discipline," Helmy says.



Rx for Health: Engineers

The goal of the Health Care & Biotechnology committee: Widen the path for UF engineers to team with doctors. "The biggest real-world enterprise we have in Gainesville is the health center [Shands]," says Chris Batich, who bridges both worlds as a professor of materials science and engineering and associate director of UF's Clinical and Translational Science Institute. "So if we are going to be relevant in engineering, then our best community is the health center." UF engineers have worked with clinicians to come up with the seed technologies for several medical advances, including the bone paste that helped make biological implant leader RTI Biologics a multimillion-dollar company. The committee wants to make such examples as routine as morning coffee.

Bruce Wheeler, professor and interim chair of biomedical engineering and committee co-chair, says biomedical imaging and the development of "neural systems" that combine engineering and biology as priorities for new investment and developments. "Imaging is a big deal," he said, noting UF has a variety of imaging experts in engineering, medicine, physics and other areas – experts who should be able to extend the legacy of CT scans and other imaging technologies. He said the same goes for neural engineering, which bridges UF's neuroscience program, brain-machine interface research and physical therapy departments.



Computing the Future

With apps multiplying by the minute, the iPhone may seem the end-all. But Sivaramakrishnan “Bala” Balachandar and Susan Sinnott have another level in mind for Gator Engineering.

It’s known, officially, as extreme computing — or computing by non-traditional methods, for example hardware that rewires itself to attack the task at hand.

Balachandar, chairman of UF’s Department of Mechanical & Aerospace Engineering and co-chair of the Computational Science & Engineering committee, says extreme computing comes into play when traditional experiments are impossible and when inquiries span minute to massive.

For example, at UF some mechanical and civil engineers work on how to protect buildings from bomb blasts and hurricane winds. Others investigate materials under extreme stress, say from shrapnel. Sinnott, committee co-chair and a professor of materials science and engineering, examines molecules under unusual duress, while still others study

how blast waves damage human flesh.

Only one net can cinch it: virtual experimentation on the world’s most powerful computers. These computers are so powerful, they can literally change how scientific discoveries happen, says Sanjay Ranka, committee member and professor of computer and information science and engineering.

The College already has computing street cred with its Center for High-Performance Reconfigurable Computing. Now, it’s poised to take the next step. The committee wants to have a UF a center for petascale computing (a quadrillion operations per second), exascale computing (a million trillion operations per second), and extreme computing.

“These problems — when you want to solve them and bring all the realities in — you cannot do it on a small computer. You need petascale computing,” Balachandar says. “You also need to be able to do across-the-scale simulation so that your answer is predictive in nature.”

(Self) Assembling the Nano Toolkit

UF engineers at work on quantum computers, super-strong alloys, speck-of-dust-sized sensors, and numerous other projects rely on the tiny tools of nanotechnology. The faculty on the Nano/Micro-Technology committee want to make sure their toolkit has room for the Next Big Thing.

“What is the next generation of tools? It will involve manipulating individual atoms and molecules,” says Bill Appleton, committee co-chair and director of UF’s Nanoscience Institute for Medical and Engineering Technology. “What we can do that is really unique is provide a window to this next generation of tools and techniques.”

The committee recommended hiring faculty and buying equipment tied to improving the production of nano- or micro-sensors and materials — production that one day soon could involve atoms or molecules that “self assemble” like proteins in the body. The committee also suggested that NIMET and the College’s nanotechnology center, the Nanoscale Research Facility, jump start a new focus in the College of Engineering and University on personalized medicine.

Appleton noted that Gator Engineers have already made tiny sensors that are incredibly sensitive to glucose, pH, and other biological chemicals. Such sensors, he says, could be melded with cell phones to allow doctors — and patients — to watch their medical conditions and tailor their care and prescriptions in the most individual way.

“We are all different, so we should all get different therapies,” said committee member and anesthesiology professor Dr. Donn Dennis at one meeting. “[Personalized medicine] dovetails with the unique capabilities of UF, and it dovetails with technology transfer and commercialization.”



THE SAVVY ENGINEER

Engineering Jobs that are Bringing Sexy Back **BY CHRIS TOWERY**

Despite the frequent stereotyping of engineers as Dilbert-esque cubicle dwellers, the profession is filled with plenty of real-life heroes and rock stars. Want proof? Check out this sample showcasing a handful of today's edgiest engineers.

Bionic Breakthrough

Remember in *The Empire Strikes Back* when Luke Skywalker is fitted with a lifelike robotic hand after Darth Vader hacked off his original with a light saber? Or perhaps you're more partial to Darth Vader's telekinetic strangling of Admiral Ozzel. Whatever your fancy, the advanced technology was nothing but a sci-fi fantasy when the film was first released. Today, however, a new field of engineering is creating bionic arms and mind-control technologies rivaling those of George Lucas' imagination.

To give returning veterans a hand, DARPA's Revolutionizing Prosthetics program turned to two research groups: the Johns Hopkins Applied Physics

Laboratory, which traces its research roots to a WWII-era project that included Gator Engineering Dean Joseph Weil, and Deka Research and Development Corp., of Segway fame. Both arms allow amputees to perform complex tasks. API's is neurally controlled; Deka's uses a joystick-like controller. In a nod to one of their inspirations for the device, Deka engineers dubbed their first prototype the "Luke arm." At UF, the Computational NeuroEngineering Lab, led by distinguished Professor José Principe, researches the principles to comprehend brain function, treat brain disorders, and ultimately to "talk" to the brain finding a way for machines to be controlled by thought — enabling normal function in cases of brain injury or disease. Though, this kind of engineering will be used for good and not by evil Sith.

Fear Factor

Whether it's suspension bridges, computer software, or car air bags, engineers are usually known for design-

ing things that make life easier, safer, and more productive. But a small group of engineers design products for the sole purpose of scaring the heck out of people. Unlike their colleagues, roller-coaster engineers get paid to take away our sense of safety and control by amplifying adrenaline levels.

People from various engineering disciplines work on coasters. Mechanical engineers are most responsible for creating the kinesthetic thrills. MEs manipulate a coaster's design, so the velocity, g-force, and other stresses provide maximum exhilaration with minimal risk. Love the rides but hate the lines? We got you covered. Bruce Laval (B. IE '69) put an industrial engineer's spin on the problem and came up with Disney's FASTPASS system, which puts guests in a virtual queue and all but eliminates the lines.

Spy Tech

No line of work is sexier than national intelligence. What's cooler than using your wits to thwart dangerous enemies? An engineering background has more value than one might think in the world of espionage.

No strangers to covert ops, a team of Gator Engineers spend their time designing and perfecting micro air vehicles. These avian-like gadgets come in all shapes and sizes — though these "birds" have cameras and GPS devices attached. The mostly-undergraduate UF MAV team has won the International Micro Air Vehicle competition eight years in a row.

But right now the hottest intelligence work that allows engineers to live out their James Bond fantasies is digital forensics. Like other forensic sciences, digital forensics is about collecting and analyzing evidence. But instead of physical evidence, like DNA, digital forensic engineers gather electronic evidence stored on computers and other digital devices. These cyber sleuths are employed in many settings — law enforcement, the corporate world, attorneys' offices — and work on busting illegal MP3 downloads to foiling al-Qaida plots.

Those looking to attain true 007 status should head to the CIA, where the demand for digital forensic engineers is booming. With the recent surge in terrorist activities, the CIA is seeking applicants now. One warning: the agency's Web site advises you use "discretion and good judgment" when telling anyone — even your family — you're applying. No kidding. □



Is there something you want to see covered in the **SAVVY ENGINEER**? Write to us.

ENGAGE



SA'WING BATTA

The distance between the dots of one color is a measure of speed of that point on the bat. Between two dots 0.01 seconds have passed. Keeping this in mind, you can compare speeds, investigate acceleration and deceleration, and calculate speeds of motion in the pictures — Sebastian Martin, exo.net

PREPARE TO GEEK OUT

Forget those crusty dinosaur skeletons and hokey cave-man dioramas. These five museums are loaded with exhibits that will leave engineers walking with their heads held high. **BY CHRIS TOWERY**



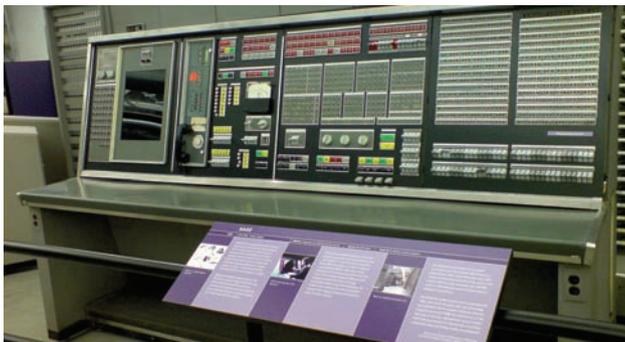
Chicago Museum of Science and Industry

This is the granddaddy of all science museums. Boasting more than 14 acres of hands-on exhibits covering the fields of science, engineering, technology, and medicine, Life Magazine rated it one of the top 15 museums in the world. Visitors can descend 600 feet below ground into an interactive coal mine, explore the decks of real U-505 German submarine, and experience the swirling vortex of a 40-foot tornado. Topping it off, the five-story, wraparound Omnimax Theater offers an array of stunning visual adventures that even give Avatar a run for its money.



Oregon Museum of Science and Industry

Located in Portland, the Oregon Museum of Science and Industry (OMSI) brings science to life with five massive exhibit halls, an Omnimax domed theater, and the Northwest's most technologically advanced planetarium. Popular attractions include an earthquake simulator, an interactive exhibit on human fear, and a multimedia journey through the history of space travel. OMSI also features eight hands-on science labs, a stomach-wrenching motion simulator ride, and trippy laser-light shows set to music acts ranging from Hendrix to Enya.



Exploratorium

The Exploratorium in San Francisco is one of the most innovative museums in the world. With more than 400 interactive, hands-on exhibits showcasing the areas of science, art, technology, and human perception, this place will make engineers feel like kids in a candy store. In addition to engaging attractions, like the Tactile Dome, Microscope Imaging Station, and the Mind exhibit, the museum features numerous public events, webcasts, an artists-in-residence programs. For some slightly more risqué fun, check out After Dark, an evening program strictly for adults that mixes cocktails with stimulating presentations on everything from music and sex to electricity and DNA.



MIT Museum

At the MIT Museum in Cambridge, MA, visitors experience the vast well of creativity, ideas, and innovation of one of the nation's leading tech schools. Recently expanded by 5,000 square feet, the museum offers a wide range of galleries showcasing the best of MIT's groundbreaking research, including fascinating exhibitions on artificial intelligence, holograms, robotics, and oceanic engineering. Also featured are a variety of special events like the Cambridge Science Festival and Soap Box, a public discussion forum with scientists and engineers making today's headlines.



Computer History Museum

Founded in 1999, the Computer History Museum preserves and presents artifacts and stories that have played a key role in the Information Age. Located in Mountain View, CA, the museum houses a vast collection of computing gear and relics, including hardware, software, documents, photographs, videos, and other ephemera. From working replicas of the Babbage Engine and PDP-1 to more than 250 computer brochures from the past 60 years, this place will blow away even the most hardcore computer geeks.



IN THE NEWS 01.10

GATORS AT THE SOUTH POLE

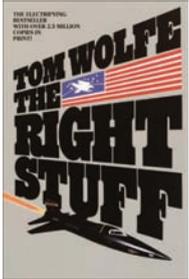
The Gator Nation remains strong around the globe, including the South Pole where engineering Assistant Professor Robb Moore recently trekked in the name of science. His Antarctic research, supported by a National Science Foundation grant, detects and quantifies the effects of rocket-triggered lightening using extremely sensitive receivers. It's freezing and also gorgeous desolation, says Moore, who adds that some of his lightning equipment, nestled in the Pole's icy terrain, is painted orange and blue. "It was a really special opportunity," Moore says of his study. "There are only three receivers run by U.S. academic programs. Only three sites and UF now operates one of them."



Read the full story on
LIGHTNING RESEARCH
floridaengineer.eng.ufl.edu

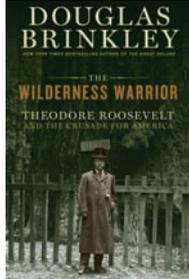
BUY THE BOOK, TAKE THE RIDE

When you're in college, the words "pleasure" and "reading" are rarely in the same sentence. Especially slogging through 150 pages of textbooks each night. But then you graduate, you start your career and you find yourself hungering for something to read, for some gifted writer to take you away. Ah ... but not too far away. You love what you do so even though you want to be entertained, you still want it to be something from your general neighborhood. **BY WILLIAM MCKEEN**



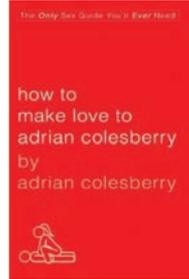
THE RIGHT STUFF

Tom Wolfe
(Picador, \$16)
The great journalist tells the story of the test pilots, the engineers and the astronauts who took us into space at the dawn of the 1960s. One of the great achievements in modern non-fiction writing.



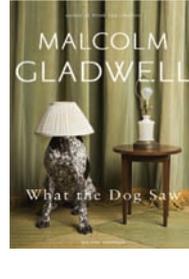
THE WILDERNESS WARRIOR

Douglas Brinkley
(Harper, \$30)
A portrait of Theodore Roosevelt, the forward-thinking president who moved society toward technology while trying to preserve the beauty and splendor of the natural world.



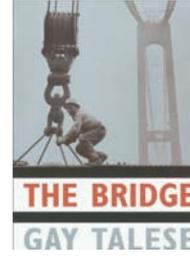
HOW TO MAKE LOVE TO ADRIAN COLESBERRY

Adrian Colesberry
(Gotham Books, \$20)
Don't let the title mislead. America's funniest biomedical engineer writes about relationships through the prism of the scientific mind. (This is an adult-only read.)



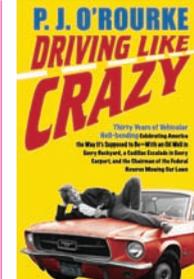
WHAT THE DOG SAW

Malcolm Gladwell
(Little, Brown, \$27.99)
With *The Tipping Point* and *Blink*, Gladwell became a franchise. Here, the New Yorker's great explainer gives us a collection of shorter pieces, covering the Challenger explosion and ketchup's image problems.



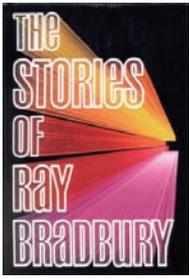
THE BRIDGE

Gay Talese
Walker, \$14.95
This classic from 1964 chronicles the building of the Verrazano Narrows Bridge spanning New York harbor. Still an engineering marvel decades later, Talese takes us into the day-to-day of design and construction.



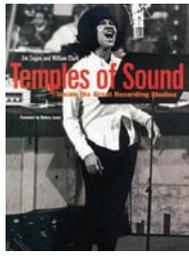
DRIVING LIKE CRAZY

by P.J. O'Rourke
(Atlantic, \$24)
O'Rourke, National Lampoon's naughty boy & Rolling Stone's smug political commentator, writes of his torrid romance with the automobile – the bigger and least efficient the better. (One piece was originally titled, "Die, Eco-Weenies.")



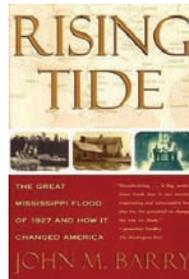
THE STORIES OF RAY BRADBURY

Ray Bradbury
(Everyman's Library, \$32).
Bless those people who wrote the books that opened our minds as children. This collection of Bradbury's stories is a national treasure and you'll soon realize these aren't really for children.



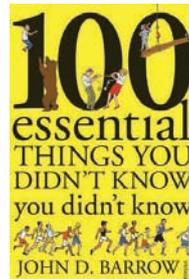
TEMPLES OF SOUND

Jim Cogan and William Clark
(Chronicle Books, \$24.95)
This is really here to hold the place until someone writes the biography of Tom Dowd, who began his career working on the Manhattan project and ended as the most significant recording engineer of the 20th Century.



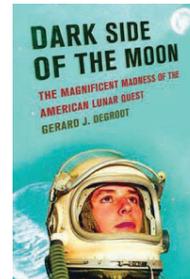
RISING TIDE

John M. Barry
(Touchstone, \$18)
The 1927 Mississippi Flood was the Hurricane Katrina of its era. It resonates in the music and literature of our culture. It also showed what the U.S. Army Corps of Engineers learned from that disaster to change the future of the country.



ONE HUNDRED ESSENTIAL THINGS YOU DIDN'T KNOW YOU DIDN'T KNOW

by John D. Barrow
(W.W. Norton, \$25.95).
Read a few pages before every cocktail party to pick up a few new facts to wow your friends. The subtitle says it all: "Math explains the world."



DARK SIDE OF THE MOON

(left) *by Gerard DeGroot* (New York University, \$24.95) (right) *by Wayne Biddle* (W.W. Norton, \$25.95)
A great historian's somewhat comic look at the space race between the United States and Russia.



The identically titled *Dark Side of the Moon* by Wayne Biddle (W.W. Norton, \$25.95) looks more at the engineering culture around Wernher van Braun.

 To get a **SIGNED COPY** of a featured book tell us why you deserve it: floridaengineer.eng.ufl.edu

There's nothing as inviting as a lush tropical landscaped yard rolled out under swaying palms and a balmy blue sky. That is until you realize that 65 percent of Florida's dwindling water supply is used to keep that lawn lush, those flowers blooming and your neighbors envious. It doesn't take a rocket scientist to figure out Florida's aquifer is taking a beating. Is engineering innovation the answer? Or is it much, much simpler? *by* **CRAIG PITTMAN**

TURN OFF
THE PIPES

THE PARTY
IS OVER...

illustration by
JOHN RITTER





WHEN THE PIONEER NATURALIST JOHN James Audubon visited Florida in 1832, he was dumbstruck by the enormous flocks of colorful flamingos and roseate spoonbills he found. But he complained that the landscape they occupied was just too wet to bear. • “The general wildness, the eternal labyrinth of waters and marshes, interlocked and apparently never ending, the whole surrounded by interminable swamps — all these things had a tendency to depress my spirits,” Audubon wrote to his editor. • Now, nearly two centuries later, Audubon might be more depressed to see a far drier Florida.

Many of the swamps, bogs and marshes where the flocks of spoonbills once fed have been drained and dredged, filled in and paved over. Rivers that once featured lazy oxbows have been straightened into fast-flowing ditches that dump polluted runoff into lakes, estuaries and bays. Meanwhile the state’s most influential group of business leaders have become so concerned about running out of water that they wonder whether the governor should appoint a water czar who could route supplies to the thirstiest places.

How could this happen in a state that has 10,000 miles of rivers and streams, 7,800 lakes and some 700 springs? How could anyone run short of water in a place that, according to the National Climatic Data Center, averages more inches of rainfall a year than famously rainy Seattle?

It happened because, like Audubon, everyone in Florida was fooled into thinking that the “labyrinth of waters and marshes” had no end.

For decades, Florida relied on tapping its underground water — the aquifer — to fuel its continued growth. There seemed to be no limit to the supply hidden in the earth.

“Historically water supply planning in Florida was a one-day affair,” explained Jake Varn, who in the 1980s was the state’s top environmental regulator. “If you ran out of water, you figured you needed another well, so you hired a well driller and the problem was solved.”

Given such apparent abundance, Floridians have never been shy about slurping up as much water as they could. Over the past 20 years, America’s per capita consumption of water has dropped - but not Florida’s, said Cynthia Barnett, author of *Mirage: Florida and the Vanishing Water of the Eastern U.S.*

“Florida consumption has been going up and up and up,” said Barnett.

Studies by the U.S. Geological Survey show per-person water use in Florida has climbed from less than 140 gallons a day in 1955 to 174 gallons a day now, she said.

In some places it’s even higher. Orange County’s usage per capita for instance, is 224 gallons a day — the equivalent of taking five baths a day using a 50-gallon tub. In 2008, the *Palm Beach Post* found some of the wealthy residents of Jupiter Island using as much as 1.6 million gallons a month. Among the biggest consumers, the *Post* found, were estates owned by singer Celine Dion and golfer Tiger Woods.

Actually, though, very little of the water that Dion, Woods, and the rest of the state’s less-famous 18.5 million residents use each day winds up in tubs or drinking glasses. Sixty-five percent of residential water use in Florida goes toward keeping yards and landscaping looking green.

“As long as people want nice yards, they’re going to irrigate the bejesus out of them,” said Ed de la Parte, one of Florida’s most prominent water-use attorneys.

Even the way the yards are constructed contributes to the problem, explained Pierce Jones, a University of Florida professor of agricultural and biological engineering.

Developers who build in wetland areas truck in “sterile soil” to use as fill to put homes above the water level, disrupting the natural soil profile, explained Jones (Ph.D. MAE ’81). Then they compact it with bulldozers and cover it with thirsty St. Augustine sod, he said.

The result, Jones said, is a subdivision that’s “heavily dependent on irrigation and fertilizer.” Replicate that over and over,

as happened throughout the state in the past decade, “and it becomes a regional-scale problem in terms of water supply,” he said. “The status quo is failing. We cannot continue as we are.”

The first signs of trouble cropped up more than 20 years ago in the Tampa Bay region. Pinellas County officials, under political pressure from developers eager to keep building, pumped so much water from the aquifer that salt water intruded. They then began pumping water from nearby Pasco and Hillsborough counties. But overpumping of the aquifer there drained lakes, ruined private wells and dried up wetlands.

“We had swamps that had been there for centuries that were dying,” said Roy Harrell, who was chairman of the Southwest Florida Water Management District, the state agency that finally ended the wars.

The cities and counties of the Tampa Bay region battled in court over control of the dwindling supply. The lawsuits cost taxpayers hundreds of millions of dollars. One Pinellas commissioner threatened to turn what had become known as the Tampa Bay Water Wars into a statewide conflict.

“Keep the Suwannee River cold, because we’re coming for it,” he vowed.

The Southwest Florida Water Management District, better known as Swiftmud, finally stepped in. In 1998 it helped to organize a new wholesale utility, Tampa Bay Water, to take control over all the region’s wellfields. Then, to persuade Tampa Bay Water to pursue alternatives to groundwater pumping, Swiftmud offered to help pay for an engineering solution to the environmental problem: building Florida’s biggest reservoir and North America’s largest desalination plant.

That same year, spurred on by what happened in the Tampa Bay region, the Legislature passed a law that cities and counties must first exhaust all their local water resources before trying to grab someone else’s. The law established a principle called “local sources first.”

Yet just five years later, in 2003, the state’s most influential business group was ready to junk the new law. The Council of 100, which is made up of the state’s most prominent developers, utility executives, sugar moguls, citrus magnates and newspaper publishers, drafted a plan that called for ditching local sources first.

Instead, the Council of 100 wanted then-Gov. Jeb Bush to appoint a seven-member commission with the power to transfer water from rural areas north of Interstate 4 to fast-growing areas south of that Central Florida dividing line. Council of 100 Chairman Al Hoffman, then the CEO of South Florida development giant WCI contended that Florida did not have a water *supply* problem, but a water *distribution* problem.

The Council of 100 plan proposed that water-starved areas south of I-4 pay a transfer fee that would benefit the water-rich areas north of I-4. As a result, the plan said, “a statewide water distribution system would establish an economic value to water, and water would become a general revenue source for the state of Florida and sending areas.”

Spearheading the Council of 100 plan was a commercial real estate broker from Clearwater named Lee Arnold. To him, the choice of what to do seemed clear.

“Do we have enough water in the state and it happens to be in the wrong spot?” Arnold asked. “Some counties are rich. Eighty percent of the consumption is south of I-4. Eighty percent of available supplies are north of I-4.”

The plan that Arnold’s group drew up failed to mention anything about the engineering and related costs for moving large quantities of water around the state. There was no mention of the pipelines, pumps and storage tanks that would be needed, much less the cost of right-of-way along any new pipeline routes.

Arnold had already picked out a source for boosting the water supply of fast-growing South Florida. Just like the long-ago Pinellas County commissioner, he had targeted the slow-growing Suwannee River region.

“They’re sitting in the Saudi Arabia of water,” Arnold said.

But the sheiks of the Suwannee had no interest in any deals for their water supply, arguing they needed it for their own future growth. Across North Florida there was a strong backlash against the Council of 100. More than 1,000 people packed one public hearing, waving signs that said, “Not One Damn Drop!”

Gov. Bush delayed the water transfer plan.

In 2005, Bush and the Legislature approved a new law that requires counties to show they have sufficient water to supply any new development they approve. The law’s first test came the following year in Miami-Dade.

Miami-Dade was pumping 346 million gallons of water a day from its wellfields. It asked state officials to approve pumping out another 100 million gallons a day to supply a dozen proposed new developments. Instead of replying by letter, the heads of the South Florida Water Management District and the state Department of Environmental Protection showed up in Miami in person. They spent two days in closed-door meetings with county officials delivering a strong warning: Don’t count on getting more underground water for your growth, because there’s not enough without damaging the Everglades.

They told Miami-Dade officials they needed to start building alternative water sources like the ones Tampa Bay Water had turned to. Their options could include desalination, skimming water from rivers and increasing the use of treated wastewater for irrigation.

“We definitely got their attention,” Carol Wehle, executive director of the South Florida Water Management District said at the time.

Environmental Engineering Sciences Department Chair Paul Chadik says a culture change is required before conservation can be fully realized. “For example, watering restrictions can be imposed and perhaps enforced, but Florida residents must take ownership of the problem and implement the conservation techniques,” Chadik said in an e-mail. “We are beginning to see this cultural change with respect to energy usage, but we still have a long way to go.”

As Chadik points out, old habits can be hard to break. After a lengthy drought required South Florida to impose a two-day-a-week limit on sprinkling lawns, water managers considered making the restriction permanent. But a coalition of utilities argued that making their customers cut back on water use permanently would hurt them financially.

So Wehle’s agency proposed three-day-a-week watering restrictions — and as of November, the utilities were objecting to even that much of a cutback. They wanted a guarantee that their water usage permits will not be reduced as consumption drops.

Growing concerns over the state’s future water supply prompted the Century Commission on a Sustainable Florida in the fall of 2008 to convene a two-day gathering of more

HOW COULD
THIS HAPPEN
IN A STATE
THAT HAS
10,000
MILES OF
RIVERS
AND STREAMS,
7,800
LAKES AND
SOME
700
SPRINGS?

“OF COURSE, LOTS OF PEOPLE GET RICH WHEN WE BUILD DESAL PLANTS AND RESERVOIRS. NO ONE GETS RICH OFF WATER CONSERVATION,” BARNETT SAID.

than 100 utility officials, developers, bureaucrats, lobbyists, lawyers and environmental activists.

Dubbed the Florida Water Congress, the group picked as its top priority getting the state to help pay for building those big-ticket projects like reservoirs and desalination plants. Second place went to forming more regional partnerships like Tampa Bay Water, to share the cost of building alternative supply projects. A proposal to put conservation of water on equal footing with building new supply projects finished third in the voting.

But those expensive engineering projects are far from an ideal solution. Just ask Tampa Bay Water. The regional utility built the nation's largest desalination plant in Apollo Beach to give some relief to the 13 wellfields that were pumping more than 190 million gallons of water a day to serve 2.5 million people. But it was plagued with problems right from the start — everything from contractors declaring bankruptcy to Asian green mussels clogging the filters.

By the time it was up and running, it was five years past deadline and millions of dollars over budget. Even when the \$140 million project was finished, the wholesale utility avoided running it at its full 25 million gallons a day capacity because its production costs were higher than any other water source.

“The Tampa Bay desalination plant had its start-up problems but important lessons were learned for investigating and then correcting the failures,” Paul Chadik said. “These lessons will reduce problems with future plants and reduce costs. Membrane treatment and desalination of brackish and salt water will be a major advance in supply water in the future.”

By contrast, Tampa Bay Water's other big engineering solution — a 15-billion-gallon reservoir designed to hold water skimmed from three area waterways and run through its new surface-water treatment plant — seemed like a big success. But about a year after opening, its soil-cement walls began cracking. The cracks were not deep enough to threaten the reservoir's structural integrity, but they have proven persistent. Repair them and soon they reappear.

The utility is now suing its contractors on the job — none of whom had any prior experience with building an above-ground reservoir of this magnitude — and figuring out how to fix the cracks so they stay fixed.

Despite Tampa Bay Water's woes, other utilities are looking to skimming the surface of their rivers as a way to supply their thirsty customers.

Seminole County, for instance, recently won permission to slurp 5.5 million gallons a day out of the St. Johns River, to

be filtered by a \$90 million plant and sent northward via a network of pipelines.

The county won its permit despite strong opposition from Jacksonville and environmental activists. Their concern: the county's long-range plan calls for siphoning 70 million or 80 million gallons each day from the river eventually.

“If we just keep putting a straw into the river, instead of actually changing our water habits, what's going to happen when we eventually suck the St. Johns dry?” asked Rebecca Wodder, of the environmental group American Rivers.

A judge issued a 66-page ruling that the county “has provided reasonable assurance the quality of the St. Johns River will not be seriously harmed.” But then, in July, the St. Johns River Water Management District launched its own study of the impact such plants would have on the river. Reviewing the potential cost and complexity of such major projects convinced the water board's members to take another look at whether conservation might be cheaper.

There are other environmental concerns, too and several Florida counties and cities are working with the St. Johns River Water Management District on studying whether to build the state's second desalination plant in Flagler County, on the Atlantic coast. Such a plant would be an alternative to drawing water out of the controversial St. Johns.

But there are questions about the impact of dumping so much brine in a coastal area, said Y. Peter Sheng, a UF coastal engineering professor who has been asked to help study the effects. So far he is optimistic.

“Desal is definitely a potential solution,” Sheng said. “Finding a cost-effective, environmentally-friendly technology for desal is still a viable option.”

Faced with the initial difficulty and expense that come with the alternatives, is it any wonder that the idea of piping groundwater south has come up again?

Last fall, the Council of 100's staff produced a new report that again suggested creating a statewide commission that could oversee building pipelines and storage tanks “needed for the storage and distribution of water over broad geographic areas so as to provide water to and between regional water supply entities,” the draft report says. Or there could be “a state water czar with the responsibility . . . concentrated in a single individual.” Once again, though, there was no discussion of the expense.

Although the full council had not yet approved that suggestion, it had already gotten an amen from another corner.

PER-PERSON
WATER USE
IN FLORIDA
HAS CLIMBED
FROM
LESS THAN
140
GALLONS
A DAY IN 1955
TO
174
GALLONS A
DAY NOW

IF ALL THE LARGE COMMERCIAL BUILDINGS IN BROWARD COUNTY RE-USED THE CONDENSATE AND BLOW-DOWN WATER THAT NOW GOES TO THE SEWER SYSTEM, THEY COULD SAVE AS MUCH AS 5 MILLION GALLONS OF WATER A DAY

The Florida Senate's Environmental Preservation and Conservation Committee staff produced its own independent report, saying it's time to "establish a central regulatory commission that oversees Florida's water resources and supply development."

According to the Senate report, regardless of "local sources first," none of Florida's 67 counties should count on exclusive use of its water if someone else in the state needs it: "The people of Florida own the water collectively, irrespective of regional jurisdiction, and a statewide body should govern Florida's water supply accordingly."

Nevertheless, if either the Legislature or the Council of 100 pursues this plan, they should expect a revival of the resistance that arose before, predict North Florida water experts.

"It's a slippery slope to seek some sort of statewide distribution system at the expense of those parts of the state that still have reasonable amounts of water," warned David Still, (B.S. ABE '82, M.E. ABE '84) of the Suwannee River Water Management District. "Do people in Dade or Duval or Hillsborough have more of a right to water in Suwannee County, just because Suwannee may have more of this finite resource?"

However, the idea of a statewide water czar is based on a faulty premise, namely that the continued growth means the demand for freshwater will inevitably increase in Florida, contends Barnett, the author of *Mirage*.

Of course, she said, "lots of people get rich when we build desal plants and reservoirs. No one gets rich off water conservation," Barnett said. "The most progressive thinking on water right now is to plan for how to use less — not how to use more. It's where everything is headed in the future."

After all, she pointed out, conservation can save money as well as water — and that's where there's an opportunity for engineering to help.

Using treated wastewater for irrigation is vitally important to ensuring the water supply for generations to come even if it might be the most unpalatable solution.

Except, it actually can be palatable.

"We already are practicing indirect reuse," said Paul Chadik. "Treating wastewater putting it into the river or into the ground and then withdrawing it downstream. We have yet to get to direct reuse — converting wastewater into drinking water — but that may not be far away. Most folks are put off by the direct reuse concept. Sometimes I wonder how much better our conservation efforts would be if direct reuse was the next option in line."

There are more options engineering offers. For instance air conditioning systems waste a lot of water during warm weather. If all the large commercial buildings in Broward County re-engineered their cooling towers to re-use the condensate and blow-down water that now goes to the sewer system, they could save as much as 5 million gallons of water a day, said Steven Bassett, senior engineer with Eco-Advisors LLC and a member of the U.S. Green Building Council. Bassett should know — he's done that kind of air-conditioning design work for everything from hospitals to South Beach condos.

Engineering solutions can help limit the waste from excessive lawn-watering, too, said Michael Dukes, an associate professor in the University of Florida's Department of Agricultural & Biological Engineering. Over the past decade, Dukes and his colleagues have done extensive studies of smart irrigation systems using soil moisture sensors that can detect the optimum times for watering.

"This is kind of cutting edge," he said, "the results have been really, really good."

As more and more cities and counties are pushed — by drought, by general water shortages, by the high cost of alternative water supply methods — to curtail water use, the more they turn to engineering solutions like smart irrigation, he said.

Depending on people to remember to save water can produce unreliable results. They forget to change the timers on their sprinklers, or try to keep watering their lawn on the sly so it doesn't turn brown. That's why an engineering solution can be more effective. As a result "I see these technologies as inevitable," he said.

Wendy Graham, director of the University of Florida's Water Institute says "We have one of the most prolific aquifers in the world. For a long time it provided us with cheap and plentiful water."

But that era is clearly over, she said. And the alternatives "all have their own ecological impacts." The alternatives such as desalination also cost more than simply convincing the public to use less water, she said.

Engineering solutions offer some promise, Graham said. She named soil-moisture sensors to limit lawn-watering to the times when it's really needed, and retrofitting homes to use something of a lower quality than drinking water for flushing toilets.

But ultimately, she said, the real solution lies in changing our behavior to use water more wisely.

"We don't want to build expensive desal plants just to use the drinking water they produce for watering our lawns," she said. □



photograph by
MATT WRIGHT-STEEL

Engineers love to solve problems. So why is the public policy arena loaded with lawyers and career politicians instead of engineers? We ask a few who have breached the wall of elected office about what it takes to be a political engineer and why more need to get involved. *by* **WAYNE GARCIA**

S

teve Precourt prepped for last year's Florida Legislature special session on high-speed rail funding from two points of view: As a practicing transportation engineer, he knew the value of rail transit in a multi-modal model. As an elected member of the Florida House of Representatives, however, he knew selling high-speed rail and the hundreds of millions of dollars it would cost to the voting public would not simply be a matter of crunching the numbers.

"My assessment of the issue is a lot deeper than almost anybody who is engaged in it would know," the Orlando lawmaker said before the December special session started.

Although Precourt knew more government spending might cause public discomfort, he supported the state money for a commuter rail system in Orlando, more funding for Tri-Rail in South Florida and a shot at a future high-speed rail between Tampa and Orlando. The transportation package passed and was signed into law by Gov. Charlie Crist. It was, Precourt decided, a smarter move to invest in infrastructure now than to delay spending that is inevitable and key to Florida's future economy.

Precourt is a rarity, an engineer who is also a politician, somebody not content with merely doing the engineering work to implement public policy but an advocate for engineers getting out in front and helping drive civic decisions.

He is one of only three engineers in the Florida House (two of whom are Gator Engineering graduates, including Precourt, B.S. CCE '83). That low number is not atypical.

Why so few? Working in the public policy arena can be frustrating for engineers who work with people who aren't always looking for the best solution to a problem, just the most palatable solution.

But now more than ever, engineering business leaders are making the case that all engineers have to improve their civic involvement.

"There are never enough [engineers involved], if you are from a political perspective and you are trying to promote your issues," said Greg Knopp, the executive director for public affairs for the American Council of Engineering Companies, a Washington-based trade group that lobbies Congress. "In this current environment with the emphasis on infrastructure, it will draw more people into the debate."



ENGINEERS IN THE MINORITY

No matter what their party, engineers in Congress or in the Florida Legislature are in the minority. In the 435-member U.S. House of Representatives, for instance, 10 elected engineers compare with 152 lawyers and 175 business owners.

And in the U.S. Senate? Two engineers.

The "dean" of Congressional engineers is Joe Barton, a congressman from Texas. An industrial engineer by training, Barton worked in industry and also served under Secretary of Energy James B. Edwards. So what's it like trying to make policy when you're the odd man out?

"At one level it is very frustrating, because engineers are trained to be logical. They're focused and problem solving," Barton said in a telephone interview just before being called to the floor of the House for a vote. "Congress and most attorneys are just the opposite."

He laughed and added, "You have to kind of grin and bear it." Barton said the lack of engineers in elected office is not surprising to him.

"Politics is people and listening and coming to consensus," the congressman said. "The classic engineer is much more comfortable... focusing on a specific problem: What's the best way to build this bridge instead of where is this bridge going to go."

"There is a thing called 'human factors,' when I was in engineering school it was the hot new thing," Barton continued. "How is this person going to interact with this design? Look at the iPhone. The antithesis of that was the early computer, where you had to put all your information on cards and put

"At one level it is very frustrating, because engineers are trained to be logical. They're focused and problem solving. Congress and most attorneys are just the opposite."

those cards into a card reader and batch them and the next day you would get your run results. That was an engineering solution; it was not a people solution."

When it comes to incorporating leadership skills and drive into engineering students and faculty, the College is already on the case, through the Leadership Initiative started by Dean Cammy Abernathy.

A committee is looking at how public and private institutions teach and instill leadership skills and values, said Erik Sander, the committee's chairman and director of industry programs at the College of Engineering.

"We want to structure a program that will be focused on graduate, undergraduate and faculty to better prepare themselves to make an impact in their career and other people's lives, as well, no matter what type of field they go into," Sander said. The end result, which would be implemented through the rest of this year, would "expand the technical curriculum focus ... to round out not only the students but provide resources to the faculty, so that we've given them a broader background and help them realize their leadership capabilities."

In addition to augmenting current courses, the Leadership

Learning the Skills

Since the fall, 2009 semester the Graham Center accepted applications for students to minor in Public Leadership. The minor is an interdisciplinary program providing students with the skills and knowledge critical to serving as effective and ethical public leaders. Students participate in workshops, seminars and the Center's speaker series and are eligible for competitive research and travel grants. The minor is open to undergraduates across the university including the natural and social sciences, humanities, journalism, engineering and business.



Learn more about The Graham Center for Public Service:
www.bobgrahamcenter.ufl.edu



HOW MANY ENGINEERS ARE IN CONGRESS?

There are 435 members of the U.S. Congress

**PUBLIC SERVICE/
POLITICS**
182

BUSINESS
175

LAW
152

EDUCATION
78

ENGINEERING
10

**ACTOR /
ENTERTAINMENT**
3

Source: CQ Guide to the New Congress

Initiative is looking at ways of offering new programs or courses for those students who want further education in public, private and civic leadership.

Today's biggest political issues cry out for an engineering perspective. Global warming. Energy costs. Re-stimulating the economy. Even the dominant health care debate has aspects of computer engineering and systems engineering as lawmakers try to find cost-efficiencies.

The economic stimulus package was co-opted by some special interests and stuffed with non-infrastructure projects instead of some of the forward-looking engineering spending on energy and transportation that was initially discussed. The money that did come through the lawmaking process was for "shovel-ready" projects that had already been engineered and so neither helped employ more engineers but failed to push for innovations that could transform the nation and its moribund economy.

Now, some engineering advocates say they want to see that kind of spending be put back on the table in Congress as it looks at reauthorizing the Surface Transportation Act this year.

"We would love to have that debate," said Knopp of the American Council of Engineering Companies. "But a lot of air is being sucked out of the room by health care."

Then there's money, commonly called the "mother's milk" of politics. While campaign cash may not directly buy influence, it certainly affords an interest group access to lawmakers and a louder voice with which to be heard. By that financial measurement, engineering is found wanting, as well.

Engineers ranked 26th in terms of money donated to 2008 campaigns, according to an analysis by the Center for Responsive Politics. Engineers as part of a larger Construction Services category that accounted for more than \$13 million in contributions. Compare that with the \$126 million donated by lawyers and law firms or the \$64 million from the securities industry and you begin to get an idea of who gets heard on Capitol Hill — and who doesn't.

"Politics is people and listening and coming to consensus, the classic engineer is much more comfortable... focusing on a specific problem: What's the best way to build this bridge instead of where is this bridge going to go."



ALL POLITICS IS LOCAL

But you don't have to be a powerful member of Congress or donate hundreds of thousands of dollars to have your engineering influence felt. Just ask Peter Partlow, the chairman of the Florida Engineering Society's committee on legislative and government issues. Partlow, who studied electrical engineering at UF before finishing his studies at the University of Central Florida, is a principal at E Sciences Inc. in Orlando, and for years worked at the local level on transportation issues and seeing very few engineers at the public advisory committee meetings.

"I was always joking that we need more engineers and less attorneys so we can get some problems solved," Partlow said.

"The rub is that the kind of people who are attracted to engineering are problem solvers and not necessarily interested

WHERE DO ENGINEERS RANK IN POLITICAL CONTRIBUTIONS

A look at what professions contributed the most to 2008 elections

LAWYERS/
LAW FIRMS
\$126,578,910

RETIRED
\$125,608,860

EDUCATION
\$37,080,562

LOBBYISTS
\$24,953,129

ENGINEERING
\$13,262,173

Source: Center for Responsive Politics



Steve Precourt was named engineer of the year by the American Society of Civil Engineers, Central Florida chapter in 2004 and 2006. He was elected to the House in 2006.

“I really can’t break the politician away from the engineer, I wouldn’t be here but for my interest in infrastructure. I want to make a better world. I can operate in this political environment and make a difference on these infrastructure problems.”

in making public policy,” he quickly added. “A very small percentage are interested in this.”

State Rep. Precourt got his start in a similar way, working on local boards such as Orange County’s Building Codes Board of Adjustment & Appeals and the Development Advisory Board, where he was chairman.

“I built a business doing the engineering and trying to give back to the community,” Precourt said. “And then you see that the policy decisions that are being made aren’t making a lot of sense. We were getting the opposite result of what was being hoped for through the policy decision.”

He got involved and learned an important lesson.

“Unless you have a seat at the table with a vote, your voice is very faint,” Precourt said. “That’s how I evolved into wanting to get involved in public policy.”

He decided to run for the state Legislature in 2006. “There were a lot of people who said, what in the world are you think-

ing?” Precourt recalled. He raised more than \$280,000, beat two Republicans in the primary and won the general election, 58 percent to 42 percent.

“I really can’t break the politician away from the engineer,” Precourt said. “I wouldn’t be here but for my interest in infrastructure. I want to make a better world. I can operate in this political environment and make a difference on these infrastructure problems.”

Precourt now serves with two other engineers in the 120-member Florida House: Trudi Williams of Fort Myers and Lake Ray of Jacksonville (B.S. CCE’ 81).

With two of the three House engineers being Gator grads, a pattern emerges of political engineering power centered in Gainesville. UF grad Pegeen Hanrahan is the elected mayor of Gainesville and uses her engineering degree to advocate for causes like global warming. And Gainesville’s member of Congress, Cliff Stearns of Ocala, though not a Gator engineering graduate is an electrical engineer.

“I believe that having more engineers in Congress would bring greater diversity, but would also bring a perspective to problem solving that would help Congress serve the American people.” Stearns said in an e-mail interview.

“Engineers are trained to use engineering analysis to solve problems. Engineers also realize that there are time and cost restraints in producing a product or service that is reliable and workable,” Stearns said. “I would encourage graduates of the College of Engineering to consider public service, including elected office.”



PUBLIC SERVICE PUSH

That’s exactly what some industry groups and engineering leaders are trying to do.

In 2005, two of Florida’s top engineering organizations, the Florida Engineering Society and the Florida Institute of Consulting Engineers, published the “Engineer’s Guide to

“The challenge is we suffer from too much knowledge. We need to back off and look at it from a holistic approach, from the 10,000 foot level. Keep it brief, keep it directed at a level that they can comprehend.”

Community Service,” which urged “Florida’s professional engineers to become an influential force in community-based and government organizations such as homeowner associations, chambers of commerce, public planning boards and advisory committees, and appointed boards. These entities offer great venues for FES/FICE members to be a voice in the community.” The 20-page booklet outlined ways for engineers to be involved with civic groups, government boards and elected offices.

In it, another UF civil engineering grad, state Rep. Lake Ray of Jacksonville, explained, “The best way we can make a difference is to get involved in our communities and government. I have always had an interest in the process of government. I love American history and our system of government.”

Even Gainesville’s mayor, Pegeen Hanrahan, made a pitch for public service in the guide. Hanrahan has a bachelor’s and master’s degree from UF in environmental engineering and is married to a civil engineer.

“As I was finishing my master’s of engineering degree at the University of Florida, the chairman of my department, Joe Delfino, asked me what I was planning to do after graduation,” Hanrahan recalled. “When I told him that I hoped to work as a consulting engineer, he shook his head. ‘You should go to law school.’ This was stunning; Joe was one of my heroes, and it was clear to me, and to him, I was sure, that the world needed one more engineer more than it needed one more lawyer. ‘True,’ he said. ‘But what the world really needs is more people in charge who understand engineering. In our culture, it’s the lawyers making the rules.’

“When I have the opportunity to talk to young engineers, typically in civil or environmental classes at UF, or during the annual induction to Tau Beta Pi, the engineering honor society, I give them advice similar to Joe Delfino’s guidance to give me: consider going into public policy,” Hanrahan said. “The world needs more people in charge who understand engineering.”

Though, some engineers think that focus on public policy is still lacking today.

“There’s not enough emphasis on being involved. It kind of comes back to all politics are local,” said Partlow, the Florida Engineering Society government committee chairman. “There’s not been enough emphasis on getting engineers involved on municipal boards. Engineers get involved in [Florida Department of Transportation matters] or Everglades cleanup but not necessarily at the highest levels.

“That’s the difference between a vision and a mission,” he continued. “Public policy is the vision. The mission becomes how to do it, and that tends to be how engineers are involved, more on the mission side of things.”

It does take, however, some different skills to begin to interact directly with politicians, especially on highly technical issues.

“The challenge is we suffer from too much knowledge,” Partlow said. “We need to back off and look at it from a holistic approach, from the 10,000 foot level. Keep it brief, keep it directed at a level that they can comprehend.”

For Partlow, the movement toward civic-minded engineers moves next to college campuses.

“As a consulting industry, there has been more of a movement toward getting involved in public policy,” Partlow said. “And that’s a good thing. The thing that doesn’t happen as much, again in broad terms, is we have not focused on the broader issues of public policies like education. Back when I was in school, there was never any discussion of that. It was all focused on how do you solve a certain problem. It was all reactive and not proactive on public policy.”

And the more that gets emphasized, the more Steve Precourt will start their rise through the political system.

“I am a product of the engineers starting to open their eyes that they need to be involved in the policy decisions and not just the implementation,” Precourt said. “We’ve been getting more organized, teaching engineers how to lobby and how to communicate. Yes, and its starting to get some legs.

“Engineers in general tend to be service-oriented people,” he continued. “... we are supposed to look out for the health safety and welfare of the public. You are looking at people who should be fundamentally inclined toward public service.” □



Gators For Higher Education

University of Florida alumni, faculty, students, staff and friends have organized a group to help communicate the University’s goals to Florida’s elected officials. The mission — being advocates for UF, supporting the University as it climbs toward its rise a top-

ranked institution, educating Florida’s future leaders, driving the state’s economic development, producing breakthroughs in scientific research and serving the state.

Get informed about the Univer-

sity’s legislative agenda and help the Gator nation by contacting your state representative and senator. There are facts about UF you may not know and information on how to effectively present the University’s initia-

tives, — particularly during cuts to the University’s budget.

We need the voices of the Gator Nation to sustain our University. Don’t just talk the talk, take the walk with Gators for Higher Education.



Get involved and make a difference in the best nation around — the Gator Nation: gatorsforhighered.ufl.edu



THE

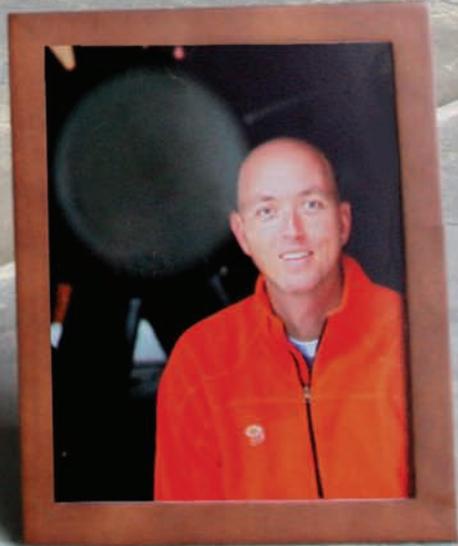
SEARCH

FOR

BRENDAN

Two Gator Engineers, a horrific Haitian earthquake, a frustrating hunt for answers and race against time to find a friend amongst the rubble of the Hotel Montana. *by* NICOLE MCKEEN

photograph by
SHANNON L. KALAHAR



From: Forrest Masters <masters@ce.ufl.edu>
Date: January 16, 2010 6:57:27 PM EST
To: "McKeen, Nicole Cisneros" <nmckeen@eng.ufl.edu>
Subject: Urgent: COE Alum trapped in Hotel Montana, Haiti

Nicole, please call me as quickly as you can regarding the Haiti earthquake. I need your help. 359-█████ Forrest

The irony is almost too much.

Brendan Beck, who graduated from the University of Florida in 1998 with his bachelor's in civil engineering, traveled the world for work, for pleasure and for the Peace Corps. He was 34 years old and still getting his footing. So in December 2009, he spent a week back on campus exploring his options for graduate school.

He planned to study sustainable infrastructure to help hurricane- and earthquake-prone areas.

His plane landed in Port-au-Prince on January 12, the same day Haiti crumbled in the largest earthquake ever recorded in the region.

Brendan Beck's body was pulled from the ruins of the Hotel Montana on February 14 — 33 days after Haiti was devastated.

Twelve years ago, two University of Florida civil engineering majors became friends. And that friendship — book-ended by UF — held fast through graduation and weekend fishing trips, to pursuing and fulfilling their dreams, to working all over the world on a mission to make people safer. Brendan was the world-traveling engineer and humanitarian. Forrest Masters became the a professor and hurricane expert making mad dashes all over the southeastern coast to record effects of landfalling hurricanes.

The two friends reunited on campus in December of 2009. Brendan was ready to become a student again and Masters, always a friend, was now his advocate, his mentor.

On his resumé, Brendan said his objective was to enroll in a doctoral program that built on his civil-engineering foundation, construction knowledge and international development experience. His goal was "to help countries in need develop sustainable infrastructure."

Masters says talent and passion embodied Brendan. "Somewhere along the way, somewhere in his mid-twenties, he decided he wanted to do more. He told us one day he was joining the Peace

Corps. He went off to Mali in Western African for two years. We kept in touch. I was one of the first people to see him when he got back. But we did drift in and out of communication. We both got busy. But he was one of those people that it didn't matter what the duration of time was between visits. It was a seamless relationship with him. He just instantly fit back in your life again."

Brendan was a nomad. He spent the better part of 2009 sailing the Mediterranean and riding the Trans-Siberian Railway. He had felt the pull for a routine, predictable life. He told Masters he was ready, finally, to take the next step, to settle down and get into a doctoral program.

"He had pretty much narrowed his choice between UF and Johns Hopkins," Masters said. "He had opportunities both places. From talking to his dad, he was leaning toward coming here heavily. He had put his application in. He would have been pursuing research that involves low-cost sustainable construction in hurricane- and earthquake-prone areas."

On January 12, Brendan was headed to Cap Haitien, Haiti for international aid work with the U.S. Agency for International Development. He flew into Port-au-Prince, but because his flight was canceled due to bad weather, the agency put him up for the night at the Hotel Montana.

"We know he was in the hotel [at the time of the quake] because he was chatting on the computer with his girlfriend and the chat was dropped," Masters said. "She didn't think anything about it because she is used to that happening [during Beck's international travel]. It wasn't until a few hours later when she heard about the earthquake that she realized why she lost the chat."

MOBILIZING POLITICALLY

Brendan was one of 97 Americans reported or presumed dead in the Haitian earthquake, according to the U.S. State Department. The Bureau of Consular Affairs also stated that it received more than 390,000 phone calls to the center since the earthquake. The bureau's Web site offered a list of need-to-know answers for the families of the Hotel Montana victims, but those need-to-know answers to must-ask questions weren't so available for Brendan's family following the quake. In fact, any communication about victims of the Hotel Montana from any government, Haitian or American, was absent.

The only information the family was getting came from an unlikely messenger — Facebook. The same social-networking site that allows users to "throw" virtual pickles or sheep at friends was to the only place to get information about the post-quake Hotel Montana.

As Masters wrote in an email, "We just got off a call with the moderators of the Facebook site: Hotel Montana Earthquake Haiti. This has become the de facto site for anyone to get and share updates on the Hotel Montana. They confirmed the State

Earthquake Claims Another

Lee Strickland, B.S. CCE '88, lost his life in the Haiti earthquake. He was also staying at the Hotel Montana. Strickland was a civil engineer who worked for PBS&J. He and his wife lived in Winter Park with their daughter, Kailey. According an article in the Orlando Sentinel "As a manager in PBS&J's

transportation group, Lee belied the stereotype of the egghead engineer, co-workers said. Lee was compassionate. He was creative. He wore jeans. He baked cookies. He made people laugh, said Tom Knuckey, a PBS&J vice president over transpiration and Lee's longtime friend."



A BROTHERS LOVE Mathew (left) and Brendan (right) have a fruitful day fishing near the flats of Boca Grande in 1999.

“We know he was in the hotel because he was chatting on the computer with his girlfriend and the chat was dropped.”

Department has not released any names of Americans found deceased. This information suggests the whereabouts and well-being of the missing are known but are not being disseminated. The overarching question this raises is why isn't more information streaming back? Why are families having to travel to Haiti to investigate this matter personally?”

Barry Beck was determined to find his son. “I went to Asheville to meet Matt [his youngest son] on Saturday afternoon,” says Barry Beck. “We spent the evening gathering the supplies that we thought we might need to go to the Hotel Montana from the Dominican Republic. On Sunday morning, we caught an early flight to Atlanta.” The two met up with Masters and three men got to Santo Domingo in the Dominican Republic on Sunday, five days after the earthquake. Shortly after they arrived, the group was met by more people looking for answers and wanting to help, Brendan's friends, Nami and Thang Tran and his cousin Guerry Wooten. Presuming that it would be difficult to cross Haiti's border, they went to the American consulate, hoping for answers.

But answers weren't waiting for them. They started at the American Embassy with a 45-minute wait for a security guard to escort them to the medical wing. There they spoke with a doctor but she wasn't able to give them any information about casualties or injured Americans. “She was responsible for get-

ting medical supplies and body bags to the embassy in Port-au-Prince, but she really couldn't help us much,” said Barry Beck. They were told they needed to go to the American consulate to try and find out information about Brendan.

Eventually, the group met with a Duty Greene. Greene was an economic growth team leader for the U.S. Agency for International Development, the same agency that Brendan was an independent contractor for. Master says Greene genuinely tried to help. “It was at that point we realized we were going to have to mobilize politically,” he says. Masters launched a volley of emails and phone calls, calling in every favor he could. (As an expert on structural damages caused by hurricanes, Masters had received his share of Florida-media attention.) The media helped get word out about Beck and other missing Americans. *The Associated Press, CNN, NBC, NPR, The Orlando Sentinel, The Gainesville Sun, The Fort Worth Star Telegram, The Palm Beach Post*, and even www.gatorcountry.com tried to get help for the families of those lost beneath the untouched rubble of the Hotel Montana.

Sally Baldwin, Brendan's mother, made appeals on her local Fort Worth and Dallas TV stations. The media were not the last stop for this debilitated and heartbroken group. Letters were sent to President Obama and Secretary Clinton. Baldwin went to work on other politicians, too. Texas Congressmen Burgess and Barton, U.S. Senators John Cornyn and Kay Bailey Hutchison, State Representative Chet Edwards, State Senator Wendy Davis rounded out the Texas political support. There were also



SIXTEEN DAYS AFTER
Crews began delayering the Hotel Montana where it is believed there were 60 people beneath the wreckage.

representatives and senators from Florida, Massachusetts, New Jersey and Virginia that also applied pressure to the State Department to appoint an accountable person to coordinate the effort, to commit to bring missing family members home and most importantly to communicate to families.

And all along, clawing at their minds was the fear that every moment that passed was a moment pushing away the likelihood of ever seeing Brendan alive again.



(He) never lost his innate compassion for people or his drive to help them. He volunteered with Big Brothers Big Sisters and kick started to make his work, his life count for something.

JUST THAT TYPE OF BOY

The boy's name was Brendan. It's an Irish name, of Gaelic and Celtic origin and, it means "prince." Saint Brendan of Ireland was known as "The Voyager," famed for his scholarship and adventurous traveling.

Brendan Scott Beck was born January 15, 1975 in South Bend, Indiana. He grew up in Longwood, Florida, where he raced remote-control cars, built model rockets, rode horses and bikes, and spent hours swimming. His grandfather even passed on his love for the ocean and fishing.

Sally Baldwin says her son was a thoughtful young boy. She recalls taking him to a wedding with her girlfriends. "I think he was 7," she says. "He just went around the table and made sure all the women were taken care of. He was just that type of boy, always picking wildflowers and bringing them to me."

He graduated from Lake Brantley High School in 1993, where he helped start a lacrosse program and had a brief career in show choir. When it came time for college, even though he

claimed to be a dedicated University of Miami fan, there was no hesitation to become a Gator.

During college, he discovered his love for travel and spent time in France and Italy. He also loved being in Gainesville, given a stated pride that his education took long enough to cover six football seasons. He was hardly ever seen without his Gator baseball hat. After he graduated, he moved closer to the ocean where he landed a job with Kimley-Horn Associates in Sarasota and would spend most weekends fishing.

Brendan never lost his genetic compassion for people or his drive to help. He volunteered with Big Brothers-Big Sisters in Sarasota, which kick-started his drive to make his work and his life count.

He joined the Peace Corps and arrived in South Africa in 2003. He began as a water and sanitation extension agent in Yanfolila, Mali. The next year, he was chosen as volunteer leader, responsible for 36 volunteers. He sometimes hosted a radio show and played guitar for friends, leading sing-alongs. He visited Senegal, Ghana and Tanzania. He climbed Mount Kilimanjaro after finishing a safari in the Serengeti. After leaving the Peace Corps, he learned to sail in South Africa. He set off again for Europe. This time, he took his newfound sailing skills and cruised the coasts of Spain, France and Portugal.

Brendan wasn't back in the U.S. long before work took him to Anguilla, where he served as an engineer for Hensel Phelps. When that hotel project ended, he worked for a few years in Washington, D.C., but soon gave in to his desire for adventure. Beck and family members sailed in the Eastern Mediterranean Yacht Rally, sending him along the coasts of Turkey, Syria, Lebanon, Cyprus, Israel and Egypt, and then traveled to Moscow. There, he hopped on the Trans-Siberian Railway. After his journey, he took up contract work Solimar Intertional. He began a project for the U.S.AID in Haiti.

IRREPLACEABLE
"No one will ever fill the place he had in my life, and a lot of other people's lives," says Forrest Masters.

In Brendan's Memory

The Brendan S. Beck Fund for Sustainable Infrastructure was created in memory of the Gator Engineer, B.S. CCE '98, who was killed January 12 in the Haiti earthquake. The earthquake occurred shortly after Brendan arrived in Haiti as a USAID consultant regarding sustainable infrastructure for eco-tourism to provide long-term benefit to the Haitian economy. Brendan planned to return to UF to pursue an advanced engineering degree. In his graduate application, Brendan stated, "Throughout the United States and the world, there are aging infrastructure systems that are in need of

repair and replacement. A thorough comprehension of the interrelation of infrastructure and environment can pay dividends in this field by minimizing costs, increasing lifecycle and decreasing environmental impacts." For this reason, Brendan's family created this fund so that others might have the opportunity to pursue this knowledge and research.

Make checks payable to:
University of Florida
Foundation, Inc.
P.O. Box 1445
Gainesville, FL 32604-2425
*On the memo line include
Beck Fund (016593)
www.uff.ufl.edu/appeals/brendanbeck

FINALITY REALIZED

Brendan was found underneath a collapsed wall of the Hotel Montana. "It's a pretty sure bet he died instantly. Thankfully," Masters said, "Brendan is one of those people who is completely irreplaceable."

Losing a friend is tragic. Losing a son is devastating. Having to deal with the State Department and bureaucracy and international red tape made the numbing horror worse for Sally Baldwin and Barry Beck.

Brendan's body was brought to Asheville, N.C. on Wednesday, March 3. The immediate family viewed his closed casket for a short time on Saturday afternoon, he was cremated that evening. "The ongoing nightmare is lessened somewhat now that we have him home," says Barry Beck.

But nothing will ever be whole again.
"I was relieved because he had been found," his mother said, "but I was heartbroken because it's so final." □

ENGINEER UPDATE



1998

KEVIN BYRD

Every little boy's dream became this Gator's reality

BY STEVE MILLER

The UF chapter of the Society of Automotive Engineers shaped his work ethic, the College of Engineering prepared him for his careers and Gator football weekends taught him how to tailgate. Now, Kevin Byrd is doing the teaching as a one of the hosts of "Two Guys Garage." He's also been on other car-junkie shows like "Rides" and "Overhaulin" on TLC. He was also the host and builder on "Payback," a series on the SPEED channel featuring pimped out rides for Jay Leno, Jaimie Pressly and Dale Earnhardt Jr.

WHAT BRINGS IN THE PAYCHECK? I work for Ford in powertrain research and advanced engines and I am co-host of "Two Guys Garage" on the Speed Channel.

SUPER-HERO NAME: Byrdman

YOUR MOST TREASURED POSSESSION? My tools. I've always found that new tools give you more opportunities to do and try new things. I used to walk into a shop or garage and scope out the welder, or the car lift, or the machine tools and think of what I could make with them. I like 'em all, like impact tools wrenches, welders, grinders — things I can fabricate with.

GATOR FOOTBALL OR GATOR BASKETBALL? Gator football. Basketball is a great sport, but I always had problems with the dribble. But football I could do. I loved playing it through high school. Plus, the pre-game parties were awesome.

TELL ME ABOUT YOUR DREAM CAR? Every time I think I have one picked out, I change my mind. As a little kid, it was heavy machinery like dozers or dump trucks. At one point it was a '57 Chevy. If I ever won the lottery, like six times, I'd have a crazy collection like Jay Leno.

WHAT'S THE ABSOLUTE WORST THING TO GO WRONG ON A CAR? Cars can be so mean! I mean really, you pamper them at the car wash, change all the fluids, do your maintenance. And then what? They hose you at the worst moment. When I was at UF, I was working on my hot rod one afternoon after work at the local Tuffy, where I was a part-time mechanic. Just as I was shutting the hood, I got called over to help push a customer's car in the shop. My hood was a very light, fiberglass piece that used hood pins to hold it down. So I forgot to put the pins in. Oh yeah, you can imagine I didn't get very far down Archer Road

before that thing just flew right up and tore right off the hinges. You could have put a string on it and called it a kite.

WHY TV? You know, TV was never in my plans. But I've always been excited about working on cool projects. And a lot of cool projects and TV just happened to be tied together.

MOST VIVID UF MEMORY? When I'm neck deep in a project, the deadlines are screaming, and I'm feeling like I'm drowning, I remember the incredible hours we spent building the Formula SAE race cars. I've thought a hundred times, "if I could pull that off then, I can sure do it now." On a TLC show I did called "Overhaulin", we literally took a 30-40 year old car and created a show piece in 7 days. And as the adrenaline turned into fatigue, I kept thinking about exam finals and building those SAE cars.

DESCRIBE YOURSELF IN THREE WORDS. Fun, creative, hard working, rule breaker (was that three?)

IF NOT AN ENGINEER, WHAT WOULD YOU BE? When I was a kid, I wanted to be a garbage man. They got to ride around the neighborhood on the back of that big truck. But today, a surf instructor might be cool.

FAVORITE UF PROFESSOR? I had a few favorites. Dr. Schueller. He was very practical. Then there was Dr. Matthew. He was quirky and mad scientist-like. And he liked cars.

WHAT PEOPLE WOULD BE SURPRISED TO KNOW ABOUT YOU? I don't like chocolate. But I love chocolate milk or chocolate ice cream. If it's not too chocolaty. □



For more **ALUMNI UPDATES** go to development.eng.ufl.edu



ALUMNI BY YEAR

1950

Stanley H. Apte, B.S. MAE

is an attorney. His wife, Laura, passed away in July 2007. His son is circuit judge Alan S. Apte. Apte says he, "Intends to retire this year (hopefully)." And is "still practicing law because I haven't gotten it right yet, after 50 years. Probably should have stayed working as an aero engineer. My sole claims to fame are the production of my son Alan, and helping design and the production of the F84F Fighter Jet during the Korean War."

1952

Robert C. Mattaline, B.S. MAE

retired from McDonnell Douglas. He and his wife Betty have six children and 16 grandchildren. Mattaline holds an MBA from St. Louis University (1957) and a J.D. from Laclede School of Law (1985).

1961

Donald R. Baker, B.S. MAE

resides in Lawndale, Calif. He retired in 1980.

1962

Paul I. Nunez, B.S. MAE, M.S. MAE '63

resides in Covington, La. He earned his Ph.D. in engineering physics at the University of California at San Diego in 1969 and continued postdoctoral training in the neurosciences at UCSD Medical School from 1971-73. He is an Emeritus Professor of Biomedical Engineering at Tulane University and the head of Cognitive Dissonance, LLC, a small consulting firm. His fourth book, "Brain, Mind and the Structure of Reality" is his first book aimed at a general audience and was published by Oxford Press, 2009.

1966

Fred Fagan, B.S. MAE

is a program manager from Energy Systems West. He holds an M.S. EE and MBA from USC and a Ph.D. from Claremont Graduate University.

Stephen W. Adams, B.S. MAE '81

is a utility engineer manager for the City of Punta Gorda, Fla.

1980

Kurt Ardman, B.S. CCE

received his Juris Doctorate from UF in 1984. He partner in the Fishback Dominick law firm which was founded in 1935. He was appointed by the Florida Bar President as chairman of the Florida Bar Eminent Domain Committee for 2009-2010.

1986

Greg Nott, B.S. MAE

resides in Avondale Estates, Ga. He works as a residential architect for Park Heydt and Assoc.

1991

Ben Fertic, B.S. MAE

is the chief executive of World Endurance Holdings, the Tampa, Fla. based operator of Ironman Triathlon events. He was inspired to compete in a triathlon eight years after his brother's leg and arm were amputated when his brother was shocked by a power line at age 14. His brother competed in 1984 and inspired Fertic to compete in a triathlon in 1986. In competing, he found his passion and turned it into a career.

1995

David Goshorn, B.S. MAE

resides in Hamilton, Ohio. He is a Senior Engineer at GE Aviation.

Michael McGhee, B.S. MAE

works as an independent contractor – project engineer. His wife is Angela and they have four children.

2000

Jennifer Richards Garbos, B.S. MAE

is a senior product development engineer for Hallmark Cards. She married Gregory Garbos in September 2007. Garbos writes that she “previously worked for Ford Motor Company and moved to Hallmark to engineer singing and dancing snowmen.”

KANITRA PERRY WAS AWARDED SUPERIOR ACCOMPLISHMENT AWARD BY THE UNIVERSITY



Kanitra Perry, program assistant in the Division of Student Affairs, was awarded a Superior Accomplishment Award by the University for her continued and tireless dedication to the staff and students. “As our front desk person, Kanitra represents the Division of Student Affairs

beautifully,” said Deb Mayhew, assistant director of student affairs. “She always delivers the very best “customer service” by seeking first to understand the needs of each individual and then directing them to appropriate resources. She has improved the daily experience of our advising staff through her skill in managing high volumes of student traffic, while keeping our schedules and individual responsibilities in mind. Personally, I depend on her (usually) gentle reminders to keep me on track during especially busy times.”

FACULTY UPDATES

Gator Engineering faculty are nationally recognized for outstanding research and commitment to engineering



CHE Fan Ren was selected as a fellow of IEEE for “contributions to processing technologies for compound semiconductor devices.”



ACM fellow for “significant contributions to the fields of Computer Vision and Medical Image Analysis.”

neers for “outstanding contributions to mechanical engineering and engineering education through service and leadership in engineering organizations including ASME, the Accreditation Board for Engineering and Technology and the American Institute for Medical and Biomedical Engineering.”



materials growth using molecular beam epitaxy.”



David Norton was elected as a fellow of the American Association for the Advancement of Science for “distinguished contributions to the field of oxide thin films and super lattices, including contributions in superconductivity, wide-band gap semiconductors, and thin-films.”



Jennifer Curtiss was selected as a fellow of the American Institute of Chemical Engineers for “pioneering contributions to particle technology, simulation of multiphase, fluid-particle flows, and national leadership in chemical engineering education and service.”



ECE Ann Gordon-Ross was awarded an NSF CAREER Award for “A Self-Tuning Cache Architecture for Multi-Core Systems.”



Prabhvir Barooah was awarded an NSF CAREER Award for “Distributed estimation and control for energy efficient buildings.”



Jenshan Lin was selected as a fellow of IEEE for “contributions to integrated microwave circuits and systems for wireless sensors.”



Mark Sheplak was selected as a fellow of the Acoustical Society of America for “contributions to microelectromechanical systems (MEMS) acoustic transducers.”



Susan Sinnott was selected as a fellow of the American Association for the Advancement of Science for “electronic-structure calculations and atomic-scale simulations to understand materials, particularly point defects in metal oxides, and fluorocarbon-plasma-modified polymers and composites.”



CISE My Thai was awarded an NSF CAREER Award for “Optimization Models and Approximation Algorithms for Network Vulnerability and Adaptability.”



MAE Win Phillips Vice President of Research at UF was honored by the American Society of Mechanical Engi-

Baba Vemuri was selected as a

MSE Cammy Abernathy was elected as a fellow of the American Physical Society for “contributions to the development of compound semiconductor

Daus Studenbert, B.S. MAE

is an applications engineer at Ludeca. He recently got engaged.

2003

Kyle Grandusky, B.S. CCE

is a project manager at Engenuity Group, Inc. where he has worked for six years providing engineering solutions to water management, environmental permitting, construction administration, and civil site design problems. He was recently inducted as president of the Palm Beach Branch of the American Society of Civil Engineering.

2004

Angelina Rosenberg, B.S. CCE, PE

is a project engineer at Miller Legg. She was installed as president of the American Society of Civil Engineers Broward branch for a one-year term from October 2009 to September 2010. In addition to ASCE, she is a member of the Florida Engineering Society and the National Society of Professional Engineers. Also, she is a member of Emerge Broward, a program of the Leadership Broward Foundation, Inc. for young professionals which promotes leadership and personal development through networking, community involvement, and educational opportunities.



2006

Aaron Vorel, B.S. ECE

was hired into GE's Edison Engineering Leadership Program. During the two years in the program, he worked in four different jobs while receiving GE leadership and engineering training and completing a masters degree in mechanical engineering through Georgia Tech. He now works in GE's Energy Advanced Controls Technology group, which develops and applies new algorithms for power plant control.

2007

Luis Holkon, B.S. CCE

is serving in Afghanistan. His wife sent in this picture and caption: "GO GATORS! BUC Genereux and I ensuring the "Gator Nation is everywhere" while entering USMC Camp Leatherneck, Helmand, AFG." (Holkon pictured on right).



2009

Dustin McLarty, B.S. MAE

resides in Irvine, Calif. He is attending graduate school at the University of California Irvine and is working as a lifeguard at Huntington Beach, Calif.



2008

Scott Whaley, B.S. CCE

From Ohio to Hume Hall to the Student Ghetto to a few questionable spots on Archer Road, Whaley has lived a lot of places, but it's Atlanta he calls home now.

Whaley is a staff engineer at Tensar International Inc. where he is an integral part of the 600-person Tensar team — even though he is one of the youngest engineers to

“It is very rare that you can call the company who makes the product you are working with and speak to an engineer that can help with all types of questions.”

ever get hired by the company. Chris Cobb, human resources manager for Tensar, said that Whaley is one of the best hires they ever made because of what he brings to the table. And, now, the UF College of Engineering is the first place the company looks for new hires. Whaley works to ensure the highly specialized geogrid and geotextile products

they develop are exactly what the client needs, from design to installation. “We are a very unique company,” Whaley said. “It is very rare that you can call the company who makes the product you are working with and speak to an engineer that can help with all types of questions.” Staff-engineer star or not, Whaley says he misses his time at UF and especially the civil

structures lab on the ground floor of Weil Hall.

“The resources in the lab were unbelievable,” he said, “especially when we were working on Steel Bridge.” He was part of the 2008 team that hosted the Steel Bridge Competition on campus. They placed second in the country. And being part of that team, helped prepare him to be a part of the Tensar team.

SAVE THE DATES...

WEDNESDAY

MARCH 17

Dean's Reception at The Westin Palo Alto in the Portofino Room from 6-8 p.m.

For additional information, please contact Heather Ashley at:

hashley@eng.ufl.edu or call (352) 392-6795.

THURSDAY

MAY 6

Dean's Reception at the Hilton Garden Inn, Palm Beach Gardens, 6-8 p.m.

For additional information, please contact Heather Ashley at:

hashley@eng.ufl.edu or call (352) 392-6795.

FRIDAY

SEPTEMBER 24

Engineering Leadership Symposium.

For additional information, please contact Marianna McElroy at:

mmcel@eng.ufl.edu or call (352) 392-6795.

SATURDAY

SEPTEMBER 25

College of Engineering Centennial Reunion and tailgate. BBQ will be held three hours before kickoff of the UF versus Kentucky football game. More information to come this summer. Watch our Web site for details on ticket packages, event times and other information: www.eng.ufl.edu

NOVEMBER 4 - 6

The Grand Guard Reunion, honoring the Class of 1960 and all prior years, will be held by the UF Alumni Association.

For additional information on this festive weekend of events, please visit their web site at: www.ufa-lumni.ufl.edu or call (352) 846-3580.

To find out how you can help the College contact: **MEG HENDRYX** Senior Director of Development mhendryx@ufl.edu



THE DYNAMIC DUO

A marriage made in Gator Engineering — and UAV heaven.

BY ANTHONY CLARK

Erica and Don MacArthur (B.S. MAE '00, M.S. MAE '03, Ph.D. MAE '07) have worked in robotics together since the high-school sweethearts were on the robotics team at the Maritime and Science Technology Academy in Miami, competing against other schools to design machines to perform assigned tasks.

Together, they earned their bachelor's, master's and doctorate degrees in mechanical engineering at the University of Florida.

They designed a navigation system to help a vehicle drive itself across a desert as part of the Grand Challenge competition against other schools.

As graduate students, they helped clear live bombing ranges of unexploded ordnance with unmanned air and ground vehicles at Tyndall Air Force Base in Panama City.

Now, the husband and wife run IA Tech, which stands for Innovative Automation Technologies. The start-up company housed at the Gainesville Technology Enterprise Center makes navigation sensors for unmanned vehicles used by universities, research labs and small defense contractors.

They are shifting focus to their own vehicle using the sensor. In September, they launched the Point and Toss small unmanned air vehicle at the Association for Unmanned Vehicle Systems International Conference in Washington, D.C. Their vehicle was featured in

“It’s a minimalistic approach to getting aerial without all the bells and whistles,”

Congressional Quarterly.

The idea was to create a vehicle that is easy to use — reducing the time and expense of training — and costs less than \$25,000 compared to more than \$100,000 for comparable aircrafts.

Just assemble the plane in a couple steps, point it, lock in its setting with a handheld device, turn on the motor and toss it. The plane captures videos or photographs and returns to its starting point. Unlike similar systems, it does not require a laptop computer to operate.

“It’s a minimalistic approach to

getting aerial without all the bells and whistles,” Don MacArthur said.

Interested customers so far are military groups.

After graduating, the MacArthurs formed the company around what they saw as a need for small, inexpensive navigation sensors for unmanned vehicles that would improve on the cost and quality of what was available.

Erica MacArthur, 31, is president and Don MacArthur, also 31, is chief technology officer.

The IA Tech sensors serve as a Global Positioning System, magnetic compass and tilt sensor, much like the navigation system of an airplane, only much smaller and cheaper.

Their academic customers include Oxford University in England, which mounted their sensor and camera on a Steppe Eagle to analyze its flight as part of a project funded by the U.S. Air Force Research Laboratory.

The air force is using “biomimicry,” studying wing movements of live creatures, for ideas to design aircraft, Erica MacArthur said. The project found hidden feathers deployed from an eagle’s tail during certain maneuvers.

Last year, they received a \$100,000 research grant along with UF to work with graduate students to develop larger unmanned air vehicles that can capture smaller UAVs.

The company formed in 2006 and last year was accepted into GTEC, a partnership between the city and Gainesville Area Chamber of Commerce to nurture tech start ups.

The incubator helped them tremendously with managing the business, planning product development and providing a network of professionals,

Don MacArthur said.

The MacArthurs handle all the product design and manufacturing themselves, teaming with local companies for electronics assembly and composite manufacturing.

Manufacturing locally costs more than outsourcing to China, but the local access makes quality control easier and is good for the local economy, Erica MacArthur said. □

This article was originally published in The Gainesville Sun

A DOOR TO MANY BENEFITS

Harris Corporation Gives \$3 Million to the College of Engineering

The Harris Corporation, based in Melbourne, Fla., gave \$3 million to the College to promote research collaboration, train scientists, and retain and recruit faculty.

The gift, made through the Harris Foundation, will establish an endow-

ment fund to support early stage, innovative research projects in the field of computer science and engineering. Areas of research may include mobile communications, high-performance computing and medical informatics.



ment fund to support early stage, innovative research projects in the field of computer science and engineering. Areas of research may include mobile communications, high-performance computing and medical informatics.

“We’re very fortunate to be part of Harris Corporation’s leadership initiative in education and research,” said UF President Bernie Machen. “Their commitment to UF and their recognition of the importance of a healthy and diverse state economy demonstrates an optimistic strategic view of

the future, and we share that view with Harris.”

In recognition of the Harris gift, UF will create the Harris Gateway to Learning and Innovation in the College of Engineering, housed in the current Computer and Information Sciences building. A portion of the gift will fund

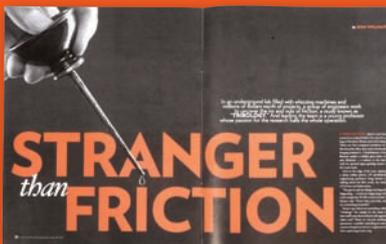
this spring’s renovation of the third floor of the building to make way for this new facility. “The Harris Gateway is aptly named in that it will provide a ‘door’ to many benefits,” said Howard L. Lance, chairman, president and chief executive officer of Harris. “It will support the recruitment and development of outstanding faculty, enhance industry partnerships, create a dynamic

educational model and play a key role in recruiting outstanding students to UF.”

Harris Corporation has had a long-time partnership with the University of Florida and currently employs 850 of its graduates. “The Harris gift is an example of how leadership, partnership and innovation can mutually benefit two dynamic organizations, and in turn, benefit industry and the nation’s economy,” said Cammy Abernathy, dean of the College of Engineering. “It is also a fitting tribute to the launch of the college’s celebration of its 100th anniversary.” □

UPDATE: Spring 2009

TRIBOLOGY REVISTED



On November 16, 2009, the Materials International Space Station Experiment, was successfully launched aboard

Atlantis STS 129. And hitching a ride were a few little gems courtesy of professor Greg Sawyer. The nanomaterials similar to teflon

but 10,000 times more durable, are being tested to see if they could coat the mechanical parts of the space station. “These are low-wear, low-friction materials that work well in vacuum, and we want to know if they work well in space,” Sawyer said in an MSNBC interview. But first the material must survive ultraviolet radiation, atomic

oxygen, extreme temperatures and other space hazards. Sawyer, his family and some of his students attended the launch at Kennedy Space Center in Cape Canaveral. During the third space walk the MISSE 7 experiments were installed and turned on. All eight tribometers successfully began making measurements in space.

CIVIL ENGINEERING GRADUATE?

You’ve found exactly what you’re looking for.

CIVIL GATORS is a great way to reconnect with former classmates, the Department faculty, staff and students.

CIVIL GATORS fosters and enhances the relationship between civil & coastal engineering, its alumni and friends, and supports CCE’s mission of teaching, research and service.

THE MAJOR GOALS/OBJECTIVES OF THE CIVIL GATORS ARE

- Share the Great Gator Spirit
- Fellowship of Alumni/Friends
- Social Interaction
- Communication of Information (industry news, trends, employment)
- Educational Benefits (job experiences, seminars, lecturers)
- Fundraising to Benefit the UF CCE department

UPCOMING EVENTS

- April 3 – Civil Gators Annual Golf Tournament
- Haile Plantation Golf Course, Gainesville
- Central FL Annual Golf Tournament
- Social Events – Local Clubs
- Sporting Events – Local Clubs
- Community Service Events – Local Clubs

LOCAL CHAPTERS IN

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www.civilgators.com

UF UNIVERSITY of FLORIDA



IN THE NEWS 11.09

MARKING OUR PLACE

The Mechanic Arts Historical Marker was installed on November 6, 2009. It is on the south side of Grinter Hall, which is the site of the original Benton Hall and reads: "A curriculum in the mechanic arts, as engineering was known, began at the Florida Agricultural College in Lake City in 1884 and stressed practical knowledge ("...a graduate's value is not based on what he knows, but what he can do.") Later, a School of Technology was established that became the College of Engineering in 1910. The college grew to be one of the largest technical schools and a leader in innovative technologies. Advances in radio technology, hurricane tracking, solar energy and biomaterials are among the innovations made at the college. This site marks the first engineering complex on campus, which included Walker Hall and the original Benton Hall. Benton Hall built in 1911, was demolished in 1967."

Left John J. Benton (son of founding Dean John R. Benton), representative from the historical committee, Dean Cammy Abernathy and Mayor Pegeen Hanrahan.



FRIENDS WE'LL MISS

1940 Allan M. Biggar B.S. CHE ARLINGTON, VA., JULY 4, 2008 **1942** Lewis E. Cooke, Jr. B. ME MELBOURNE, FLA., AUG. 23, 2009 **1944** Robert Royal McPherson B. EE GAINESVILLE, FLA., NOV. 21, 2009 **1948** Charles H. Edwards ME WARNER ROBINS, GA., JAN. 3, 2009 | Richard F. Heitzman B. CHE TYLER, TEXAS, JAN. 15, 2010 | Walter B. King, Jr. B.S. ME BELLEAIR BLUFFS, FLA., JAN. 29, 2010 **1949** Richard D. Hodge B. ME GAINESVILLE, FLA., JAN. 13, 2010 | Albert J. Smith B. ME FERNANDINA BEACH, FLA., OCT. 26, 2009 | Manuel M. Solis MSE CE NAPLES, FLA., AUG. 30, 2009 **1950** James W. Craig B. CHE HOUSTON, TEXAS, OCT. 20, 2009 | Austin C. Dillinger B.S. ME ORLANDO, FLA., JUNE 20, 2008 | James A. Howze MSE CE BRADENTON, FLA., NOV. 27, 2009 | John A. Lanehart B.S. CE CYPRESS, TEXAS, NOV. 27, 2009 | John C. Rountree B.S. CE MOBILE, ALA., NOV. 13, 2009 | Ragan M. Womack B.S. ME PONTE VEDRA BEACH, FLA., NOV. 11, 2009 **1951** Marcus R. Baggett B.S. IE SPRING HILL, TENN., JAN. 20, 2007 | Wayne E. Fausset B.S. EE GAINESVILLE, FLA., SEPT. 15, 2009 | Ross D. Reitz B.S. EAE CLERMONT, FLA., JAN. 13, 2009 | John P. Roebuck, Jr. B. IE TAMPA, FLA., NOV. 11, 2009 **1952** Raymond N. Garrison TAMPA, FLA., JUNE 1, 2009 | Earl K. Ossorio B. IE ORLANDO, FLA., JULY 9, 2009 **1953** Robert S. Webb MSE JAMESVILLE, N.Y., OCT. 28, 2009 | James R. Young, Jr. B. IE PLANT CITY, FLA., JAN. 6, 2010 **1956** Edward C. Edmunds, Jr. B.S. ME INVERNESS, FLA., OCT. 4, 2009 **1957** Richard H. Smith B. CE PITTSBURGH, PA., SEPT. 14, 2009 | Daniel V. Stateler B. EE LOUGHMAN, FLA., JULY 24, 2009 | Fred W. Vosloh III B. ME FOLEY, ALA., OCT. 12, 2009 **1958** Shelby A. Johnson B. EE NEW ORLEANS, LA., JUNE 1, 2006 | Kenneth C. LeDuc B. ME SAINT PETERSBURG, FLA., OCT. 10, 2009 | Dr. Roy O. McCaldin PH.D. CE TUCSON, ARIZ., AUG. 20, 2009 | Carlton K. Shen-Tu MSE CHE PASADENA, CALIF., JULY 24, 2009 **1959** Richard A. Claridge B. CE CASSELBERRY, FLA., NOV. 3, 2009 | William M. Moran BA SHALIMAR, FLA., DEC. 19, 2009 | John P. Redmond B. EE CLEARWATER, FLA., OCT. 31, 2009 | Lawrence A. Seely B. ME TULLAHOMA, TENN., APRIL 28, 2009 | Herbert G. Yalof B.S. IE QUECHEE, VT., SEPT. 21, 2009 **1960** Robert E. Nichols, Jr. B. CE TALLAHASSEE, FLA., OCT. 19, 2004 | Bureon L. Wheeler B.S. EE KNOXVILLE, TENN., SEPT. 4, 2009 **1961** Epifanio Agliano B.S. ME SEFFNER, FLA., OCT. 15, 2009 | Eugene M. Beverly B.S. CHE WEST PALM BEACH, FLA., OCT. 25, 2009 | Dr. Allen E. Leybourne III PH.D. CHE HATTIESBURG, MISS., AUG. 1, 2009 | Dr. Forrest L. Poska PH.D. CHE DALLAS, TEXAS, APRIL 2, 2009 **1962** Wynfred H. Garrett B. EE CRESTVIEW, FLA., JAN. 1, 2010 | Gerald L. Gibson B. EE MERRITT ISLAND, FLA., DEC. 11, 2009 **1963** William A. Walker B. CHE BATON ROUGE, LA., NOV. 27, 2009 **1964** Daniel P. Olszewski B. ME MERRITT ISLAND, FLA., SEPT. 29, 2009 **1966** William T. Pettit III MSE VENICE, FLA., SEPT. 8, 2009 **1967** Richard W. Wilkens B.S. EE WILDWOOD, FLA., FEB. 14, 2009 **1968** John C. Hsieh ENG EE FLUSHING, N.Y., DEC. 12, 2008 **1970** Yasar B. Tanrikut M.S. CHE BLOOMFIELD, CONN., OCT. 16, 2008 **1971** Joseph A. Scianna ENG MAITLAND, FLA., OCT. 5, 2009 **1973** Fletcher W. Gibson III B.S. IE HOUSTON, TEXAS, JAN. 29, 2010 | Elliot P. Valkenburg M.S. EE MAITLAND, FLA., MAY 21, 2003 **1974** Dr. C. Fred Hiatt PH.D. EE LAKEVILLE, MINN., AUG. 4, 2009 **1977** Clement J. Brossier B.S. ENE EUREKA, MO., MAY 25, 2006 **1978** Dr. John F. Alexander, Jr. PH.D. ENE GAINESVILLE, FLA., NOV. 6, 2009 **1980** Glenn A. Porcella M.E. CHE LAKE PLACID, FLA., AUG. 22, 2009 **1986** Deborah L. Parmenter B.S. EE HERNDON, VA., SEPT. 8, 2009 **1988** Lee Strickland B.S. CE WINTER PARK, FLA., JAN. 12, 2010 **1990** Bruce T. Wright II B.S. CHE PALM HARBOR, FLA., SEPT. 22, 2006 **1991** Scott M. Moeller B.S. EAE ORLANDO, FLA., JUN. 19, 2005 **1992** Robert A. Borys B.S. EES MONMOUTH BEACH, N.J., DEC. 28, 2009 **1994** Jonathan T. Roberts B.S. EE FORSYTH, GA., FEB. 10, 2007 **1995** Donald J. Davis II B.S. CHE DOVER, DEL., OCT. 23, 2009 **1998** Brendan S. Beck B.S. CE GAINESVILLE, FLA., JAN. 12, 2010



Professor Charles Beatty

passed away in early February after an extended illness. Chuck, as he was called, came to the materials science department in 1979 from Xerox. He was an expert in polymer processing and quickly established a world-class group, organized a student chapter of the Society of Plastics Engineers and shared his passion for plastics with hundreds of students. His friendly disposition, excellence in research, coupled with rare creativity helped him continue to create research ideas up until his passing. He will be missed by everyone, and we extend our condolences to his wife Barbara and his family.



Mary Lynn Slone

a veteran Gator Engineering staff member, passed away in January. Mary Lynn began her career at the UF in 1976. She worked nearly 20 years in the Department of Computer & Information Science & Engineering. She moved to the College administration in the early 90s, serving as manager of the Personnel & Payroll office for more than a decade. Mary Lynn was widely admired and highly regarded for her compassionate and selfless approach to life, both at work and at home. To the Gator Engineering family, Mary Lynn was a trusted colleague and a friend. To her husband, children and grandchildren, we extend our deepest sympathies.



WINNING ISN'T EVERYTHING

But seriously, it just feels so darn good when you do

Being a part of Gator Engineering is one of which I am most proud of. I'm already a Gator. I was raised for a good portion of my childhood in Gainesville. When it was time for me to go to College — even though it was later than most students begin their college career — I *only* applied to UF. I graduated from UF's College of Journalism and Communications. My husband is a professor at UF. We are Gator-football season ticket holders. I even insisted my second son, Travis' birth be induced on a Thursday so I could be sure to watch the Tennessee vs Florida game in my home rather than in the hospital. Being champion for the College through the pages of *The Florida Engineer* has been such an honor for me — and lots of fun.

It all culminated this winter, when *The Florida Engineer* was named the winner of the "Grand Award for Best Alumni Magazine" for institutions with an enrollment under 10,000. The recognition was given by the southeastern CASE district, the Council for the Advancement and Support of Education. (Basically CASE is the mothership for any and all higher ed communication and development efforts).

It was after I got involved with CASE a few years ago that I learned how and why to produce an alumni magazine. I was taught that alumni magazines have potential rarely

exercised by their institutions and that while we may have a built in circulation, we still have to earn our readers.

Here are some of the rules I work by:

1. Mirror your institution.
2. Put yourself in the reader's seat and reward the reader.
3. Good design has to have a purpose and editorial has to be read.
4. Give readers what they want, not just what the institution wants them to want.
5. Design the reader experience, not just the magazine.
6. Let reason rule the day.
7. Be consistent but not predictable.
8. Have fun (this is my favorite, of course, and as Elvis said "If this ceases to be fun, we will cease to do it.")

I am really excited and thankful I get to work with such amazing people, a wickedly talented design firm, brilliant faculty and students, a supportive administration and the best alumni around that all make producing this magazine the best gig I've ever had.

Nicole Cisneros McKeen,
EDITOR | nmckeen@eng.ufl.edu

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