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# IESE News

Industrial and Enterprise Systems Engineering | University of Illinois at Urbana-Champaign | Winter 2008/2009

*Jong-Shi Pang, Laura Ruhl, Mary Ruhl, Ilesanmi Adesida, Deanne DeWitt, Michael Brunetto, and Harry Wildblood prepare to cut the ribbon to celebrate the grand opening of the Senior Engineering Project Laboratory.*

## New Senior Engineering Project Laboratory Unveiled on October 9

*By Harry Wildblood*

The Department of Industrial and Enterprise Systems Engineering announced the completion of the renovated Senior Engineering Project Laboratory in the Transportation Building. It represents the culmination of years of work by faculty and staff, the alumni board, College of Engineering, and many generous individual and corporate donors who collectively brought this vision to reality.

The Senior Engineering Project Program was originally developed in the Department of General Engineering to give its undergraduates real world experience before graduation. Students hone their skills through engineering analysis and application of real solutions for companies looking for viable solutions with sound economic justification. In this way, students become prepared for the rigors of practical application in a commercial environment.

Archived project reports show that the program began in spring of 1963 through the efforts of professors Jerry Dobrovolny, Bernt O. Larson, and others. It was soon expanded through a Ford Foundation grant to promote both analytical and applied courses. Later, in 1971, as the Ford grant ran out, Larson and another professor, Rolland (Rolly) L. Ruhl, changed the program paradigm so that industry would provide not only the projects, but the necessary funding as well.

The history of the program's excellence is demonstrated by the 32 top awards in the annual James F. Lincoln Arc Welding Foundation National Engineering Design Competition. The total of all awards from this competition is more than any other such program in the nation.

Since its early years, it has been recognized by the Accreditation Board for Engineering and Technology (ABET) as one of the preeminent programs in the na-

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## iFoundry Looks at Possible Shift in Curricula, Teaching "Soft Skills"

*By Sharita Forrest, Assistant Editor, U of I News Bureau*

*This article first appeared in* Inside Illinois *on October 2, 2008*

To pave the way for curricula reform, the College of Engineering is forging a program based upon organizational change first.

The college recently launched iFoundry: The Illinois Foundry for Innovation in Engineering Education, an interdepartmental curriculum incubator that is exploring ways to enrich and balance engineering curricula so that students

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## In this Issue

## From the Department Head

Dear Alumni and Friends,

Time flies! I have now completed 18 months in my position as head of the Department of Industrial and Enterprise Systems Engineering. I would like to take this opportunity to update you with regard to news and developments from this past year. With the rich history of the department and sheer size of our campus, I spent much of my time during the first few months meeting people and learning about the University, while at the same time making plans to advance the department.

The first challenge I faced was to oversee the Accreditation Board for Engineering and Technology (ABET) review, which occurred in late September 2007. In preparing for this, I was lucky to have a diligent and dedicated team led by Tom Conry, emeritus professor, and Manssour Moeinzadeh, professor and associate head for undergraduate programs. In response to the suggestions in the outcome report, I reinstated the Assessment and Continuous Improvement Committee with Harry Wildblood as its chair. Harry has since developed a robust computerized ABET toolkit that greatly facilitates the preparations for future reviews. Most recently, we were informed that both the General Engineering and Industrial Engineering programs are accredited through September 30, 2010. While we still need to prepare a report to describe the actions taken to correct shortcomings in the final ABET statement, a further visit by ABET is not needed until the next cycle.

At long last, the renovation of the Senior Engineering Project Laboratory was completed in July 2008. The refurbished space is equipped with state-of-the-art computer facilities and houses two conference rooms ideal for group work. Many of our alumni have contributed to the completion of this project through their gifts of time, effort, and financial support. We are particularly indebted to the generous contributions of Mrs. Roland (Mary) Ruhl, Ralph Wakerly and the Wakerly Family Foundation, and members of the IESE Alumni Board. A dedication of the laboratory was held on October 9; many of you were here to help us celebrate the event.

During the past year, faculty members have been recognized with various honors and have made significant headway in their research. I am proud to highlight the following for their accomplishments:

- **Deborah Thurston** was invested on April 22, 2008, as an Edward William Gutgsell and Jane Marr Gutgsell Endowed Professor.
- **Angelia Nedich** received a highly competitive three-year National Science Foundation (NSF) CAREER Award.
- **David Goldberg**, the Jerry S. Dobrovolny Distinguished Professor, was appointed Co-Director of iFoundry, the Illinois Foundry for Innovation in Engineering Education. You can read more about this exciting endeavor on the cover.

Our students have been busy, too. In this issue you'll find an article introducing the department's first female PhD graduate, Silvia Mastellone. You'll also read about Juan Mejia, whose graduate work earned him 2nd place as a Boeing 2008 Engineering Student of the Year.

On January 1, Negar Kiyavash joined our faculty as an assistant professor. With a PhD from our own Department of Electrical and Computer Engineering, Negar brings great expertise in information trust issues and further strengthens our relationship with other units in the college.

Aiming to reach new highs and set milestones, IESE is undergoing an exciting period of change, and we need your help and support to achieve our goals. I very much look forward to hearing from you.

Yours sincerely,

Jong-Shi Pang
*Department Head and Caterpillar Professor*

## iFoundry,

*continued from cover*

develop competencies in crucial "soft skills" – such as communication and teamwork, critical and creative thinking, and ethics – in addition to math and science.

The goal of iFoundry is to shift the focus of engineering education from analysis to artifacts – products, processes, and systems – and the ways in which people conceptualize and use them.

"The current engineering curriculum was established during the Cold War era and needs to be thoroughly re-examined and overhauled," Ilesanmi Adesida, dean of the College, said in a news release announcing iFoundry. "Engineering today is unusually fast-paced and requires an uncommon blend of knowledge and skill along technological, humanistic, and artistic dimensions."

"One of the things that's difficult about curricula change is that it is a political process, and you really have to change minds before you can get permission to change courses," said David E. Goldberg, a professor of industrial and enterprise systems engineering and co-director of iFoundry along with Andreas Cangellaris, a professor of electrical and computer engineering. "Curricula change is an academic NIMBY – not in my backyard – problem. Everyone agrees it's great, except when it comes to changing their own courses or prerequisites. The key to iFoundry is that it respects faculty governance while allowing experimental change.

"Illinois is renowned for the scientific and mathematical depth of our students, and we're not sacrificing any of that. However, we do want students who also are better able to deal with leadership and the societal challenges of our times."

With seed funding from the College of Engineering and the Office of the Provost, iFoundry is experimenting with enriching the existing engineering curricula with only minimal changes, disruption, and cost.

Faculty members and students across campus are collaborating in the development, testing, and implementation of content. Fourteen iFoundry Fellows from engineering and units across campus – including the School of Art and Design, Gender and Women's Studies Program and the department of history – are creating videos, slide presentations, and other media that explore themes often unaddressed or under-represented in current engineering courses, such as ethics, women and technology, leadership, and the creation of aesthetically pleasing, emotionally engaging, functional products.

The videos and other media are being shared with audiences worldwide in an online library called 3Space Studios. In addition to being a source of free content for use in existing or pilot courses, 3Space Studios is a mechanism for coalescing educators, students, and industry partners everywhere in a grassroots exploration of curricula reform.

The majority of "hits" on the 3Space Web site and its YouTube site have been from the U.S., but "there's been a fair amount of interest from India and France and some interest from China," Goldberg said. "The power of something like YouTube can be pretty spectacular, and its power to reach large numbers of young people is unprecedented. We think it bodes for a 'viral' curricula transformation. We're interested in changing minds and courses here at Illinois, but part of our vision is that Illinois can be a leader in using modern digital technology in aggressive ways to project new ideas around the globe."

In addition to 3Space Studios, iFoundry has two other initiatives under way this semester: Operation Fresh, a critical examination of academics and experiences during the freshman year; and Human Artifacts, Phenomena and Interactions, a program that organizes the required 18 hours of humanities and social science electives in themes, so that students can select courses that align with their scholarly and professional aspirations.

"Students really embrace the idea of being able to choose," Goldberg said. "We think that will be appealing and will have a great and immediate impact without having to do very much to the curricula."

Illinois also has formed a strategic alliance with Franklin W. Olin College of Engineering in Needham, MA, an innovative engineering college that opened in the fall of 2002 and currently enrolls 304 students.

Chancellor Richard Herman signed a memorandum of understanding on September 12 committing the University of Illinois to working with Olin "to improve engineering education in matters such as content, curriculum, pedagogy and organizational change."

The strategic partnership with Olin may encompass a variety of activities, such as student-faculty exchanges and meetings, Goldberg said.

The University and Olin are organizing a second "Engineer of the Future" conference at Olin during the spring of 2009. The first conference was held at Illinois in fall 2007.

# Alumni and Student Update

## Meet Silvia Mastellone, IESE's First Female PhD

*By Lynnell Lacy*

Born in Rome, Silvia Mastellone earned a Laurea Degree in Ingegneria Informatica con Indirizzo Controlli ed Automazione Industriale from the Universita' degli Studi Roma Tre. From April through December of 2001, she worked as a system design and verification engineer for the MBDA Company in Rome. After spending some time in the workforce, she decided to pursue her MS in electrical engineering from the University of New Mexico. In spring 2008, Mastellone earned a PhD in systems and entrepreneurial engineering at Illinois, making her the first female PhD graduate from IESE.

In Mastellone's thesis, titled, "Interaction and Configuration Control for Networks of Dynamical Systems," she described how multiple cooperating subsystems can effectively perform complex tasks in macro and micro workspaces. The remote, or direct, interactions among dynamical subsystems generate a dynamical network where, due to the large number of subsystems involved, or because of the nature and structure of their interaction, complex behaviors result.

Currently, Mastellone resides in Switzerland, where she works as a research scientist in the control and automation department of the ABB Corporate Research Center. In her free time, she enjoys going for long runs outdoors, swimming, cooking with friends, reading, and exchanging ideas about inspiring books, psychology and philosophy, and Greek and Latin mythology.

*Juan Mejia*

## Mejia, Illinois Students Honored By Boeing

*By Jenny Applequist, Information Trust Institute*

For Boeing competition second-place winner Juan Mejia, most of his graduate work has concentrated on "model predictive control" techniques for distributed control and coordination of multiple autonomous vehicles, such as mobile robots and airplanes. Model predictive control, also known as "receding time horizon control," is an optimization-based control approach used for stabilizing dynamic systems and controlling complex systems. It is valued for its ability to achieve system performance goals while simultaneously handling system constraints.

As Mejia explained, "The main goal of my thesis work is control and coordination of multiple vehicles with nonlinear dynamics performing multiple tasks, such as pursuing desired targets and trajectory tracking or path following, while also satisfying vehicle safety conditions by guaranteeing that there won't be any collisions between vehicles or with static objects. Within that framework, the use of receding horizon control as a tool for achieving desired objectives is advantageous in its ability to handle new and unexpected events, such as potential conflicts with vehicles and objects that appear, or changes in strategy that result from new goals."

Portions of Mejia's work have already been implemented in Boeing's Swarm testbed, and other portions will soon be implemented in a newly completed mobile robotic testbed in the Robotics Laboratory at the University of Illinois, where Mejia is the student team leader.

Ultimately, his work could lead to improvements in a wide variety of real-world applications, with transportation technologies, particularly air traffic management, being the most likely beneficiaries. For example, Mejia explained, an airplane could incorporate a safety verification system (on top of current systems in use) to provide detection and suggest re-planning in the case of potential conflicts overlooked by a central air traffic manager. The same technology could also be generalized to underwater vehicles, ground vehicles, motorboats, and other forms of transportation in assisting safety and coordination.

## Boeing, *continued*

In addition to first-place and second-place winners, Boeing recognized four Honorable Mention recipients, two of whom are graduate students at Illinois. Manu Sharma, who is pursuing a PhD in aerospace engineering with Professor Joanna M. Austin, was acknowledged for his work on experimental investigation of hypervelocity flow environments, with specific emphasis on high-temperature effects, using a newly constructed expansion tube that he helped design and construct. Anirban Basu, a PhD student in electrical and computer engineering under the guidance of College of Engineering dean Ilesanmi Adesida, was honored in recognition of his work on advanced design and fabrication techniques of gallium nitride-based power amplifiers for harsh environment applications, such as airplanes and satellites.

Boeing's annual international competition is now in its third year. It attracted a record number of entries in 2008, and drew applications from nations around the globe, including Australia, India, Singapore, South Africa, and the United Kingdom, among others. The contest is intended to encourage students to pursue careers in aerospace engineering. According to Boeing, the winners are selected based on the extent to which their work is judged "likely to impact the future of aerospace engineering in areas such as new or enhanced capabilities, systems, processes, or tools; new levels of performance; and improved life cycle costs." The first-place winner for 2008 was Agnes Blom of Delft University in The Netherlands.

The Information Trust Institute is a multidisciplinary cross-campus research unit housed in the College of Engineering at Illinois. ITI brings together more than 90 faculty, many senior and graduate student researchers, and industry partners to conduct foundational and applied research to enable the creation of critical applications and cyber infrastructures. Instead of concentrating on narrow and focused technical solutions, ITI aims to create a new paradigm for designing trustworthy systems from the ground up and validating systems that are intended to be trustworthy.

*Cozad Competition winners Conrad Tucker (left) and Joe Bradley*

## V. Dale Cozad Award Presented to IESE Students

Conrad Tucker's startup company, CentriOpt, placed first runner-up in the Commercial Venture Division of the V. Dale Cozad New Venture Competition with its Aerodynamic Particle Separator, an air filtration system that is most efficient at 10 microns—smaller than a grain of sand. Tucker said the product could be used residentially, with HVAC systems, or installed in homes or businesses as a pre-cleaner, removing heavy particles from the air.

This requires less maintenance and cost than conventional filtration systems. Tucker's close friend Doug Barker, also an engineering student, brought the product idea to him for feasibility determination. Barker's professor, Yuanhui Zhang, in the agricultural and bioengineering department, holds the patent for the Aerodynamic Particle Separator. Together, with the help of David Lins in the Department of Finance, the team was able to validate financial feasibility. Mary Miller, associate dean in the College of Business, was instrumental in helping Tucker make key contacts, including with an attorney experienced in working with startup companies. Her assistance was critical to the overall success of the team's strategic plan.

The competition had two components: an elevator speech and a presentation to investors. Tucker's team took the prize for the best elevator speech, along with their first runner-up placement in the presentation portion.

Cleanliness is key for Joe Bradley and his colleagues. His effort, The Clean Home Company, was second runner-up in the Social Venture Division. Bradley worked with Angela Bradley and Gwen Joyner to present their child safety product, the Sequence Timer with Animation. Bradley said his idea was prompted after reading a study conducted by a school in Michigan that implemented a hand washing policy that resulted in a 25-30% reduction in student absenteeism. The Clean Home Company aims to use their product to encourage hand washing in children, minimizing the spread of germs.

## Honor Societies Name Distinguished Alumni at Awards Ceremony

Far Left: *Andy Elsbury receives the 2008 Alpha Pi Mu Distinguished Alumnus Award from Alpha Pi Mu Vice President Jessica Wood.*
Left: *Troy Sieburg, President of Gamma Epsilon, with alumna Lindsay Winn. Winn received the 2008 Gamma Epsilon Distinguished Alumnus Award.*

## IESE Welcomes New Assistant Professor

With a PhD in electrical and computer engineering from the University of Illinois, Negar Kiyavash has been serving as a research assistant professor in the department of computer science since January 2007. She joined IESE January 1, 2009, as its newest assistant professor.

Kiyavash's dissertation on information-theoretic limits for secure multimedia and magnetic recording addresses fundamental limits for data protection and storage that are central for many applications, such as digital rights management (DRM). As a research scientist with expertise in information theory, statistical signal processing, networking, security, and iterative inference algorithms, she will greatly contribute both independently and collaboratively to the research of several IESE groups.

In particular, she has successfully applied information-theoretic ideas in unique ways to the application areas of digital rights management of multimedia, network flows, and hardware; biometrics; and cryptography. Formerly, she pursued these interests in conjunction with the Information Trust Institute, an interdisciplinary environment at Illinois that brings together researchers from engineering, computer science, and mathematics.

Kiyavash said, "While my active involvement in various research programs and my publication record reflect my commitment to research, I am passionate about teaching and training both undergraduate and graduate students."

## Thurston Receives Gutgsell Endowed Professorship

On April 22, Deborah Thurston was invested as an Edward William Gutgsell and Jane Marr Gutgsell Endowed Professor at a ceremony held in recognition of her dedication toward promoting faculty development and ensuring high achievement. A professor in IESE, Thurston is also co-director of the Hoeft Technology Management Program and director of the Decision Systems Laboratory. Her research on multi-attribute decision-making integrates environmental impacts, cost, and quality into concurrent design and manufacturing engineering. Her work helps designers make rational choices when faced with overwhelming complexity. The designer can then anticipate and prevent environmental impacts while simultaneously improving overall product quality.

The Gutgsell professorships were funded through an estate gift from the Gutgsells, who were loyal and generous supporters of the University throughout their lives. Both earned BS degrees in 1934—Edward in LAS and Jane in journalism. In 1998, the University established the Gutgsell Professorships to recognize some of its most distinguished senior faculty.

## Shanbhag Voted Recipient of Excellence in Teaching Award

Assistant professor Uday Shanbhag was recognized by the IESE Alpha Pi Mu and Gamma Epsilon Honor Societies for excellence in teaching. IESE seniors are asked to nominate faculty members on the basis of factors such as organization, the instructor's overall delivery of the concept of a course, fairness and consistency in grading, use of innovative teaching methods, effective response to questions in class, ability to stimulate learning, compassion for learning, availability, and whether the instructor serves as a strong, positive role model.

Uday has a PhD from Stanford University's department of management science and engineering with a specialization in operations research. He also holds a master's degree from MIT and an undergraduate degree from IIT in Bombay (Mumbai).

His research interests are optimization theory and algorithms, particularly in settings complicated by competition, uncertainty, and dynamics. His application interests are in planning/operations in deregulated electricity markets, communication networks, and, more recently, in computational models in neuroscience.

## Goldberg Named Co-Director of iFoundry

*Excerpted from* Engineering at Illinois News. *By Rick Kubetz, Office of Engineering Communications*

David Goldberg, Dobrovolny Distinguished Professor, has been named iFoundry's Co-Director. In partnership with the Franklin W. Olin College of Engineering, the University of Illinois has signed a memorandum of understanding that creates the Olin-Illinois Partnership, promising to work together "to improve engineering education in matters such as content, pedagogy, and organizational change."

To advance this process, Dean Ilesanmi Adesida recently announced the establishment of the Illinois Foundry for Innovation in Engineering Education, or iFoundry, as a collaborative, interdepartmental curriculum incubator where volunteer faculty and students from many departments will come together to plan, test, and execute the engineering curricula of the future.

In addition to the Olin-Illinois Partnership, the two institutions have agreed to assemble a national and international open-source alliance of schools interested in curriculum transformation appropriate to the 21st century. This effort, called the Alliance for Promoting Innovation in Engineering Education (aPIE2), is intended "to form a large, trusted, grassroots network of institutions committed to the transformation of engineering education through the open sharing of best practices, content, curriculum, pedagogical materials, and student-learning outcomes data." Visit ifoundry.illinois.edu to learn more.

## Nedich Honored with Prestigious NSF CAREER Award

Angelia Nedich, an assistant professor, was one of only two recipients to receive a 2008 National Science Foundation Early Career Development (CAREER) Award. The award will provide five years of funding for Nedich to study distributed optimization. It recognizes and supports the activities of scholars early in their careers. Recipients are often considered to be emerging leaders in their respective fields.

A key goal of this grant will be to better understand the behaviors of complex interconnected systems—how to coordinate and control them without centralized authority, with a goal of utilizing self-organized systems. In addition, the grant will address a broader goal of promoting interest for women and other underrepresented groups in optimization. Planned educational activities will promote optimization and enhance diversity of the student population.

## Pang Named Caterpillar Professor

Jong-Shi Pang joined the University of Illinois as the Caterpillar Professor and head of the Department of IESE in August 2007 and was invested on March 27, 2008. Pang is internationally recognized for his work on finite-dimensional variational inequalities and has published three widely cited monographs and more than 100 scholarly articles in top peer-reviewed journals.

He has broad research interests in the foundation and applications of optimization and equilibrium to engineering and economics. At the heart of such interests are the formulation and understanding of mathematical models for applied problems and the development and analysis of solution methods for solving these models.

The Caterpillar Foundation has had a long and distinguished relationship with Illinois. Caterpillar professorships in the College of Engineering have been established as part of the company's commitment to supporting students and faculty. Formed in 1952, the Caterpillar Foundation has distributed nearly $200 million to support education, health and human services, and civic, cultural, and environmental causes.

# IESE **Giving**

## Greetings Fellow Alumni!

During a recent visit to campus, I was overwhelmed with the growth and energy around town. I'd last visited in April and couldn't believe how much has developed in such a short period of time! Newly opened facilities include our best-in-class ARC (Activities and Recreation Center; formerly IMPE), the I Hotel and Conference Center, the renovated Memorial Stadium and, of course, our Senior Engineering Project Laboratory. You have to come and see the latter for yourself. It is splendid—and hopefully just the beginning of much-needed renovations for our Transportation Building!

Whenever I walk onto campus I get a sense of being "home." I believe that preserving my Illinois connection is a precious opportunity. The University represents a pivotal period in my life, and celebrating my connection allows me to be part of something much bigger; I suspect you can relate. I also believe that keeping some symbol of my alma mater in a place where I see it often keeps this connection ever-present in my thoughts and actions. As those who know me will readily confirm, I have found creative ways to allow orange and blue into most rooms of my home, my car, and my work space! With this in mind, I encourage you to use the enclosed calendar as one way to keep your alma mater and our department ever-present in your thoughts and actions.

The doors are opening to a myriad of new opportunities for our active department. The Industrial and Enterprise Systems Engineering title is taking root and catching the attention of recruiters, corporate supporters, and ratings experts. Our students have acclimated to the change and appreciate the doors it has opened for them as they pursue careers. It's truly a great time to be part of our history!

In the coming year, as in years past, all Illinois alumni will receive Annual Fund requests for support. You'll receive these letters from IESE department head Jong-Shi Pang. I ask that you look for his letter and join in my support of the department. Our gifts truly make a difference—I see the evidence all around our department, our campus and, most importantly, in the diversity and quality of our students. Greater success and recognition is within our reach, but we can't get there without greater financial support.

Yours in Illini Spirit,

Deanne DeWitt
*BSGE 1994*
*IESE Alumni Board, Immediate Past President*

**YES** **I want to support IESE!**

Please accept my donation to the IESE Annual Fund, payable to the **UI Foundation.**

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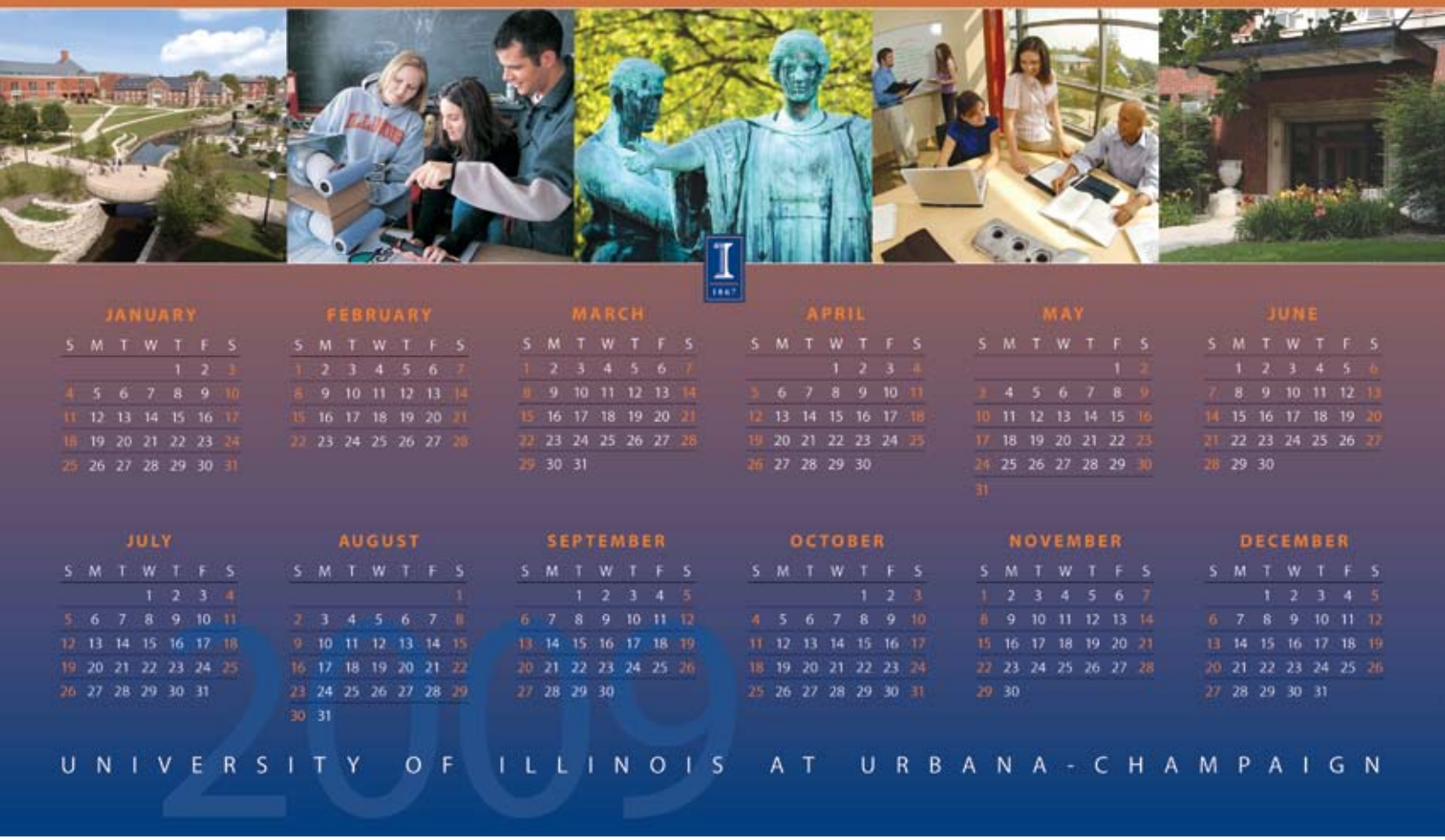



# Class of 2009 Challenges You, Our GE and IE Alumni

The IESE Class of 2009 Gift Committee is issuing a challenge to all alumni. These young professionals recognize the impact when people come together for a common purpose. So the Class of 2009 is launching a fundraising campaign that will request contributions from the entire IESE student community in support of IESE's dedication to academic excellence.

But they need your help to widen the scope of opportunity. You'll be able to monitor their fundraising progress online at www.iese.illinois.edu, and take the alumni challenge. Your contributions can be directed toward student scholarships, graduate research fellowships, faculty recruitment initiatives, or capital improvements such as building renovations. You can even contact us to investigate opportunities for leaving a legacy gift, which could include naming rights to the new Senior Engineering Project Laboratory, or honoring a loved one by establishing an endowed professorship. Whatever your level of giving, the Class of 2009 respectfully challenges you to match their giving level. For more information and to make your gift online, visit www.iese.illinois.edu and click on the "IESE Class of 2009 Challenge" link. They double-dog-dare you.

# Reflections on a Great Year and Future Opportunities

## Dear Alumni and Friends,

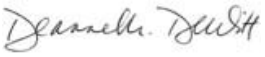
**I encourage you to find a meaningful way to pay it forward while paying tribute to the department that helped you get your start.**

Our IESE Alumni Board has had a very busy year. We met in April and October with very full agendas. Our work and ideas continue to move forward thanks to thoughtful contributions from our active committees and dedicated members. This semester, some of our Alumni Board members have been on campus recruiting for their companies, some have presented as Engineers in Residence (a day-long campus visit filled with student interaction), some have met with students over Papa Del's pizza for conversation and counsel, others are working on innovative ways to connect with fellow alumni, and still others are exploring ways to integrate corporate sponsorship and undergraduate degree areas of specialization.

It was truly a great honor and pleasure to serve as president of the Alumni Board this past year. Some may wonder, why all the effort? For one, it makes me feel smart! Sitting at the table with innovative young alumni, successful executives, and dedicated faculty and staff is incredibly energizing! Second, I'm inspired by our collective ability to make a difference. I'm confident that our thoughts and ideas help shape our departmental strategy and plans. And I'm proud to report that our Alumni Board recently joined forces (and pocketbooks) to earn naming rights to the conference room in IESE's new Senior Engineering Project Laboratory. And lastly, I'm certain that one gets back far more than one gives. It's often not directly related, but I've found that the more I give (time, talent, and treasure) the more rewarding and fulfilling my own world.

Have I piqued your interest? Please let me know if you are interested in joining our Alumni Board team. It's an experience and opportunity you won't regret. I encourage you to find a meaningful way to pay it forward (contribute now for the interests of the future) while paying tribute to the department that helped you get your start. I assure you that you'll get back more than you give—whether you contribute your time and talent (maybe as an Engineer in Residence) or by sharing your treasure (any and every contribution truly makes a difference). Let our history and tradition move you.

Sincerely,



Deanne DeWitt
*BSGE 1994*
*IESE Alumni Board, Immediate Past President*

## ABET Committee Seeks Alumni and Industry Feedback

The ABET Assessment and Continuous Improvement Committee is working to improve the curriculum to better prepare our students as they enter the workplace—but we need your help. Many of you actively recruit IESE students to serve as interns as well as permanent employees. Now we need your feedback for how well our students are prepared for those positions. Please take a moment to visit www.iese.illinois.edu, click on the ABET link, and complete the applicable survey(s). Your feedback is appreciated and helps us continue to improve our programs.

# New Members Join Alumni Board

*The IESE Alumni Board came together October 10 at the ACES Library, Information and Alumni Center on campus. The Board's next meeting is scheduled for April 17.*

**Dan Creinin** is a product manager at Böwe Bell + Howell (BBH) in Wheeling, IL, where he was named regional sales manager for the Central U.S. and parts of Canada after spending three years as product manager for the company's Spectrum XF and Truper scanner lines. Creinin has more than 15 years of experience in technology product marketing and management, strategic planning, and tactical execution. Before joining BBH, he served as marketing manager of EMNS Inc., a supply chain management software company. He also has worked for numerous technology startup companies and 3Com Corporation. Creinin holds a bachelor's degree in industrial engineering from Illinois, and is pursuing an MBA from the University of Illinois at Chicago.

A graduate of the general engineering class of 1994, **Kelly Dempski** is an accomplished and highly regarded leader in the technology industry, focusing on innovative, leading-edge technology advances in virtual collaboration and social networking. His work has resulted in patents, awards, and national recognition for his thought leadership in these areas. His inventions can be found in-house (Accenture's corporate-wide "People Pages"), O'Hare International Airport (interactive wall in the American Airlines terminal), JFK Airport, London National Theatre, the Milan Art Museum, numerous client installations, and various publications.

**Jay R. Goldberg** is director of the Healthcare Technologies Management Program and associate professor of biomedical engineering at Marquette University, and assistant adjunct professor of biophysics at the Medical College of Wisconsin. He has 14 years of product development experience with several medical device companies, including DePuy, Baxter, Surgitek, and Milestone Scientific, where he was director of technology and quality assurance. Goldberg has consulted for several startup medical device companies and law firms on new product development projects and product liability cases, respectively. He has six patents for urological devices and is a registered professional engineer in Illinois and Wisconsin. He received a BS degree in general engineering from the University of Illinois, an MS degree in bioengineering from the University of Michigan, a master of engineering management degree from Northwestern University, and a PhD in biomedical engineering (biomaterials) from Northwestern University.

Since earning her BS in industrial engineering in 2001, **Amee Green** has enjoyed various positions involving logistics, materials management, and other supply chain, customer service, quality control, and project management positions. She has demonstrated a high level of professionalism and leadership during her tenure with Proctor & Gamble, and her assignments in Green Bay, WI, and Cincinnati, OH, are strong indicators of her drive and abilities as a contributing engineer. Quite active in her college years, Green has continued to excel in her career and remains active in various endeavors in the Green Bay area and on the Illinois campus. She brings energy and commitment to the University and to IESE.

**Jay Nuttall** completed his BS in industrial engineering in 1994 from the University of Illinois and a JD from Loyola University Chicago in 1997. He is currently an attorney focusing on litigation and counsels clients on evaluation, procurement, and protection of intellectual property rights. He has been recognized as one of the top intellectual property litigators in Chicago, and was named one of the 2007 "40 Illinois Attorneys Under 40." Nuttall's engineering background enables him to work on a wide variety of technologies including medical devices, polymer chemistry, chemical processes, networked casino gaming devices, light fixtures, paper machines, sporting goods, concrete conveying systems, and food and medical packaging.

**Steve Pawlowicz** is excited to actively participate in IESE programs as the department continues to provide academic excellence. As a 1983 industrial engineering alumnus, he believes recent departmental changes are natural, logical, and positive. As a past member of his local board of education and a member of the Fermilab Community Task Force on Public Participation, Pawlowicz partnered with committed and talented individuals to provide insight and direction to improving his community. All of his experiences position him to make positive contributions to the mission of our Board—support of the educational, research, service, and career placement objectives of the department.

# Department **News**

## New Staff

In early January 2008, **Heidi Craddock** began her new position as Academic Advisor and Coordinator of Undergraduate Programs. She works with undergraduate students in the department as well as prospective students. She is a 2006 graduate of Eastern Illinois University with a BS degree in elementary education. She has worked at the University of Illinois for 14 years. This fall, after being nominated by another campus adviser, she had the honor of serving as an honorary coach for the Illinois vs. EIU football game. Craddock lives in Allerton, IL, with her husband and two sons.

In July 2008, **Amy Holland** joined IESE as secretary to the head of the department. She came to IESE from the College of Business where she worked for five years as an office manager for the MS in Technology Management Program. Prior to working at the University, she did freelance editing and graphic design for local authors and businesses.

Holland's day-to-day work includes scheduling appointments and meetings, arranging travel, and assisting with various projects. She provides administrative support for faculty searches, the promotion and tenure process for faculty, and for other committees and groups. In addition to directing departmental elections, she coordinates IESE's Summary of Engineering Research information, faculty biodata forms and non-University activity reporting, and assists with various publications.

**Lynnell Lacy** arrived at IESE in January 2008. As Coordinator of Development and Alumni and Student Relations, she assists with the department's development efforts and serves as a conduit for the entire IESE community. She works extensively with alumni and student groups, and is also the instructor for the GE490/IE390 course and manages the Engineer in Residence Program.

Lacy earned a BS in career and organizational studies from Eastern Illinois University in 2005 and will complete an MS in technology training and development in May 2009. With more than 20 years of experience on the Urbana campus, she is known for building and managing professional partnerships and is committed to promoting comprehensive excellence through her role at IESE. She resides in Urbana with her husband, their daughter, and one very spoiled cat.

## Student Societies

IESE has several active student organizations that provide networking, leadership, mentoring, and service opportunities with current students, faculty, and alumni as well as the Champaign-Urbana community. Read on to learn more about these organizations.

Alpha Pi Mu (Industrial Engineering Honor Society) recognizes IE students who have shown exceptional academic interests and abilities in the profession. Alpha Pi Mu members seek to unify students, industry organizations, faculty, and IESE personnel in working toward a common goal of promoting industrial engineering students and the profession.

Gamma Epsilon (General Engineering Honor Society) has a current membership of 66 students and expects to initiate more at the IESE spring awards banquet and ceremony scheduled for April 17. The organization's objectives are to facilitate student-faculty interaction, provide guidance to freshmen and sophomore IESE students, promote interest in department research and objectives, and serve the community.

Institute of Industrial Engineers (IIE Professional Society) provides leadership in: developing industrial engineering; representing the industrial engineering profession; and enhancing the capabilities of those who are involved in or manage the application, education, training, research, or development of industrial engineering.

Illinois Society of General Engineers (GE Professional Society) allows general engineering majors to interact with alumni and learn about opportunities in the profession; provides a friendly environment to meet fellow students through organized social events such as bar crawls, camping trips, and ice skating; and participates in the annual Engineering Open House.

Illinois Systems and Entrepreneurial Engineering Graduate Organization …Watch for ISEEGO's online debut at www.iese.illinois.edu this spring.

## IESE Helping Others

IESE students Tim Barnett (senior), Sabrina Edwards (junior), and Jessica Wood (senior) give the gift of their time through community service efforts with iHelp.

## System-of-Systems Proposal Brings Value to Illinois Research

Sandia National Laboratories, operated for the U.S. Department of Energy by Sandia Corporation, saw a landmark year with 23 internal submissions for research proposals. Each submission was carefully evaluated and matched to research groups with similar interests at Sandia—and although the competition was tough, the proposal submitted by Harrison Kim, professor, and Conrad Tucker, PhD student, was selected for funding through the 2008 Excellence in Science and Engineering Research Program. The program awards $25,000 per year for the next five years and offers a priceless value that results from collaborative partnerships among government, national laboratories, and IESE researchers.

In the proposal, *Parallel, Data-Driven Enterprise Model for System-of-Systems Portfolio Design,* the definition of "System-of-Systems (SoS)" is a dynamic, interdisciplinary network and communication/collaboration structure of decision-making entities composed of multiple individual, autonomous systems where the decision-maker is also a part of the entity. The concept of system-of-systems is different from that of a traditional large-scale system that is complex but static. To understand the nature and mechanisms of a complex system, for the last few decades researchers have addressed the core components of static, single-system design optimization utilizing traditional systems engineering and mathematical programming. The emerging notion of dynamic design and operations of SoS results in an important generalization of architecture and mechanism.

The vision of this research is to develop new methods for a quantitative reconfiguration of an SoS that can respond to unforeseen operating scenarios by integrating distinctive domains of knowledge in systems engineering, data management and mining, multidisciplinary optimization, and parallel computing. Kim and Tucker identified key research themes: the dynamic aspect of systems architecture is modeled; the decision-maker remains in the loop for the coordination process; and the SoS optimization framework is easily scalable to model realistic operating conditions and models.

Their proposed research will transform the conventional paradigm for designing and operating multiple-system infrastructures into a new paradigm of autonomous, reconfigurable system-of-systems. The outcome of the research will potentially benefit areas such as homeland security, emergency response, and future combat systems, where the dynamic paradigm plays a key role.

*Conrad Tucker, left, and Harrison Kim*

As a result, human and capital losses from natural disasters, unforeseen attacks, or system failure may be significantly less than those observed in the cases of hurricanes, tsunamis, food contamination, and salmonella outbreaks. The collaboration between Sandia National Labs and Illinois leverages expertise in these core research areas.

Sandia places primary importance on becoming the laboratory that the U.S. turns to first for technology solutions to the most challenging problems that threaten peace and freedom worldwide. Sandia recognizes the value in partnering with universities and traditionally contracts for university research in an effort to expand performance.

Sandia awards 40 proposals overall. "While it is rare for one university to benefit from the selection of multiple Sandia proposals, the wealth of intelligence resources at the University of Illinois was apparent with 23 local proposals considered and two selected," said Kim.

## IIE and ISGE collaborate for Homecoming 2008 Tailgate

IIE and ISGE members collaborated to host a Homecoming tailgate for IE alumni and students. Congratulations on a successful event!

## Student Awards and Scholarships

Each year, IESE hosts a spring banquet to honor students receiving awards and scholarships. To view a list of the 2008 recipients, visit www.iese.illinois.edu.

And save the date for the IESE spring 2009 awards ceremony and banquet, sponsored by the department in partnership with Alpha Pi Mu and Gamma Epsilon and scheduled for Friday, April 17. Contact Lynnell Lacy at lynnell@illinois.edu or 217-333-0140 for additional information.

## New Senior Engineering Project Laboratory, *continued from cover*

tion, and helped influence ABET's decision to require all engineering departments to have similar senior project experiences for their undergraduates.

Since the spring semester of 1963, 1,228 senior projects have been completed using lab space that had not changed significantly in the past 50 years. The alumni board, lead by its president at the time, Mike Brunetto, spearheaded the effort to expand and renovate the lab space into a modern engineering facility with resources commensurate with the excellence of the program. This became a sustained effort until the new lab was completed for the fall 2008 semester.

The new facility includes: two dedicated conference/meeting/presentation rooms; computer stations for individual work; 10 cubicles for team collaboration; a 3-D prototyping lab; a "dirty" work lab; and dedicated storage for course equipment and industry partner materials. Thirty new Dell workstations are complete with the latest software.

On dedication day, students, faculty, staff, and friends watched as the ribbon was cut cooperatively by College of Engineering Dean Ilesanmi Adesida, IESE Department Head Jong-Shi Pang, Mrs. Mary Ruhl, Laura Ruhl, Mike Brunetto, IESE Alumni Board President Deane DeWitt, and Harry Wildblood, Coordinator of the Senior Engineering Project Program.

*Professor Henrique L.M. dos Reis and Mary Ruhl celebrate the opening of the Roland (Rolly) and Mary Ruhl Collaboration Room in the lab. The late professor Ruhl was instrumental in the collaborative vision of the Senior Engineering Project Program.*

*IESE seniors work on their engineering project in the new lab.*

*Alumni Board members Gary Newtson and Bob Hoffman share a conversation with Kathleen Hoffman in the lab's workroom.*

*Randy Elkins, assistant to the IESE department head, gives Fred Chin, Alumni Board member, a tour of the computer room.*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For more information or to submit news items or articles of interest, contact:
Lynnell Lacy
117 Transportation Building
104 South Mathews Avenue
Urbana, IL 61801
217-333-0140
lynnell@illinois.edu



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## BARRIERS ARE OVERCOME.

Shahid and Ann Khan, both University of Illinois alumni, understand that providing new possibilities for individuals with disabilities means supporting the visionary work of the University. Their gift of five endowed professorships to the College of Applied Health Sciences Center on Health, Aging, and Disability directly impacts the lives of countless people and their health and wellness needs. You too can make a profound and lasting difference by supporting the Brilliant Futures Campaign.

Find out more about giving opportunities at the Brilliant Futures Campaign website, brilliantfutures.illinois.edu

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**Industrial and Enterprise Systems Engineering**
College of Engineering
University of Illinois at Urbana-Champaign
117 Transportation Building
104 South Mathews Avenue
Urbana, IL 61801

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