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# ingenuity

Fall 2009

NEWS FROM THE DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

TOP STORY

## >> Illinois Gable Home wins second in Solar Decathlon

By Melissa Mitchell, U of I News Bureau



### A team of students from the University of Illinois won second place in the 2009 Solar Decathlon design competition sponsored by the U.S. Department of Energy.

Winners of the international contest were announced the morning of October 16 in Washington, D.C., by U.S. Deputy Secretary of Energy Dan Poneman.

The interdisciplinary team from Illinois designed a super-energy-efficient, solar-powered residential dwelling it calls the Gable Home.



PATRICK CHAPMAN

"As I kept saying, we never could guarantee first place, but we could guarantee a first-place effort," said ECE Associate Professor Patrick Chapman, one of the team's lead faculty advisers, who oversaw engineering efforts on the project.

"We're very happy to get second place," said architecture professor and project manager Mark Taylor, who added that Illinois "just couldn't beat a house wrapped in solar panels," referring to the

house designed by the German team, which won first place.

The Illinois team's highly insulated, 800-square-foot house borrows its design from a familiar Midwestern architectural vernacular and is constructed largely from recycled, reclaimed wood, and engineered bamboo. It is outfitted with a rooftop array of solar panels. The house was designed to meet Passive House standards set by the Passive House Institute US.

According to another of the team's faculty advisers, industrial design professor David Weightman, the home has "more solar panels than would be required for normal operation, due to the particular nature of the competition requirements."

"It requires very little heating in Illinois during the winter months," he said. "In fact, it can produce three to four times the output of power that it needs."

The Gable House, originally constructed on the U. of I. campus, recently was disassembled, then trucked to Washington D.C., where it was reassembled for the competition last week on the National Mall in a temporary "neighborhood" known as the Solar Village.

Core members of the Illinois team are undergraduate and graduate students from the colleges of Engineering and Fine and Applied Arts, Weightman said. About 200 students in all participated in the project, including others from the colleges of Business and Media.

Stated goals of the competition included education of participants on the benefits of energy efficiency, renewable energy and green building technologies; raising public awareness of these practices; encouraging research, development and marketability of solar energy technologies; fostering educational cooperation among students and institutions; and promoting an integrated, "whole building design" approach to new construction.

Other goals included demonstrating the potential of zero-energy homes, which produce as much energy from renewable sources such as the sun and wind, as they consume.

The competition included tests in 10 areas ranging from

architecture, comfort, livability and market viability to how well the solar homes provide energy for space heating and cooling, hot water, lights and appliances.

ECE graduate student Charles Murray noted the camaraderie among the students from the various schools. "You didn't start getting competitive until your house was set up," he said. He noted that the Illinois team loaned spare parts to the Minnesota team, and borrowed an item from the California team. "Everybody wants to see this technology work, and there's a lot of like-minded people out there," he said.

The Illinois team won first place in three competition categories: hot water, appliances, and home entertainment. It also won second place in

lighting design, comfort, and net metering.

Teams selected to compete were initially provided with \$100,000 in seed money from DOE; additional funds to complete projects then had to be solicited by the teams.

This is the second time U. of I. students have participated in the biennial competition, which began in 2002.

The house's shell was manufactured by Homeway Homes, of Deer Creek, Ill. In addition to Homeway Homes, a number of commercial sponsors contributed to the home's design and its contents. They include Texas Instruments, Kohler, Optiwin, Valcucine, Lamboo Inc. and Crate and Barrel.

Since the competition, the Gable Home has settled into its new home outside the I Hotel in Champaign, with regular tours of the home planned for the future.

For more information on the Illinois Gable Home, go to [solardecathlon.uiuc.edu](http://solardecathlon.uiuc.edu). To learn about the Department of Energy's Solar Decathlon and to see more images from the competition, go to [solardecathlon.org](http://solardecathlon.org).

"EVERYBODY WANTS TO SEE THIS TECHNOLOGY WORK, AND THERE'S A LOT OF LIKE-MINDED PEOPLE OUT THERE."

—CHARLES MURRAY



PHOTO BY STEFANO PALTERA/U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

Illinois students celebrate after taking second place overall in the U.S. Department of Energy Solar Decathlon competition on the National Mall in Washington, D.C.



ECE ILLINOIS



ANDREAS CANGELLARIS

Dear Students,

**On my way back from a trip to Asia earlier this fall, I found myself watching the movie *Into the Storm* an intriguing look into the complex personality of Winston Churchill against the backdrop of his influential leadership during World War II. I am glad I watched this movie. It reminded me of the particular reason for my fascination with Churchill, namely, his steadfast optimism and courage through the most dire of times and circumstances. As he put it: "For myself, I am an optimist—it does not seem much use being anything else."**

Optimism should be our strongest antidote to the sense of anxiety and insecurity prompted by the ongoing economic hardships and the uncertainty of the job market. And there are two very specific reasons why each and every one of us should be an optimist.

The first one has to do with the widely voiced conjecture that technology will be the driver of economic recovery. While recent earning reports in the technology sector offer tangible evidence to the validity of this conjecture, I believe that the case made in W. Brian Ar-

thur's recent book *The Nature of Technology: What It Is and How It Evolves* offers the deepest and most compelling argument for the strong foundation of such a conjecture. Arthur, an economist, used the following words in a recent interview to summarize the theme of his book: "What I began to realize as I got into this project is that everything emerges out of technology. It's technology that gives rise to both modern science and the economy, and we tend to think of it in reverse—that science gives rise to technology and the economy gives rise to technology. But technology is more fundamental than either one."

The second reason to be optimistic is your personal experience as engaged members of the University, humanity's relentless dynamo of knowledge, innovation, and hope. The value of the American university in particular, as a place that serves a multi-cultural society in the best of ways, is most impressive. Founded on the principle of equality, it has demonstrated to the world the way knowledge should be pursued and shared, not for purposes of competition against one another but rather for enabling the advance-

ment of everyone in a shared manner.

The American university functions as a center for students, researchers and professors from a multitude of cultures and countries to come together to study, to learn, to teach and to conduct research for the basic purpose of training minds, of any and every cultural background, eager to contribute to a fundamental advancement of knowledge to improve living conditions all over the planet.

We continue our successes because we continue to welcome those who will come to share with us in this pursuit of knowledge and innovation, in a spirit of cooperation that is the hallmark not only of the American university but of the American experience. And this, I believe, is the experience you should use to fuel your optimism about prevailing over any hardship and any challenge you encounter down the road.



## Alumnus provides new furniture for lab classroom

By Susan Kantor

Room 238 in Everitt Lab got a makeover this summer. ECE alumnus David Jeske (BSCompE '96) wanted to give back something that would be useful to students. Looking back at his own ECE experience, lab classes stood out in his mind.

Jeske recalls staying up late nights with his partner to work on a final software design project. There wasn't an exact requirement of what the software needed to do, but the pair kept working. "The more we worked on it, the more it did, and the more excited we were about it," Jeske said. "It's experiences like that I enjoy most."

Memories of those experiences combined with a desire to give back drove Jeske to make a donation.

Room 238 is the lab classroom for ECE 391: Computer Systems Engineering and now boasts new computer desks and chairs. ECE Network Administrator Jon Matz, who is in charge of the computer equipment in the labs, chose the new desks and chairs.

ECE Professor Steve Lumetta, the instructor for ECE 391, said the class is one of the first lab classes in which students spend a lot of time working on design projects—

sometimes 20 hours per week.

"Both alumni and students see this class as hard, but a good learning experience," Lumetta said. "I'm glad our alumni are helping to make sure that our students are happy."

For Jeske, lessons learned in the lab were most valuable.

"I really love hands-on experiences," Jeske said. "For me, the interesting insights and little kernels of learning are abstract when I'm learning them from a book or in a classroom setting. However, when I use them to make something work, they become tools I would always remember."

The learning experiences in ECE Jeske had 14 years ago helped propel him to success in the industry. He started out working on hardware and software for S3 and Acclaim Entertainment. Later, he joined other Illinois alumni at eGroups.com, a startup in San Francisco working on e-mail mailing list software. As the company was acquired by Yahoo, he helped morph it into Yahoo! Groups.

Jeske decided he wanted to start his own company, and partnered with alumnus Brandon Long (BS CompE '95, MSEE '97) to found Neotonic. Their software streamlined e-mail customer-care and was ultimately sold to Google, where

Jeske worked for another six years. He is now taking a break from industry to recharge and plans to begin a new startup in the near future.

"I look at tuition as sort of a sliding scale. As an in-state student I estimate my education cost several times what I paid in tuition," Jeske said. "I went to the University of Illinois; I got out into the world; I did some stuff that turned out to be pretty lucrative. I felt that it was an opportunity to give back and help make sure that future students can enjoy the same education benefits that I did."



Room 238 Everitt Lab was given a new look over the summer with new computer desks and chairs. The furniture was provided through a gift by alumnus David Jeske (BSCompE '96).

VISIT My.ECE DAILY



My.ECE is the main information resource for ECE students. On it you'll find

- ECE news and information
- Upcoming events
- Important announcements
- Other opportunities

Don't miss out on important information that could impact your standing as an ECE student.

Be sure to visit My.ECE every day, and read The Wire, the department's weekly e-newsletter.



<https://my.ece.illinois.edu>



# Internships provide exciting, real-world experiences

By Charlie Johnson

For many college students, the first work experience—that is, the first work experience that doesn't involve a paper hat and the expression "Super Size it"—often comes in the form of an internship during their undergraduate years. Students seeking internships in ECE and Computer Science are in luck as a number of corporate partners offer internships with hands-on experience, exciting work environments, and perhaps best of all, pay. We talked to five students who had internships with Corporate Connection partners about their experiences.

Instead of attending formal interviews, ECE senior Alex Stezskal found his summer internship by eating pizza. "I couldn't make the interview session because I had to go home for a family function. They said, 'OK. If you can't come to the interview, come to Papa Del's for dinner,'" said Stezskal. "So, we just sat around and talked and ate pizza."

A phone interview occurred a week later, and Stezskal soon had a paid summer position with ViaSat in San Diego. There he worked on designing a prototype by writing FPGA code and integrating new devices into the prototype.

"What was neat about my project was we were in the lab and we had all the tools you could ever imagine to work with. And because we were in the lab, there were other engineers working right there we could work with and ask questions," said Stezskal.

And as an added bonus, ViaSat's headquarters was only miles from the beach, which meant lunch break surfing and beach volleyball.

"It was great. I sort of have taken to describing it as a paid summer vacation doing something I really liked."

Neeraj Ramesh, a senior in CompE, spent the summer of 2008 as an intern at Cerner, an international health care information technology company, in Kansas City, Missouri. Ramesh worked on the development of servers and aiding Cerner's engineers.

"Basically, I just sort of helped with whatever errors they were dealing with and helped them handle whatever problems arose," said Ramesh. "Apart from working for the first time in a company and learning about how a corporation works, it really helped me hone my programming skills a lot. That's what I improved the most."

Ramesh found that the experience he gained with Java in ECE 190 and CS 225 prepared him for his time at Cerner. But, what ECE couldn't prepare him for was field crumpets, the new sport he would learn that summer. Field crumpets is a game played like soccer, except instead of using one's feet to put the ball in the goal, the players use a large plastic bat shaped somewhat like a rowing oar.

"It was a lot of fun, and I know it's gaining popularity in the Midwest," said Ramesh. "Things like that made me really enjoy my time at Cerner. I certainly wouldn't mind going back, but I want to keep my options open at the same time. I'm open to anything, really."

Wanmin Wu, a PhD student in CS, spent time working with Internet giant Google. Her time at Google really opened her eyes to the possibility of a career in industry.

"For industry, my experience was blank before the internship. Google was a great place to work, and I would carefully consider between academia and industry when I graduate," said Wu.

Wu loved her time at Google, and speaks warmly of her colleagues. And as part of her foray into industry, Wu picked up some tips for job and intern seekers in the future.

"A résumé is very important, so have it polished again and again. So keep revising your résumé, adapt it for every company so you can be chosen for a project that matches your interest."

Police escorts and private screenings of blockbuster films are luxuries usually reserved for A-list celebrities and heads of state, not interns. But Fernanda Mendes, a senior in CS and a Microsoft intern, got that very same treatment this summer. During her internship at Microsoft, Mendes and the other interns enjoyed the "Intern Celebration." Aside from the police escort and private screening of "Harry Potter and the Half-Blood Prince," all the interns also received an Xbox Pro. Simply put, "it was awesome."



PHOTO COURTESY OF ALEX STEZSKAL

For ECE senior Alex Stezskal, internships can have some added benefits: location, location, location!

Mendes has already accepted a full-time position with Microsoft as a program manager starting in August 2010, a position similar to the one she had as an intern. As a program manager, she will be working to integrate every department in the company from fabrication to legal and communications into one, streamlined process.

"I would definitely recommend tuning up your résumé. The Engineering Career Service provides great feedback and résumé workshops. I'd recommend talking to as many companies as possible to brush up on interviewing skills and to learn about all of the amazing positions that are available."

Most ECE and CS students find internships during the summer months. For Tabi Kim, junior in EE, her intern experience at State Farm is unfolding this semester.

"It's a great atmosphere to work in and the subject is interesting," said Kim. "So far, it's been a really great experience and it's helped me gain some out-of-classroom experience."

Good experience. Great companies. Corporate Connection.



# 2009-2010 Corporate Partners

By Brad Petersen

The Corporate Connection, the industry affiliates program sponsored by the ECE Department and the Computer Science Department, currently has 10 partners for the 2009-2010 academic year, with two more pending. By investing in the program, these partners have made a commitment to recruiting ECE and CS students at Illinois. They will be on campus frequently for career fairs, info sessions, tech talks, and invitation-only lunches and dinners. And the cost of their membership will support the department's ongoing corporate relations efforts as well as select student organization activities.

If you haven't done so already, complete your Corporate Connection Profile to ensure you don't miss an opportunity. Information you provide will be used to identify you and could lead to an invitation to an exclusive event with a corporate partner. Want to work at ViaSat, Cerner, or Texas Instruments? Make sure your profile reflects this desire. Want to work in California or Chicago? Be sure to tell us. And, do your best to keep your profile up to date. We'll remind you when it's time.

You can access your profile any time by logging into My.ECE. In the "Jobs" module, the first link is "CS-ECE Corporate Connection Profile." Follow this link to create your profile or make your updates. Also, this module

contains links to Engineering Career Services (ECS), where, for a small fee, you'll have access to job announcements and the ability to post your resume for all companies recruiting in the College of Engineering to see.





# Anniversary symposium celebrates past, looks to future

By Jamie Hutchinson

The U of I Beckman Institute for Advanced Science and Technology celebrated 20 years of world-renowned interdisciplinary research with a symposium held October 5–7, 2009. Keynote speaker Susumu Tonegawa of Massachusetts Institute of Technology, who won the 1987 Nobel Prize for Physiology or Medicine, addressed a packed auditorium on the opening night, describing his study of the molecular and cellular foundations of memory.

Presiding over the symposium was ECE Professor Tamer Başar, who is interim director of the Beckman Institute. Other ECE faculty figured prominently in the proceedings, as they have done ever since the early 1980s when the institute was no more than a draft proposal circulating among a few campus leaders.

One of those leaders was ECE Professor Emeritus Karl Hess, who was in charge of developing the physical science component of the proposal. After Arnold O. Beckman

pledged \$40 million to make the proposal a reality, Hess remained instrumental in the creation of the institute and served as associate director during the early years while building his research program in computational electronics.

Başar welcomed symposium-goers by stressing that the gathering would not be an occasion for the institute to rest on its laurels. “The work at the Beckman Institute over the last two decades has been remarkable,” he said, “but we’re also here to recognize the work being done today, and to envision our future.”

Hess, who retired in 2006, spoke at a symposium session devoted to Beckman research milestones. The institute’s research program, he said, was originally designed to comprise what he called a “silicon side” addressing materials, computers, and information, and a “carbon side” addressing biology, behavior, and cognition. The silicon and carbon sides informed an overarching theme of “intelligence,” both natural and artificial.

Hess reminded his audience of the small but important role played by ECE legend John Bardeen, who read early versions of the institute proposal. “John suggested we organize our research around the most powerful instruments in the disciplines,” recalled Hess, noting how the institute today—with its superb facilities for visualization, imaging, microscopy, spectroscopy, and more—bears the fruit of that suggestion.

In the spirit of Başar’s welcome,

“THE WORK AT THE BECKMAN INSTITUTE OVER THE LAST TWO DECADES HAS BEEN REMARKABLE.”  
—TAMAR BAŞAR

many sessions featured current research at the institute, and a final session offered visions for the future. ECE Professor Stephen Boppart described a Beckman Institute strategic initiative to marshal imaging talent and resources from across campus. ECE Professor Todd Coleman addressed the future of neuroengineering.

Several ECE students participated in the symposium poster session. One was Lydia Majure, a graduate student in Professor Stephen Levinson’s group. “I am

doing research in a nascent and interdisciplinary field—cognitive robotics,” said Majure, who credited the “forward-thinking environment” of the Beckman for the opportunities she enjoys as a researcher. “The scientific diversity of my colleagues here has contributed greatly to my intellectual development.”

Beckman researchers are drawn from over 40 home departments across campus, ECE being one of the most prominent with about 30 full-time, part-time, and adjunct Beckman faculty.



PHOTO COURTESY OF THE BECKMAN INSTITUTE

ECE Professor Joe Lyding (left) and Professor Emeritus Karl Hess enjoy a break at the Beckman Institute 20th Anniversary Symposium. Working at the Beckman, the two developed and patented a deuterium annealing process that extends the life of silicon microchips. “It started with a hallway conversation,” recalled Hess.

## STUDENT VOICES

### What goal have you set for yourself for this school year?



My goal is to get an internship. I’m not sure exactly where but I want to get some hands-on experience and maybe have some research opportunities.

>> JOCELYN DAVIS, COMPE SENIOR



I am looking for some research to do in the field of design. I actually have an interview with a professor at 3 o’clock today! Also, I want to work on establishing an MLM business with some friends.

>> ROHIT PRAKASH, COMPE SENIOR



My goals this year are to have a better social life and to get an internship. Last year I wasn’t in a terribly social dorm, and I want to go out and meet more people.

>> JACOB MAAS, COMPE SOPHOMORE



I want to do research with a professor who is working on nanotechnology electronic devices.

>> PATTARAMON VUTTIPITTAYAMONGKOL, EE JUNIOR





# ECE Student Receives Google Lime Scholarship

By Laurel Bollinger

Google and Lime have teamed up this year to provide a scholarship for Computer Science or Computer Engineering students with disabilities. Lime, a New York-based not-for-profit organization, advocates for people with disabilities in the business industry. This year five students were recognized in the first round of this scholarship, and among them was ECE ILLINOIS's Matthew Strom.

Strom, a senior in computer engineering, said that he learned of the scholarship through the Disability Resources and Educational Services office. Though the application itself was fairly simple, "there were also two letters of recommendation, two essays, and then a résumé," said Strom. "It was fairly extensive."

ing an entrepreneurial opportunity and trying to decide what he'll do when his undergraduate career at Illinois is over. "I have been working on a project of my own which is an application for smart phones that will display MTD bus information in a more convenient way than just the tickers outside," said Strom. "So being an entrepreneur may be

a pursuit of mine after graduation, but I've also considered working in the industry or getting my MBA and starting my own business."



## New student events start the year



ECE student Matthew Strom was a recipient of the inaugural Google Lime Scholarship.

Despite the amount of materials needed, the work paid off, and Strom is now the recipient of a \$10,000 academic scholarship and an all-expenses paid trip to the Google Headquarters in California in 2010.

Beyond the perk of having financial help with school, Strom said this scholarship means much more. "It's an acknowledgement for my hard work," said Strom. "This means that someone notices I'm working hard, even though I haven't necessarily been able to keep up with the best academic accolades."

Outside of his academic career, Strom is currently pursu-



It can be difficult to be a new student in a largest department at the University of Illinois. To help with the transition to University life, two events were held at the beginning of the school year to welcome the class of 2013 to ECE ILLINOIS.

Freshmen Fusion (shown on the left) enabled the students to hear from a variety of ECE faculty who described the many areas of specialization contained within the department.

The Freshmen-Mentor Picnic (right) was an opening event to an effort to pair new students with juniors and seniors who could provide guidance in course selection and other aspects of University life.

Get through Senior Design.  
KATIE SNELL, EE SENIOR



Plan ahead more. I definitely want to gain as much as I can from ECE 290 and ECE 210 for an internship that I am going to have in the spring. I'm hoping to apply what I've learned this semester there.

>> JONATHAN ADAN, EE SOPHOMORE



It's one of things I've been thinking about lately. Basically I'm still just trying to stay on top of things this semester. I think I'd like to improve my GPA.

>> MICHAEL DRISCOLL, EE JUNIOR

It's not as easy because I'm a senior. Get a job.  
TOM FRANKLIN, EE SENIOR



I was going to say get through Senior Design to until Katie said it. I want to get through it, not just get through it, but to get the most out of it.

>> ARIEL MOCTEZUMA, EE SENIOR



To just do the best I can in all of my classes and make time for some nonacademic things like Marching Illini. That takes up a lot of my time, so I try to complete my assignments and still have time for that and for my friends.

>> ARICA INGLIS, EE SENIOR

# ECE receives early design drawings for new building

By Tom Moone

On September 10, representatives from Smith-Group, the architecture firm that is designing the new ECE building, presented a first look at preliminary images of the proposed new building. The renderings are the result of months of work with the ECE Building Committee and the University. Recently the firm had completed the blocking procedure of trying to determine where the various elements could fit.

Lead architect David King noted that not all of the showpieces for the department were able to fit on the first floor. However, the Instructional Fabrication Lab and labs for ECE 110: Introduction to Electrical and Computer Engineering will be on the first floor, and they will have windows to allow visitors to observe the activities in these exciting labs.

The design presented was made up of a three-story structure and a five-story structure joined by an atrium. The building will contain a 450-seat auditorium for large classes and presentations. There are plans for a green roof and a large array of photovoltaic cells to help power the building. A chilled beam system provides cooling and heating for the taller structure.

Numerous other innovations will be included to make the building as energy efficient as possible. The goal is to achieve near-zero net energy consumption.



David King (center), lead architect for the ECE building, talks with ECE Department Head Andreas Cangellaris (left) and College of Engineering Dean Ilesanmi Adesida following a September 10 presentation of initial designs for the new ECE building.



A rendering of the ECE 110 lab.



A view of the building from the Beckman Quad, at night.



The main entrance of the Bardeen Quad.



A view from Wright Street (west side).

# Survey says!

by Brad Petersen

Who says your opinion doesn't count? This past summer, the ECE Department surveyed key constituents, including students, to understand perceptions of the department, ideas about how the department communicates and what's important to communicate, and overall feelings about the department. This survey was first conducted in 2006.

The department is grateful for the 300 plus students who found time to complete the survey over the summer. All told, more than 750 alumni, faculty, students, and corporate contacts provided feedback. Here are some of the findings.

## Ranking of ECE departments

- 80% of students ranked MIT first
- 61% ranked Stanford second or third
- 52% ranked Berkeley third or fourth
- 76% ranked Illinois third or fourth

## Greatest source of pride for ECE ILLINOIS (top three answers)

- 25% of students are most proud of the department's overall reputation
- 20% are most proud of the department's history of engineering breakthroughs
- 16% are most proud of the quality of the education the department provides

## Pride in ECE ILLINOIS

- 91% of respondents are proud to be affiliated with ECE

The screenshot shows a survey interface with the following questions and response options:

**Q.1. How do you feel about the quality of the ECE department's reputation?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

**Q.2. How do you feel about the quality of the ECE department's communication?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

**Q.3. How do you feel about the quality of the ECE department's facilities?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

**Q.4. How do you feel about the quality of the ECE department's faculty?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

**Q.5. How do you feel about the quality of the ECE department's students?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

**Q.6. How do you feel about the quality of the ECE department's research?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

**Q.7. How do you feel about the quality of the ECE department's outreach?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

**Q.8. How do you feel about the quality of the ECE department's overall performance?** (1 Not at all, 2 Fair, 3 Good, 4 Very Good)

More than 300 students participated in an online survey to help ECE understand how the department is perceived by its various constituents.

## Happy with decision to come here

- 86% of respondents are happy with their decision to come here
- This number is lowest for undergrads (85%) and highest for alumni (91%)

## Connectedness

- 24% of undergrads and 35% of grad student feel connected to the department
- Most students are interested in more faculty interaction
- Grad students want more department events

## Marketing

- All respondent groups widely support efforts to increase national exposure for the department
- All respondent groups indicated significant improvement across the board for "ECE marketing materials project the right image"

What department attributes (generally speaking) are most appealing to industry contacts

- Quality of education, faculty, and students

## News sharing

- Most students prefer an e-mailed newsletter
- Less than 20% of students prefer a print newsletter

The department is in the process of reviewing the survey results closely in search of opportunities for improvement. In the meantime, your further comments or suggestions are always welcome and can be e-mailed to Jill Jarboe, coordinator of alumni and student relations, at [jj-arboe@illinois.edu](mailto:jj-arboe@illinois.edu) or Kevin Lin, chair of the ECE Student Advisory Committee, at [klin84+ECESAC@gmail.com](mailto:klin84+ECESAC@gmail.com).



NARENDRA AHUJA

• **Narendra Ahuja** received the T. A. Stewart-Dyer and F. Trevithick Prize for his work on the use of computer vision for railroad engineering. The award, which is presented annually by the Institution of Mechanical Engineers, recognized Ahuja's work on an interdisciplinary project on automated visual inspection of the loading of intermodal freight trains to improve their energy efficiency.

• **Stephen Boppart** is the 2009 recipient of the Paul F. Forman Engineering Excellence Award. The award is sponsored by the Optical Society of America, a professional society in which Boppart was recently named a Fellow. Nominated by ECE Professor Shun-Lien Chuang, Boppart received this award for his contributions to undergraduate research.

• **Deming Chen** organized and presented a tutorial at the 46th Design Automation Conference in San Francisco. He presented the tutorial, "From Nanodevices to Nanosystems: Promises and Challenges of IC Design with Nanomaterials."

• **Minh Do** recently received the Young Author Best Paper Award from the IEEE Signal Process-

ing Society. His paper, "The Contourlet Transform: An Efficient Directional Multiresolution Image Representation," co-authored by Martin Vetterli, describes computational techniques for visual information representation that mimic the way that the human visual system works.



JIANMING JIN

• **Jianming Jin** recently published a book, *Finite Element Analysis of Antennas and Arrays* (John Wiley, 2009) with Douglas Riley of Northrop Grumman. The book is the product of nearly five years of research from a Multidisciplinary University Research Initiative (MURI) grant from the Department of Defense.

• **Michael Loui** and the Information Trust Institute's Assistant Director for Social Trust Initiatives Masooda Bashir received an NSF grant to fund a summer internship program and create a Research Experiences for Undergraduates site at ITI.

• **Xiuling Li** is a recipient of a Young Faculty Award from DARPA, the Defense Advanced Research Projects Agency. Li will receive up to \$300,000 for two years of research on her

proposal, "III-V Nanowire Fin FET on Silicon: A Bottom-up CMOS Compatible Approach." This is another prestigious award she has won, having received an NSF CAREER award in 2008.



SEAN MEYN

• **Sean Meyn and Tamer Başar** were among a group of researchers from the University of Illinois who recently received a three-year, \$1.03 million grant from the U.S. Department of Energy to tackle complex questions regarding energy markets. This research will allow for a deeper understanding of the competitive interplay between firms, power marketers and consumers in the face of uncertainty in both demand and resource availability.

• **John Rogers**, the Lee J. Flory-Founder Chair in Engineering Innovation in the Department of Materials Science and Engineering and an affiliate of ECE, has been named a 2009 MacArthur Fellow by the John D. and Catherine T. MacArthur Foundation. Rogers is among 24 fellows who will each receive \$500,000 in "no strings attached" support over the next five years.

## ECE ranks higher in U.S. News annual survey

By Susan Kantor

ECE ILLINOIS is again one of the top-ranked engineering departments in the country, according to the 2010 annual survey by *U.S. News and World Report*.

ECE is ranked third for undergraduate computer engineering, up from fifth in the 2009 rankings. MIT and University of California Berkeley are ranked first and second, respectively.

For undergraduate electrical engineering, ECE tied for second, up from third in 2009. MIT is ranked first, and Stanford University tied with Illinois for second.

"Through this we are reminded of the excellence of this department and of the respect it commands nationally and internationally for its leadership in engineering education and for the quality and talent of its graduates," said ECE Department

engineering programs are ranked in the top ten, and agricultural engineering is ranked first.

### Rankings for individual College of Engineering departments:

- Aerospace/ Aeronautical / Astronautical – 7th
- Agricultural – 1st
- Chemical – 7th
- Civil – 2nd
- Computer – 3rd
- Electrical/Electronic/Communications – 2nd
- Engineering Science/Engineering Physics – 4th
- Environmental – 3rd
- Materials – 2nd
- Mechanical – 6th



Head Andreas Cangellaris. "We are also reminded of our responsibility to continue being outspoken advocates of this excellence through our teaching, scholarship, and service."

The College of Engineering's undergraduate engineering program ranked fifth this year, tied with Georgia Tech. Ten Illinois

## Plaque honors Nick Holonyak Jr.

By Tom Moone

On September 18, 2009, a ceremony was held at the Micro and Nanotechnology Laboratory (MNTL) to unveil a plaque honoring the achievements of alumnus and ECE Professor Nick Holonyak Jr. (BSEE '50, MSEE '51, PhD '54).

At the ceremony, Holonyak said, "The work itself is the pleasure. Everything else is just something you can talk about."

Holonyak, the John Bardeen Endowed Chair in Electrical and Computer Engineering and Physics, developed the first visible spectrum light-emitting diode (LED) while working at General Electric in 1962. He joined the University of Illinois faculty in 1963 and has gone on to develop the quantum well laser, improvements for vertical cavity surface-emitting lasers, and most recently, the transistor laser.

Holonyak is one of only 13 Americans to have won both the National Medal of Science (1990) and the National Medal of Technology (2002). His other awards include the John Scott Medal (1975), Charles Hard Townes Award (1992), National Academy of Sciences' Award for the Industrial Application of Science (1993), Japan Prize (1995), Frederic Ives Medal (2001), Global Energy Prize from Russia (2003), IEEE Medal of Honor (2003), Lemelson-MIT Prize (2004), and Laureate of the Lincoln Academy of Illinois (2005).

He is a fellow of the American Academy of Arts and Sciences, the American Physical Society, the IEEE, and the Optical Society of America. He is also a foreign member of the Russian Academy of Sciences.





# National Science Foundation provides Illinois \$3 million for neuroengineering education

By Kim Gudeman

This fall, a select group of Illinois students will have engineering on the brain, thanks to a nearly \$3 million grant through the National Science Foundation.

The 5-year grant is provided through NSF's Integrative Graduate Education and Research Traineeship (IGERT) program, which aims to spark interdisciplinary education in emerging frontiers. In Illinois's case, IGERT will provide graduate students with the opportunity to study neuroengineering, which falls outside the boundaries of traditional disciplines like neuroscience and engineering.

"So often, neuroscientists see the need for a new technology, but don't think it's possible," said ECE Professor Doug Jones, a researcher in the Coordinated Science Laboratory.

"Engineers, conversely, often have the ability to make advances happen, but don't know what is needed. We're going to retrain students in both disciplines to tackle problems in a richer way."



DOUG JONES

The program will provide training for a group of 30 to 40 engineering and neuroscience students over five years. Students in both disciplines will immerse themselves in the other discipline through coursework and joint research.

The research will focus on three thrusts; the first two showcase key core strengths that are unique to Illinois, while the third has potential for transformational impact in the future. The thrusts are:

1. **Audition:** By learning how the brain processes sound, researchers will be able to build better cochlear implants and other types of hearing aids, among other benefits.
2. **Neuroimaging:** This work will focus on unlocking the mysteries of brain functioning and identify what parts of the brain are active under various circumstances. The research will not only help engineers build more effective imaging technology, but also help doctors make better decisions at the bedside.
3. **Brain-machine interfaces:** This forward-looking thrust will examine how brain signals recognize intent. Applications could include: (a) rehabilitation – for example, a paraplegic could direct the movement of a wheelchair through thought; or (b) visual implants that stimulate the optic nerve and restore sight.

The research draws on the collective strength of Illinois's expertise in psychology, integrative physiology, biochemistry, audition and speech recognition, and engineering, particularly in the areas of materials science and electrical and computer engineering.

"We have world-renowned experts in these areas," said ECE Assistant Professor Todd Coleman, who is co-principal investigator and also a researcher in the Coordinated Science Laboratory. "Illinois could be a huge leader in the neuroengineering field."



TODD COLEMAN

Other co-principal investigators include Monica Fabiani and Bob Wickesberg, both professors of psychology.

The researchers believe that students may hold the key to breakthroughs in neuroengineering.

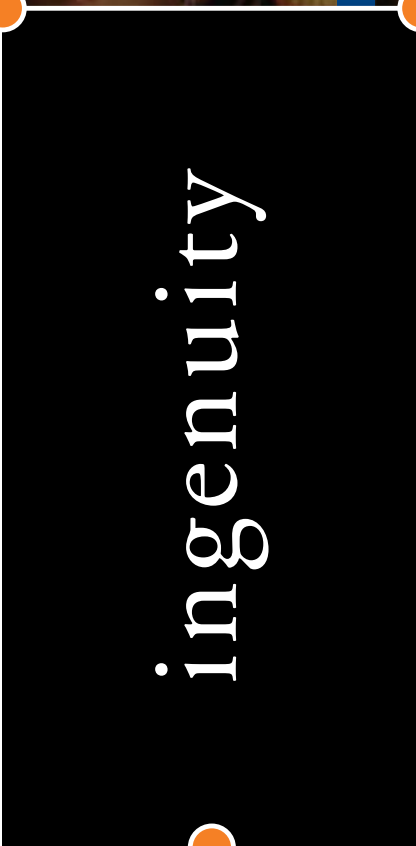
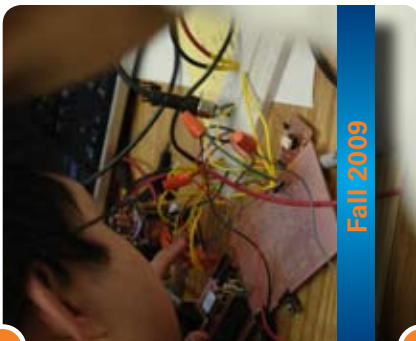
"Traditional neuroscience and engineering disciplines are deeply ingrained in traditional ways to view problems, which have benefits as well as limitations," Coleman said. "Sometimes ignorance is bliss: having an unbiased perspective can allow people to re-think problems in unique ways. This is the opportune time to cross-fertilize these two areas and attack problems with a combination of scientific and engineering viewpoints."

## About IGERT

IGERT is the National Science Foundation's flagship interdisciplinary training program, educating U.S. PhD scientists and engineers by building on the foundations of their disciplinary knowledge with interdisciplinary training.

Collaborative research that transcends traditional disciplinary boundaries and requires teamwork provides students with the tools to become leaders in the science and engineering of the future. Diversity among the students contributes to their preparation to solve large and complex research problems of significant scientific and societal importance at the national and international level. IGERT students obtain the personal and professional skills to succeed in the careers of the 21st century. Since 1998 the IGERT program has made 215 awards to over 100 lead universities in 41 states, the District of Columbia, and Puerto Rico. IGERT has provided funding for nearly 5,000 graduate students.

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Department of Electrical and Computer Engineering  
University of Illinois at Urbana-Champaign  
53 Everitt Laboratory  
1406 W. Green St.  
Urbana, IL 61801

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