On the Cover:

Dr. Hua Gu received her Ph.D. in Materials Engineering in December 2006, following an MS in 2004. An outstanding scholar, Hua is a citizen of her new “Mother University” and regularly participates in student, alumni and college events.

The recipient of the 2004 UIC International Student Service Award for outstanding academic performance and volunteer work, Hua was a mentor at Engineering Career Prep Day and for Women in Science and Engineering. A member of IEEE and SWE, Hua authored the winning proposal at 2005 US-PRC Research Exchange Program of the Multidisciplinary Center for Earthquake Engineering Research.

While a graduate student, Hua was both a TA and an RA. She researched wireless PVDF sensor design for real-time infrastructure monitoring and developed novel PVDF interdigitated transducers for corrosion detection using Lamb Wave, and adopted photolithography technology into their fabrication. Hua continued her research on nano-structured hydrogen sensors at Argonne National Laboratory. Later, a summer 2006 internship had a special benefit — a job offer. In 2007, Dr. Hua Gu joins the staff of Caterpillar Inc., Production Systems Division, in Peoria, Illinois.
Dear Alumni and Friends,

Happy New Year!

This is my third academic year at the UIC College of Engineering and what an experience it has been! My colleagues, our staff and students will agree that this has been an intense, exciting period producing remarkable successes for the College as we focused on implementing our Strategic Plan through careful discussion and the restructuring of many policies. I thank our faculty and the College Executive Committee for their hard work.

Our faculty members are impressive! Please join me in extending congratulations to Professor and University Scholar Michael Stroscio, who was honored this fall with the third endowed Richard and Loan Hill Professorship. Joining him as a University Scholars this year are professors Clement Yu and A. Prasad Sistla of the Department of Computer Science and Piergeorgio L.E. Usleghi and Derong Liu of the Department of Electrical and Computer Engineering. We also welcome new faculty members, Elodie Adida and David Eddington.

Classes for the 2006-2007 academic started August 28, 2006. We had a wonderful Freshman Convocation Ceremony at the UIC Pavilion where the Chancellor, Provost, and Deans of the 15 Colleges welcomed all freshman students and their parents and friends to campus. They also were introduced to our UIC Flames Athletics teams and cheerleaders. The 333 freshman students in Engineering were introduced to the Chancellor with a large applause from the floor; they are quite a noisy and energetic group of students!

Of the 333 freshman students, 12.3% are women, 27.4% are Asians, 7.5% are African American, and 11.5% are Hispanic. This past year, we were very active in our recruiting efforts from high schools. We also increased our average composite ACT scores from 25.4 to 25.6 while maintaining the diversity of our students.

We also welcomed 152 new transfer students from community colleges into our undergraduate student family and 254 new graduate students into our graduate student family of 861 students.

As I will continue to do in my Letter from the Dean, I'm pleased to highlight the goals of our strategic plan and give you an update on our accomplishments. By 2010 we plan to:

- Increase undergraduate enrollment from 1550 to 1900 while increasing admission standards. Results: The College of Engineering has increased undergraduate enrollment to 1625, while also increasing the ACT scores of first year students.
- Develop a funding model to support Ph.D. education and increase the number of Ph.D. graduates from 35 to 100 per year. Results: A new 5-year funding model to support Ph.D. students is in place. We increased the number of Ph.D. graduates per year from 35 to 60.

Consider the balance of our faculty while growing its size from 114 to 130. Recruit senior faculty from the ranks of the National Academy of Engineering, and recruit more women faculty. All of this will be accomplished in the context of clusters of excellence through which our faculty collaborate. Results: UIC has hired 8 new engineering professors - 50% female - including two members of the National Academy of Engineering. UIC just received a much sought-after $3.3 million ADVANCE grant from the National Science Foundation that will help the campus to recruit more women faculty members in science and engineering.
Increase research funding from $21 to $40 million, create cross-disciplinary areas of research and large collaborative research centers. Results: Our four cross-disciplinary themes of research are biotechnology, nano-technology, information technology and energy/infrastructure technology, areas in which the majority of faculty conduct research and teaching. You can review a quad chart view of research interests and see samples of their research on the College Web site. We are well on the way to increasing research funding goals, having received $13 million in grants for five large collaborative centers in addition to the $3.3 NSF ADVANCE grant: $5.5 million from MURI, $5.5 million from NSF IGERT, $2 million from DARPA.

Create innovative Technology Centers to bring short-term industry projects to the College that will provide an alternative means of support for Ph.D. students interested in working in industry. These Technology Centers are featured in this issue of Engineering News. Results: UIC has initiated a novel way of supporting Ph.D. students through graduate assistantships while they work on short-term industry projects and received contracts worth about $650,000 in the first year of operation from companies such as Motorola, UOP, JSC, Baxter, and others. The model is a win for industry as it has access to our highly skilled students. It is a win for students since they have funding support and gain valuable experience, and a win for the University as it increases total funding and relationships with industry. Read more at: http://www.uic.edu/depts/enga/techservices/

Develop fair and transparent resource allocation models across the College. Results: Our faculty developed, adopted and implemented new uniform teaching and research load policies covering all faculty. They developed new teaching assistantship allocation policies based on student and course enrollment, Ph.D. graduates, and number of research assistantships and they increased the number of teaching assistantships through the reallocation of funds. Together, we have instituted new faculty allocation policies based on student and course enrollment, and research funding. Our newly executed operational budget and staff allocation policies are also based on those criteria. Together, we see these resource allocation models as providing the right incentives for all the departments and moving the College of Engineering forward.

Develop a strategic fund-raising plan. Results: We have a plan to fund a total of four $2 million Chaired Professorships, twelve $500,000 Professorships, twelve $100,000 undergraduate scholarships, twelve $250,000 graduate fellowships, and a $15 million new College of Engineering building. We have already made some progress as we have secured funding for one Chair in Information Technology from Peter and Deborah Wexler, three Professorships from Rick and Loan Hill, a Professorship in Energy Engineering from James P. Hartnett, as well as significant endowed scholarships and teaching laboratory funding from several alumni and friends.

As we celebrate the 40th year in which the College has graduated engineers, I hope that you will always consider the College of Engineering your home, no matter how far away you are from campus or how long you have been away. Please join us as we celebrate the Class of 2007 at the Engineering Commencement on Saturday, May 12, 2007 at 2 PM, in the UIC Pavilion. I look forward to meeting you at events. You can reach me at prith@uic.edu.

Warm regards,

Prith Banerjee
UIC Distinguished Professor and Dean
TECHNOLOGY CENTERS

THE UIC COLLEGE OF ENGINEERING STANDS OUT FROM OTHER ENGINEERING INSTITUTIONS IN THE WAY IT THAT REFLECTS THE VALUE OF HAVING THE CROSSROADS OF THE MIDWEST AS ITS FOUNDATION.
TECHNOLOGY CENTERS AND ENGINEERING SERVICES FOCUSING ON ECONOMIC DEVELOPMENT RESHAPE APPLIED RESEARCH AND CONSULTING

In the 1960s, when the University of Illinois Chicago Circle was constructed, it was distinctly odd to name the campus after a highway intersection. Today, this location is a distinct advantage for the University of Illinois at Chicago. Situated just west of the Loop at the junction of four highways, the campus and the College of Engineering sits in proximity to the Midwest’s Center of Manufacturing, Innovation and Corporate Headquarters.

It is a prime location for access to the technical expertise that is a source of pride to the UIC College of Engineering.

Now, Dean of Engineering Prith Banerjee and the faculty are taking pioneering steps to further position the College as a direct partner with regional industry, consultants and law firms.

Kicking off a technology center pilot project and instituting enhanced faculty consulting opportunities, the College and University are testing in-house engineering services that engage faculty as experts and employ Ph.D. students as graduate assistants under short-term applied research contract to corporations.

Technology centers analogous to the nationally recognized UIC Energy Resources Center will invite companies to present their research or outsourcing needs. As center directors, industry-based experts will help to identify the engineering team best suited to carry out each project. They will oversee client contracts and relations and manage the projects, relieving faculty of business-related tasks they now must field when consulting with private clients. The Energy Resources Center brings in about $2 million per year; a good portent for the future of the four or more new technology centers.

The technology centers base their underlying revenue model on charging an hourly rate for engineering services. That rate would cover actual costs such as compensation plus a markup to cover overhead and provide a net profit to split between the campus administration through the Office of the Provost, the College and its academic departments.

MEETING FUTURE DEMANDS

There is a well-constructed business plan for operating the College of Engineering – the Strategic Plan for 2010.

“Our commitment to the future of engineering education includes the clear identification and strategic application of our resources, whether people or laboratories. We have truly dynamic reasons for implementing at least four technology centers and encouraging faculty to coordinate their private consultancies through the College,” says Dean Prith Banerjee. “However, one over-riding message I would like to send to our external partners is that they also have strong economic reasons to contract research with UIC.”

Engineering’s Strategic Plan for 2010 was updated in 2006 as part of UI’s system-wide strategic planning requested by President Joseph White. It anticipates many successive outcomes that build on one another. One is to boost the annual engineering research budget from $21 million to $40 million in the next five years. Accomplishing this means both winning extensive multi-year, collaborative interdisciplinary research grants from government agencies and furthering strong associations with industry of all sizes.

“We are also committed to broaden the Ph.D. pool to 600 funded students and guarantee five years of support for each of them. To succeed, we must provide a mix of assistantships focused on teaching and doctoral research as well as servicing other college needs. No Ph.D. student should be self-supporting. Our success will lead to an increase in reputation and programs that allow the College to educate the best students at every level,” explains Banerjee. “We imagine with great pleasure the year in which UIC graduates 100 engineers with doctorates.”

The College Advisory Board took note of the social return built into the technology centers: the College provides a better quality graduate education, curriculum improves, and it serves the needs of the business community on behalf of the entire University. Selectivity in choosing clients and projects means solving interesting applied research problems.

This is a unique concept, found at only a few U.S. universities, with many facets and winning opportunities for all.

Here we detail some of the ways in which the technology centers and changes to consulting could increase financial and research opportunities and resolve research and business challenges facing companies throughout Chicago and across the Midwest.

IT TAKES A PLAN – HOW TECHNOLOGY CENTERS MEET EVERY NEED

“The structure and benefits of technology centers and our vastly altered approach to consulting has been shared with the Vice-Chancellor for Research, Eric Gislason, Provost R. Michael Tanner, and Vice-President for Technology and Economic Development David Chicoine. All have endorsed these ideas, and Provost Tanner has agreed the technology centers should start on a pilot basis,” explains Dean Banerjee, who has the whole-hearted backing...
This pilot program introduces new approaches to sharing technical and intellectual resources.

"First, we are embarking on a plan to address the short-term applied research needs of companies and government agencies in a unified manner. Our services will help our partners to meet their professional obligations, demand for engineering expertise or research goals in a cost-effective manner," Banerjee continues. "Second, if we want to continually increase the quality of engineering education and facilities as well as meet the demands of industry as we prepare our graduates, we must have resources to do it."

"These plans will deepen our existing external relationships and open new doors for everyone."

The imbalance between funding for basic and applied research in the U.S. distinctly tips in favor of applied research. Initially, the Strategic Plan placed a heavy demand on receiving research dollars in national competitions. It still does. But, says Banerjee, "We studied the benefits of rebalancing opportunities for basic research conducted to advance science and applied research to answer industrial problems at UIC as well."

He has led lengthy discussions with faculty, the College Advisory Board, alumni, and potential clients. The persuasive facts and figures follow, below.

"We concluded that it is entirely apropos to our educational and economic mission to equip our engineers with the most challenging applied research training and to provide all Ph.D. students with a mix of applied and basic research. It reshapes their resumes competitively." Clients will appreciate that graduate assistants are a key to success.

They make the cost structure of the research and development contracts much more competitive than corporate providers of engineering services. For the clients, many of whom may not be in a position to direct funds to building up their own R&D group but can benefit from a more affordable resource, the fees are much less than what full-time engineers make within those companies.

This plan ties directly to opportunities for graduate students to be well paid while gaining practical research experience. Client’s pay fees to the College, which in turn provides faculty salaries, and benefits, tuition waivers and salaries for graduate assistants year round as well as additional training in applied methods if needed.

In discussing the creation of technology centers and revision of faculty consulting services publicly, at the start of this pilot program, the College of Engineering asks for your broad support and input into the ways in which applied research can drive future successes.

"We have identified several companies in the Chicago area as possible clients and have held informative discussions with them. Whether or not they become clients, alumni in the leadership of these companies have provided us with practical insight and helped shape these up and coming centers," reports Banerjee, who regularly visits alumni. "You are welcome to contribute to the conversation, too."

**MARKET OPPORTUNITY - ENGINEERING SERVICES ARE PARAMOUNT TO ECONOMIC DEVELOPMENT**

The tremendous market opportunity for university-based technology centers grows out of solid economics.

The Gross Domestic Product -- the market value of the nation’s output of goods and services -- increased 5.2 percent, or $160.4 billion, in the fourth quarter of 2005 to a level of $12,766.1 billion. According to the U.S. Census Bureau, the private non-goods producing industry accounts for 70% of the economic activity in the United States.

These non-goods industries include the services industry, which alone accounts for 55% of the economic activity.

In 2004, the market for architectural, engineering and related design services was $180 billion. In addition, the market for scientific research and development services was $54 billion. On the other hand, the total R&D market for life sciences and engineering was less -- $52 billion.

"These figures lay the groundwork for understanding our motivation. We know that research funding has increased significantly in the past 5 to 10 years, but we also realize that it is expected to remain flat or decrease over the next five years. This goes to the core of our Strategic Plan for 2010. Those five years are critical to the College of Engineering," Banerjee asserts.

The faculty agrees.

So as the College competes with other universities for federal grants for cutting edge research projects that will shape the scientific world, they do this with the awareness that there is four times as much funding in applied engineering and technical services.

This is just one reason why it makes business sense to start an engineering services arm to complement income from competitive research grants.

**OUTSOURCING TO HALSTED AND TAYLOR STREETS**

Another key market force faces U.S. companies - the global competition for services from a hungry, skilled workforce willing to work for less compensation -- a concept detailed in Thomas Friedman’s The World is Flat.

Today, the fully loaded cost of subcontracting an engineering service job within the U.S. is about $150 per hour. That translates to a full loaded annual expense of $300,000 per engineer. Little wonder that many of these jobs
are being outsourced to India and China, or countries in Eastern Europe, at rates of $35-45 per hour.

Banerjee, an entrepreneur, also recognizes another fundamental problem: managing workers and projects elsewhere – this is particularly hard when the employees are in another country.

"University technology centers provide an appealing alternative to outsourcing jobs. We can retain jobs and money in Illinois by offering access to a large pool of highly skilled engineering talent – our UIC engineering graduate students – at a competitive U.S. rate," he finds. "The same work can be performed without having to send these jobs across the globe. As a bonus, the nightmare problem of remote management is resolved."

Its Advisory Board suggests that the College of Engineering could encounter such a significant call for engineering services that the potential exists for having too much demand. That said, the number of centers would likely be limited to four or five with total revenues of $10 million per year. This requires faculty to raise the remaining $30 million each year from competitive basic research grants.

MAKING IT WORK

Two years ago, the College inaugurated its Office of Corporate Relations and Career Services. Under Associate Dean Ralph Pini, an alumnus and former senior vice president and Chief Technology Officer for Motorola’s Personal Communications Sector, this office is dedicated to establishing strong partnerships by providing service to its constituents. His office is a key organizational center, says Pini; "We are the central contact point for our partners, knowledgeable in external relations, research arenas, technology transfer and direct corporate involvement on campus. We anticipate interests; make introductions. Now, we will become matchmakers."

They anticipate interests; make introductions. Now, the College of Engineering is taking it a step further.

Here, the Software and Information Technology Center is already hard at work on its first project outsourced to UIC. "We have already trained 10 graduate assistants on the advanced and proprietary software used by JSG Solutions LLC through a 1-credit intensive short course ENGR 490 Practical Experience in Industry," says Dean Banerjee, who threw himself into the outreach and spoke to students to help recruit applicants. "Once they understood the long-term employment benefits and challenges, the resumes kept coming in. It was a highly competitive interview process. We could afford to be selective even among our most accomplished computer science students."

The College is pleased that Sandeep Chaudhuri of JSG Solutions is confident in the outcome of the pilot project.

Channel partnerships, like all other projects with faculty or the technology centers, offer graduate students positions akin to a co-op experience without leaving campus and while placing the cutting edge research facilities of the College of Engineering at their service.

"Think of it this way," remarks Banerjee. "If this program is successful, we will also be able to recruit more high quality graduate students by promoting our programs as 'UIC Brings Engineering Practice to the Classroom!'"

CHANGING THE CULTURE – AN UPDATED TAKE ON FACULTY CONSULTING

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Facult
By faculty vote, there is a choice - an organized consulting program with faculty opting in. Again, the College in a matchmaker role is committed to cultivate its extensive existing relationships. It will advertise each faculty member’s expertise and laboratory facilities through a concentrated marketing effort that demonstrates, to the potential client, the breadth of research capability in the College of Engineering.

At this early stage, there are bridges yet to be crossed, particularly when it concerns the use of University resources for private gain.

State policy says that faculty cannot use any UIC resource such as advanced labs, computers, or even software for their private consulting. The College is not afraid of far-reaching change. So it is advocating access to UIC resources including computers and labs such as the Nanotechnology Core Facility, Research Resources Center or the Electronic Visualization Lab as a core component of its proposal. The key is that this is no longer private consulting, but engineering services and a revenue generating arm of the College.

“We will absolutely make sure the University is adequately compensated for the use of its assets. If industry wants to use our advanced services for experiments and tests, they must pay fair market value. The hourly rate we charge would take into account the cost of labor as well as the usage of University resources such as laboratory equipment. At the same time, the rate must be competitive or nobody will use our services,” explains the Dean.

One of the last issues to negotiate is refining the intellectual property policy. In general, the University of Illinois owns intellectual property created by faculty and graduate students. External private funding adds another dimension to the assignment of ownership. The question of assignment for intellectual property created out of these centers still remains.

The faculty thoroughly discussed the benefits of altering their existing consulting relationships, the question of non-compete clauses, service and loyalty to past clients, and adherence to State policies on conflict of interest and other ethics issues.

Faculty and students will naturally sign non-disclosure agreements, but publishing is the life-blood for tenure track faculty and Ph.D. candidates. The College encourages graduate students and faculty to publish research findings even when working on applied research. This means finding a common ground with the clients.

On a case basis, they may need to identify unique portions of their research that can be published to make it reasonable to remain with the technology centers in the long run. This is one instance of why the client’s projects are designated to supplement income for Ph.D. students and provide valuable hands-on training in applications of research and not to replace research in basic science.

The College is enthusiastic that new applied research opportunities and consulting changes will lead to new public policy that opens avenues for the entire campus.

Working with campus legal services, the College has hammered out solutions to issues of intellectual property rights, confidentiality, use and return of proprietary information, compensation, delivery of services, and disclosure of inventions as well as non-competition. A legal agreement has been written.

“We have learned a lot in doing so, and it was worth the wait,” reports Banerjee, who is grateful to the University for its support.

BRINGING STRETCH IDEAS TO LIFE

At the heart of the College of Engineering plan to build at least four technology centers and bring faculty resources to the marketplace is a drive to strengthen the four-fold mission of the University of Illinois at Chicago: teaching, research, service and economic development. The College faculty usually find themselves most actively involved in teaching and research, but economic reality underlies their decision to pursue technical centers. The success of the centers, and many new partnerships that grow from it, has the potential to move the University’s mission of service and economic development to a higher level. It brings a new focus to economic responsibility for the urban university. It provides financial resources. It allows the College of Engineering to meet its goals. And, broadens the public knowledge of the University of Illinois at Chicago.

Nothing stands alone under the College of Strategic Plan for 2010, especially “stretch ideas” All of these projects began as stretch ideas. So keep in mind that the UIC College of Engineering is changing the culture of engineering and economic opportunity.

We are always proud to say that the College of Engineering provides access to exceptional engineering in the heart of Chicago.
The Outstanding Alumni, Faculty and Staff Awards celebrate, recognize and honor the pursuit of excellence within engineering. In our journey to excellence, perspiration, perseverance and inspiration all play a part. Our Award honorees exemplify the best of engineering education, research and service. As each member of our UIC College of Engineering community pursues excellence in his or her area of strength, we create an opportunity to realize our potential and add value to the College of Engineering. The sum of all of our efforts propels our UIC College of Engineering community to broader and higher levels of excellence.

Debra P. Evans
President, Engineering Alumni Association

Each time that we celebrate the contributions and talents of an alumnus or alumna, we say, “This is the true outstanding example of a successful, productive engineer who is also involved in his or her community!” Then, we meet more engineering alumni and are amazed all over again.

Dean Prith Banerjee

Celebrating the Inspiration and Achievements of Engineers and Honoring the Contributions of Alumni, Faculty, and Staff to the Engineering Community

In November 2006, the UIC engineering community honored eleven individuals for their unique contributions. Each created a richer world through their invention, persistence in the search of knowledge, passion for bringing technology to popular use, and dedication to the educational experience. This, too, was a celebration of service to the University of Illinois at Chicago and its College of Engineering, professional engineering societies, community organizations, and the students who will engineer the future.

Pairing the new Outstanding Faculty and Staff Awards with the Outstanding Alumni Awards enhanced the homecoming for the 175 alumni and guests who celebrated at the National Italian American Sports Hall of Fame on Taylor Street.

The eight 2006 Outstanding Alumni Award recipients symbolize the career accomplishments of all UIC engineering alumni. The two Outstanding Faculty Award recipients represent their colleagues and collaborators across the University, who daily change the way we comprehend the world through their research. Producing great engineering graduates, they keep UIC at the forefront of engineering education through their determination to make the classroom and laboratory places where students learn to apply theory to the resolution of challenges. The Outstanding Staff Award recipient, like her colleagues in every unit, interacts daily with students and faculty, alumni and friends, and promotes both the fine reputation of our College of Engineering and an interest in this, our chosen profession.
Recipients and guests traveled from across the U.S., from the Midwest, Washington, California and Texas, and as far as Taiwan. The images engraved on the crystal award presented to the Outstanding Alumni, Faculty and Staff honorees include the UIC logo and two classic faces linked to a starburst. This Award beautifully represents the mind and imagination moving to a stellar outcome.

Meet the 2006 Honorees

Christine Marie Kuypers
Outstanding College of Engineering Staff Member

Enthusiastic undergraduate counselor Chris Kuypers is dedicated to the College. Chris takes a profound interest in the many undergraduate students who walk through her door seeking guidance and approaches her work with a passion for a positive outcome. Add to this honesty and frankness, abounding energy, and knowledge of the University system, and it is apparent why Chris deserves this award. Her office door is always open. That is no cliché. There is often a line waiting to speak with Chris. The phone rings and emails pop up because students know that makes certain that their problems are completely explored and resolved.

In nominating Chris for this award one alumnus wrote, “Chris tells the good news with a smile and bad news with guidance on how to make the situation better.”

Chris teaches Engineering 100, an orientation to the College and engineering profession, drawing alumni back to that classroom as speakers and directing them to other College projects as dedicated volunteers.

Robert A. Kleiber
Outstanding Service to the College of Engineering


Robert Kleiber is a UIC champion, committed to expanding the role of industry within academia and guiding students in their education and career exploration. A consummate volunteer and life member of the Alumni Association, Bob served on the College of Engineering, Minority Engineering Recruitment and Retention Program and Department of Mechanical and Industrial Engineering Advisory Boards representing Caterpillar, Inc. He believes in the advantages of a diverse campus and workplace, leading him to work closely with affinity groups and societies that encourage women and minorities to succeed in engineering.

Bob developed Caterpillar’s campus presence into a highly visible, mutually beneficial relationship that supports industry-relevant research, student development, curriculum advancement and successful job placement. This ensured increased opportunities as well as considerable funding for the UIC Pipeline Programs for Diversity and scholarships. As lead recruiter, Bob also hired many students for internships and career positions.
Supportive of research endeavors, Bob facilitated opportunities for faculty and graduate students, leading to more than $3 million in funding and five major patents; some are implemented in the new generation of Caterpillar products. He also provided students with real-world research projects and judged at the Senior Design EXPO.

He mentored during Career Prep Day and recruited his colleagues to do the same.

Bob is retiring soon, but will be on campus supporting these activities for a long time.

**Dianne Chong, Ph.D.**

*Outstanding Alumni Service to the Engineering Community*


Dr. Dianne Chong demonstrates with great energy how dedication to a career and community come together with great success. Dianne is the spirited leader and proponent of a full range of professional engineering and honor societies important across the community of engineers beginning with her wholehearted, career-long service to ASM International. A Fellow, Board member, and vice president of ASM International, Dianne is soon to be the first female president in that noted society's history.

Dianne is an outstanding scholar, too, who delights in study. She received many degrees in engineering and other fields, including manufacturing management, and her Ph.D. work involved developing a steel-making technology derived from methods used by the ancient Chinese.

Her application of knowledge, technical engineering skills and people management has taken Dianne to the position of director of Commercial Airplanes - Material Processes and Technology for The Boeing Company.

Dianne shares her strengths and talents by serving others. She is the engine that drives organizations, challenging them to open doors for all engineers in pursuit of diversity and opportunity. Dianne is committed to professional advancement for all engineers through The Minerals, Metals and Materials Society, American Institute of Aeronautics and Astronautics, Society of Automotive, Society of Manufacturing Engineers, Society of Women Engineers, Beta Gamma Sigma, and Tau Beta Pi.

A most willing leader, who greatly enjoys what she does, Dianne received the 1997 YWCA Special Leadership Award in Science and Technology and was a 1999 participant in the Greater Missouri Leadership Challenge and a 2001 graduate of Leadership America. She also received the
Women of Color Technology All-Star Award (2002), Organizations of Chinese Americans Corporate Achievement Award (2002), Boeing Corporate Diversity Award (2003), and Boeing’s Diversity Change Agent Award (2005). Dianne sits on the National Materials Advisory Board of the National Academies of Science, Engineering and Medicine.

**Peter J. Quintas**

**Outstanding Young Alumnus**

1996 B.S. Computer Engineering

Peter Quintas reached a high level of entrepreneurial success in his 10-year engineering career by showing a remarkable insight into creating the technical tools for security that meet the critical demands of our time.

Beginning a career in technology startups focusing on high-volume transactional financial solutions, by 1998 he authored an integrated Java development environment that won the prestigious JavaOne ’98 Best-of-Show Award.

Peter aligned himself with other bright entrepreneurs including Andrew “Flip” Filipowski at divine, inc. and SilkRoad Equity. Previously, CTO at SilkRoad Technology and director of technology for divine inc., Peter continues to work under the Silk Road umbrella as senior vice president for its InterAct TrueSentry security product line. There, Peter addresses global security issues, driving the technology and product strategy for large-scale video surveillance and building an innovative high-growth business in enterprise software. His clients are those most concerned with global security management technologies, intelligent threat detection and response for public safety, and homeland security. TrueSentry, Inc. cameras are present on every continent, including the NASA camera on the South Pole, with a goal of identifying threats with remote video, analytics, and sensors to effectively mobilize and coordinate a response team.

An avid blogger, young engineers also know Peter for his commentary on collaborative web technologies and willingness to change the nature of dialog through his consideration of the social implications of technology.

**Anthony Kobrinetz**

**Outstanding Alumni Intrapreneur**

1974 B.S. Communications Engineering

Anthony Kobrinetz, vice president of Motorola Inc.’s 802.16 wireless broadband products, is an intrapreneur — an innovative thinker with entrepreneurial skill operating within a company. Now leading Motorola’s next generation of wireless broadband products broadband wireless access with a focus on WiMAX, Tony demonstrates a dedicated understanding of the intersection of technology and internal business demands that contributed significantly to the market share for Motorola Inc.

Tony helped shape mobile telephony, wireless local area networks, cellular communications, and telematics. His accomplishments reflect a list of firsts, including the development of a private wireless data network in the U.S., pioneering of a wireless local area network at 18 GHz, and Motorola’s first digital infrastructure platform for the Japanese cellular infrastructure market.

Business dynamics are fluid. As general manager and business founder of Motorola’s Canopy business, Tony remained a steadfast
advocate when Canopy was to be divested. It took a bold intrapreneur to transition that broadband technology incubator into a commercial business with skillful product development, operations, sales and marketing. Launched in 2002, the Canopy platform became a global commercial success and won the SUPERQuest Award for Continuous Achievement, an award given to one product or portfolio that demonstrates a noticeable evolution over at least a three-year period.

During this short time, and because of his role as internal champion, the company’s sales revenue has grown to an estimated $300–400 million. Canopy is a true intrapreneurial success story as Tony led it from that incubator into a commercial business with product development, operations, sales and marketing.

Stuart M. Bailey
Outstanding Alumni Entrepreneur
1994 B.S. Computer Engineering

Stuart Bailey, an expert in creating the future of networking, receives exceptional notice as an entrepreneur with an eye to the future of computing. In 1999, at age 28, Stuart founded Infoblox, Inc. in Evanston. Today it is a leading developer of essential infrastructure for identity-driven networks and a company to notice, located in California.

Stuart’s founder and CTO title for Infoblox tells only part of his story. Post-graduation, Stuart worked with Dr. Robert Grossman in the Department of Mathematics, Statistics and Computer Science in the College of Liberal Arts and Sciences. For five years, Stuart led teams from the Laboratory for Advanced Computing that developed advanced distributed data architectures. He participated in building the National Scalable Cluster Project and the National Center for Data Mining and guided teams that earned awards in the High Performance Computing Challenge at Supercomputing conferences.

His technical vision for robust technologies to support next-generation networks and produce secure, manageable and compliant networks allowed Stuart to start his own company and acquire early-stage venture capital locally. Through much-coveted Silicon Valley investments he acquired funding of about $65 million by 2005. Hundreds of organizations worldwide, including the Fortune 500, use Infoblox solutions for the critical naming, authentication, authorization and IP management services.

In 2006, Infoblox received the Red Herring Award. Red Herring magazine’s list is an important step in identifying new, innovative technology firms and entrepreneurs that could eventually change the way in which we live and work, by “pushing and breaking the boundaries of the technology business.”

An-Chi Liu, Ph.D.
Outstanding Alumni Achievement in Engineering Education
1981 Ph.D. Engineering

Dr. An-Chi Liu sat at the Awards ceremony with Chancellor Sylvia Manning, one university leader with another, as he was celebrated for his remarkable leadership as the president of Feng Chia University, Taiwan.

An-Chi conducted his Ph.D. research under UIC Distinguished Professor Tadao Murata and was a faculty member at Illinois Institute of Technology and North Dakota State University prior to

Hilda and Thomas Valdes-Booth receive the Outstanding Career Award from Nancy Cohen on behalf of their son, Raul Valdes-Perez.
Jean Woloszko receives the Outstanding Alumni Achievement in Research Award from Mark Jones
UIC Distinguished Professor Thomas A. DeFanti, Emeritus
joining Feng Chia University in 1989 as a professor and chair of the Department of Information Engineering and Computer Science. In a rapidly developing academic and policy-making career, he shaped the engineering departments and computer center before becoming president in 1998. During the past eight years Feng Chia University has grown rapidly, notably surpassing other Taiwanese universities in technology transfer and links with corporations such as IBM.

More than 80% the size of UIC, with about 20,000 students enrolled in seven colleges (Business, Construction & Development, Engineering, Humanities and Social Sciences, Sciences, and Information and Electrical Engineering, and the newest—Management Development), Feng Chia University offers 32 Bachelor’s degree programs, 36 Master’s and 13 Doctoral degree programs. An-Chi is on the forefront of creating the next-generation university experience. He inaugurated e-learning Master’s Degree programs for working professionals. New construction on campus has resulted in an ultramodern trend-setting high-tech library and a new sports center.

Ranked by the Ministry of Education as excellent in all areas of teaching, research, administration and services, Feng Chia University is highly successful in placing its students. For the past five years its name appears on “The Most Popular College Graduates” list of the top-10 institutions whose graduates are most heavily recruited by that nation’s leading businesses and enterprises.

An advisor and board member for many organizations, An-Chi serves as president of the Computer Society of the Republic of China, the Chinese Information Literacy Association, and the Chinese Institute of Electrical Engineering (Taichung Chapter) in addition to his role as a researcher, author, and businessperson.

W.J. Minkowycz, Ph.D.
James P. Hartnett Professor of Mechanical Engineering
- Energy Systems
Outstanding Faculty Achievement in Engineering Education
The College celebrates Dr. W.J. Minkowycz for his career-long dedication to engineering education and his delivery of an exceptional classroom experience. The campus also honored him in November for 40 years of service. Appointed as the first James P. Hartnett Professor of Mechanical Engineering – Energy Systems, Professor Minkowycz is part of an elite group, a world-renowned authority on heat transfer and editor-in-chief of that field’s most prominent journals. This is the reason his office door is open long into the evening. Yet, most undergraduates interact with Professor Minkowycz because he is willing to put down what he is writing to listen to their questions, as they study heat transfer, the laws of thermodynamics, and numerical methods in heat transfer.

Professor Minkowycz is a great teacher—one never forgotten. His love of teaching shines through in every lecture and his energetic classroom presence. For in all his years of teaching, he has always been prepared. He strives to make his students see that thermodynamics, the science of energy and its transformation, is everywhere around them. He has always recognized that the newest findings in research and application need to be presented in the classroom as real-life examples to inspire students. So, each lesson is relevant, punctuated with real-world examples and reflective of newly published research.

His memorable classroom presence includes striding up and down in front of the class, looking at the students, gesturing. The blackboard completely filled with notes and formulas.
A measure of Professor Minkowycz’s skill in communicating these concepts comes from the honors and respect bestowed by engineering students, alumni and professional colleagues. He earned multiple teaching awards -- the Harold A. Simon College of Engineering Award, six UIC Silver Circle Awards, the UIC Excellence in Teaching Award, the Outstanding Teacher Award from the State of Illinois, national Ralph Coats Roe Award from the American Society of Engineering Education and the national Heat Transfer Memorial Award for lifetime achievements in teaching, research and service from the American Society of Mechanical Engineers.

Jean A. Woloszko, M.D., Ph.D.
Outstanding Alumni Achievement in Research
1981 Ph.D. Bioengineering
Dr. Jean Woloszko offers his corporate and research leadership as CTO and vice president of Research and Development for ArthroCare Corporation, in California and Texas. His scientific advances in the development of surgical devices based on plasma-based Coblation technology are key in successfully treating many pathologies, changing the outlook of surgery. Jean was a physician in France certified in Rehabilitation Medicine and Biomechanics and heading a consortium of European researchers on Functional Restoration for Spinal Injury patients when a meeting with two Illinois Institute of Technology faculty prompted him to move to the U.S. to join a research project at IIT. While in Chicago, Jean earned his Ph.D. in Bioengineering in just two years under College of Engineering professors Gyan Agarwal and Sabri Cetinkunt. After joining Medtronic in The Netherlands, Jean and his family relocated to California where Jean eventually joined ArthroCare. Now directing over 100 people, Jean and his research team design and develop new products including plasma surgery tools, implants and anchors, and surgical tools for sports medicine, ENT surgery, spine surgery, urology, neurosurgery, and other fields of medicine. His medical research includes a novel, transformational electrosurgical technology using plasma to etch tissue rather than creating a pyrolytic effect as occurs in conventional electro-surgery. This proprietary coablation technology shows unique effects on tissue providing less pain, faster recovery and promoting both tissue healing and regeneration. ArthroCare Corporation, one of the largest companies in its field, has been growing over 25% every year for the past 10 years and reached $215 million in revenues last year.

Thomas A. DeFanti, Ph.D.
Outstanding Faculty Achievement in Research
UIC Distinguished Professor
Professor Thomas DeFanti is transforming the way in which we experience reality, the speed and security with which scientific data is delivered around the world. His broad spectrum of contributions to the UIC College of Engineering and its Department of Computer Science make the Electronic Visualization Laboratory an important facility for local, national and global computing. Tom’s name is popularly linked with his early research advances through the computer animation produced for the Star Wars movie and as co-inventor of the CAVE virtual reality theater, created in 1992 with EVL co-director Professor Dan Sandin. Tom once wrote that visualization “transforms the symbolic into the geometric, enabling people to observe their computing... Whereas computer graphics is generally concerned with things that ought to be seen... visualization most often brings the unseeable to light.” With EVL collaborator Maxine Brown, he connected high-resolution visualization and virtual reality devices over long distances, advancing education and research. Tom was instrumental through his role as a founder and leader of the Global Lambda Integrated Facility, which manages international switched wavelength networks, in developing a 2006 collaborative agreement between UIC and Japan’s National Institute of Information and Communications Technology.

Raul Valdes-Perez, Ph.D.
Outstanding Alumni Career Achievement
The career achievements of Dr. Raul Valdes-Perez bring together entrepreneurial talent, dedication to science and academic excellence, and involvement in his community. After graduating from UIC, Raul sought adventure in Brazil, writing software, was a research scientist at MIT’s Artificial Intelligence Laboratory, and achieved his cherished dream of earning a Ph.D. in computer science under Carnegie Mellon Nobel Prize laureate, Turing Award recipient, and artificial intelligence pioneer Herbert A. Simon. Presently an adjunct associate professor, Raul has been a faculty member in his home-department since 1991. His research on new methods and applications of knowledge discovery produced nearly 50 journal articles crossing the fields of natural, social and computer science. Raul has served on the National Science Foundation advisory committee for social, behavioral and economic sciences and was a principal investigator on six NSF grants. As President and Cofounder of Vivisimo, Inc., whose name translates as lively from Spanish and Portuguese, Raul produces intelligent software that allows enterprises to organize information from anywhere, at any time, in any language. Clusty.com, its breakthrough meta-search clustering search engine, is a “crawler” that locates Web pages and challenges the way in which many Internet search engines are structured. Over 10 percent of all Internet searches are now “clustered” using Vivisimo technology. Since founding Vivisimo in 2000, Raul was recognized as a top-ten favorite among readers of Inc. magazine for entrepreneur of the year. His insights on Internet research and clustering appear in a regular column in CIO magazine on-line, and he was lauded three times as one of the top 50 CEOs by Hispanic Engineer magazine. Raul was also a CEO of the year finalist in the Pittsburgh Technology Council Tech 50 awards in 2005.
With the price of gasoline skyrocketing, public interest in high-speed inter-city rail transportation is growing. But getting U.S. rail systems up to the infrastructure standards enjoyed by riders in Europe and Japan will require a huge financial investment, along with elaborate planning and a better understanding of the problems that designers, engineers and planners face.

That means the railroad industry needs a better understanding of derailments.

Ahmed Shabana, the Richard and Loan Hill Professor of Mechanical and Industrial Engineering, has received a five year $2.7 million grant from the U.S. Department of Transportation’s Federal Railroad Administration (FRA) to create the crucial large-scale, three-dimensional simulation software to analyze the forces involved in train derailments. The computer models for such large-scale vehicle dynamics applications are complicated, and evolve step by step. There is no doubt that a thorough understanding these forces is necessary to developing successful high-speed passenger rail corridors around the country, and even building a U.S. based high-speed locomotive and train car industry.

Called Enhancement and Development of Railroad Vehicle Dynamics Simulation Capabilities, this is a second phase of a research project supported by FRA to develop and enhance comprehensive computational algorithms and capabilities for the nonlinear dynamic simulations of large-scale high-speed railroad vehicle systems.

"The U.S. government needs new tools to do good modeling for high-speed trains," said Shabana. "Our goal is to provide FRA and the railroad industry with new capabilities for accurate prediction of the nonlinear dynamics behavior, vehicle critical speeds, vibration characteristics, and derailment and accident scenarios for high speed rail systems subjected to different dynamic loading conditions and disturbances subjected to different dynamic loading conditions."

This is a change for U.S. researchers, explains Shabana. "Most of the research recently has been done in Europe and Japan. It’s almost disappeared in the U.S."

Shabana’s Multi-body System Dynamics Laboratory at UIC is one of the few facilities in the United States that conducts such research.

"Conditions and environmental factors need to be modeled with more accuracy," Shabana said. "Modeling tools used by U.S. railroads are often based on simple or outdated assumptions and algorithms that are not very accurate at predicting the speeds at which derailments would occur."

When high-speed rail lines are put in place, the U.S. will, at least initially, buy much of its new rail equipment from foreign manufacturers, but the most advanced rolling stock now available from those manufacturers will not run on current rail systems. With the exception of places such as Amtrak’s Northeast corridor, specially built to handle high-speed passenger trains, rail lines are not up to the task as most tracking is designed for low- to moderate-speed freight trains, not high-speed city-to-city passenger rail that policy makers foresee to offset other transportation and energy costs.

Interested in learning more about high-speed passenger trains around the world? Investigate these.

www.railway-technology.com/projects/amtrak
ACELA High-Speed Rail Network, USA

www.railway-technology.com/projects/spain
AVE Spain High-Speed Rail Network, Spain

www.railway-technology.com/projects/beijing
Beijing-Shanghai High-Speed Line, China

www.railway-technology.com/projects/california
California High-Speed Rail Network, USA

www.railway-technology.com/projects/eastcoast
East Coast Main Line Rail Route Upgrading, United Kingdom

www.railway-technology.com/projects/italy
Eurostar Italia High-Speed Rail Network, Italy

www.railway-technology.com/projects/finland
Finland Pendolino Tilting Trains
Open Road Tolling

Applying Gaming Technology to Illinois Open Road Tolling Project

By Laura Wolf

Over the summer, researchers at the Electronic Visualization Laboratory (EVL) developed a virtual driving simulator to evaluate alternative signage designs as part of a user study conducted by the Illinois State Toll Highway Authority (ISTHA) and consulting firm Wilbur Smith Associates (WSA).

Each toll plaza on the Illinois Tollway is announced by a quick succession of signs directing drivers to either manual pay or I-PASS (the Illinois Tollway’s electronic toll collection system) lanes; yet everyday many drivers juggling loose coins dangerously weave, switch lanes, or find themselves unwittingly routed through the I-PASS lanes and incurring a toll violation.

Unfamiliar or inattentive drivers account for most of these infractions, but ISTHA, now in the process of converting all twenty of its mainline toll plazas to Open Road Tolling (ORT) by the end of 2006, wanted a cheap and effective means to evaluate several advance signage options specifically for ORT toll plazas using a focus group of drivers. Previously, the Toll Authority built multiple physical signs for such user studies at great expense.

ORT allows vehicles with I-PASS transponders to proceed unimpeded through the toll plaza at highway speeds. Cash-paying vehicles are required to exit the mainline roadway, stop to pay a toll, and then merge back with the ORT lanes downstream of the plaza.

EVL’s tollway simulator modeled a high-resolution driving environment similar to an actual ORT plaza. Using a steering wheel designed for gaming environments, each driver was asked to navigate a virtual course displayed on a wide-angle display screen constructed of side-by-side LCD displays, and follow signage through the toll plaza. Test administrators could toggle among signs, incorporating diagrams, text, or a combination thereof. Drivers were then asked which signs best conveyed the required actions to be taken at the toll plaza. Several lighting conditions were also simulated such as bright sunlight, dawn, overcast and night.

“Recent advances in commodity gaming technology and high-resolution displays allowed us to create a realistic testing environment with acuity approaching 20/20,” said EVL co-director Jason Leigh, who is also an associate professor in the department of computer science. “Our goal was to enable ISTHA and WSA to elicit useful feedback on the signage, so the simulation had to mirror realistic driving conditions.”

The focus group consisted of commuters, infrequent travelers and commercial vehicle drivers.

Over 30 people participated in the study over the course of three days in late August.

The tollway simulator was co-developed by computer science Ph.D. student Robert Kooima and Master of Fine Art student Kapil Arora. This technology can be applied to a wide range of other application areas, including driving simulators to train emergency responders in fire and police departments.
The EVL–Japan Connection

By Laura Wolf

A memorandum of understanding between the University of Illinois at Chicago and Japan’s National Institute of Information and Communications Technology (NICT) was signed on July 26, 2006 at a special ceremony to formalize a scientific collaboration that puts Chicago at the hub of ultra-high-speed advanced optical network research and development exchanges with Japanese research and education institutions.

The NICT-funded Japanese Advanced Testbed Network for Research and Development, known as JGN-II, links Japan with the U.S. via StarLight, a National Science Foundation–funded advanced Internet switching facility located at Northwestern University’s downtown Chicago campus and managed by UIC, Northwestern, and Argonne National Laboratory.

Japan’s choice of StarLight underscores global confidence in both the technology and research being conducted by UIC and its Illinois–based partners. They are developing new application tools and techniques that enable real-time transmission of super-high-resolution images at 4K the quality of current HDTV, and masterfully expand the accuracy and speed of computer simulations over long-distance optical networks.

Meet StarLight

Operational since summer 2001, StarLight is a 1–10 Gigabit Ethernet network exchange facility offering high–performance access to participating networks, as well as true optical switching for wavelengths. StarLight users include a global scientific community conducting advanced networking, database, visualization, computing, and middleware research using IP-over-lambda networks. StarLight is being developed by the UIC Electronic Visualization Laboratory (EVL), the International Center for Advanced Internet Research at Northwestern University, and the Mathematics and Computer Science Division at Argonne National Laboratory, in partnership with Canada’s CANARIE and the Netherlands’ SURFnet. StarLight is an US National Science Foundation (NSF)–sponsored initiative under the leadership of UIC/EVL.

Notable US – Japanese Applications Supported by StarLight

CineGrid is a digital cinema research and education testbed to enable new kinds of distributed media production, remote mentoring, remote-controlled scientific research, networked collaboration and international cultural exchange. Research ranges from visual special effects for theatrical–quality digital cinema production to large–scale scientific visualizations. The CineGrid initiative includes researchers at Keio University, University of Tokyo and NTT Innovations Laboratories in Japan, as well as the EVL, University of California, San Diego/California Institute for Telecommunications and Information Technology (UCSD/Calit2), and other national and international sites.

The first public CineGrid demonstration was at iGrid 2005 and featured the world’s first real–time transmission of super–high–definition 4K digital motion pictures between San Diego and Tokyo. Nearly six hours of content streamed from Keio’s Research Institute for Digital Media and Content to UCSD/Calit2 including pre–rendered computer animations, materials shot with 4K digital motion picture cameras and digital still cameras, real–time computer–generated visualizations and digitally scanned 35 mm and 65 mm motion picture films.

This photo captures the 4K telepresence demonstration where live greetings were exchanged between UCSD Chancellor Marye Anne Fox in San Diego, and Keio University President Yuichiro Anzai in Tokyo.

Opting for OptIPuter Power

OptIPuter is a 21st–century cyberinfrastructure, whose goal is to enable scientists generating massive amounts of data to interactively visualize, analyze, and correlate their data from multiple storage sites connected via optical networks. One of two scientific drivers for OptIPuter is the Biomedical Informatics Research Network (BIRN), coordinated by the UCSD National Center for Microscopy and Imaging Research (NCMIR). UCSD/NCMIR and BIRN are pioneering new methodologies to do multi–scaled correlated microscopy experiments in real time. UCSD/NCMIR is deploying OptIPuter technologies to BIRN sites, and is providing feedback to make new OptIPuter tools and techniques more user friendly. Of note, UIC/EVL and UCSD/NCMIR recently assisted Osaka University in Japan build a BioWall tiled display running SAGE, or the Scalable Adaptive Graphics Environment, developed by the Electronic Visualization Laboratory.

OptIPuter is funded by the National Science Foundation with the UCSD/Calit2 and EVL researchers leading the research team. UIC is proud to identify its academic partners: Northwestern University, San Diego State University, University of Southern California/Information Sciences Institute, University of California-Irvine, Texas A&M University, UIUC, and, its affiliate partners at the US Geological Survey EROS, NASA, University of Michigan, Purdue University, University of Amsterdam and SARA Computing and Network Services in the Netherlands, CANARIE and Communications Research Centre in Canada, the Korea Institute of Science and Technology Information, and the National Institute of Advanced Industrial Science and Technology in Japan.
Age related macular degeneration is a “raging epidemic” affecting about 1 in 6 Americans between ages 55 and 64 years old. The number jumps to 1 in 4 by age 74. One in 3 people over the age of seventy-five are afflicted. More than 200,000 people will lose all their central vision in one, or both of their eyes each year. Of the world’s population, it is estimated that the disease affects 50 to 70 million people.

The Macular Degeneration Foundation

Seeing Into the Future – A Chip of a Different Color

Imagine the day when those blinded fully or in part by age-related macular degeneration or other diseases of the retinal photoreceptor cells see again.

“That day will come,” asserts mechanical engineering professor Laxman Saggere. He is a 2005 recipient of the prestigious National Science Foundation’s Faculty Early Career Development (CAREER) award, which supports the research activities of scholars who are most likely to become the academic leaders of the 21st century.

In its second of five years, Saggere’s research entitled “A Biomimetic Microsystems Technology towards a Novel Retinal Prosthesis” is funded at $400,000 and has received immense notice.

“We are now working on the technology that may lead to the creation of a light driven and chemical based implantable prosthetic device that mimics the natural functioning of the retinal photoreceptor’s to transduce light into a chemical or neurotransmitter signal,” says Saggere.

“We are taking a different approach to stimulating retinal neurons compared to that taken by researchers elsewhere. They are using electrical stimulation, which generates heat. We propose a biomimetic stimulation using chemicals similar to those produced by the natural photoreceptors in the human eye when light strikes the retina,” Saggere reports. “However, currently we do not have the technology to enable this biomimetic approach.”

Saggere is developing a technology comprising an array of tiny pumps that would release minuscule amounts of chemicals in response to low intensity light on the order available at the retina. His research exploits the enabling technologies of MEMS, microfluidics, and thin-film piezoelectric materials and may find other medical applications beyond the retinal implant.

The press coverage of Professor Saggere’s research has been intense, as has the public response.

What caused the stir? Locally, the Chicago Sun Times ran an article. Then there were others. New Scientist magazine wrote that Saggere has “built a crucial component: a solar-powered actuator that flexes in response to the very low-intensity light that strikes the retina.” A powerful first step toward success and the development of a device. However, they also added in the same paragraph “Multiple actuators on a single chip pick up the details of the image focused on the retina, allowing some “pixels” to be passed on to the brain.” While this is the ultimate hope of Saggere’s research, the actuator that he has just built is not capable of functioning as an implant by itself. This encouraging news was picked up by journalists around the world. Discussion and reprints in many languages popped up all over the Web and in print.

His excitement is tempered by the email, letters and calls from those touched by macular degeneration and other visual disorders, all hoping for help: “Any implant research, especially a retinal implant, has tremendous social impact. Since my research was presented at BIO2006 and a story appeared in the April 2006 New Scientist Magazine, I have learned first hand how many people are waiting, desperately, for a cure.”

“Many hundreds who are touched by blindness have written or called. I want to be able to tell them that a biomedical solution is near as researchers around the world are working on several different approaches, including implant-based and cell transplantation approaches, as are others at UIC. But, I do not want to give them a false hope. We do not expect our technology—a prototype device—to be ready even for animal experimentation for another four to five years,” Saggere explains. “We need to be successful with this research.”

Bloggers at http://memepunks.blogspot.com understand that need for patience and optimism, writing, “Dr. Saggere’s implant is a chip of different color… At this point, the device is merely a prototype… But we are now one step closer to throwing out the orange tipped canes and dark glasses. Kudos, Dr. Saggere.”

The College agrees. The future is bright. Professor Saggere will be answering those messages for some time to come.

Other College of Engineering faculty conducting retinal research includes professors John Hetling, Patrick Rousche, and David Schneeweis, faculty experts who participate in the Bioengineering Technology Services. Their Laboratory of Neurotronic Communication specializes in information transfer between living neural systems and electronics, for monitoring or inducing neural activity, especially in the vision and olfaction sensory systems. They use traditional and novel electrophysiological techniques to evaluate animal models of disease, investigate novel therapeutic approaches, and exploit properties of living systems for sensor applications, and have expertise with in vivo and in vitro stimulation and recording protocols.
The Energy Resources Center (ERC) in the Department of Mechanical and Industrial Engineering has been awarded extensions for two significant energy efficiency and new technologies activities funded by the United States Department of Energy (DOE).

The DOE renewed the charter for the Industrial Assessment Center (IAC) within the ERC, which it funds, providing a two-year extension of the existing IAC, with an option for an additional three years.

This decision by the DOE places the ERC in a select group of only 26 similar Centers nationwide to achieve this designation.

As an educational-research institution, the IAC offers a unique opportunity for undergraduate and graduate engineering students to supplement their academic curricula with real world engineering analysis. Working under the guidance of faculty and professional engineers, students play a significant role in carrying out energy conservation, productivity improvements and waste minimization assessments. The result is twofold. UIC students receive first hand engineering field experience in energy conservation, productivity and process analysis while helping to increase manufacturing efficiency that can lead to improved job retention throughout the Midwest.

These vital energy assessments are provided to small and midsize industries at no cost.

Dr. William Worek, director of the Energy Resources Center, and head of the Department of Industrial and Mechanical Engineering recognized this achievement: “We are extremely pleased that the ERC was again awarded an Industrial Assessment Center from DOE. Over the last seven years, dozens of mechanical engineering students have participated and taken their experiences into the professional arena, specializing in energy engineering.”

“This new award is an example of DOE’s respect for the Energy Resources Center at UIC and their recognition of the successes of the IAC.”

Michael Chimack, IAC assistant director sees the impact on small and mid-size industrial clients: “The assessments provide recommendations resulting in average implemented energy savings of over $60,000 annually. Our clients have been able to improve profitability by increasing energy efficiency.”

The ERC also announced an expansion of a second DOE effort, the Midwest Combined Heat and Power Application Center (MAC). ERC received an additional $150,000 commitment to continue and expand the work of the MAC for an additional 18 months and to further develop its efforts usage of biogases.

In 2001, DOE established the first of its kind Combined Heat and Power (CHP) Center at UIC. Then, the MAC was established as its arm to develop technology application knowledge and the educational infrastructure necessary to foster CHP as a viable energy option in the Midwest.

CHP systems provide businesses with on-site energy generation that can assist in satisfying both the electric and thermal demands of their facilities. This results in increased reliability of service, efficiency of operation, lower energy costs, and reduced emissions.

To accomplish the MAC Center’s business mission, the ERC works closely with Midwest State Energy Offices in 12 states to provide multiple services to the CHP industry and its potential customers. These services focus on targeted education and the delivery of unbiased information and technical assistance.

John Cuttica, director of the MAC has seen progress over five years: "We are very proud that the MAC has met the Midwest CHP Challenge for farm operations while solving odor and nutrient problems related to animal wastes. In emergencies, CHP technologies can keep critical facilities in full operation during electric grid disruptions as demonstrated during Hurricane Katrina and during the Midwest/Northeast blackout in 2003.

Dr. Worek reported that the best indication of the MAC’s success is that DOE has now used UIC’s MAC as a template to create similar centers: “The MAC’s efforts have been a contributing factor in the installation of over 1 gigawatt of combined heat and power production. This success convinced DOE not only to continue the efforts here in the Midwest, where UIC serves 12 states, but to expand the ERC’s example nationwide with the establishment of seven additional Centers throughout the country.”
Students Certified in Computer Security as the Center for Research and Instruction in Technologies for Electronic Security Opens

Engineering students learning to secure computer networks against hackers now qualify for a certificate of expertise sanctioned by the National Security Agency. Those who successfully complete the special sequence of computer science and math courses also receive a UIC-issued certificate in information systems security that verifies completion of courses in accordance with standards set under NSA’s National Information Assurance Education and Training Program (NIETP).

The federal certification comes at an opportune time for students entering the job market. “It’s a very hot field,” says associate professor of computer science Jon Solworth, who applied for the program with V.N. Venkatakrishnan, an assistant professor of computer science.

“RITES will be responsible for maintaining accreditation for our excellent and growing program in Information Assurance, which contains undergraduate and graduate courses through the Computer Science and the LAS Department of Mathematics, Statistics and Computer Science, with study in cryptography, network security, and systems security. We have articulated specializations in the Computer Science degree at both the undergraduate and graduate levels,” says Solworth. Venkatakrishnan notes that UIC is authorized to certify students in roles as information systems security professionals or officers, explaining, “These professionals are the system analysts and programmers who develop computer systems. Their certificate means they underwent training in writing programs and secure code,” he said. “Officers, on the other hand, are at the management level. They formulate security policies, oversee them and refine them when and as necessary.”

This program is designed to provide a broad understanding of what to consider when designing and maintaining network security systems.

“Security is a very broad area. You don’t know where you’ll get hit. Students need broad knowledge for important conceptual and skill purposes. Otherwise, they might secure just one part of the system, lock up the front doors and windows, but leave the back door open,” Solworth said.

The new certification gives national recognition to UIC’s computer systems and network security program and should help the new center’s program grow.

RITES itself is an interdisciplinary umbrella for both faculty research and education in security and privacy. The center fulfills an important research role as it seeks to increase awareness of computer security as a discipline and serve as a point of contact with outside organizations.

The founding faculty members are internationally known for their work in computer security and with a history of collaborative efforts. They also include principal investigator Daniel Bernstein, Mathematics, Statistics and Computer Science, who specializes in the investigation and design of high speed cryptography algorithms and implementations which will make cryptography sufficiently inexpensive to be used universally; Prasad Sistla, Robert Sloan, and Lenore Zuck, Computer Science; Prith Banerjee, Dean, College of Engineering, who specializes in Compiler and Hardware Approaches to Computer Security; Peter Nelson, head of the Department of Computer Science, who brings his in anti-spam and phishing expertise; Annette Valenta, head of Biomedical and Health Information Sciences, who specializes in protection of patient health information in the academic research environment; and, Kaijie Woo, Electrical and Computer Engineering, who in known in the field of side channel attacks and countermeasures of side channel attacks of secure chips.

Their projects including authorization, authentication, certificates, cryptography, secure software, complexity of authorization systems, and formal methods of secure systems.

For more information on UIC’s Center for Research and Instruction in Technologies for Electronic Security, visit www.rites.uic.edu/index.html

Paul Francuch contributed to this article.
A Unique Visit to the Rehabilitation Institute of Chicago Highlights the Intersection of Rehab and Computer Science

Interaction with the scientific and medical community serves a vital purpose for engineering students. They need to see leading-edge technology put to work in the most functional settings and challenged to the extreme in order to more fully understand the complex intersection of computer and rehabilitation science. A unique relationship with the Rehabilitation Institute of Chicago (RIC), where Professor Robert V. Kenyon conducts research, allows his class in Human Computer Interaction to learn first-hand how computer scientists contribute to the advancement of rehabilitation science.

Visits to research labs are shaping careers, according to Kenyon, who is affiliated with RIC’s Sensory Motor Performance Program and well as the College of Engineering’s Electronic Visualization Lab.

“Our students are studying “Universal Design” and specifically the development of computer interfaces that can be used by a wide variety of users – young, old, disabled, and elderly, says Kenyon. “They are learning about this important aspect of software design by reading the burgeoning literature on universal design, presenting papers, traveling to research laboratories, and conducting a semester-long project on human interface design that encompasses the principles of universal design. At the completion of this course, my students have a broad understanding of universal design and an in-depth knowledge of a specific aspect relevant to their own computer science interests.”

At RIC, students observe a wide range of research focused on rehabilitating persons who have survived a stroke, limb loss, or traumatic neurological or brain injury. Student Nakul Drupad Shah called this access to the labs “amazing.” In the latest visit, students had the opportunity to examine new methods to promote rehabilitation through devices ranging from robots for retraining patients to walk to prosthetics for limb loss and devices, including virtual reality, to aid stroke victims relearn skills quickly. They were able to voice questions and offer observations — even ideas for future research.

“I had never experienced anything like this. Every single piece of equipment is one of a kind, state-of-the-art technology. These knowledgeable professionals all treated us — budding engineers — with respect for our ideas and curiosity.” Shah said.

While the disabilities suffered by the patients can be generalized, they are also each one of a kind. Devices developed by specialized research labs still need to be able to be individualized according to changes in treatment protocol and to match the abilities of each patient. So, students saw many examples of how computer programming leads to the successful rehabilitation of life-changing injury.

Wear a Robot – Relearn to Walk: In the Neuromechanics of Impaired Locomotion Laboratory, where Dr. Keith E. Gordon conducts his research, students encountered “Lokomat” – a robot that stroke and brain injured patients can wear to help them regain the ability to walk through retraining.

Research is enhancing understanding of the body’s underlying nervous and mechanical systems responsible for walking abnormalities in those with a brain injury. Computer controls and a combination of sophisticated robotics are tuned to the individual’s physical stamina and level of progress. Over time, incremental adjustments, now controlled by computer, gradually increase the patient’s reliance on his or her own strengthening limbs and less on Lokomat.

While the motivation to regain independence following injury is high, the task can be painful, and since rehabilitation is repetitive, it can be tedious. Students could see that computer science expertise might alleviate tedium problems while motivating other benefits. Adding a visual component to the retraining that would endow the training facility with conditions that patients might encounter in real life could reduce boredom. But also, ideas like this could increase the flexibility of the system and help researchers.
understand how patients might behave under real world conditions.

Targeted Reinnervation — Using Nerves to Move Artificial Limbs: The Neural Engineering Center for Artificial Limbs (NECAL) is home to a new form of prosthetic limb used to aid persons who have suffered amputation. Researchers are working to improve both limb function and quality of life. Currently, amputees are only able to operate one motion at a time with myoelectric prostheses. At the NECAL laboratory researchers are experimenting with targeted reinnervation to improve myoelectric prosthesis function by transferring amputated nerves to spare muscle and skin in an amputee’s residual limb. Dr. Joseph Barton explained the procedures needed to control these new systems for prosthetic limbs using muscle activity from the remaining limb. The exciting part of this research is that patients operate the prosthetic arm as if it were their own because of the targeted reinnervation, pioneered by lab director Dr. Todd Kuiken.

Unclenching Fists — Grasping Virtual Reality: Stroke induced weakness (hemiparesis) or paralysis (hemiplegia) on one side of the body can leave a patient unable to use muscles in a hand affected by stroke. In the Neuromuscular Hand Rehabilitation Lab, Dr. Derek Kamper is designing rehabilitation devices and procedures that help survivors to regain use of hands. The current device assists with finger extension. The therapeutic training uses a virtual reality environment to facilitate hand rehabilitation training. They use a 3D model of the index finger to facilitate the study of motor control and to predict the effects of potential therapeutic interventions, while a pneumatic glove trains patients to use their encumbered hand. The union of VR with therapeutic devices has shown to be promising avenue of recovery, and College of Engineering computer science students are quite familiar with virtual reality. Here, they met patients using a Head Mounted Display showing various objects that they can grasp with their instrumented hand. This appliance aids the patient in opening his or her hand to grasp the virtual object. Seeing VR applications in use by patients helps the students to comprehend the extent to which patients can grasp a virtual object and their physical limitations. They saw a need in both the design of the visual images and for more interesting tasks to perform.

VRROOM: In the Virtual Reality Robotic Optical Operations Machine Laboratory where College of Engineering alumnus Chris Scharver (2005 MS Computer Science) is a researcher, students were exposed to the design, development, and tests for a new robotic interface for upper-limb rehabilitation of brain-injured individuals. These novel systems safely operate in three dimensions with a large workspace and an appropriately designed visual interface. Again, VR coupled with robots is helping patients recover faster and increasing understanding of what the brain needs to aid healing. Using robotics, Dr. James Patton, the director, demonstrated how the application of forces to the moving hand of a stroke victim could successfully reduce recovery time from days to hours. Other robots produced similar results. Said Professor Kenyon, who frequently collaborates with Drs. Kamper and Patton on journal articles, “The visit to RIC was an exceptional experience that all of my students said they would remember. With first-hand exposure to physical rehabilitation and the role of the computer, they now have more insight into what is needed to design software for a variety of users, whether disabled or able-bodied.”

“The visit to RIC was an exceptional experience that all of my students said they would remember. With first-hand exposure to physical rehabilitation and the role of the computer, they now have more insight into what is needed to design software for a variety of users, whether disabled or able-bodied.”

Darshan Bhatt, a Master’s student, remarked that this trip “changed my life.” The outcome? Bhatt is now interested in pursuing research in that avenue where computer science and medical rehabilitation meet. Kenyon encourages alumni to provide access to research for all students, whether through in-depth tours for classes or internships for talented individuals.
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Dear Alumni and Friends,

Why are you a donor to the College of Engineering?
Is it because of the quality of education that you received? The increasing value of your education, even years after graduation? A special faculty member? Maybe someone helped you and now you want to share your good fortune. Or you feel that contributing to the education of our next generation of engineers is a way to support the mission of public higher education.

Giving back is a positive contribution to society. It is also part of a personal journey.

All of us reach a point in our lives when we start thinking about how we can make a difference, how we can say thank you or return something of value to our communities in a way that says “I believe in what you do and I want to help out!” Each time I make a gift to the College of Engineering that is exactly how I feel.

When I introduce a donor of a scholarship to the student recipient, I see the look of gratitude and the bond between them. They connect - past and future. College is not affordable for everyone, even at a public institution. Without a pool of scholarship funds raised from private sources, like our alumni, UIC misses the opportunity to educate potential engineers. I give to the College that is so much a part of my daily life because I see the results.

What about you? Do you see yourself in our current students?

In 2007, our engineering community will reach 18,000 alumni. The lives of our newest alumni, possibly like yours, have been changed as a result of that decision to pursue engineering as a form of education as well as a profession. Some things have not changed over time. Many of these aspiring engineers are immigrants or their children, or the first in their families to attend college. Most work to pay tuition. Many of them need and would benefit greatly from scholarship support. That is one of Dean Banerjee’s greatest priorities.

We hope that you believe strongly in our mission, too. That is why we ask you to support the College of Engineering with an Annual Fund gift.

Large or small, your gifts make a difference in the life of the College.

The impact on students is dramatic. That good feeling knowing that you are contributing to the growth and development of your college is an additional return on your investment.

And, please remember the mathematics of giving. If just one quarter of our alumni make an Annual Fund gift of $100, we will raise nearly half a million dollars in scholarship support, a year.

On behalf of our students, faculty, and staff, thank you for your support. You are a UIC engineer and you are our greatest accomplishment!

We are happy to meet with you in the event that you would like to learn about other funding priorities in your College of Engineering or other methods of giving.

Warm regards,

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Editor, Engineering News
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We are proud to represent Excellence in Engineering in the Heart of Chicago and to count you as a supporter!

Thank you,
Prith Banerjee
Dean of Engineering and UIC Distinguished Professor

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Engineering Alumni Association Reaches $25,000 Scholarship Fund Goal
“A group commitment to rewarding student leadership allowed us to raise the funds necessary to increase these scholarships,” says EAA Treasurer Sunondo Roy about the success of the EAA Scholastic Fund Challenge during the spring 2006. “We thank all of our classmates and friends who made additional gifts this past year in order support both the Annual Fund and the EAA Challenge.” The Engineering Alumni Association achieved its goal of reaching $25,000 for the EAA Scholastic Award Fund. Begun in 2001, by Roy and other EAA Board members who first organized a golf outing to raise funds, the EAA annually honors one or two continuing undergraduates for their leadership contributions to student professional engineering societies and other campus groups, based on dedication and activity, and continued educational achievement. The College of Engineering Scholarship Committee chooses recipients.

The EAA is your engineering alumni association. In 2006, the Board committed $2,500 in matching gifts to the challenge from your annual or life membership dues to the University of Illinois Alumni Association, which provides the operating funds of the EAA. Each and every one of who is a UI Alumni Association member is a contributor to this cause.

The EAA salutes its friends and classmates who have made this scholarship possible through gifts received from November 2001 through October 2007.

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The gift levels for a named deanship, institute, center, college, or department are linked to University of Illinois budget allocations and must be approved by the Provost and Chancellor. The faculty of the College of Engineering will meet to evaluate and accept these generous gifts.
Q. Writing to University of Illinois Alumni Association members last spring, the EAA told the story behind its Scholarship Award Fund, which now exceeds $25,000 in principal. Why did the EAA choose to fund an endowment? Why not raise funds every year for the amount that you want to award?

President Debra Evans: “As engineers, this was an easy decision. We evaluated the options. Endowments last forever, allowing us to leave something for future engineers. Each time we add a donation into the fund, it’s not spent, but the interest from that gift allows us to provide a bigger scholarship the next year. We’re now giving two scholarships a year.”

Treasurer Sunondo Roy. “There is a second reason. Educational costs keep rising. We need to budget the amount available for student scholarships, not just rely on annual fundraising where there could be fluctuation.”

Q. What led up to these decisions?

Vice President – Programs Jerry Meyerhoff: “We are proud our volunteer work. But, we also had an idea that we wanted to be ever more involved with the lives of students. We wanted any money we raised from the social events and technical talks to go purposefully toward a goal. It made it easy to gather alumni for golf outings that Sunondo organized if the golfers knew there was a charitable challenge behind their day of fun.”

Q. Was there personal motivation behind the decision to endow an award?

Evans: “Absolutely. Tuition costs a lot. We all know how we struggled to pay for our education. I worked and I suspect all of us on the Board did. Some of us have raised families while we were in school. Every scholarship means a student can pay a bill, buy books, devote time to studies and professional accomplishments, and prepare to be an engineer. In many ways, it also extends our family to include these students.”

Q. This was a group project. How did it work out?

Meyerhoff: “When we started big, focusing on an endowment, we knew it would take time. Everyone was on board so after every event, it became easier to see that the outcome that we projected would be met. It came together faster than we expected. The corporate and individual sponsors of our golf outings provided a substantial bounty of large gifts. When we inaugurated the endowment, our initial contribution exceeded $12,000.”

Q. Today where does the Fund stand?

Roy: Alumni seem very interested in everything that is going on in the College of Engineering. We know that the average donation to the College is rising. Well the average gift to the EAA Fund is increasing too, and these gifts count toward the Annual Fund goal for the College. The good news – we exceeded our goals for 2006, going over $25,000.

Q. Who have received the EAA Scholarships?

Meyerhoff: So far we have presented the scholarship awards to five wonderful students. Daniel Lungstrom, Sam Pro and Neelima Vidula received the first ones. The 2006 recipients are Francis Zurek, a civil engineering student and Theophile Ntandja, studying to be an electrical engineer.

Q. What comes next? Are there more opportunities for alumni to donate to the EAA Fund?

Evans: We should look at this as the beginning of a trend of building endowments to secure the future of our College of Engineering and its students. Anyone can make a donation to the EAA Fund, of any size. The fact is that there are two types of giving. That means that in addition to a regular Annual Fund gift that helps Dean Banerjee meet his annual financial goals for student and college programs, all alumni can give a gift to the alumni endowment and know that they are leaving a legacy.

I want to make a suggestion to my fellow alumni. We engineers should always do the math. One does not have to be rich to leave a wonderful gift. Make a donation of a few thousand dollars to the College and fulfill a promise to build it to $25,000 or more through monthly electronic transfers made over a few years. You can do it with a group of friends or family members. And, don’t forget to apply for a corporate match from your employer. It’s easy to see a great benefit with a huge return measured through future engineers.

The next challenge is to build the EAA Scholarship Award Fund to $50,000.00. Your contributions may be made on-line at www.uic.edu/depts/enga or by mailing a check made payable to the UI Foundation and designated for the EAA Scholarship to the University of Illinois Foundation, PO Box 3429, Champaign, IL 61826-9916.

Debra P. Evans, President, Engineering Alumni Association
Welcome New Faculty

The College of Engineering welcomes its newest faculty, Dr. Elodie Adida and Dr. David T. Eddington.

**ELODIE ADIDA** is an assistant professor in the Department of Mechanical and Industrial Engineering. She received her Engineering Diploma in 2002 at Ecole Centrale Paris, Chatenay-Malabry, France and a Ph.D. in Operations Research in 2006 from MIT. Dr. Adida’s major interest is in modeling mathematically real world decision-making problems and providing efficient ways to solve them. Her research is currently focusing on modeling the presence of uncertainty in an optimization problem in a realistic yet tractable way, via the use of the robust optimization methodology. Areas of applications include pricing and revenue management with uncertain data. She is also interested in the determination of Nash equilibriums in oligopoly systems and quantifying the loss of efficiency at equilibrium due to the lack of coordination, in areas such as competitive supply chain management.

**DAVID EDDINGTON** is an assistant professor in Bioengineering. He received his BS in Materials Science and Engineering in 2000 from UIUC and then an MS and Ph.D. in Biomedical Engineering from the University of Wisconsin-Madison in 2002, and 2004, respectively. Dr. Eddington was a postdoctoral associate at the University of California at San Diego and a postdoctoral fellow in the Division of Health Science and Technology, a collaborative project of Harvard University and MIT. He is the principal investigator in the Biological Microsystems Lab. There the research interests include developing and utilizing microfabrication techniques to study biological phenomenon and solve current medical problems, recapitulating cellular microenvironments for tissue engineering research and developing new systems for peptide drug delivery. His research lab will focus on applying microfluidics to multiplex biological techniques and enable highly precise large-scale biological investigations. In addition to microfabrication assisted biological research, they are interested in developing new drug delivery systems. Peptide therapeutics comprise a growing portion of the pharmaceutical development pipeline and microfluidic systems provide a unique toolset to build and develop exciting new drug delivery devices.

Honoring Excellence in Teaching

The College now recognizes five faculty members each year who make outstanding contributions to engineering education with the new Faculty Teaching Awards. The Faculty Teaching Awards are based on excellent student evaluations, course enrollments and course level in the courses where these evaluations are obtained, with larger enrollments and lower course levels more heavily weighted. It also considers significant curriculum changes beyond the normal yearly course revisions, significant lab upgrades that exceed normal annual upgrades, and the creation of new courses at an undergraduate level by the faculty member.

Congratulations to lecturer VLADIMIR GONCHAROFF (1) (Electrical and Computer Engineering), visiting associate professor SAEED MANAFZADEH (2) (Mechanical and Industrial Engineering), assistant professor of transportation engineering ABOLFAZL MOHAMMADIAN (3) (Civil and Materials Engineering), associate professor LUDWIG NITSCHE (4) (Chemical Engineering), and lecturer DALE REED (5) (Computer Science) who all received the 2006 College of Engineering Faculty Teaching Awards.
Faculty NEWS

Computer Science faculty Tanya Berger-Wolf, Bing Liu, Peter Nelson, and Lenore Zack attended the 2006 Microsoft Research Faculty Summit, an invitation only opportunity for academic researchers and teachers join Microsoft researchers and product engineers and architects for in-depth presentations and discussions of computing problems and research trends. The theme year was “Computing at the Center of Transformation.”

John Bell and Mitch Theys helped UIC Host the ACM-International Collegiate Programming Contest. Three student teams placed 6th, 7th and 16th on site and placed well regionally.

Isabel Cruz (right) was the Program Committee Co-chair for the 5th International Semantic Web Conference, a major international forum on visionary and state-of-the-art research. The Semantic Web augments the current Web with formalized knowledge and data that can be processed by computers for the automation, integration and reuse of data across various applications. Facilities and technologies to put machine understandable data on the Web are rapidly becoming a high priority for many communities. She is pictured with Professor Jane Fountain (University of Massachusetts-Amherst). EVL’s co-director Jason Leigh delivered a keynote speech at the International Symposium on Flow Measurement in Cerebrovascular Surgery held at the University of Illinois at Chicago in the Department of Neurosurgery. His topic was “The Principle’s of Hemodynamics.”

A pod cast from GenCast, Genetic Engineering News, on August 3, 2006 features an interview with Hui Lu and Ann Reed, an adjunct professor and senior director of the iBIO Institute, about careers in bioinformatics. Hear this 10-minute interview at www.genengnews.com/genCasts.aspx.

Sudip Mazumder is the new Editor-in-Chief of the International Journal of Power Electronics. He has also been selected as the Tutorial Co-Chair for the 2007 IEEE Power Electronics Specialists Conference.

G. Ali Mansoori has been appointed as the honorary editor-in-chief of the International Journal of Nanoscience and Nanotechnology. Mansoori is also the coauthor of a new book on “Molecular Building Blocks for Nanotechnology,” which will be in the market in early 2007.

WJ Minkowycz received the Heat Transfer Division 2006 Classic Paper Award at the ASME IMECE meeting in November 2006. This award was established in 1997 recognizing seminal papers in the heat transfer area. The paper, co-authored with Ping Cheng, is entitled “Free Convection about a Saturated Porous Medium with Application to Heat Transfer from a Dike” and was originally published in the Journal of Geophysical Research, Vol. 82 in 1977.

Karl Rockne and collaborators professor of Biological Sciences Mary Ashley and Steve Forman of the Chicago Botanic Garden, received a $2.75 million IGERT award from the National Science Foundation on “Ecology, Management and Restoration of Integrated Human/Natural Landscapes.” The goal of this project is to develop a new doctoral program called LEAP -- Landscape Ecological and Anthropogenic Processes -- that is set on promoting and preserving biodiversity in cities, subsurbs and other areas dominated by humans.

Robert Sloan is a 2006-2007 recipient of the UIC Award for Excellence in Teaching, joining a select group of faculty acknowledged as UIC’s most dedicated and outstanding teachers.

Thomas L. Theis, director of UIC’s Institute for Environmental Science and Policy, and professor of Civil and Materials Engineering, has been reappointed for a three year term as a charter member to the United States Environmental Protection Agency’s Science Advisory Board (SAB). SAB charter members consist of 35 experts drawn from universities, non-government agencies, industries, national laboratories, and state governments representing the breadth of the environmental disciplinary spectrum. The SAB is the EPA’s principal source of expert advice on technical issues underlying EPA policies and decision-making. Theis has served on the SAB in various capacities since December 2000.

College Office of Undergraduate Affairs

Professor Michael McNallan, second from right, is the new associate dean of Undergraduate Affairs, appointed for a term of five years. McNallan is a professor in the Department of Civil and Materials Engineering. He joined the College of Engineering in 1978 with a Ph.D. From MIT. He has most recently served as Director of Graduate Studies in his home department.

Sharad Laxpati, who previously served as the associate dean of Undergraduate Affairs has stepped down from that position and returned to teaching in the Department of Electrical and Computer Engineering.
Four Faculty Become University Scholars

For the first time, four internationally known faculty of the College of Engineering have been honored as University Scholars. Named for 2006–07 are professors Clement Yu and A. Prasad Sistla of the Department of Computer Science and Piergeorgio L.E. Uslenghi and Derong Liu of the Department of Electrical and Computer Engineering.

In recognition, each scholar is awarded an unrestricted grant of $10,000 for each of the next three years to be applied at the discretion of the winner. The goal of the University Scholar program is to attract and retain excellent faculty; the award will enhance their scholarly work.

Meet this outstanding group.

PIERGEORIO L.E. USLENGHI began his career at UIC in 1970 after receiving his Ph.D. in physics from the University of Michigan. He also holds a Dott. Ing. Electrical Engineering from the Politecnico de Torino, Italy, and is the essential player in the international engineering programs between that institution, and Politecnico de Milano, with the College of Engineering. Uslenghi is also the associate dean for Internet Programs, directing that Master of Engineering program. He is an IEEE Fellow and, in 2001, was the president of the IEEE Antennas and Propagation Society. Uslenghi co-directs the Andrew Electromagnetics Laboratory where his research is in electromagnetics, scattering theory, modern optics, solid state, and applied mathematics. This research includes efforts in the development of analytic-numerical models for scattering by anisotropic materials, frequency-selective sheets and imperfect conductors; studies of diffraction by bodies with cavities; model theory of graded-index anisotropic optical fibers; evaluation and modification of radar cross sections; design, measurement and evaluation of radar absorbing materials; nonlinear electromagnetic properties of composites.

DERONG LIU is currently serving as the director of graduate studies for his department and is the director of the Computational Intelligence Laboratory. His research focuses on approximate dynamic programming, bioinformatics, computational neuroscience, control neural networks, power systems, wireless communications and wireless networks. Liu is the associate editor of the IEEE Transactions on Neural Networks. A Fellow of IEEE, he was also associate editor of IEEE Transactions on Signal Processing and Circuit and Systems. He received his Ph.D. in electrical engineering from the University of Notre Dame and was with the Stevens Institute of Technology and the General Motors Research and Development Center before joining the College of Engineering faculty in the Department of Electrical and Computer Engineering.

A. PRASAD SISTLA is recognized for his research contributions in the areas of formal methods for concurrent systems, databases, distributed systems and security. Having received his Ph.D from Harvard University in computer science and applied mathematics, his work in formal methods deals with issues of primary importance in the design, development and verification of correct, reliable, concurrent systems. With professors Ed Clarke of Carnegie Mellon University and E. Allen Emerson of the University of Texas at Austin, Sistla is one of three co-founders of the computer science subfield introducing the model checking based approach. This work uses the branching time temporal logic CTL for verification. Model checking is now one of the important practical methods for checking correctness of hardware systems and is used in leading companies such as Intel and Cadence. A member of IEEE and ACM, Sistla is the associate editor of the journal Formal Methods in System Design.

CLEMENT YU is known internationally for his computer science research in database and information retrieval including a well-recognized paper to determine the membership of a query (tree or cyclic query) known as the GYO reduction in the database literature - "Y" in "GYO" stands for Yu; "O" stands for Ozsoyuglu, a former student of the Professor Yu - and a process to linearize non-linear recursive rules that is referred to as ZYT linearization. There, "Z" and "T" stand for Zhang and Troy, former students of Professor Yu. Yu has co-founded two companies, Webscalers and PharmIR. Webscalers is a meta-search engine company, which attempts to cover the entire Web. PharmIR applies information retrieval techniques to the pharmacy domain. It is likely to expand to other health care areas. Yu received his Ph.D in Computer Science at Cornell University. He served as the general chair for the ACM SIGMOD 2006 conference and has served as a member of editorial boards or a the associate editor for several journals such as IEEE TKDE and WWW: Internet and Web Information Systems.
Faculty NEWS

A paper co-authored by Wei Qu and Professor Dan Schonfeld received the Best Student Paper Award at the IEEE International Conference on Image Processing. This conference received 2100 submissions received this year, of which 856 were accepted. Their paper is entitled: “Robust kernel-based tracking using optimal control.”

Michael Stroscio and Mitra Dutta presented an invited tutorial on Bioelectronic Applications of Integrated Mannmade Nanostructures and Biomolecules and gave a presentation on Integrating Mannmade Nanostructures with Biological Structures at IEEE Nano 2006. Professor Stroscio chaired the session on Nanomaterials and Nanostructures. He has also been appointed as the Technical Program Chair of the 2007 Nano-electronic Devices for Defense and Security Conference organized by several DoD agencies. Congratulations to Daniela Tuninetti, who was awarded a NSF CAREER Award. Her research proposal is titled “Etiquette for Collaborative Communications and Networking.” She also recently was appointed an associate editor for IEEE Communications Letters and a Technical Program Committee member for the “26th Annual IEEE Conference on Computer (INFOCOM 2007).” Tuninetti will also serve on the Technical Program Committee for WCN3: “Wireless Networks: Communication, Cooperation and Competition.”

William Worek, professor and head of mechanical and industrial engineering and director of the Energy Resources Center, was featured in a report on the PBS Nightly Business Report, airing locally on WTTW Channel 11. The report examined the ways a manufacturing plant in Milwaukee has tightened operations to reduce energy use and costs. Also, his presentation on The Utilization of Combined Heat and Power is one of the five lectures included in The US Department of Energy National Webcast Lectures Series 2006. Entire presentation is available for viewing as a webcast at National IAC Webcast Lecture Series Web site.

Miloš efran received a new NSF grant in the amount of $245,000 titled, “Haptic playback: A new approach to teaching of sensorimotor skills.” His proposal aims to further the understanding and applications of haptic playback, a paradigm for displaying both position and force data streams to the user, one through a haptic device and the other through a visual display.

Dialogue - Keeping Students and the Deans Up to Date

One aspect of the implementation of the College of Engineering Strategic Plan for 2010 is causing remarks – all from the students. Another has genuinely upgraded faculty and student participation in advising.

In 2004-2005, Dean Prith Banerjee held 12 meetings with undergraduate and graduate students to explain the College’s new strategic planning process and discuss portions of that plan that could impact current students and those who would follow them. Now, in the 2007 academic year, Dean Banerjee again held student meetings, this time six meetings with undergraduates to obtain their feedback on how the College is doing with regard to undergraduate education.

“I want to learn in a forthright way what our students think about their education. At the same time, I want to share information on student enrollment and graduation trends in the nation and the College and departments, as well as career placement along those lines. Naturally, this is presented within the bounds of the College Strategic Plan, so they can see that the changes we are implementing and our targets are all part of a larger picture. I’m committed to involving our engineering undergraduates. They deserve to be knowledgeable about their College and have their opinions respected,” said Banerjee. Coming into the meetings, which involved a departmental representative such as the director of undergraduate studies in each department, Banerjee knew some of the subjects on the minds of students. This included improving advising, upgrading instructional labs and curriculum changes.

The remainder of the agenda – “Open to all of their ideas and comments!” said Banerjee. “When it comes to planning the academic future for an individual student, we need a parallel commitment. I am pleased to say that we are serious about improving the quality of advising and proper course scheduling,” explained Banerjee. “This means making everyone responsible for its accomplishment. I was able to remind the students in person and also in writing that they must meet with their assigned advisor from their home department during the 10th week of the semester to get help with a wide range of academic and professional matters, including course selection. We have put a no-excuses but anonymous evaluation program in place.”

It works this way. As each student meets with the advisor as a requirement for registering for classes, the student must now obtain a timely signature on the new Faculty Advising form. Students then complete an anonymous Advisor Evaluation Form, with both handed in at the same time. These evaluations are placed in a box to be delivered to the Dean’s office.

This is not just another form according to Undergraduate Dean Michael McNallan. “The College is looking carefully at this data, tabulating it for the department. The questions are simple and important. We ask whether the advisor shows genuine concern for the student’s academic and professional development, and has detailed knowledge of curriculum and provides solid advice about courses. We also ask if the advisor was actually available during advising week, and whether the student was encouraged to come at other times beyond the required meeting to discuss progress.”

Newly implemented changes in the undergraduate advising program require all tenured and tenure track faculty and lecturers to advise undergraduate students so each student will have the same advisor throughout her or his continuous enrollment in an undergraduate major. There are faculty incentives. Dean Banerjee plans to use the advisor evaluation data in evaluating faculty performance for both annual salary raises and at the time of promotion and tenure. Six faculty members each a year will receive Best Advisor Award for that academic year.
Michael Stroscio Honored as Third Hill Professor

A prominent writer, Stroscio is the author of more than 300 journal and conference publications and 19 book chapters and the holder of nine patents. Prior to joining UIC in 2001, he held a series of federal government positions, the last of which was as the principal scientist at the Army Research Office for ten years, as well as holding adjunct professorships at several universities. He is a Fellow of the IEEE, American Academy for the Advancement of Science, and American Physical Society. He is the recipient of the Issai Lefkowitz Award and the IEEE Harry Diamond Award.

The College of Engineering has received three $500,000 Professorships thanks to the generosity of Richard S. and Loan B. Hill. Mr. Hill is the Chairman and CEO of Novellus Systems, Inc. and chair of the College of Engineering Dean’s Advisory Board. The two earlier recipients of the Hill Professorships are Professor Ahmed Shabana, Mechanical and Industrial Engineering, and Professor Ouri Wolfson, Computer Science.
Meet Our Scholars

Meet the faculty members who have received distinguished titles and have been elected to the most influential professional societies in the engineering world. From the National Academy of Engineering and the American Association for the Advancement of Science to field specific organizations, the world of innovation is in their hands.

National Academy of Engineering
Subrata Chakrabarti
Rodica Baranescu

UIC Distinguished Professors
2001 Alexander Chudnovsky
2001 Thomas DeFanti, emeritus
2002 Tadao Murata, emeritus
2004 Prith Banerjee
2004 Mitra Dutta

College of Engineering Named Professors
W.J. Minkowycz, James P. Hartnett, Professor of Mechanical Engineering
Energy Systems
Ahmed A. Shabana, Richard and Loan Hill Professor
Ouri Wolfson, Richard and Loan Hill Professor
Michael Strasico, Richard and Loan Hill Professor

College of Engineering Distinguished Professor
2000 Faydar L. Litvin, emeritus

University of Illinois Scholars
1986 to 1989 Wai-Kai Chen, emeritus
1988 to 1991 Daniel Graupe
1989 to 1992 Thomas DeFanti, emeritus
1989 to 1992 Wolfgang-Martin Boerner, emeritus
1990 to 1993 Tadao Murata, emeritus
1991 to 1994 Suresh K. Aggarwal
1993 to 1996 Prith Banerjee, UIUC
1994 to 1997 Jeffrey J.- P. Tsai
2002 to 2005 Jezekiel Ben-Arie
2004 to 2007 Michael A. Strasico
2005 to 2008 Farid Amirouche
2006 to 2009 Piergeorgio L.E. Uslenghi
2006 to 2009 Clement Yu
2006 to 2009 Derong Liu
2006 to 2009 A. Prasad Sistla

National Science Foundation Young Investigator and CAREER Awards
1987 Prith Banerjee
1994 Ludwig C. Nitsche
1996 Isabel F. Cruz
1997 Piotr J. Gmytrasiewicz
1998 Thomas J. Royston
1999 Ashfaq A. Khokhar
1999 Ajay D. Kshemkalyani
1999 John Lillis
1999 Derong Liu
1999 Farzad Mashayek
2001 Milos Zefran
2001 Florin Balasa
2002 Barbara Di Eugenio
2002 Jie Liang
2003 Sudip Mazumder
2004 Patrick J. Rousche
2004 Karl J. Rockne
2005 Bhaskar DasGupta
2005 Laxman Saggere
2006 Daniela Tuninetti

Office of Naval Research Young Investigator Awards and Department of Energy Early Career Awards
1999 Farzad Mashayek
2003 Oliver Yu
2005 Sudip Mazumder

Fellows of Professional Societies
A Fellow is the highest elected grade of membership within professional societies. Those elected as Fellows are chosen by their peers in recognition of their exceptional engineering achievements and their long-term contributions to the engineering profession.

Academy of Dental Materials
James Drummond

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American Association for the Advancement of Science
Gyan C. Agarwal, emeritus
Prith Banerjee
Wolfgang-Martin Boerner, emeritus
Subrata Chakrabarti
Wai-Kai Chen, emeritus
Mitra Dutta
Lawrence A. Kennedy, dean emeritus
Gyungho Lee
James C. Lin
Michael A. Stroscio
Thomas T.C. Ting, emeritus
Jeffery J.-P. Tsai

American Concrete Institute International
Mohsen A. Issa

American Institute for Medical and Biological Engineering
Gyan C. Agarwal, emeritus, founding member
James C. Lin, founding member

American Institute of Aeronautics and Astronautics
Lawrence A. Kennedy, dean emeritus

American Institute of Chemical Engineers
G. Ali Mansoori

American Physical Society
Lawrence A. Kennedy, dean emeritus
Michael A. Stroscio

American Society for Metals International
J. Ernesto Indacochea
Michael J. McNallan

American Society of Civil Engineers
Subrata Chakrabarti
Vijay K. Garg

American Society of Mechanical Engineers
Suresh K. Aggarwal
Farid Amirouche
Prashant Banerjee
Sabri Cetinkunt
Subrata Chakrabarti
William DeFotis, emeritus
Vijay K. Garg
Krishna C. Gupta
Lawrence A. Kennedy, dean emeritus
Faydor L. Litvin, emeritus
Farzad Mashayek
Constantine M. Megaridis
W.J. Minkowycz
Ahmed A. Shabana
Thomas T.C. Ting, emeritus
William M. Worek
Chien H. Wu

American Society of Mechanical Engineers
Suresh K. Aggarwal
Farid Amirouche
Prashant Banerjee
Sabri Cetinkunt
Subrata Chakrabarti
William DeFotis, emeritus
Vijay K. Garg
Krishna C. Gupta
Lawrence A. Kennedy, dean emeritus
Faydor L. Litvin, emeritus
Farzad Mashayek
Constantine M. Megaridis
W.J. Minkowycz
Ahmed A. Shabana
Thomas T.C. Ting, emeritus
William M. Worek
Chien H. Wu

Association for Computing Machinery
Prith Banerjee
Thomas A. DeFanti, emeritus
Ouri E. Wolfson

Alexander von Humboldt Society
Wolfgang-Martin Boerner, emeritus

International Engineering Consortium
Thomas A. DeFanti, emeritus

Institute of Electrical and Electronics Engineers
Gyan C. Agarwal, emeritus
Rashid Ansari
Prith Banerjee
Wolfgang-Martin Boerner, emeritus
Wai-Kai Chen, emeritus
Mitra Dutta
Daniel Graupe
James C. Lin
Derong Liu
Tadao Murata, emeritus, Life Fellow
Michael A. Stroscio
R. Michael Tanner
Jeffery J.-P. Tsai
Piergiorgio L.E. Uslenghi
Hung-Yu David Yang

International Society for Health Monitoring of Intelligent Infrastructure
Farhad Ansari

International Society for Optical Engineering
Wolfgang-Martin Boerner, emeritus
Soyoung S. Cha

Optical Society of America
Wolfgang-Martin Boerner, emeritus
Mitra Dutta

Palmes Academiques
Farid Amirouche

Regional Science Association International
David E. Boyce, emeritus

Society for Design and Process Science
Jeffery J.-P. Tsai

Society for Exploration Geophysics
Wolfgang-Martin Boerner, emeritus

Society of Automotive Engineers International
Rodica Baranescu
“Nihon-go no jouzu ni naritakatta desu,” said Michael Leonhard, a December 2006 computer science graduate. Roughly translated, Michael wanted to improve his Japanese. So Michael opted to go directly to the source. Through the UIC Office of International Affairs student exchange program, he attended Chiba University, just outside of Tokyo. After his once-in-a-lifetime, yearlong stay in Japan, Michael finds it easy to say, “Nihon de ryugaku suru no ga totemo ii keiken deshita!” That means, “Studying abroad in Japan was a great experience.” He hopes his UIC classmates will see the need for a global experience.

Home was the International Dorms at Chiba University, five buildings where 220 students from “everywhere” resided in tiny rooms. About half of the foreign students were from China. The rest were from the USA, Peru, Ecuador, Brazil, Germany, Belgium, Italy, Spain, Hungary, Romania, Syria, Russia, Azerbaijan, Mongolia, Korea, Hong Kong, Taiwan, Thailand, Cambodia, Indonesia, Philippines, and Australia. Japanese was their common language.

Michael recalls the dorm rooms, and camaraderie, with affection. “The rooms and everything in them are very tiny, but they do contain everything you need to live on a budget: a bed, desk, tiny closet, shower, sink, toilet, and a tiny kitchenette with an electric hotplate, exhaust fan, sink, and tiny refrigerator.”

“When I arrived in Japan, I was disappointed to not live with the Japanese students. But now I’m glad that I lived with the other international students. It was so much fun! Of course, we had some
There is much more to Michael Leonhard’s story.

Michael’s true objective goes beyond improving his own conversational language skills. His employment and engineering training have helped shape his research interests. Michael says that his long-term career goal is to transform the core software engineering tools to make it easy to create software that handles text in all languages.

In a competitive and rapidly changing world, this would vastly increase the number of programs that work successfully with symbols or non-Roman script, such as Arabic or the Asian languages, or non-English accents and special characters, as found in Spanish, French, Portuguese or German.

Some of the most popular software programs support all varieties of language very well. Users can apply Japanese, Spanish, and English characters in the same document. Other programs, like the popular iTunes, support English and just one other language, such as Japanese. Take English out of the picture and the outcome can be different says Leonhard, “Suppose your Windows computer is set to ‘Japanese’ as its preferred language and you add a Spanish song to your iTunes playlist. What should be an accented letter in Spanish is displayed as a random Japanese character! Other less sophisticated software fails to handle non-English characters entirely, showing little squares in place of characters and refusing to open files whose names contain such characters.”

“I know first-hand that our world is becoming more international every day. "To remain competitive, U.S. software developers - all software developers - must acknowledge their future global customers, and learn and switch to a worldwide standard called UNICODE." In fact, to be successful, the first "fix" to this problem is to alter the tools that programmers use to create software the compilers, editors, and libraries of code. That is his chief career goal.

Michael also wants to turn his creative powers to new solutions to the way in which impoverished people of the world might conduct business on the Internet in the future.

While at UIC, Michael has worked for Opportunity International, a global micro-finance organization that provides business training and micro-loans to help the poorest people of the world to work their way out of poverty.

"In coming years, billions of people will get on the Internet," he says. "You and I can conduct business using a credit card and the other tools of our economic system. They cannot get a credit card. So, my other long-term goal is to create a payment system for the Internet that is as easy as email. I want to help these people to buy and sell online." To facilitate discussion of this, Michael has set up a wiki at www.http402.org.

Michael Leonard’s future plans are to work at a company that “has many smart people working on cutting edge technology.”
could not attend U.S. universities. Instead, they returned to Japan for their higher education. So when it was his turn, Jeff’s father also went overseas to study. Although a U.S. citizen and identifiable outsider, he remained in Japan rather than join his family in the internment camp where they were confined after the bombing at Pearl Harbor. He fulfilled his compulsory military service in the Japanese army leaving as a first Lieutenant, and eventually raised a family in Tokyo.

At age 9, Jeff, like youngsters around the world, was awe-struck by the early Soviet and U.S. ventures into space. While he first listened to and then watched manned space flights, he planned to someday be there himself.

**Emigrating to the U.S. helped.**

In 1960, the family gained permission to return to the U.S., to Chicago. Jeff became a naturalized U.S. citizen in 1965. By then, the family had settled into a typical North Side life, with Jeff graduating from Lane Technical High School. Admitted into MIT, the Sugano family could not afford that tuition for Jeff, but the newly built University of Illinois at Chicago Circle was both near and affordable. There, he says, he received a great education especially in what was then unconventionally called fluids engineering but was conveniently understood by others as aerospace engineering.

Jeff remembers Professor W.J. Minkowycz for the matrix problems he assigned. Before computers! Jeff used a slide rule in class, but when he did problems at home, he switched to an abacus, which was better for high-level math, and faster. That was a trick to success he did not share with his classmates or faculty.

Graduating in 1970, Jeff enrolled in graduate school at the University of Michigan, only to be drafted within his first semester. Serving in the US Air Force, Jeff flew fighter planes completing his service as a 1st lieutenant. He calls it an irony that both he and his father served in the military of countries not of their birth and achieved the same rank.

While changes in his vision caused him to give up the dream of being an astronaut, it never stopped Jeff from serving the cause of space flight. His insight into flight and his engineering proficiency support his career.

Arriving in Texas in 1976, Jeff met many people who themselves had never met an Asian. They did not know where he was from, what to make of him. That surprise was compounded by his distinctive Chicago accent.

For his entire engineering career, Jeff Sugano has been associated with one program, the NASA Space Shuttle. Each of his employers has had him assigned to the Space Shuttle program. Now with The Boeing Company Orbiter Entry Guidance Group,

**Boeing Orbiter Flight Systems Design and Analysis, and housed adjacent to the NASA Johnson Space Center, Jeff worked in the Aircraft Operations group at NASA Ellington Field in Houston early in this career.**

As a flight simulation software engineer, his job was to upgrade and maintain the Shuttle Training Aircraft (STA) flight software. It also involved training the Shuttle pilots without a Shuttle Orbiter.

In its place, NASA used a highly modified corporate Gulfstream 2 jet that flew like the Shuttle Orbiter in the landing phase of its reentry trajectory. Jeff was responsible for its simulated software measuring intricate aerodynamics, and showing the flight controls, navigation, and guidance systems of an Orbiter.

A trainer, the STA flies differently from the rock-solid Orbiter because it is much smaller, he explains. “In terms of handling, it is susceptible to winds and generally exhibits a more rapid response when you input a command. The Shuttle Orbiter is a much more docile, heavier aircraft.”

Still, the Gulf Stream served its purpose. Its flight computer was modified to run emulated Shuttle flight software that made it look and handle like the Orbiter vehicle. “At main gear touchdown, during landing, the crew is about 35 feet off the ground. The pilots compensated, when they practiced landing in the smaller Gulfstream. They would fly just above the runway to mimic the flight of the actual Space Shuttle,” he explained. “In other words, the STA could fly like the Orbiter coming in at a 19 degree angle.”

It was tricky, but his simulated software was effective.

Over the years, a small team designed and refined the simulator original software; Jeff was part of the group receiving and implementing the suggestions from returned pilots.

Jeff remembers his interaction with the first shuttle crew. He got to know him or her well, and has since met almost every astronaut.

“Whenever we made a change to the software, we had to take a flight to make sure it flew okay. As engineers, we went also along on some training missions, flying out of El Paso over the White Sands Missile Range area, but the flight crew was our guinea pig.”

Along with other Boeing engineers, Jeff has an online recollection of supporting the STS-1, the first Space Shuttle test flight on April 12, 1981, posted in celebration of its 25th anniversary.

Jeff vividly remembers STS-1 flight as one of those experiences that you don’t forget. “I was on-site at NASA Building 2 watching the launch broadcast into the Teague Auditorium. We were afraid that some of the tiles might have come off and a high-powered telescope in Hawai’i was looking at the bottom side of the Shuttle. During the re-entry, during the blackout, I held my breath and hoped for the best.”

“My work on the STA was one of the most fruitful experiences I’ve had. In 1977, I worked through the approach and land tests at Edwards AFB as a part of the Mission Control Team. As one of the flight guidance officers, I was at the actual shuttle landing at Edwards from the Mission Control Center in Houston. But, the STS-1 landing was something else!”

The perfect landing was the moment of truth for Jeff. It proved that the Shuttle Training Aircraft had served its purpose. The crew was prepared.

When the Space Shuttle Discovery landed on July 17, 2006, Jeff was among those at the Johnson Space Center watching Mission Control handle the return. It has been a sweet ride.

Thirty years after coming to Texas, Jeff Sugano is working on the Orbiter glass cockpit and the flight software for the Shuttle. “The glass cockpit project is a lot of fun. I get to see some of the changes I made on the new software,” he added. Jeff hopes to stay on the Space Shuttle program for another five years, which is the time that it too is expected to be retired.

As he told his Boeing colleagues, “Space exploration has always been my dream. It has been amazing to be able to get where I wanted to be and stay as long as I have. It was a dream career. I am very fortunate that actually get to use what I learned at school and it’s been a lot of fun.”

Jeff is married to artist Diane Zwarst, an artist. They have 3 children.

Richard T. Harrigan (UIUC) and Edmund G. Memi (The Boeing Company) contributed to these alumni profiles.
Alumni News

1970s
Kasra Daneshvar (1) is a professor in the Department of Electrical and Computer Engineering at the University of North Carolina.
Anthony Felder is the Chair of the American Concrete Institute Reinforcement and Development Committee.
Brandon Hamilton is president of Hamilton’s Solutions, a management consulting company in Calumet Park, Illinois. Brandon is also an associate professor of Business at DeVry University. Thank you Brandon for your contribution to support the February 2007 Career Prep Day!
Farhad Sadighian is now a professor of international business at Pepperdine University in Malibu, California. He recently retired from 3M Co. after 27 years of business and management career.
Peter Tan has been president of BenQ Latin America since 2001 and has been with the company since 1996, when it was Acer. BenQ, Bringing Enjoyment ‘N Quality to life, is the manufacturer of networked digital lifestyle devices. The Latin American division has about 200 employees. Peter and Diane live in Doral, Florida. He is interested in bringing their daughter for her first visit to campus and the Windy city.

1980s
Daria Hrnialk-Khan, who resides in Kiev, Ukraine, was in the US in April 2006 as a speaker on Chernobyl representing the Shelter Implementation Plan. The conference was held at the UIC School of Public Health.
Ken Rehor, of Palo Alto, California, is an engineering and executive consultant specializing in VoiceXML/CCXML, VoIP, multimodal and voice application network architecture. Ken is now the chair of the VoiceXML Forum. His services include product design and specification, project management, technical due diligence, competitive analysis, and systems engineering. Ken has also served in executive, engineering and R&D roles at various industry leaders such as Vocalocity, Nuance, AT&T and Lucent Technologies.

2000s
The Millennium Classes
Louann Devine, (4) now at Motorola, has joined the Engineering Alumni Association Board. Louann is pictured with Yvonne Liebelt, Class of 1994, who is also an EAA Board member.
Vikas P. Shah, (5) Class of 2003, is in law school. In 2005, he worked in products liability at Horwitz, Horwitz & Associates Ltd., but also had the opportunity to draft a Brief Amicus Curiae on behalf of the Illinois Trial Lawyers Association regarding insurance coverage issues and a Post Conviction Petition with supporting memorandum for relief from a criminal conviction. During the 2006 academic year, he was a judicial extern for The Honorable Matthew F. Kennelly of the United States District Court for the Northern District of Illinois, and during the summer, he worked at Brinks, Hofer, Gilson and Lione, one of the largest IP firms in the country.

Craig Carson is now the director, Project Execution, for BP Alternative Energy Systems, in Houston, Texas. In November, Craig returned to campus for Lunch With An Engineer, a conversation about energy engineering with students. Thanks Craig!
Cherie Heaser, of Lake Zurich, Illinois, has returned to college to become a media specialist.
Chad Hughes (3) joined the Infogix Leadership Group in 2006. He has more than 10 years of software industry experience — all of it in the Infogix Product Development Group. Prior to Infogix, Chad was an Application Developer at the Chicago Stock Exchange.

1990s
Ipek Basdogan (2) is an Assistant Professor of Mechanical Engineering at Koc University, Istanbul, Turkey.

UIC mascot Sparky rode the Portland, Oregon 10 Bridge Ride perched on the helmet of Class of 1971 bike enthusiast and EAA Board member Jerry Meyerhoff.
Argonne National Lab, Caterpillar and Austin/AECOM Technology Corporation Sponsor September 2006 Career Prep Day

Many efforts of the College of Engineering and the Engineering Alumni Association would go undone or under-sponsored without the timely support of alumni and their companies or employers.

For ten years, the Engineering Alumni Association has supported the job-hunting efforts of graduating students through Career Prep Day, a mentoring event now held each semester. The product of discussions initiated by young alumni leaders Jonathan Abon and Brian Domingo, Career Prep Day is provides a series of workshops, panel discussions and one-on-one or small group mentoring by alumni that both puts students at ease with the interview process, and leads them to construct resumes that showcase their exceptional experiences.

Students looking for internships and other part-time employment are encouraged to participate, in order to be well situated in the job-market. Each year 100 to 150 students participate and at least 35-40 alumni return to campus for the day to be a mentor. Alumni have also played a stellar role in asking their corporate employers to step forward as partners in this effort, helping to cover the costs associated with Career Prep Day.

Argonne National Laboratories, a leading employer of UIC engineers and scientists, is the principal sponsor of the Fall 2006 and Winter 2007 sessions as a result of a generous contribution to underwrite much of the costs. Alumnus Dr. Ali Khounsary, a regular mentor at Career Prep Day, facilitated this kind donation. The College of Engineering and the Engineering Alumni Association deeply appreciate this gift and the strong and lasting relationship behind it. Thank you.

Additional corporate donations were received from Austin/AECOM Technology Corporation and from Caterpillar, Inc. Those donations underwrote the cost of refreshments for the event, keeping the students and mentors well focused on their hard work that day. Thank you to five alumni – Joe Mulvey, Bob Kleiber, Rick Lasko, mentor Lorena Gomez, and Samantha Steinberg - who facilitated these gifts.

A heartfelt thank you to additional September mentors: Keith Alsberg, Truman Chua, Louann Devine, Michael H. Goluszka, William Hawes, Fawaad Khan, co-chair Yvonne Liebelt, Imran Lakhwera, Nija Linnear, Jerry Meyerhoff, King May, William Nakulski, Michael Niedzinski, Moses Phenany, Grant Reichard, Frank Riordan, Dusyant Sharma, co-chair Rick Schmidt, Sameer Sharma MD, Riyaz Shipchandler, and William Welter.

The College of Engineering announces with regret that alumnus Keith Roberts passed away in June 2006 in an accident. Keith, age 52, stood out in crowd despite being wheelchair-bound throughout much of his college education due to multiple sclerosis. When he graduated in May 2003, his classmates, their families and faculty recognized his accomplishment; Keith received a standing ovation as he crossed the stage at the Engineering Convocation. Keith was attending graduate school at the University of Idaho. Gregarious, humorous, adventurous, well traveled and an expert on jazz, Keith had made many friends in Idaho.

While a student at the University of Illinois at Chicago Circle, engineering student Robert Krieger first met nursing undergrad Melisande “Sandy” Carlson in the campus bookstore. A member of College of Engineering’s first class – the Class of 1968 – Bob married Sandy shortly after graduation. They lived first in Minneapolis where he started his career with Sperry, then in Iowa. There, Sandy earned a degree in education and Bob co-founded TeamQuest Corp, a software company in Clear Lake, Iowa and Goteborg, Sweden, serving as president and CEO. His TeamQuest Foundation still assists nonprofit organizations to use technology. Bob passed away in August 2004. Bob understood the point at which philanthropy and support of education met and so in February 2006, Sandy established the Robert W.B. Krieger Memorial Scholarship at North Iowa Area Community College as a tribute and to benefit local engineering students. During the summer 2006, Sandy spoke with the College of Engineering about Bob, his accomplishments, and this testament to his memory. Sandy knew that Bob would be pleased. “Bob believed in the importance of education as a means of improving yourself,” said Sandy at the ceremony inaugurating the endowment. “Education is so important for today’s youth and a little help along the way is always appreciated.” In August 2006, Sandy died. Children Ashley and Michael Krieger survive them.

The College of Engineering also recognizes the loss of these fine alumni.


Obituaries
Job-Hunting?
University Of Illinois Alumni Career Center Helps Engineering Alumni Manage Their Careers

“The counseling and mock interviews I received at the Alumni Career Center were timely, insightful and very effective in all phases of my job search from goal setting to planning, to negotiating my salary. …and the staff was a great resource for career advice, job-searching strategies…. It was an important service for me.” — M.S./B.S. Electrical Engineering 2002/1991 UIC

“Did you know that your University of Illinois Alumni Association provides career services? It is a great benefit of membership in the UIAA, according to vice president Mary Anne Buckman. In the past five years, the Chicago-based Alumni Career Center has served 417 engineering alumni, of those who provided profiles, from the University of Illinois campuses. Engineers represented 17.4% of all alumni served and come from the whole spectrum of engineering specialties. The Alumni Career Center provides services for alumni at all age and work levels. In the past three years, 45% were entry level to five years experience, 19% had 5 to 10 years experience and 36% reported more than 10 years experience.

“When employers call the college asking for experienced engineers, we direct them to the UIAA Career Center,” says Ralph Pini, associate dean for Corporate Relations and Career Services. His staff handles internships, co-ops, engineering job fairs and Career Prep Day. Contact them at engrjobs@uic.edu.

Looking for that perfect "next job" involves a lot of effort. The UIAA Career Center makes the process more efficient by offering a variety of services. "Job-hunting can be as individual as each person, but some strategies work very well, and we can help you learn those methods as well as assess the direction your career is taking," explains Buckman.

These one-on-one services include individual career advising in person or by phone, and career assessments taken online and interpreted in person or by phone. Group workshops are available in downtown Chicago. Living elsewhere? Alumni can attend via conference call.

Three online job and resume posting systems—Hire UI Alumni, Experience and MonsterTrak—are available. Add to this an employer database—CareerSearch, which is searchable by location and industry and the UIAA Online Directory, which lists over 40,000 alumni for networking. Scientific and professional journals and trade publications, all of which post openings, are available online through ProQuest/ABI-INFORM Complete.

The University of Illinois Alumni Career Center professional staff have an average of 15 years of experience each in providing job search, career change and career management services.

Alumni Association membership is required for Alumni Career Center services and covers most online resources. Fees charged for the individualized services are less than half of market value fees for career counseling. The University of Illinois Alumni Association subsidizes the operations of the Alumni Career Center. For more information, go to www.uiaa.org/careers or call 312-575-7830. The Alumni Career Center is located in downtown Chicago, Illinois, on the second floor of the Illini Center at 200 S. Wacker Dr. and can also be reached at careers@uillinois.edu.
Come Home to UIC!!!
From the Class of 1968 to the Class of 2007 - Celebrate the 40 Years of Engineering Education! Attend the College of Engineering Commencement, Saturday, May 12, 2007, 2 PM.UIC Pavilion. Everyone Welcome!

Senior Design EXPO, Tuesday, April 17, 2007, Student Center East: Join a judging team or come home to UIC as a visitor to EXPO, the challenging and exciting presentation of senior research projects. Team projects are demonstrated from 9:00 to 11:30 AM. To volunteer as a judge, contact the Engineering Alumni Association at eaa@uic.edu.

Undergraduate Research Symposium and Sigma Xi Symposium, Friday, April 20, 2007, Student Center East: A campus-wide showcase of independent student research, including engineering students, from 10 AM to 4 PM. To judge or for more information, contact Prateek Gupta at URS@gmail.com or visit the Undergraduate Research Symposium’s Web site at http://www.uic.edu/orgs/urs.

Navy Pier Heritage Project: Special Initiatives To Connect, Sustain and Extend The Historical Legacy Of The University Of Illinois At Navy Pier. Visit the Pier Room in Student Center East, 750 S. Halsted Street, to view photos and memorabilia. Join the Reconnection Receptions hosted by Navy Pier alumni. For information, contact Jennifer Lewis, UIC Alumni Association, (312) 355-3996 or jlewis2@uic.edu.