The College of Engineering of the University of Illinois at Chicago publishes Engineering News. We welcome your comments, suggestions, and news of your professional and personal achievements. Should you have any questions about this issue or about contributing to the College of Engineering, please contact Nancy J. Cohen, editor, Engineering News, and director of development at enginews@uic.edu or address correspondence to Engineering News, College of Engineering (mc 159), 851 South Morgan Street, Chicago, Illinois 60607-7043.

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On the Cover:
As a recipient of the 2006 Illinois AIChE McCormack Award, Angela E. Bish exemplified excellence in study, research, and extra-curricular activities. Student life included working 28 to 40 hours a week and tutoring inner city students through the UIC New Life Volunteering Society. Angela and teammates Olajide Jaji and Sony Mathews took first prize in the Senior Design EXPO Process Design category for their project, Ethanol Production from Reed Canary Grass and won the Arlene F. Norsym Award for the research project selected as most successful by their peers. Today, Angela is a process engineer with Anhydro Inc. where she works in the evaporator division on projects for the starch and ethanol industries.

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Dear Alumni and Friends,

This summer is one of transition. After 23 years in academia and three years as your Dean of the College of Engineering, my family and I have made a decision, long-thought out and difficult. On August 1st, I join Hewlett-Packard as Senior Vice President of Research and Director of HP Labs Worldwide. It is a great opportunity for us. I have greatly enjoyed my time as Dean, which was certainly full of challenges and accomplishments.

It was a busy three years. Just ask the faculty and staff! Together, we made great progress as we implemented our ambitious College of Engineering Strategic Plan. These advances will shape the College for years to come.

Over three years, we recruited the best - 13 talented and diverse faculty members, all from top universities, including six women. Two are Members of the National Academy of Engineering, our most prestigious society. We proudly benefit from a highly-competitive $5 million NSF ADVANCE grant to recruit women faculty in science and engineering.

Our students are great! In August 2007, we will meet an undergraduate enrollment goal as we welcome a student population that has grown from 1,550 to 1,700, all while raising the quality of our students. Forty of the first year students qualify for $2,000 freshman merit scholarships from the College.

Emphasizing graduate education with a direct Ph.D. program and a five year funding model has shown results. In May 2007, we graduated 64 new Ph.D.s, up from 35 graduates last year. We are well on the road to graduating 100 Ph.D.s a year in 2010. We identified the four large collaborative, interdisciplinary research areas of the College as Biotechnology, Nanotechnology, Information Technology and Energy/Infrastructure Technology. These are our core areas of expertise where leading faculty members work and junior faculty are recruited. We successfully received five large grants of $2 million to $3.3 million each, and are preparing for several more NSF Engineering Research Center grants. Our research Web pages describe the projects conducted by our faculty.

Creating Technology Centers as a way to bring in short-term industry research projects, and providing a WIN-WIN-WIN situation for industry, students and university, we successfully received University of Illinois Board of Trustees approval for this innovative concept and brought in contracts worth $640,000 in the first year of operations.

We have had initial but moderate fundraising success for endowed Chairs and Professorships for the faculty, scholarships for our undergraduate students, and funding for a new building, a Bioengineering Institute.

We will soon announce details of a new and remarkable Motorola Innovation Center, a highly creative industrial collaboration between Motorola, and the Colleges of Engineering, Business Administration and Architecture and the Arts that introduces the future.

The excitement that we have built in the College of Engineering campus does not end here. You have an opportunity to be part of the future of the College and the entire UIC campus.
On June 1, 2007, the University of Illinois announced the Brilliant Futures campaign to raise $2.25 Billion across three campuses. Of the goal of $650 million for the UIC campus, the College of Engineering will raise $50 million by 2011. As remarkable as these numbers appear, the University system has already received gifts or commitments in excess of $1 billion. As you will read in this issue of Engineering News, the Brilliant Futures campaign is aptly named. As a student, you may have received a scholarship or fellowship that changed your life. As a donor, you may have given a gift that did the same for someone else. Each gift, each action, has a ripple effect. Be bold; Join the ripple!

This issue also covers the immensely intriguing work coming out of the UIC Electronic Visualization Lab, directed by Computer Science professor Jason Leigh, who follows in Tom DeFanti’s footsteps. The timing is perfect.

Provost R. Michael Tanner has appointed Professor Peter Nelson, head of Computer Science, as Interim Dean of the College. Professor Nelson steps up on August 1, 2007 while Dr. Tanner appoints a search committee to do a national search for a permanent Dean who should be in place by August 2008. I will work with Pete during this transition.

Pete Nelson joined the Department of Electrical Engineering and Computer Science in 1988 as an assistant professor and was later promoted to associate and full professor. In 2001, EECS was split into the departments of Computer Science and Electrical and Computer Engineering, and Dr. Nelson has served as department head since that time. The department’s 28 faculty members include 7 NSF CAREER Award recipients and 6 ACM and IEEE fellows.

Dr. Nelson founded the UIC Artificial Intelligence Laboratory in 1991. The Laboratory specializes in applied AI research and development and has undertaken a variety of applied intelligent systems projects in the areas of transportation, molecular biology, electronics manufacturing optimization and networking.

Dr. Nelson received his B.A. in computer science and mathematics from North Park College, and his M.S. and Ph.D. in computer science from Northwestern University. His research focuses on developing efficient artificial intelligence search techniques, and he has been the recipient of over $15 million in research grants and contracts from a wide variety of government agencies and corporations including the National Science Foundation, National Institutes of Health, National Academy of Sciences, Federal Highway Administration, Illinois Department of Transportation, Manufacturing Research Center, Motorola, and Sun Microsystems. Join me in congratulating Dr. Pete Nelson. I am also pleased to welcome a new addition to our important alumni relations staff. Arnaud Buttin comes to the College from the Stritch School of Medicine at Loyola University Chicago as our new Director of Advancement and will head the College of Engineering efforts for the Brilliant Futures Campaign. I thank you all for your support in the past. I have agreed to join the College of Engineering Dean’s Advisory Board. It will be a new role for me.

As alumni and friends of the College of Engineering, you help make it vital.

I think the College of Engineering is on an upward trajectory, and I wish the College even more success in the years to come.

With warm regards,

Prith Banerjee
Dean and UIC Distinguished Professor


From the Dean

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Dean and UIC Distinguished Professor

What **Happens** When

You Give Someone

a **Chance?**
Together, we share a vision of a brilliant future for all of our engineering graduates. When you give a student a chance, they question, discover, invent. They transform the future. You can, too!

Brilliant Futures

Engineering education is a road to opportunity shared by many. Rick and Sharon Schmidt often reflect on the path they traveled. They say it reshaped their lives.

For a mechanic and Army veteran with a young family to provide for, entering the UIC College of Engineering at age 29 opened the door to a successful career in the energy industry and allowed Rick to follow his aspirations. Today, Rick and Sharon give others a chance. Grateful to the College of Engineering, they help to fund undergraduate scholarships.

A brilliant future begins in Chicago where discovery is at the heart of a great engineering education.

Our college is poised to be a premier educational and research institution. We educate remarkable students, push boundaries with new applications, solve problems still on the horizon, and incorporate advanced knowledge into our classes.

Our internationally renowned faculty members, who come from 6 departments, 8 research centers, and work across 4 core thrust areas, constantly redefine their fields. They share ideas and enhance education as they create funded interdisciplinary collaborative research centers and bring best practices into the classroom. They facilitate the development of our students as creative, far-reaching engineers, prepared for challenges that we cannot fully imagine.
opportunities for faculty consulting. Support and practical training, with new vehicle for technology transfer from the staffed by Ph.D. students. We have created short-term research and development needs, offer solutions to industry for its organized level expertise that is rapidly deployed and provide local, cost-effective, and high-quality services.

Technology Services Centers

Research funding and financial support for graduate students and a rapidly growing industrial partnership come together in the newest engineering innovation, the Technology Services Centers. Technology Services Centers provide local, cost-effective, and high-level expertise that is rapidly deployed and offers solutions to industry for its organized short-term research and development needs, staffed by Ph.D. students. We have created a new vehicle for technology transfer from the university, new avenues for graduate student support and practical training, with new opportunities for faculty consulting.

Our College is a Platform That is Forever Changing

We promise every student, faculty member, and industrial partner access to excellence in engineering. It takes a partnership to fulfill the promises to our students and faculty that will allow us to rise among the engineering institutions, public and private, while assuring 2,500 students receive a sound engineering education. It takes a collaborative relationship with alumni and friends to recruit and retain the best students and faculty, continue our upward growth in research funding, and enhance our core areas of expertise as we plan to transform engineering opportunities, aid businesses with their technical problems, and serve our vast engineering community. You inspire others by supporting our strategic vision.

We Assure Access to Excellence for Future Engineers

"There are so many kids today who are coming out of the inner city schools and just need the opportunity to succeed. I relate to that."

—Glenn Neland

Ranked high among engineering colleges, we are raising the bar while keeping our urban mission.

Our vital decision to organize student recruitment and offer merit scholarships as incentives to incoming in-state students increased our enrollment of high-achieving undergraduates who might have matriculated elsewhere. Both endowments and Leadership Annual Gifts provide the core funding for these scholarships.

Our alumni care about the next generation of engineers. With endowed scholarships, Glenn and Linda Neland provide need-based incentives to attract graduates of Chicago high schools; and Dr. Nancy Anderson Holmes, our first female graduate, provides a merit scholarship to benefit civil engineering students “because it is the right thing to do,” having received a scholarship herself. Jose and Geri de Leon, our alumni partners for over 6 years, provide multi-year scholarships that recruit more women students into engineering, through a combination of endowed and annual gifts.

When you think about the needs of the College of Engineering to support its programs think of this:

What we need to support undergraduates ~ $1.8 million in endowed gifts and $100,000 or more each year in unrestricted annual giving.

Graduate fellowships attract the brightest students. For Ph.D. students, there is a guarantee of five years education through a mix of teaching, graduate, and research assistantships. These come from research funding, collaborations with corporate partners, and endowed gifts from you, our alumni and friends. Samantha Lipsky, a bioengineering Ph.D. student explains the benefit of funding for graduate students.
Scholarships and Internships Allow Civil Engineering Undergraduate Frank Zurek To Be A Student Leader Who Serves The Third World And The Future Of Our Great Cities.

Scholarships are important to my family. I work, but with scholarships, I now also have time to apply my knowledge. My parents would like nothing more then to pay for my education so I wouldn’t have to worry about tuition and can concentrate on projects like the “City of the Future” competition where I am analyzing storm water run-off and considering health and public policy implications in addition to engineering solutions. I was able to afford to work in Guatemala with our student chapter of Engineers Without Borders. I obtained real-world experience in construction techniques and design of concrete and masonry walls. Now, in my reinforced concrete design class, I think back to my trip and consider how my newfound knowledge might be used in the future to help others.

“An assistantship is a gift of academic freedom and time to make the seemingly impossible possible. It means time to pursue knowledge, whether it’s learning how to instruct as a teaching assistant, improving technique in the laboratory as a research assistant, or devoting time towards class work.”

What we need to support graduate students ~ 12 Named endowed graduate fellowships totaling $3 million.

As We Expand Our Senior Faculty, We Honor Our Intellectual Core and Build Teams Around Them

Each time a generous donor creates an endowed chair, a senior faculty member joins UIC from among the giants in the scientific and engineering world, bringing a further base of expertise, talent and reputation. Chairs, such as the gift from Peter and Deborah Wexler in information technology, spread opportunities as the endowment is used to construct labs, hire researchers, support scholars, and provide experience for students.

Professorships, such as those gifts from Richard and Loan Hill, Dr. Warren Rohsenow and the late Professor Emeritus James P. Hartnett, ensure retention of excellent faculty. Professors Ahmed Shabana, Michael Strasocio, Ouri Wolfson and WJ Minkowycz hold these titles. Professor Minkowycz carries Dr. Hartnett’s legacy as an international leader in energy engineering.

What we need to build a foundation for each of the 4 core research areas through the recruitment and provision for our senior faculty – 4 named Chairs endowed at $2 million each and 12 named Professorships endowed at $500,000 each.

Together We Transform the Future

Knowledge transfer grows more exciting and eye-opening when we have a pool of funds that allow the college to create and renovate our teaching and research laboratories and classrooms. Great facilities that meet, or exceed, industry standards open doors to the future for every undergraduate. They present a career defining opportunities for graduate students testing theories and faculty researchers breaking new ground. A great learning environment is a reason to be at UIC!

We know that the gift of one grows to benefit others, and placing tools in the hands of students makes teaching come alive.

Rafiq Mohammadi remembers how Professor Tom Moher influenced him and contributes to his research. Peter Malcolm is a student who benefits from Rafiq’s generosity as he works in Professor Moher’s lab. Peter finds it is a great experience: “I really get make a difference in Chicago Public Schools by working with Professor Moher, who is doing revolutionary work on the way kids learn science in the classroom.”

Did You Know? Our students take introductory courses in their chosen field and benefit from a streamlined curriculum to ensure they choose the right path. Recruitment goes hand in hand with our urban mission. Our celebrated ethnic, racial and gender diversity parallels that across UIC. On average, graduating seniors are 24% female, 6.5% African American, 17.5% Hispanic and 33% Asian. All of these exceed the national norm. Half of our recent hires, like MIT trained Assistant Professor Elodie Adida, who joined the faculty in 2007, and 11% of all faculty members, are women.
Dr. Christopher B. Burke, an adjunct professor of Civil Engineering and engineering firm owner, also knows the power of a great lab for the students who enter it to learn. Chris and his firm — our corporate partner — underwrote the instrumentation for the newly renovated, hydraulics and hydrology laboratory.

What we need to support discovery through renovated classrooms and teaching labs ~ $1 million and the transfer of cutting edge classroom equipment from our industrial partners to meet our education needs, valued at $12 Million.

To attract the best and brightest faculty from the leading institutions around the world, it is necessary for the College of Engineering to offer the freedom to explore the horizon and a well-equipped place to do it.

Funding for laboratory research allows us to invite new faculty with an industry base, such as professors Rodica A. Baranescu and Subrata Chakrabarti, Members of the National Academy of Engineering, to build a research presence among our faculty.

What we need ~ a pool of research funds valued at $2 Million to provide seed money for faculty members applying for large-scale grants as they lay their intellectual and exploratory groundwork and start-up costs for new faculty, especially our junior faculty.

Expanding Our Engineering Home

We are growing. A 15,000 square foot building, a cross-disciplinary Nano and Bio Technology Institute, costing $60 Million, would allow diverse faculty from across the 4 core research thrust areas to collaborate every day, face to face, in inspiring labs.

We seek to raise at least $15 million through private philanthropy for this building; the rest will be raised from other sources.

Your Commitment to a Brilliant Future Will Reach Many.
It Is Your Turn to Lead.

Envision a cutting-edge teaching lab where excited students run tests using equipment that rivals that which they will use in their professional life. They will enter the workplace well grounded in critical thinking, familiar with current research and technology, and ahead of others. Those who teach will be exceedingly-well prepared. Your generosity and belief in the UIC Brilliant Futures campaign is an enduring source of influence as you help others to achieve their aspirations, just as Rick, Glenn, Nancy, Jose, Samantha, Rafiq, Peter, and Frank were inspired to aim high and succeed.

Together, we will create a new generation of tools to enhance and expand the cycle of education, discovery and global involvement. Your gift makes it possible for these students to become the engineers who will impact others.

Someday, these students will give back to the College of Engineering like you do.

Your commitment has that impact to change the future and impress others with the need to participate, too. Join us in our commitment to inspire UIC engineers to Challenge, Lead, Innovate, and Excel through the Brilliant Futures Campaign!
“Sight is a person’s primary sense, and one-third of a person’s brainpower is spent processing visual images. Therefore, visualization is becoming a primary means for scientists and researchers to explore new territory and show new concepts to the general public.”

– HPCwire, an on-line source for news and information on the ecosystem of high productivity computing

**EVL Director Discusses Advanced Visualization Techniques**

HPCwire has a noted authority on the subject of visualization: Jason Leigh, director of UIC’s Electronic Visualization Laboratory (EVL). At the EVL, a collaborative effort of the Colleges of Engineering and Architecture and the Arts, the most exciting and successful advances in visualization are driven by research scientists from many fields who apply computer science techniques to the complex issues faced in those fields.

The EVL has an exciting history from the 1970s when engineering professor Tom DeFanti created computerized graphics for the first Star Wars films to the creation of the Cave Automatic Virtual Environment in 1992. The CAVE, which can be experienced at UIC, is a room-sized immersive 3-D virtual reality environment and the progenitor of many advanced scientific visualization techniques such as the GeoWall. Used in the geosciences at about 500 sites world-wide since 2000, GeoWall is a relatively low-cost, 3-D, stereoscopic display. In the US, disaster planning is aided by the GeoWall as the US Geological Survey uses it to analyze 3-D data of high-resolution images of our urban areas in order to plan responses to disasters.

A more recent creation is the OptiPuter. It combines computational resources over optical networks, and its key use is optical networking to build super networks that allow researchers to expand their collaborative global activities. The scientific user is often the scientist who is producing terabytes and petabytes of data. They can now visualize, analyze and correlate their data from multiple storage sites connected to optical networks on an interactive basis.

The EVL and its academic and governmental collaborators are the driving force that is solving problems using advanced computing systems.

This means that the EVL develops advanced applications for these high-speed networks. The Lambda Ram is one such application. A pool of clustered memory, it provides access to large, remote data sets, allowing researchers using display screens to communicate with each other and view multiple images and data sets at the same time while using the OptiPuter.

Another intriguing use grew from a collaborative project with the Science Museum of Minnesota. Museum-goers manipulate geo data through a table-top display that includes a digital map of a geographic region to simulate change from naturally occurring elements. Create a lava flow in Hawaii and see the impact on tides! More of their advanced uses make up the story below. Whether you are prepared to visualize the skies or want to chat with Abe Lincoln via an avatar in near-to-real time, the EVL has the programs, student and scientists, and dreams to make this a reality.

**ADLER PLANETARIUM’S NEW SPACE VISUALIZATION LABORATORY**

Cutting-edge space science exhibits and enhance public education and outreach efforts for all participants.

As high-resolution digital imagery captured by sky surveys and satellite missions continue to build bigger and better 3D maps of our galaxy, the Adler Planetarium and Astronomy Museum is taking a modern approach to high-tech exhibit development that involves university researchers, museum-based scientists and the
Adler has formally opened its Space Visualization Laboratory (SVL), a working laboratory on the main exhibit floor that features a variety of scientific visualization applications and display technologies many of which came out of the EVL.

Adler astronomers Mark Subba Rao and Doug Roberts conceived of the SVL as the next level in technology-rich museum environments. Visitors can get a behind-the-scenes look at exhibit development and get to play with advanced display systems designed and invented in cutting-edge research labs like EVL. They will also be encouraged to directly participate in user studies involving both application and pre-installation prototypes during special public tours.

SVL centralizes and anchors Adler’s growing program of space science visualization and digital imagery exploration application development. The planetarium’s in-house scientific researchers work with several university laboratories, some in conjunction with shared faculty appointments or affiliations with university labs, and others, like EVL, when expertise and outreach goals dovetail.

Adler and EVL have been working together for several years; deploying EVL’s projection-based 3D display system called GeoWall for viewing stereo photographs from the surface of Mars, and conducting user studies of space-science-themed video games, but the establishment of SVL has formalized the relationship as a collaboration.

EVL Ph.D. doctoral candidate Robert Kooima, formerly a computer programmer at NASA, has been working jointly with Adler since last fall, teaching SVL researchers how to use his scripting language Electro, a user friendly software for developing graphical applications on tiled and stereoscopic displays; and to help test and debug two new virtual-reality applications: Mars Transporter, a user controlled virtual flight around Mars, and StarFlight, a tour of the constellations in the Hipparcos star catalog.

Mars Transporter was recently added to Adler’s suite of exhibits called Our Solar System. StarFlight will remain in the SVL for several months for more user testing before going into the Cyberspace Gallery, an all-digital educational themed area that exhibits flexibly updated space science content on plasma touch screens, hemispherical Ellumens Vision Stations, and joystick-controlled exhibits. Various next-generation displays systems such as EVL’s high-resolution tiled display wall will be evaluated for main show floor adaptability as well.

Tiled display walls are gaining prevalence in the academic community for networked scientific collaboration. Tiling LCDs creates an impressive ultra-high-resolution display that can be connected via ultra-high-speed research and education networks for fast data retrieval and viewing. In the SVL setting, the tiled wall is especially well suited for real-time exploration of high-resolution imagery.

According to Subba Rao, the advent of high-definition digital camera technology has revolutionized the field of astronomy. High-resolution imagery captured during space missions and sky surveys provide unprecedented access and insight into astronomical phenomena; however even more discoveries may be gleaned from the enormous amounts of other data gathered along with the imagery. Tiled displays enable researchers to view extremely large images along with related information to make informed decisions and discoveries.

Scientific visualization refers to a broad range of applications, and includes high-resolution digital imagery, virtual reality, and 3D animation and volumetric models. Using computer modeling and computation, raw scientific event data is converted into imagery that can be interactively explored. With numerous large-scale telescopes and satellite missions constantly generating scientific data and imagery worldwide, space science is a leading scientific visualization application domain.

While the development of advanced scientific visualization tools and techniques may be a common research pursuit of scientists at the Adler and faculty at a university graphics laboratory, their clientele are very different. Adler educates the public about space science through exhibits and guided shows in its planetarium, while EVL conceives, constructs and deploys high-end visualization systems to domain scientists who use visualization to analyze massive datasets. Both, however, are challenged to offer people experiences visual or interactive that they can’t get anywhere else.

EVL researchers have been inventing and building virtual-reality displays since the early 1990’s, with complementary research in advanced networking, user interaction and collaboration. The breakthrough in advanced display technology combining these research threads is the 55-panel tiled display wall EVL built two years ago; the largest and, at 105 million pixels, the highest resolution wall of its kind at the time.

High-end graphics cards like those enabling the latest generation of gaming consoles can be fitted in the clusters driving the tiled displays to maximize performance computationally, which translates to millions of pixels on the display wall. Specialized middleware developed at EVL manages gigabit streams of image data and allows the user to scale, pan, zoom and otherwise explore massive datasets in a giant windows-like environment.

Kooima’s Mars Transporter application is an interactive scale model of Mars built using two NASA datasets: Mars Orbiter Laser Altimeter (MOLA) terrain map data gathered by the Mars Global Surveyor; and high-resolution color imagery of the entire planet gathered by the Viking orbiter. Displaying an accurate terrain height map based on the MOLA’s 44,000 by 22,000 pixel dataset was a computer science problem requiring complex algorithms, but producing a highly accurate model was a priority.
StarFlight is an interactive virtual-reality exhibit to explore constellations. Kooima acquired and visualized the Hipparcos star catalog, and in collaboration with the MSCOPE museum science outreach group at the University of Chicago, mapped out three well-known constellations and programmed an environment allowing users to fly around these constellations in space.

Subba Rao says StarFlight is an ideal outreach project for ongoing testing in the SVL because it meets clear educational goals of communication, accuracy, and accessibility. “StarFlight communicates the tremendous distances between the stars and accurately conveys that constellations are just two-dimensional projections of a three-dimensional distribution of stars,” said Subba Rao. “And as an exhibit for both English and Spanish speaking users, I expect it’s going to be a big hit with our visitors.”

“The technology and knowledge transfer between EVL and the newly created SVL fulfills a valuable outreach component of our research,” says EVL director Jason Leigh. “Decades ago when we were learning science in high school we used telescopes and microscopes because those were the tools that scientists were actually using at the time. Today scientists are routinely using supercomputers, high-speed networking, high-definition cameras and advanced visualization systems to enhance and extend the capabilities of these instruments — these are the new telescopes and microscopes. It’s important that we begin to teach a whole new generation of future scientists how to use these tools.”

Imagine having a discussion with Isaac Newton or Albert Einstein on the nature of the universe, where their 3-D, life-sized representations looked you in the eye, examined your body language, considered voice nuances and phraseology of your questions, then answered you in a way that is so real you would swear the images were alive. This was an opening scene from an episode of the TV show “Star Trek” almost a decade and a half ago. A new research project between UIC and the University of Central Florida in Orlando may soon make such imaginary conversations a reality.

Technology from computer games, animation and artificial intelligence provide the elements to make this happen. The National Science Foundation has awarded a half-million dollar, three-year grant to UIC and UCF researchers to bring those elements together and create the methodology for making such virtual figures commonplace.

UIC will focus on the computer graphics and interaction while UCF will concentrate on artificial intelligence and natural language processing software.

“The goal is to combine artificial intelligence with the latest advanced graphics and video game-type technology to enable us to create historical archives of people beyond what can be achieved using traditional technologies such as text, audio and video footage,” said Jason Leigh, UIC’s lead principal investigator.

EVL will build a state-of-the-art motion-capture studio to digitalize the image and movement of real people who will go on to live a virtual eternity in virtual reality. Knowledge will be archived into databases. Voices will be analyzed to create synthesized but natural-sounding “virtual” voices. Mannerisms will be studied and used in creating the 3-D virtual forms, known technically as avatars.

Leigh said his team hopes to create virtual people who respond with a high degree of recognition to different voices and the various ways questions are phrased.

“Imagine a computer smart enough to have the avatar respond ‘Do you understand what I’m saying?’ in the natural way humans communicate with each other,” said Leigh. “We’re trying to tip towards being as naturalistic as possible.”

The project’s test subject will be a senior NSF program manager known for his wealth of institutional knowledge. A UIC graduate student will shadow this official for several months making video and voice recordings. His presence will be digitally reconstructed and interviews used to clean his institutional insights will be stored in the information database. It will allow NSF personnel to consult his virtual counterpart whenever they want to tap his institutional wisdom.

Leigh sees a commercial market for preserving virtual people whose critical or unique knowledge is vital to operations of corporations and other institutions.

Faster, more powerful computers in the future will likely enhance the realism of these interactive avatars. How they will be used is limited only by one’s imagination.

“What’s interesting to us is how this works in cycles,” said Leigh. “Advanced graphics/simulation research resulted in today’s gaming technology. A lot of the virtual reality techniques we now take for granted in game systems like Nintendo Wii or immersive environments like Second Life came out of labs like EVL. Now next generation gaming technology is stimulating new applications for advanced graphics/simulation research that can benefit gaming as well as other fields.”

Other principal investigators on the project include UIC computer science professors Andrew Johnson, Luc Renambot and Thomas DeFanti; communication professor Steve Jones; and EVL staffers Maxine Brown and Lance Long. University of Central Florida principal investigators include Avelino Gonzalez, professor and interim head of civil and environmental engineering, and Ronald DeMara, professor of computer science.
Solar physicists at the Naval Research Laboratory (NRL) are viewing impressive solar disturbances whose depth and violent nature are now clearly visible in the first true stereoscopic or 3D images ever captured of the Sun, thanks to the UIC Electronic Visualization Lab.

These new views, recently released by NASA, are providing scientists with unprecedented insight into solar physics and the violent solar weather events that can bombard Earth’s magnetosphere with particles and affect systems ranging from weather to our electrical grids.

NRL scientists are viewing the high-resolution stereo pairs on an ImmersaDesk4 (I-Desk4) display system specifically commissioned and installed at the laboratory last summer in anticipation of the release of the data.

The I-Desk4, invented at EVL, is a tracked, 4-million-pixel display system driven by a 64-bit graphics workstation. Its compact workstation design is comprised of two 30-inch Apple LCD monitors mounted with quarter-wave plates and bisected by a half-silvered mirror enabling circular polarization. Multiple users can view the head-tracked 3D scene using lightweight polarized glasses.

The stereo video pairs come from NASA’s Solar Terrestrial Relations Observatory (STEREO) mission, a pair of satellites launched in October 2006 that began circling the Sun in January 2007. One satellite is slightly ahead of Earth in its orbit around the sun, the other is slightly behind, which provides the separation...
needed to achieve stereo depth perception. STEREO is the third mission in NASA’s Solar Terrestrial Probes program, destined to provide a unique and revolutionary view of the Sun–Earth System. The two nearly identical observatories trace the flow of energy and matter from the Sun to Earth. They will reveal the 3D structure of coronal mass ejections; violent eruptions of matter from the sun that can disrupt satellites and power grids, and help us understand why they happen. STEREO will become a key addition to the fleet of space weather detection satellites as it provides more accurate alerts for the arrival time of Earth-directed solar ejections using its unique side-viewing perspective.

Violent solar weather, especially that caused by the destructive CME solar eruption, can blast magnetic fields capable of disrupting satellites in space and power grids and radio transmissions on Earth. The new 3D imagery will help monitor the front of a CME cloud to allow scientists to take preventative measures and issue warnings.

It has three additional objectives: To aid scientists to characterize the propagation of these CMEs through the heliosphere; to discover the mechanisms and sites of energetic particle acceleration in the low corona and the interplanetary medium, and to study the structure of the ambient solar wind.

The Solar Physics Branch at NRL developed the SECCHI (Sun Earth Connection Coronal and Heliospheric Investigation) suite of telescopes for the spacecraft. The high-resolution sensor suite includes coronagraphs, wide-angle cameras and an Extreme Ultraviolet Imager. The sensors generate 10 synchronized video feeds, each up to 2K by 2K pixels.

In summer 2006, EVL student Cole Krumbholz worked with NRL solar physicist Dr. Angelos Vourlidas to help establish a solar imagery display environment at NRL. Krumbholz helped build two EVL-developed display systems capable of viewing and managing files on the scale of thousands of pixels per square inch: a nine-panel tiled LCD wall ideal for viewing high-resolution 2D imagery, and an I-Desk4 for viewing high-resolution 3D imagery.

The tiled wall is capable of synchronously displaying multiple high-resolution video streams. NRL scientists can also composite the sensor data into a single video to conduct a multi-spectral analysis, and view multiple days of video. Krumbholz implemented a distributed video-rendering tool with interactive features such as pan, zoom and crop.
“This project is about properly managing the waste we generate” says Krishna Reddy, professor of civil and environmental engineering. With a $130,000 grant from the National Science Foundation and a $120,000 from CReeD, France's Research Center for Environment, Energy and Waste, Reddy and his students are testing a way to successfully recycle leachate — the waste liquid that is generated in landfills — back into the waste heaps, adding moisture to accelerate anaerobic microbial biodegradation.

The U.S. Environmental Protection Agency has issued research and development permits to about a dozen landfill operators to test this “bioreactor concept,” as it’s called. Partnering with French-based Veolia Environment, a major international operator of landfills and waste removal companies, Reddy is studying where leachate moves and how it behaves after being re-injected. Two Veolia landfills in the U.S. and one in France serve as test sites.

“The problem with uncontrolled injection is possible failure,” Reddy says. “There’s a case from Colombia where they did massive recirculation and the result was a huge collapse of the landfill.”

EPA wants hard data on how well the bioreactor concept works before approving its use.

Presently, leachate is drained from landfills, collected and sent for waste water treatment. Collection is required to continue for 30 years after a landfill is closed in order to protect ground water supplies from contamination.

Researchers have found that better-engineered landfills from recent decades are doing a good job of preserving — rather than breaking down — a lot of solid waste. That’s partly because hungry microbes don’t like the dry conditions there.

Landfill owners hope that recycling leachate provides microbes the moisture they need to hasten compacting and settling of solid trash.

While the number of U.S. landfills has steadily declined since 1988, capacity has remained relatively constant and new landfills are much larger than those from the past.

Sites that reach capacity can eventually be converted for other uses, such as industrial parks and golf courses. But the conversion can’t take place until the waste is settled.
To make sure bioreactor landfill technology is helpful and not harmful, Reddy and his students will monitor landfills that inject leachate in different ways to see where the waste water flows and what it does.

Post-doctoral student Solenne Grellier developed methodology called electrical resistivity tomography that uses an array of landfill surface electrodes to monitor the water movement.

"We measure electrical resistance, which is linked to water content," says Grellier. "The method allows use to get something like a photograph of what’s happening in the ground without digging."

Site samples of leachate and solid waste are also gathered for laboratory analysis at UIC. Ph.D. student Janardhanan Gangathulasi shreds and mixes the materials, noting how much methane and carbon dioxide is produced. "We monitor what gases are produced over what time period," he said. "It gives us another parameter to help determine the stability of the bioreactor."

Reddy developed a mathematical model that he hopes could be used by landfill operators to successfully and safely redirect leachate for productive use. He’ll be monitoring and collecting data for at least another two years, using it to test his model.

"The whole idea is to provide recommendations on operating, monitoring and design of bioreactor landfills that won’t have failures," he says. "We want to degrade waste faster, while eliminating environmental risk to surrounding sites."
The College of Engineering is aiming for a faculty of 130 members by 2010 representing the gender mix of the College at minimum, and reflective of the great diversity within the student body.

It is not an easy task, reports Dean Banerjee. “The still-low number of female Ph.D. graduates entering academia drives the competition to hire them. This is ever more difficult for colleges that are also seeking to increase the representation of minority faculty,” Banerjee says. “Half of our recent faculty hires have been women. With $3.3 million funding under the new 5 year NSF ADVANCE grant and the leadership of WISEST, we have that extra assistance that is needed to meet this goal.”

The UIC Center for Research on Women and Gender, partnered with the Colleges of Engineering and Liberal Arts and Sciences, is one of 13 recipients of the National Science Foundation ADVANCE award, Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers.

This award will accelerate planning and actions to increase the number and leadership status of women in the eleven science and engineering departments at UIC. Female tenured or tenure-track professors in these departments range from zero in chemical engineering (soon to change) to 32% in biology. There is only one female department head in the sciences and engineering, Dr. Mitra Dutta in Electrical and Computer Engineering. Consequently, female role models for students are scarce to non-existent.

One new faculty member is Dr. Ying Liu, who joins the Department of Chemical Engineering in August 2008 following her completion of a post-doctoral program. Dr. Liu received her Ph.D. in Mechanical and Aerospace Engineering from Princeton University in May 2007 with a dissertation titled “Formulating Nanoparticles through Flash Precipitation for Drug Delivery and Sustained Release.” She brings with her advanced experience in nanotechnology.

At the front line of hiring are the faculty search committees, identifying potential candidates and recruiting all new faculty members. Under WISEST, the new SUCCEED Committee (Supporting UIC’s Commitment to a Community of Excellence, Equity, and Diversity) is assisting departments in their hiring process to understand and address the effect of gender bias on recruitment.

Increased representation in the faculty by women, whether they are members of a majority or minority group, provides opportunities for women students at every level. One is the opportunity to see the success, hear from or be taught by people “like themselves,” says Linda Siebert Rapoport, WISEST Project Director.

“When we discuss role models, we are talking about the visibility of women. Under the Visiting Scholars Program, we awarded grants to the departments of Biological Sciences, Chemistry, Chemical Engineering and Physics to bring high-profile women faculty to campus to provide a format to illuminate their scholarly work and serve as role models for students and faculty.”

A series of leadership seminars was kicked off with a seminar that featured Dr. Claire Van Ummersen, Vice President, Center for Leadership at the American Council on Education (ACE). She provided insight into the recently released ACE study that calls upon research institution leaders to establish more flexible career paths to increase the recruitment and retention of outstanding, diverse faculty. This was followed by a talk, “Battling Bias and Barriers: Necessary Steps our Academic Institutions Must Take to Assure a Strong Science and Engineering Workforce” featuring Dr. Geraldine Richmond, a professor in the Department of Chemistry and the Materials Science Institute at the University of Oregon.

For many young faculty members, their academic career begins after a post-doctoral experience. Part of the WISEST funding will be used for the WISEST Postdoctoral Fellowship Program, to cover part of the salaries of women in postdoctoral training at UIC who are unsure whether to pursue careers in academia or private industry. The fellowships will provide networking and workshop opportunities that will encourage these young professional women to enter academic careers.

“These female scholars will begin in August 2007, and again the Department of Chemical Engineering benefits. The Postdoctoral Fellowship Program will help these scholars, particularly those who are members of underrepresented minority groups, to prepare for faculty positions, whether they remain at UIC or move to another institution,” Siebert reports.

There are also times when faculty members are called upon to be care-givers. Whether it is an interruption of the career due to a prolonged illness, aging, or childbirth, these careers need to be put back on track. The Women in Science and Engineering Research (WISER) “Back on Track” Fund was established to help these researchers resume their careers after that period of intense care-giving. Drs. Olga Barannikova, a Professor in the Department of Physics and Dr. Zhichun Zhu, an Assistant Professor in the Department of Electrical and Computer Engineering, received funds for the 2006-07 academic year under this ADVANCE grant program.
Douglas Kosar, principal research engineer at the Energy Resources Center (ERC), and his colleagues ask this question every day. As air cleaning experts, they recognize the complexity of this seemingly simple question and the myriad of public health issues raised by poor indoor air quality. Now, they have a research laboratory that may lead to the reduction of indoor pollutants, and healthier environments in buildings, by helping the air cleaning industry in Illinois and elsewhere chart the future course of its technology development.

"The air we breathe directly impacts our health, comfort and productivity. Most people in the industrialized world spend the vast majority of their time indoors, and the air in our buildings is coming under increased scrutiny today because of airborne contaminants. At UIC, we now have the capacity to help industry in Illinois, and around the world, to develop and refine technologies to clean air and, hopefully, resolve many of these public health issues over time," says Kosar.

**Setting the Stage for Air Cleaning Industry Growth**

Forward-looking engineers see the use of innovative practices for the introduction of "fresh air" into buildings that would allow the choice between two procedures for designing that ventilation system, either: the traditional procedure which prescribes outdoor airflow rates into the building sufficient to dilute indoor contaminant levels and ensure acceptable occupant well-being; or an alternative procedure which cleans recirculated air of indoor contaminants to promote energy efficiency. This second procedure reduces the volume of outdoor air and the costs of conditioning it. The recirculated air is cleaned of contaminants so as to produce a final indoor air mixture as acceptable to the occupants as the air would otherwise have been by the prescribed outdoor air ventilation rates. As a result, the air cleaning industry is poised for significant growth with the wider adoption of this alternative method of cleaning recirculated air, in addition to the already growing markets for the cleaning of outside air for dilution ventilation in higher ambient pollutant areas.

The air cleaning industry includes the manufacturers of various media filters (such as fibrous and sorbent media) and energetic devices (such as UV lamps) that can clean air of particulate, gas, or biological contaminants by collecting or absorbing the particles and gasses, and altering or neutralizing the microorganisms. In collaboration with its research sponsors, UIC manages an industry expert panel to provide research needs in the air cleaning area. The panel meets annually to revise its needs, and help set priorities for the air cleaning research agenda at UIC and other facilities. Illinois is home to several air filter manufacturers including the Filtration Group, which is the largest privately held manufacturer of air filters in North America and one of our expert panel members.

**Air Cleaning Technology Laboratory**

The focal point for this collaborative research is the new Air Cleaning Technology Laboratory or ACTLab (www.actlab.uic.edu), operated jointly by ERC and the Department of Mechanical and Industrial Engineering (MIE), and dedicated to research in the growing air cleaning field. "Air cleaning is a booming industry. The market research group Melville Company reports that world-wide filter markets will grow 44% or $2 billion over a 5 year period beginning in 2004, to reach $6.5 billion in 2008. The gas phase filtration market is projected to grow faster than any other segment to $0.8 billion by 2008," explains Kosar, who also acts as director for the ACTLab. "As a result," he adds, "The ACTLab is focused on addressing technologies which clean air of particulates and gases/vapors using various forms of fibrous media, energetic surfaces, and sorbent materials."

Construction of the laboratory began late in 2004 with funding provided by the National Center For Energy Management and Building Technologies (NCEMBT), as part of a cooperative agreement with the Department of Energy (DOE), along with substantial cofunding from UIC. Over $1,700,000 in financial support has been provided by the NCEMBT and the DOE. In addition, over $650,000 in cash and in-kind funding has been provided by the Office of the Vice Chancellor for Research, College of Engineering, MIE and ERC departmental resources, UIC Office of Facilities Management, and others including the Illinois Department of Commerce and Economic Opportunity. According to David Chojnowski, senior research engineer and manager of the ACTLab, "The test loop became operational for particulate filter research at the start of 2007 and will be capable of limited gas phase filter testing early in 2008. It is currently compliant with ASHRAE Standard 52.2 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size. It is also compatible with the emerging ASHRAE Standard 145.2P Method of Testing Gaseous Contaminant Air-Cleaning Devices for Removal Efficiency."

He adds that "Per our industry expert panel driven agenda, the ACTLab is presently conducting particulate filter bypass and seal research in 2007, and will be initiating gas phase research on ozone removal in 2008."
The field of microfluidics involves the handling and analysis of small volumes of fluid. These systems leverage microscale phenomena such as fast diffusion, process integration, large surface to volume ratio, or precise control over the cellular microenvironment, to enable experiments or techniques not possible or at least very difficult to perform at the macroscale.

So, when Professor David Eddington, an expert in microfluidics, joined the Department of Bioengineering in the fall 2006, the College built a Biological Microsystems to apply microfluidics and microtechnologies to overcome experimental bottlenecks and accelerate scientific discovery.

"Over the past 15 years, there have been many successful demonstrations of microfluidic systems," explains Eddington. "But few have transcended proof of concept demonstrations in microfluidics research labs into widely used devices or procedures. Oftentimes the system complexity limits the practicality, as laboratory demonstrations are successful only in the hands of specialized users who designed and developed the devices. However, streamlined microfabricated systems can effectively leverage microscale phenomenon without becoming overly complex."

"We fabricate all our devices in house and have set up our soft lithography fabrication facility equipped with all the equipment necessary for rapid prototyping of microfluidic devices," says Eddington. "This includes a 8’x8’ softwall class 1000 clean room, an oxygen plasma system, spin coater, and UV source."

Briefly, the microchannel layout is designed in AutoCAD and printed onto a high resolution (5080 dpi) transparency. This transparency is used as a photomask to selectively crosslink a photoresist which is spin coated onto a silicon wafer at a desired thickness (the spin velocity and time dictate the thickness). Following exposure, the unexposed, uncrosslinked photoresist is washed away and the result is a negative mold of the desired channel network.

Next, polydimethylsiloxane is mixed from a kit and poured on to the negative mold and cured. Following curing, the PDMS is peeled from the mold master, access holes are cored, and the network is reversibly sealed to a substrate.

This procedure is inexpensive compared to traditional microfabrication techniques where a photomask might cost $50, a wafer $10, and a 1 lb PDMS $40. It is also simple and termed ‘rapid prototyping’ as designs can be turned from concept to prototype in under 24 hours which facilitates rapid design iterations when optimizing microfluidic devices.

"This is an exciting step for Bioengineering at UIC. Our three main research thrusts combine enabling microtechnologies, translational research, and biomimetic Microsystems," says Eddington. "Our enabling technologies branch aims to rapidly disseminate streamlined microfabricated systems to immediately impact biomedical research in our collaborators’ laboratories. We are currently developing a high-throughput hypoxia model for cell culture that can improve the efficiency of hypoxia research on cellular systems by several orders of magnitude. Our translational research branch involves working closely with clinicians to leverage microscale systems to solve current unmet clinical needs."

Eddington is currently working with the Islet Isolation Lab at the University of Illinois Medical Center to find ways to improve their procedures through adopting simple microfabricated platforms.

"Our biomimetic research branch aims to exploit living systems for use in microfabricated platforms. We are currently investigating exploiting the natural firing mechanism of the stinging cells of jellyfish for use in a microfabricated platform. All of our projects use a reductionist philosophy to increase the potential for wide dissemination."

"Accelerating Scientific Discovery - Engineering’s New Biological Microsystems Lab"
When bioengineering seniors Cheryl Bettinardi, Zenith Jameria and Victor Sapozhnikov considered the biomedical test equipment that they needed to build in order to fully carry out their senior design research project, they knew that they needed a special kind of help from others. They required a machine shop and skilled operators to take their drawings from paper to product. They needed a team to create and assemble their device. Another student group came to their rescue. These were students learning machining skills through the Illinois Manufacturing Foundation Spring and Machining Training Program at the Sheridan Correctional Center in Sheridan Illinois.

It was a first-of-a-kind encounter. From proposal to completion, only 11 days passed. The bioengineers received their final test equipment in time to assure it was to specifications and worked perfectly.

The senior design project, titled The Analysis of Forces and Displacement Acting on a Realistic Brain Model During Locomotion, was under the guidance of bioengineering professor Patrick Rousche, who researches cortical neuroprosthetic devices. According to the students, research suggests that cortical neuroprosthetic devices have the potential to restore sensory perceptions in many blind, deaf, and paralyzed patients. These devices provide a multi-channel electronic interface with targeted brain cells and will someday allow direct communication with the brain from external sources, usually other medical or scientific devices. Short-term results in this scientific area have been promising. Still, there remains a biocompatibility problem in the electrode-tissue interface over long-term. For these devices to work effectively, they have to remain in very close contact with the target cells during the life of the implant.

At the bottom line, locomotion results in micro-motion of the electrodes. Simple acts such as walking can dislodge the electrodes, however slightly. The students took on the challenge of generating design specifications for a test system that could characterize modes of possible micro-motion. To do that, they needed to undertake a quantitative analysis of the mechanical forces that act on the electrode-tissue interface during locomotion. This cannot be tested on the human brain. So, the students designed a bench-top system to mimic the physiologically relevant mechanisms of the brain. This system simulates the natural environment of the brain during walking or running and allows them to measure the forces that act on an implanted electrode during that motion.

This is where the mechanical device fits in. Their prototype, driven by a single motor, can simulate a diverse pattern of locomotion ranging from walking to running, allowing the students to quantify the resulting forces and displacements acting on a gelatin-based model of the brain placed inside. They hope that their undergraduate research will someday contribute to the development of an electrode that is more accommodating to brain micro-motion, and that it will suggest a new direction in the design of future neuroprosthetics.

Mike Dombrowski, IMF program director, was enthusiastic about the project and the interaction of the instructors and both sets of students. He says, “This project has given the IMF students the opportunity to use the skills they have been taught in basic machining to make something that they were able to see in operation plus also help the UIC engineering students achieve their educational goals. Our IMF students are grateful for the opportunity to use their skills and to also help medical research. Future IMF and UIC collaboration on projects such as this may be in the offing.”

Rousche agrees: “The project constraints – both time and budget – forced the senior design students to use those less-taught but very important engineering skills – creativity and resourcefulness. It was a unique project because both Mike Dombrowski and I have the same goals – educating our students – and it is really amazing how a device that mimics brain motion was able to do that while bridging the gap between university engineering students and incarcerated vocational students, for the benefit of all involved. I look forward to working with the IMF students again and we are actively seeking funds to support a larger cooperation between our two institutions. It shouldn’t be that hard, after all, we have the same boss – Illinois Governor Rod Blagojevich!”

For more information on this unique partnership or to become a contributing partner, please contact Patrick Rousche, Rousche@uic.edu or Nancy Cohen, njcohen@uic.edu. To learn more about the programs at the Sheridan Correctional Center, Engineering News suggests a PBS special, Maximum Capacity, which features one of the inmates who worked on this project at www.pbs.org/now/shows/322/index.html or contact Mike Dombrowski, Mikedom22@aol.com.
Leadership Annual Giving

Dear Friends,

With summer here, we are likely to look for leisure activities, find time to travel, and spend time with family and friends.

For College of Engineering students, it’s time to put in extra hours of work in order to pay for tuition and fees, books, insurance, and living expenses for the upcoming term. Students entering in the fall of 2007 will have a guaranteed four year tuition rate, with fees, in excess of $12,000 a year.

Applicants who have been accepted to the College and who excelled in high school are now being offered a Merit Scholarship as a financial incentive to enroll in the College. For many, it’s an award that helps influence their financial decision about where to go to school. For young engineers, a Merit Scholarship can help cover about 18% of their tuition and fees. One hundred nineteen students were offered a Merit Scholarship in 2007 and 31 enrolled. For 2008, more than 160 students were offered the scholarship and 40 have accepted it.

What was it like when you enrolled in UIC? Why did you choose our College of Engineering? Was financial need part of that choice? If it was, or if you can imagine that need, then you know how excited these new students are and how concerned they and their parents are about keeping bills, studying, and managing part-time work.

Your 2007 Leadership Annual Gift of $2,500 or more will allow the College of Engineering to help as many students as possible through scholarship support. A $2,500 Named Scholarship can be placed directly in the hands of one student who is now even more likely to succeed because of your generosity. All individual gifts of $2,500 or more will qualify you for recognition as a member of the Chancellor’s Circle.

Now, we need more donors who are just as kind as you in order to make our goal of raising $150,000 a year in unrestricted funds to help our incoming students.

In this issue of Engineering News you will find an envelope and reply card. Your Annual Fund gift returned with this card, no matter what the size of your gift, will be directed to scholarships for incoming students unless you tell us otherwise.

Let us know about your experiences at UIC and why you are making this gift. Every story is a piece of UIC engineering history.

We are here to answer your questions about annual giving and all other giving options.

Thank you for caring about UIC engineers!

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A Legacy of Opportunity Lasts Forever

Opportunity gives others a chance to succeed, be creative, discover, and be an engineer.

You can create an enduring gift to the College of Engineering that will benefit our engineering students or faculty for generations to come by adding a bequest to your estate plan to create an engineering endowment fund.

An engineering endowment fund offers opportunities -

• So students can receive scholarships or fellowships while earning their degrees
• So faculty can teach, conduct dynamic research and serve their communities
• So programs that we have not yet begun can have a home, and great programs can grow
• So discovery can lead to knowledge, and knowledge can solve problems and help people

In the world of engineers, great achievements begin with an opportunity to give others that chance.

You can leave a legacy to the UIC College of Engineering through an endowment fund. All it takes is a paragraph added to your estate plans that reads like this:

“I leave (e.g., % of my estate, $ amount, or residue) to the University of Illinois Foundation, a not-for-profit corporation located in Urbana, Illinois, to create a permanent endowment fund in my name to support the College of Engineering at the University of Illinois at Chicago.”

Your bequest is easily accomplished and gives you the maximum estate tax benefits. By sharing your estate with your College of Engineering, you create a philanthropic vision that improves the lives of everyone who benefits from the opportunities you make possible.

For additional information about making a bequest to support the College of Engineering, please contact Charles Van Hecke at vanhecke@uic.edu.
Your Stake in the Future

Each of the alumni and friends or corporations and foundations that support the College of Engineering through their volunteer activity, donations to the Annual Fund, endowed and planned gifts to perpetuate programs or educational assistance, grants and contracts to underwrite cutting-edge faculty research, or provision of materials to reinvigorate laboratories and classrooms, has a stake in the future of the College.

This is your College of Engineering, whether you are a graduate student, parent, faculty member, friend or corporate partner.

The College is indebted to those who call our institution home. For 40 years, the UIC College of Engineering has awarded degrees and provided a unique and dynamic location where access to excellence in engineering is highly prized. We promise to continue our concern for our students and the academic environment. You make this possible!

With continuing gratitude and thanks, we recognize these donors and partners in the advancement of engineering.

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- Motorola Inc.
OUR PAST, PRESENT AND FUTURE

The UIC College of Engineering celebrates the unique link between the alumni of the Navy Pier campus, which began over 60 years ago, and the future engineers who now benefit from the generosity of those who attended Navy Pier before there was a University of Illinois at Chicago Circle campus. During the years leading up to the inauguration of this campus, architecture and engineering students participated in a single program on The Pier, only later moving into their chosen professions. The friends of the UIC College of Engineering honored here each attended classes on the famous Navy Pier and then went on to earn their degree elsewhere. A first graduation date is provided following each name. They are among the most generous of donors because they understand that there was a need during their academic lifetime for a campus serving Chicago-area students, many of whom could not afford to leave home to attend college. They were fortunate. Their combined generosity provides five Freshman Merit Scholarships for students matriculating in the UIC College of Engineering in 2007-2008.

Navy Pier Alumni

Roy G. Anderson* (1961)
James V. and Donna L. Bilotti (1963)
Melleroa and Janet B. Bose (1966)
Anthony Cassata (1974)
Jere G. and Joanna Castor (1951)
Frank J. and Nancy R. Cihak (1963)
Robert E. Daniels (1961)
Thomas J. and Marie Darcy (1955)
Paul J. and Marianne P. Douglas (1956)
Thomas J. and Marie Darcy (1955)
Robert E. Daniels (1961)

Our Heritage Continues

When the UICC – or Circle Campus – opened in 1965, Engineering was among the first colleges to enroll students. The first class graduated in 1968 with 75 students. Many members of the earliest classes also attended Navy Pier. Today, we are in contact with 1,121 living alumni of the 1,346 who obtained a degree from the College of Engineering during those growth years. Over time, through their combine giving, the 450 members of the First Five Club made gifts to the College totalling almost $550,000, most of which is through regular Annual Fund giving. We recognize and thank these members of the First Five Club who donated to the College of Engineering during the 2007 fiscal year.

First Five Club

Members of the Classes of 1968 through 1972

Stuart G. and Kristina Abrams
John W. Ahlen
Robert F. Bendlech
Robert E. Bernd
Donna D. and William D. Bobco, Jr.
Lido J. Boni
Michael A. and Mari L. Brown
Robert B. Brown
Phillip S. and Lynn Cali
Paul F. Chan
Paul H.S. and Yueh Y. Chou
Raymond R. Christian
James C. Covello
Eugene DeRamus
Kourosh Dilmanian
Angelo P. Dimopoulos
Daniel J. Fedor
Richard F. Fedorowicz
Robert A. Ferlis
Michael A. Ferraro
Gregory M. Fontana
Charles E. Freda
Thomas G. and Victoria Funk
Peter M. Garbely
James M. Gelbio
Barry Lee Gilbert
Jack A. and Linda Goldfarb
William J. and Debra M. Hass
William W. Heine
David B. Heinrich
Gregory N. Hessie
George J. Hoff, Jr.
Nancy A. and Thomas Holmes
Douglas Hum
James E. Inns
Donald Y. Jing
Victor W. and Lucy Kao
Jai H. Kim
Larry A. Kobigg
George A. Koran
John E. Kowalski
Ivan M. Kralk
Clifford C. Kruse
James C. LaBelle
Fred M. Levyoy
William Tard S. Christine Li
Richard C. Lindgren
Kam B. Lui
Leroy J. Magas
Michael R. McKenna*
Michael J. McLaughlin
Jerry D. and Joanne Meyerhoff
Kurt D. Michi
Gary T. Nakai
Michael M. Niedzinski
Richard H. Nixons
Terrence Noonan
Kevin J. and Charlotte O’Connell
Niva S. Ogighian
Bruce A. Olmam
Robert C. Osmondson
Bryn G. Padera
George D. Panagopoulos
Wolfgang and Linda H. Pavlok
Kenneth A. Peterson
Edward J. and Sharon K. Prentice
Herman J. and Dianna J. Rehnt
Laszlo N. Repay
James F. Ries
Leonard E. Schwer
Glenn R. Scott, Jr.
Michael F. Seder
Sunesh M. Sivak
Larry F. and Marilyn Shanok
Thomas S. Skuse, Jr.
Gregory E. and Joyce Smith
Robert A. Sowadski
Ronald J. Stelakpans
Brian A. and Joan M. Stilton
David G. Styka
Frank F. Talaga, Jr.
Archie L. Thompson
Thomas A. Weiczci
Anastasios Zervakis

A NEW WORLD!

Engineers graduating in the new millennium face challenges that were not on the radar of those who were among our first alumni. They have new tools, new applications, and a startlingly different future ahead of them. But at the fundamental level, they are engineers, not much different from those in the earliest classes, facing theories that must be mastered and learning how to solve problems. One thing that the newest generation of engineers has mastered is philanthropic giving. Their gifts to the Annual Fund have already provided support for several Freshman Merit Scholarships and have underwritten prizes for Senior Design EXPO and their academic departments. We thank the members of the Classes of 2000 through 2007 who contributed to the College of Engineering Annual Fund this year.

Twenty First Century Club

Members of the New Millennium Classes of 2000 through 2007

Aldo Aguirre
Syed Haider Ali
Craig F. Barnes

A note to our donors and friends. The 2007 Honor Roll of Donors for individuals includes corporate or other matching funds and those of spouses. Alumni who have made gifts as the principal owner of a company are recognized as individuals and through the listing of their company name. The College of Engineering has made every effort to recognize each donor whose gift was received by the University of Illinois Foundation by June 30, 2007. If your gift or the company match was received after that date, it will be recognized in the 2008 Honor Roll of Donors. If you wish to have the name of your spouse added to future recognition listings or your name listed in a different fashion, please inform the College of Engineering of your preference at engnews@uic.edu.

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Faculty Fellows List Grows

Faculty members who have received distinguished titles and have been elected to the most influential professional societies in the engineering world are the foundation of excellence at the College of Engineering. 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. The College now has 44 faculty members who are Fellows of prestigious academies, institutes and societies. Congratulations to the three newest Fellows!

Gyungho Lee Elected AAAS Fellow

GYUNGHO LEE (1), professor of electrical and computer engineering, joins 11 faculty members within the College of Engineering as Fellows elected to the American Association for the Advancement of Science.

The announcement of the AAAS Fellows was made in the November 24, 2006 issue of Science. The AAAS cited Professor Lee for his contributions to the “technology for high performance computing and networking, and for the successful development of a commercial multiprocessor system.”

Lee has directed UIC’s computer engineering program since joining the faculty in 2002. His career history is one of work in both the academy and in private industry. He is also the director of the Laboratory for Computer Architecture.

“Gyungho Lee is one of a limited number of talented engineers who have made significant contributions in both academia and industry, has developed seminal ideas in computer architecture and also developed them successfully in industry, and who has successfully shown leadership and administrative skills at the university and in industry,” said Mitra Dutta, professor and head of electrical and computer engineering, who herself is an AAAS Fellow.

Thomas Royston Elected ASME Fellow

TOM ROYSTON (2), professor of Mechanical an Industrial Engineering, has been elected a Fellow of the American Society of Mechanical Engineers (ASME) for his “significant research contributions in the area of structural acoustics and vibration, with applications in medical diagnostics, active sound and vibration control, musical instruments, nondestructive testing and high-precision instrument isolation.”

Royston has also received The Acoustical Society of America R. Bruce Lindsay Award (2002), UIC College of Engineering Faculty Research Award (2002), and the prestigious NSF Early Career (CAREER) Development Award (1998).

Royston is the director of the Acoustics and Vibrations Laboratory, which has two focuses. Looking at biomedical issues, his research studies medical imaging based on vibration and acoustics such as the development of novel multimode sonic imaging techniques combined with US and MRI, tissue response to vibro-acoustic energy, and piezoelectric transducers. In the area of vibrations, acoustics and dynamic systems, his research is directed at structural acoustics and vibration, hysteresis, nonlinear dynamics, smart material systems and structures, musical instrument acoustics, nondestructive evaluation based on vibration and acoustics, vibration isolation of high-precision facilities and instrumentation.

Mohsen Issa Elected ASCE Fellow

Civil and Materials Engineering professor MOHSEN ISSA (3), who directs the Structural and Concrete Materials Laboratory, was named a Fellow by the American Society of Civil Engineers. He is also a Fellow of the American Concrete Institute International.

Professor Issa conducts state-of-the-research on civil engineering structures and concrete materials. The research in his lab is well-known for the design and testing of structural models and prototypes; development of experimental and analytical techniques for monitoring and rating existing highway bridges; design of optimum structural slab system for rehabilitation and new bridge construction; scale effects and surface characterization in fracture of cementitious materials; high-performance concrete materials; application of advanced composite materials for rehabilitation of civil engineering structures; and inspection and evaluation of wood structures.

Issa has received additional awards celebrating his talents as a teacher and an advisor. In 1994, he was honored with the Harold A. Simon Award for excellence in teaching. He was twice awarded with the best advisor award, in 1994 and 1996. He was recently honored with the Faculty Research Award by the College of Engineering.
The Dean’s Advisory Board, meeting in April 2007, included a poster display by graduate students and research staff demonstrating the depth of the College’s involvement in energy and infrastructure research.
AWARDS AND HONORS

National Center of Academic Excellence in Information Assurance Education

UIC won designation as a National Center of Academic Excellence in Information Assurance Education for 2007-2012, the highest designation given to security programs. It qualifies UIC for funding under the NSF Scholarships for Service Programs and is of substantial value when applying for NSF Cybertrust grants. This status is awarded jointly by the Department of Homeland Security and the National Security Agency. The extensive application was submitted by professors Jon Solworth and V.N. Venkatakrishnan. Dean Prith Banerjee and professors Sol Shatz, Pete Nelson, Pat Troy, Sharad Laxpati, and Bob Sloan also provided assistance.

The College of Engineering congratulates these faculty members and extends thanks to the additional faculty affiliated with the Center for Research and Instruction in Technologies for Electronic Security (RITES). Their excellent work made this designation possible. They are Dan J. Bernstein, Prosad Sistla, Lenore Zuck, Jeff Tsai, Annette Valenta, and Kajii Wu.

Faculty News


Rodica Baranescu was Keynote Speaker at the 2007 College of Engineering Commencement speaking on “The future of energy and a new generation of engineers’ opportunity to be part of this future.” Dr. Baranescu is manager of International Truck and Engine Corporation. She is also a professor in the department of Mechanical and Industrial Engineering, and is a Member of the National Academy of Engineering.

Masud Chowdhury chaired seven recent conference sessions: sessions on Power Circuits IV, Low Power Circuits I, Communication Circuits, Low Power Logic & Architectures I, and VLSI for Communications II at the International Symposium on Circuit and Systems (ISCAS) and the Computer Systems and Intelligent Systems and Circuits and Electronics sessions at the IEEE International Conference on Electro/Information Technology. Chowdhury present a paper titled “Analysis of Power Consumption and BER of Flip-flop Based Interconnect Pipelining” co-authored with Jingye Xu and Abinash Roy at the IEEE/ACM conference on Design, Automation and Test in Europe 2007. He has been elected technical program committee member of VLSI Track of IEEE Circuit and System (CAS) Society. This committee oversees VLSI track related matters in IEEE CAS Society’s flagship conference ISCAS, and four other conferences GLVLSI, MWSCAS, APCCAS, and ICECS as well as special issues of IEEE Transaction on VLSI.

EVL co-founders Thomas A. DeFanti (pictured) and Daniel J. Sandin, and computer science alumna Carolina Cruz-Neira (Ph.D. 1995) received the 2007 IEEE Virtual Reality Technical Achievement Award for development of the CAVE Automatic Virtual Environment in the 1990s. This award was presented at the IEEE Virtual Reality 2007 conference. Computer science graduate student and lead author Tom Peterka and EVL scientists Robert Kooma, Javier Girado, Jinghua Ge, along with professors Sandin, DeFanti, Andrew Johnson, Jason Leigh, and Cal IT2 researcher Jurgen Schulze won the conference Best Paper Award. In “Dynallax: Solid State Dynamic Parallax Barrier Autostereoscopic VR Display,” Peterka and his co-authors described a no-glasses-needed 3D display technology called Dynallax. It uses a solid-state, dynamic parallax barrier which occludes certain regions of an image on a display as seen from each of a person’s two eyes, permitting the viewer to see an image in 3D without using 3D glasses.

Barbara Di Eugenio, director of the Natural Language Processing Laboratory, is the PI on the project “Extending and Validating a Computational Theory of Effective Tutoring,” which recently obtained funding from the ONR of $345,309. The project is collaboration with Dr. Stellan Ohlsson (Psychology, UIC). Says Di Eugenio, ‘’We investigate why one-on-one tutoring dialogues are so effective for student learning, and we embody our findings in language interfaces to Intelligent Tutoring Systems, software systems that support students’ learning. Our current domain is basic data structures and algorithms in computer science.’’ Di Eugenio has also received new funding from the Motorola University Partnership in Research program for Intelligent Aggregation for Mobile Search. This project focuses on developing resources and algorithms to perform aggregation or summarization of long lists of concepts. The problem is important for effective mobile search, since long lists can overwhelm small displays, are difficult to remember when spoken and difficult to navigate on a small device. The problem touches on unsolved research issues. The team will develop new algorithms to generate meaningful groupings of the items that appear on long lists; in many cases, such as aggregating email messages, the possible dimensions are too numerous to define a priori and must be dynamically determined. Since a mobile search cannot be conceived of as a sequence of isolated queries, the system must be able to address new requests from the user that will refer to the entities dynamically created by the system.

AWARDS AND HONORS
Shantanu Dutta was a featured speaker at the IEEE International Conference on Computer-Aided Design (ICCAD), speaking on "A Network-Flow Approach to Timing-Driven Incremental Placement for ASICs."

Mitra Dutta, Michael Stroscio and Amit Raichura presented on "Phonon Bottleneck Effects in Finite-length Carbon Nanotubes" at the International Conference on Phonon Scattering in Condensed Matter. Dutta and Stroscio also spoke on "Bio-inspired Bottom-up Nanoscale Control of DNA-based Nanoscaffolds" with Nadrian C. Seeman, Milana Vasudev, and Takayuki Yamanaka at NANO-DOS. Both Dutta and Stroscio are members of the steering committee for the Workshop on the Frontiers of Electronics, to be held December 15 - 19, 2007.

David Eddington received $248,000 from the Alfred P. Sloan Foundation for the project "Microfluidic Microbial Sieve." Microfluidics has the potential to identify and sequence rare microbes from heterogeneous field samples which is currently not possible. As current samples of environmental microbes are processed in bulk, rare species are oftentimes overlooked. This proposal addresses this experimental limitation by developing a simple microfluidic bacterial sieve to isolate and analyze individual microbes. He also received $321,000 from DARPA for the project "Cnidocytes as Microscale Synthesis and Delivery Modules."

Cnidocytes, the stinging cells and defining characteristic of members of the Phylum Cnidaria, function as microscopic hypodermics to inject venom into the tissues of the animals prey or predators. This proposal encompasses leveraging the cnidocyte as a functional material for microfabricated drug delivery platforms. The elegant firing mechanism of the cnidocyte will be characterized to establish an empirical set of material properties and progenitor cnidocyte cells will be isolated and the transcriptome will be sequenced as a first step towards re-engineering the cnidocyte to produce desired therapeutics. UIC is collaborating with Peter Anderson, director, Whitney Laboratory of Marine Biology at the University of Florida, who leads the sequencing effort.

Danilo Erricollo received a Research Opportunities University Research Instrumentation Program (DURIP) award for a precise positioning system for antennas. This award is administered through the Air Force Office of Scientific Research, the Army Research Office, and the Office of Naval Research for the acquisition of major equipment to augment current or develop new research capabilities to support research in the technical areas of interest to the Department of Defense. Ericollo is also a 1998 Ph.D. alumnus.

Andrew Johnson and John Lillis received the 2007 Teaching Recognition Program Awards from UIC's Council for Excellence in Teaching and Learning. They are two of only 20 faculty members campus-wide to receive this honor. Congratulations!

Derong Liu chaired the 2007 IEEE International Symposium on Approximate Dynamic Programming and Reinforcement Learning, sponsored by the IEEE Computational Intelligence Society. He presented a seminar series at Tsinghua University on "Adaptive Dynamic Programming, Motif Identification Using Neural Networks," Call Admission Control for CDMA Wireless Networks, and "Gradient Based Methods for Blind Source Separation." He also was the general chair of the 4th International Symposium on Neural Networks held in Nanjing, China.

Frank Loth was co-chair of the UIC/Conquer Chiari Research Symposium 2007, held on campus, with top neurosurgeons and researchers attending from around the world. Loth's research is directed towards determining the fluid dynamics parameters present in vivo using experimental and numerical techniques to gain a better understanding of disease for improved treatment and diagnosis. His specific areas of research include the development of CFD tools to predict blood flow patterns based on MRI measurements and experimental and numerical investigation of the importance of turbulence in arterio-venous graft failure. He also conducts research on the fluid dynamics of cerebrospinal fluid, which resides within cranial and spinal cavities and moves in a pulsatile fashion to and from the cranial cavity. This motion can be measured by magnetic resonance imaging and may be of clinical importance in the diagnosis of several brain-related disorders such as hydrocephalus, Chiari malformation, and syringomyelia.

Sohail Murad, department head of Chemical Engineering, published a paper on his research on gas solubilities using molecular dynamics, which is supported by an NSF grant. That paper, Molecular dynamics simulation of Henry's constant of argon, nitrogen, methane and oxygen in ethylene oxide, co-authored with M. Krishnamurthy and J.D. Olson. It was the fourth most downloaded paper of the journal Molecular Simulation in 2006.

Sudip K. Mazumder was an invited speaker on “Global Stability Methodology for Switching Power Converters” at the IEEE Power Electronics Specialists Conference and the program chair. He has received a DOE PHASE I grant of $179,607 for research titled “All-SiC Bidirectional Dc-Dc Converter for Hybrid Electric Vehicle” and $100,000 for research titled Optically-gated High-power Solid-state Switch (SiC-OGHSS) for Pulsed-power Application. He also received $110,000 from the California Energy Commission for research on “Modular and Efficient Power Converter with Source Ripple-current Mitigation.” He presented an invited talk on “A Ripple-Mitigating and Energy-Efficient Fuel Cell Power-Conditioning System” at the Department of Electrical and Computer Engineering at Ohio State University.

Krishna R. Reddy received the 2006 Best Practice-Oriented Paper Award from the American Society of Civil Engineers and the 2006 Outstanding Geotechnical Educator
Award at the Great Lakes Geotechnical & Geoenvironmental Conference. He organized and chaired two symposia on Contaminated Sediment Remediation: Challenges and Opportunities and Nanotechnology for Contaminated Site Remediation by the American Chemical Society at the Spring Annual Meeting and co-chaired a major international conference on The Challenge of Sustainability in Geoenvironment by the Geo-Institute of the American Chemical Society as well as a session on Advances in Waste Utilization and Disposal at the Geo-Denver Conference. He has delivered these keynote presentations: “Geotechnical Aspects of Bioreactor Landfills,” at the Indian Geotechnical Conference, Indian Institute of Technology, Madras; “Physical and Chemical Groundwater Remediation Technologies,” and “Enhanced Aquifer Recharge,” at the NATO Advanced Study Institute on Overexploitation, “Contamination of Shared Groundwater Resources: Management, (Bio)technological, and Political Approaches to Avoid Conflicts”, Bulgaria; and “Transport of Modified Reactive Nanoscale Iron Particles in Subsurface Soils” at the U.S. EPA Workshop on Nanotechnology for Site Remediation.

Laxman Saggere and graduate student Sandeep Krishnan named the device pictured here a “micromanipulator station.” Saggere and Krishnan describe their one-square centimeter device in the March issue of the Journal of Micromechanics and Microengineering. The article Seeing into the Future, in the last issue of Engineering News, included this photograph. It is not associated with Professor Saggere’s research on macular degeneration. It exemplifies their research successes in constructing microscopic-sized machines of the future, assembled with micrometer or nanometer-scale parts. These will someday be made with devices that use tiny, agile “fingers” that can grip, lift and perform assembly work in a controlled, coordinated way.

Robert Sloan has been appointed acting head of the Department of Computer Science effective August 16, 2007. Sloan recently received the IEEE Computer Society’s 2006 Golden Core award, given for his “long-standing service to the society.” The Golden Core is the highest level of membership designation in the IEEE Computer Society. Sloan is one of only 32 recipients out of the more than 100,000 current members. Congratulations!

Michael Stroscio is the guest editor for the special issue of IEEE Sensors journal, Nanosensors for Defense and Security, 2006-2008. He is serving on the advisory committee for the 12th International Workshop on Computational Electronics to be held October 2007. He was an international advisory committee member for the 12th International Conference on Phonon Scattering in Condensed Matter and the Technical Committee co-chair for the Nanoelectronic Devices for Defense and Security Conference. He chaired the session on Integrating Nanostructures with Biological Structures at the June 2007 Nanoelectronic Devices for Defense and Security Conference. Daniela Tuninetti was awarded a five-year, $400,000 NSF grant to explore ways of using radio interference to improve wireless communications and was interviewed by Network World, which asked “Can we make radio interference into a virtue?” Her story can be found at Network World at www.networkworld.com/news/2007/012407-radio-interference.html.

Piergiorgio L. E. Uslenghi, associate dean for MEng and International Programs, was awarded the IEEE Antennas and Propagation Society Distinguished Achievement Award. This is the highest award that the Antennas and Propagation Society can bestow on its members.

V.N. Venkatakrishnan, who specializes in computer and network security, was one of three security specialists, all local engineering professors, appointed to an unpaid, independent the technical review team chaired by the Hon. Abner J. Mikva, to examine why November 2006 election results tabulated in many Cook County precincts were unable to be received and processed in a timely manner by the central tally system during that general election.
Alumni, Corporate Partners and Friends Make Events Boom for Graduating Engineers

Making a Lasting Impression

Students hunting for jobs know the first thing they need is a great resume, no matter what their level of educational, research or engineering-related employment experience.

That is where the Engineering Alumni Association — the EAA — makes a lasting impression.

Each year, the EAA organizes two day-long mentoring sessions for students anxious to make the best impression on prospective employers, whether they are looking for an internship or post-graduation employment. The semi-annual event that brings students and alumni mentors together is Career Prep Day.

Students learn about the institutional offerings provided to them, being briefed by the UIC Office of Career Services, which they use at graduation, and the College of Engineering Office of Career Services, which they use to obtain internships, paid part-time employment or full time summer jobs in engineering.

One session brings alumni to the stage — literally. A panel discussion, with prizes for the best questions asked, brings out those questions that most students think about but are afraid to ask.

“We’ve been asked every possible question,” says Rick Schmidt, a co-facilitator of Career Prep Day. “Students want to be reassured that their concerns are realistic and shared by others. They want to know if the company courting them is going to offer them both a reasonable position and a corporate mentor to help their career develop. They do not want to make mistakes when accepting a first job, and especially while interviewing.”

Small group or one-on-one mentoring is a key to success at Career Prep Day. There, resumes are reviewed and discussed openly.

“We separate students by field, but also by educational and even employment experience when we pair them with alumni mentors,” explains co-facilitator Yvonne Liebelt. “Many of us have the work experience or degrees that allow us to help Ph.D. candidates polish a research resume. Others receive a harder mentoring task — helping students with little experience produce a good looking resume and personal skills that will land that first engineering job.”

“While we were students, many people stepped up to help us,” says Schmidt, “Now as members of the Engineering Alumni Association Board, we are coming forward to help and to reinforce the idea that if you help someone succeed today, they will be able to help other students in the future.”

Our Thanks to Career Prep Day Mentors and Sponsors!

The EAA, College of Engineering and its Office of Career Services wish to thank those who helped to make Career Prep Day a success.

Thank you to Arlene Norsym, Caryn Karman and the staff of the UIC Alumni Association for their co-sponsorship and presence.

The alumni mentors who shared their time, energy and advice were Keith Alsberg, Gene Changnon, Truman Chua, Louann Devine, Kim Fitzgerald, Jason Friedlund, Michael Goluszka, Brandon Hamilton, Daniel Hernandez, Ben Hom, Pamela Huck, Mark Kilduff, Yvonne Liebelt (co-facilitator), Luis Llanes, Michael McDermott, John Molburg, King Moy, William Nakulsri, Michael Niedzinski, Kent Olson, Moses Phenany, Richard Schmidt (co-facilitator), Dusyant Sharma, Riyaz Shipchandler, and Edward Yousif. It is a day well spent!
Hamilton’s Solutions, Caterpillar, Inc., Austin/AECOM and AECOM Technology Corporation, Argonne National Laboratories Make Career Prep Day Possible

Sponsorship is essential to the continuation of alumni sponsored events that benefit engineering students. The February 2007 Engineering Career Prep Day was made possible by the generosity of four organizations. Argonne National Laboratory, as a principal sponsor of Career Prep Days during the 2006-2007 academic year, provided a financial sponsorship that underwrote a significant portion of the operating cost both in September and February. Many thanks go to Argonne National Laboratory and alumni mentor Ali Khounsary, Ph.D. whose personal interest in engineering careers made this significant year-long sponsorship possible.

Caterpillar, Inc. has a long-term relationship with the College of Engineering through its collegiate partners program, which focuses on this campus and 13 others nation-wide for hiring and support. Their additional support of Career Prep Day is just one of the many ways that Caterpillar is promoting the careers of students in every field of engineering.

AECOM Technology Corporation, one of the companies of Austin/AECOM, provided additional support, company literature and token gifts to attendees, as well as a mentor — alumnus Kent Olson.

New alumni mentors are always welcome. This one made a difference!

Brandon Hamilton and his management consulting firm, Hamilton’s Solutions of Calumet Park, Illinois, were new contributors to the success of Career Prep Day. Brandon is also an Associate Professor of Business at DeVry University. Thank you Brandon for your sponsorship gift and for becoming a mentor! We were pleased to introduce you to so many students.

Intellectual Challenges as Engineers Prepare to Graduate – Senior Design EXPO

As students approach the end of their undergraduate career, they undertake extensive team-based research projects known generally as senior design. Each April, students gather to demonstrate their research to judges from among alumni, faculty, and members of industry. It is the culmination of up to a year of hard work, creativity, analysis and problem-solving. Students compete across 13 technical categories, with cash prizes given to the winning teams and recognition for the second place teams. With about 65 teams competing this year, a challenge was to develop technically deep and appropriate judging teams.

Over 70 alumni and friends responded, the largest turn-out of alumni judges since EXPO began, including a waiting list of judges. Additional alumni and faculty came on that day as last minute volunteers. The College of Engineering is indebted to all and to Professor Vladimir Goncharoff, the faculty coordinator of 2007 Engineering Senior Design EXPO.


Continental Automotive Systems, the Jasica Family, Gabriel Duran, Primera Engineers, Ltd., Brian Stinton Sponsor EXPO 2007

A capstone event in the academic career of seniors, EXPO is long remembered for its tension, excitement and elation. Many alumni, friends and corporate sponsors have, over the years, underwritten the costs of student research materials, the program book and awards to assure the success of EXPO. This year saw the greatest number of prizes awarded by individuals and companies, as well as a most generous gift from Continental Automotive Systems as the Principal Corporate Sponsor. That was at the initiative of alumnus Max Magnelli.

The College of Engineering gratefully recognizes and extends its thanks to Continental Automotive Systems for this sponsorship, which included underwriting four $400 awards presented to the first place teams in the User Interface and Education, Specialty Electronics and Intellectual Challenges as Engineers Prepare to Graduate – Senior Design EXPO
Signal Processing, Remote Control, and System Monitoring categories. We were pleased to provide Continental with a table so students could visit to extend their thanks, and the College was pleased to know that almost all of the Continental employees staffing the table were UIC engineering alumni! The College extends its deep thanks to all of the additional members of our engineering family who underwrote category prizes.

Raymond and Jeanine Jasica provided first, second and third place awards in the Assistive Technology category. Their gift honors grandson Jimmy Mercola and recognizes the involvement of the Easter Seals Society of DuPage County in Senior Design EXPO.

Arlene Norsym, Vice President of the University of Illinois Alumni Association and Associate Chancellor for Alumni Relations, again provided a prize recognizing the one project voted most popular by the EXPO participants.

Three generous alumni judges, Gabriel Alexander Duran, Michael W. Gonzalez, Executive Vice President, Primera Engineers, Ltd., and Brian Stinton underwrote prizes presented to four first place teams. Alumnus Joe Mulvey facilitated three first place prizes, gifts from Austin/AECOM, which was represented by Iyad Al-Rabadi. The dedication that these alumni, judges and companies show underscores the fact that engineers supporting future engineers strengthens relationships with in engineering community, and that it is wonderful to be able to give back to the College.

The University of Illinois Alumni Association presented EXPO originator and alumna Kathy McGuire with the UIAA Loyalty Award. Kathy was recognized for initiating the concept of EXPO, remaining an active participant and volunteer in EXPO and most recently guiding the College of Engineering and the Easter Seals Society of DuPage County into a relationship through which students partner with Easter Seals clients for projects within the assistive technology and universal design category.

For information regarding sponsorships of Career Prep Days in 2007-2008 or the April 2008 Senior Design EXPO, please contact Nancy J. Cohen at njcohen@uic.edu.

The campus chapter of Engineers Without Borders was honored at the Chancellor’s Student Leadership Awards for Volunteer Service with the 2007 Student Organization of the Year Award for their outstanding accomplishments and exemplary leadership. Many of the members received individual awards for volunteer service at the celebration, but the announcement of the overall award was an incredible but well-deserved surprise.

The chapter is honored for its humanitarian work in Cerro Alto, Guatemala. For more information, visit www.ewb-uic.org/

**Class Notes**

Send your Class Notes to enginews@uic.edu.

### 1970s

**Vijay Balakrishnan** (1975) is the new COO of VSoft Corporation in Georgia. During his 28 year career in technology and financial services, Vijay has had the opportunity to work in 45 countries. His career included leadership positions at Honeywell, Deluxe Corporation, Equifax, Alogent Corporation and most recently Metavalue Corporation where he was vice president of strategic marketing.

**Jerry Bragiel** (1974) is president and CEO of Champion Parts Inc. of Hope, Arkansas. Champion Parts remanufactures fuel system components, air conditioning compressors, front wheel drive assemblies, and other underhood electrical and mechanical products for the passenger car and light truck, agricultural, heavy-duty truck and marine parts aftermarket.

**Michael Greczek** (1974) runs Apex One Graphics in Fulshear, Texas.

**Timothy Martin** (1978) stepped down as the Secretary of Transportation for the State of Illinois and joined Consoer, Townsend and Associates, which is a subsidiary of AECOM, as vice president.

**John Leonard Murphy** (1972) lives in Clinton, Tennessee. He received an MSE from Southern Methodist University and an MBA from Bristol University. John spent a full career with the DOE and Oakridge National Laboratory. John writes that he is thinking of retiring. Congratulations to **Ken Nelson** (1970), president of Clark Dietz, Inc. His company to received the American Public Works Association national 2007 Project of the Year Award for Historic Restoration/Preservation under $2 Million for their design and construction engineering on the Station Street Bridge over the Kankakee River. This open spandrel arch bridge was originally built in the 1920s to carry vehicles and streets cars operated by the Kankakee Electric Railway Company. It currently carries two lanes of traffic and a pedestrian walkway. Their project also was honored with the 2007 APWA Chicago Metro Chapter, Project of the Year in that category and the 2007 ACEC-Illinois Engineering Excellence Special Achievement award.

**Gary Schwab** (1972, 1975, Ph.D. 1979) lives in Oak Park, Illinois where he has been on the board of the Historical Society of Oak Park and River Forest for 15 years and served on the Village’s Community Design Commission and Community Development Citizen Advisory Committee for the Community Development Block Grant program. He has been a member of the Village Managers Association for 13 years. He is a member of the Oak Park Area Arts Council, the Unity Temple Restoration Foundation and the Oak Park Regional Housing Center.

### 1980s

**Parvin Aggarwal** (1980) is the Division Chief, Structural Design and Analysis Division in the Spacecraft and Vehicle Systems Department at Marshall Space flight center of NASA. He and Prasha live in Madison, Alabama.

**Alan El-Shafei** (1986), CEO and founder of Microsun Technologies LLC, was inducted into the Chicago Area Entrepreneurship Hall of Fame. Alan was recognized for his entrepreneurial achievements and making a lasting impact on Chicago's business landscape. The UIC’s Institute for Entrepreneurial Studies hosted the event. Alan and Nancie, and their three children, are long time residents of Lisle and are actively involved in community and charitable organizations. MicroSun Technologies designs and manufactures rechargeable battery and charger systems for the portable products market ranging from rechargeable batteries for consumer satellite radios to highly engineered backup power solutions for computer server applications to battery and charger solutions for the medical and military industries.

**Jeff Fenn** (1982) joined NN, Inc. as the general manager of NN Asia. His new office is in Jiangsu. Previously, Jeff was the general manager at Knowles Electrical Co, in Suzhou, China. Jeff also held positions with CTS Electronics Company in Tianjin, Peoples Republic of China and divisions of Motorola, Inc. and Northrop Defense in the U.S. NN, Inc. manufactures and supplies high precision metal bearing components, industrial plastic and rubber products and precision metal components.

**Jeffrey Finn** (1987) is a partner and intellectual property attorney with Sidley and Austin in Los Angeles. He represents start-up, emerging growth and large corporations in all aspects of intellectual property law with an emphasis on patent litigation. He is also experienced in patent portfolio procurement, licensing and evaluation, preparing due diligence non-liability, and right-to-use opinions. Mr. Finn is currently an editor of the treatise Patent Litigation published by the Practicing Law Institute. Mr. Finn is a member of the American Intellectual Property Law Association (AIPLA), and the Los Angeles Intellectual Property Law Association (LAIPLA). He is also a member of the Institute of Electrical and Electronics Engineers (IEEE).

**Lou Fyda** (1982) is a managing partner with R3 Systems Group in Carol Stream. Thanks to Tom J. Kunkel, another managing partner and 1988 Economic graduate, for visiting with the Dean!

**Mark George** (1982, 1988) is now the director of research for General Plasma Inc. in Tucson, Arizona. General Plasma is a manufacturer of components and integrated thin film manufacturing systems for Solar Cell production.

**Ram Madugula** (1982) has been appointed a vice president at Sargent & Lundy LLC. He is a project director in Sargent & Lundy’s Fossil Power Technologies group with responsibility for the direction of advanced generation technologies. Ram is a registered PE and a member of the ASME and past chair of the Combined Cycle Committee.

**Bob Monkman** (1987) is director of Software Project Management at Penguin Computing in San Francisco. Bob guides the direction of technology development based on an analysis of market demand. He has been at Penguin since 2005 where he has launched the next-generation Syclad ClusterWare product for Linux HPC cluster management. Previously, Bob managed the Carrier Grade Linux product line at MontaVista Software and has held a variety of product management, marketing and engineering roles.

**Greg Sherwin** (1987) accepted the position of vice president of Engineering for TBD.com, also
known as TeeBeeDee. Started by the founder of Parenting magazine and former executive of several media companies, this newly formed 17-member company will focus on utilizing the internet to enable social networking among baby boomers. Greg is leaving his position at CNET Networks after 7 years where he served as a vice president for information technology.

1990s

Waydin J. Arwan (1991) is with Kellogg Brown and Root LLC, a division of Halliburton, in Houston, Texas. Nader Enayati (1990) received his Ph.D. and is now a research scientist with American Science and Technology in Chicago. Richard Gurak (1990) is an intellectual property attorney with Welch & Katz, in Chicago, and reports that he can see the campus from his office. Before coming to Welch & Katz in 1995, Mr. Gurak was a systems improvement engineer with an engineering consulting firm specializing in pneumatic and hydraulic abrasive material handling systems. From 1986 through 1993, Mr. Gurak served as a civil engineer and heavy equipment operator in the U.S. Navy Reserve SEABEES. Thanks for the visit Richard! Raouf Haddad (1994) is a Principal Staff Engineer with Motorola in Fort Worth, Texas. Jacob Idichandy (1995) is director of Engineering Services for MobileComm Professionals, Inc. in Plano, Texas. Ranga Kandalam (1991) is the Chief Transportation Planner with h-gac.com in Houston, Texas. Connie Jing Li (Ph.D. 1994) is the co-founder, president and CEO of TrafficCast International, of Madison, Wisconsin. TrafficCast has offices in NY, Detroit, LA, Ohio and Shanghai. She is the co-author of a leading traffic flow text. Connie was the CEO traffic and transportation consulting business, TranSmart Technologies prior to founding TrafficCast, Inc. and TrafficCast International, Inc. She and husband Dr. Bin Ran have two children. Connie is pictured here signing an agreement with the City of Shanghai making a multi-million joint investment to upgrade the city traffic control infrastructure and create jobs in Wisconsin. Michael Livshutz (1996) is a software engineer with NAVTEQ North America, LLC, located in Chicago. He and co-workers have a patent on Segment aggregation and interleaving of data types in a geographic database and methods for use thereof in a navigation application. Jonathan Montgomery (1999, 2004) is the laboratory manager for SmaTe International in Naperville. Jonathan returned to the College for graduate school and received his MS in 2004. Brian Sievers (1998) and Theresa live in Palos Heights, Illinois. Brian teaches physics and honors physics at Thornridge High School in Dolton. He is pictured here with his students working with Habitat for Humanity. Cyrus Walker (1997) is the program coordinator for Wilbur Wright College’s Department of Computer Security and Forensic Investigation. Michael Yuefeng Zhang (Ph.D. 1995) is now with Advance Transformer Co. in Rosemont. 2000s


Obituaries

The College of Engineering takes notice of the passing of these fine engineers.


Start a Tradition! Be a mentor! Hire our students! Send your family members to UIC!

Be a Mentor – Volunteer for Career Prep Day by writing to eaa@uic.edu for dates

Hire Our Students

Fall Diversity Career Fair
Thursday, September 20, 2007

Internship and Part-time Job Fair
Thursday, October 18, 2007 and February 14, 2008

Engineering Career Fair
Wednesday, February 20, 2008

Spring Diversity Career Fair
Thursday, March 13, 2008

Employers may register for the Diversity and Part-time and Internship Fairs through the UIC Office of Career Services at www.vcsa.uic.edu/_mainSite/departments/career_services/home.

Register for the Engineering Career Fair – the only event solely for engineers – at www.uic.edu/depts/enga/coop/careerfair.htm, or contact Kate Kaplan, director of Engineering Career Center, College of Engineering at 312-996-2311 or klederer@uic.edu.

Keeping UIC in the Family!

Is UIC part of your family tradition? Commencement for our Summer and Winter 2006 and Spring 2007 brought families together in celebration.


Rosanna Lee (2006) and Arnold Lee (2007) are siblings, too. As brother and sister, Sumant Shiv (2007) and Dr. Shalu Shiv (2006) have a lot to celebrate. Sumant received his engineering degree one day after his sister received her Ph.D. in medicine.


Conrad Holmes (2007) reports that his sister Sherri Q. Holmes (1998) is a graduate from the CBA.

Tell Engineering News your alumni family connections at enginews@uic.edu!
Visit the Brilliant Futures Campaign’s Web site www.brilliantfutures.uic.edu and the U of I Foundations’s Web site at www.uif.uillinois.edu

For more information on giving opportunities at the College of Engineering, contact Arnaud Buttin, Director for Advancement at 312-413-1387 or abuttin@uic.edu.