



# BUFFALOENGINEER

FALL 2009

## National Awards

- CAREER Award – Corso (CSE)
- CEISARE Earns National Designation
- ICDAR – CSE Researchers Top Two Sections

## SUNY Chancellor's Teaching Award

- DesJardin (MAE)
- Pados (EE)

## Student Awards

- Udall Scholar – Llop (EE)
- Barry M. Goldwater Scholar – Lochner (EE)
- Microsoft ImagineCup Award – Gentner & Williams (CSE)

## Development

- National Grid Gives Major Gift
- Cadigans Give and IBM Matches

## Alumni Awards

- Bansal, Gerhardt, Tak



## Engineering North Groundbreaking



## MCEER and Calspan Building New World-Class Bridge Testing Site

A theme that well characterizes our recent emphasis is “capability enhancement” for the School, which we approach through several avenues: appointment of highly qualified persons to leadership positions; research grants that have increased significantly; building new and more sophisticated infrastructure; and resource development.

I am pleased that several faculty members have accepted appointments in School leadership positions. Three departments have new chairs: Professor **Alex Cartwright** as Chair of BME and EE, and Professor **Aidong Zhang** as CSE Chair. There have also been two reappointments: UB Distinguished Professor **David Kofke** as CBE Chair, and Professor **Rakesh Nagi** as ISE Chair. We welcome EE Professor **Stella Batalama** to the appointment of Associate Dean for Research. Please see the article, “UB Engineering Appointments,” in the Faculty section.

The School has made excellent progress in its goal to increase our research funding. Research grants have increased from 89 awards for \$20.77M in 2007–08, to 107 awards for \$34.99M in 2008–09. To our faculty who have generated this growth, thank you for your hard work.

We are also very pleased to report exciting new, state-of-the-art facilities underway, as construction has begun after the ceremonial groundbreaking for the new building. Also, through a MCEER-Calspan collaboration, a new bridge test facility in Ashford, NY has great educational, research, and industry potential. For more, please see the Top Stories section.

With the concerted effort of many School supporters and our SUNY colleague institutions, Binghamton and Stony Brook, proposed New York State cuts to our 2009–10 budget were reinstated. The funding is critical to several of our programs, and the assistance of legislators and area companies was essential, and greatly appreciated.

We believe all of these are indications of the School’s progress, which bodes well for its future in both the long- and short-term.

Sincerely,

Dean Harvey G. Stenger Jr.



(L to R): Groundbreaking ceremony: UB President John B. Simpson; the Honorable Dale M. Volker of the NYS Senate 59th District; Dean Stenger; the Honorable Robin L. Schimringer of the NYS Assembly 140th District; and Provost and Executive Vice President for Academic Affairs, CSE Professor Satish Tripathi  
Photo: Nancy J. Parisi

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**Cover photo captions and credits:**

*Top: At the groundbreaking for UB Engineering’s new building, donors (l to r): Ravinder and Pratibha Bansal, \*Jack Davis (BS IE ’55), and \*Gina Bronkie Hammond (MS CS ’73), with Dean Harvey G. Stenger Jr. and graduate student Barnard Onyenucheya (BS EE ’07). Photo: Nancy J. Parisi*

*Bottom: (L to R): Dean Harvey G. Stenger Jr., CSEE Professor and MCEER Director Andre Filiatrault, Calspan Executive Vice President Thomas Pleban, and CSEE’s SUNY Distinguished Professor George Lee at the new Ashford testing facility, a collaborative project between MCEER and Calspan. Photo: Doug Levere*

Join **UB Believers** and help create the future of our communities—at the university, local and state levels. UB Believers is an advocacy group that supports the University at Buffalo’s 2020 growth plan. Your voice will be part of a growing chorus dedicated to strengthening Western New York’s economy and quality of life. To learn more, please visit: [ubbelievers.buffalo.edu/ubbelievers/home](http://ubbelievers.buffalo.edu/ubbelievers/home).



**Departmental Research Highlights:**

- CBE:** CBE and EE Greatbatch Professor Takeuchi: Powering Devices, p. 17; CBE’s Tzanakakis Generating Stem Cells, p. 17
- CSE:** Corso Wins NSF CAREER Award and DARPA Funding, p. 18; CSE’s Miller and “Magic”: Powerful Computer Available Worldwide, p. 18; CSE Researchers Tops at Document Conference, p. 19
- CSEE:** CSEE’s Basaran: Carbon Nanotubes Succeeding Metals, p. 20; The Center for Integrated Waste Management (CIWM) Hosts New York State Tire Derived Aggregate (TDA) Workshop, p. 20
- EE:** EE Professor Pados on Digital Steganography, p. 21; EE’s Safiuddin Joins Energy Efforts, p. 21; Prasad Team: Nanorods Against Drug Addiction, p. 23
- ISE:** ISE’s Llinas Leading Group in Prestigious MURI Research, p. 22; ISE’s Zhuang Works toward Optimal Defender Strategies, p.22
- MAE:** MAE’s Meng Receives Federal Grant to Study Brain Aneurysms, p. 23; MAE’s Team Collaborates on NASA Hypersonics, p. 23

## Engineering Breaks New Ground

UB Engineering celebrated the ceremonial groundbreaking for the new Engineering North building, scheduled to house the departments of CSE and EE upon its completion in 2011.

Presiding over the ceremony was Dean **Harvey G. Stenger Jr.**, who introduced the speakers – the Honorable Robin L. Schimminger of the NYS Assembly 140th District; the Honorable Dale M. Volker of the NYS Senate 59th District; **\*Gina Bronkie Hammond** (MS CS '73), Director in the Federal Sector, Defense Group, of Computer Sciences Corp.; **Dennis Elsenbeck** (M.Eng '96 and Dean's Advisory Council Chair), National Grid's Regional Executive Director of Energy Solutions Services; and UB President John B. Simpson. In attendance was Provost and Executive Vice President for Academic Affairs, CSE Professor **Satish Tripathi**.

The event's theme was gratitude for the generosity of donors to UB Engineering, and looking to the future for completion of the structure. While much of the planning and strategizing for the building is in the past, objectives to be met include development goals for appropriately furnishing the facility. Funding for the building was obtained through a public-private partnership between New York State and private donors, with UB Engineering continuing to raise additional funds from private donors.

Designed by renowned architects Perkins + Will, the 130,000-square-foot building will increase UB Engineering's facility space by nearly one-third, accommodating significant new growth in the Engineering School and fostering more collaboration within the school. The building will include a 5,000-square-foot "clean room," a particle-free environment in which researchers can do innovative work, such as research on powerful solar cells, ultra-sensitive biosensors, and disease-curing nanoparticles. The building also will feature a "cybertorium," or "smart" auditorium, outfitted with sophisticated communications devices and smart



technologies. Flexible research labs, classrooms and meeting areas will foster interdisciplinary work.

Numerous sustainable strategies will make it one of the most environmentally friendly buildings in the region, and earn it a Leadership in Energy and Environmental Design gold certification by the US Green Building Council. It will feature water- and energy-saving devices including lights that adjust according to the natural light in a room, and a green roof that will absorb storm water. A highly reflective, white roof will reduce the heat absorbed into the building.

Dean Stenger indicated that the new building's state-of-the-art facilities will further enhance the quality engineering education that students receive here, citing that "We work with nearly 200 Western New York companies each year and a significant number of our graduates embark on engineering careers within the state. The quality of our students has a direct impact on the local and regional workforce and economy."

For a rendering of the new building, please see the Development section.

## MCEER-Calspan to Partner on Full-Scale Bridge Testing

MCEER and Calspan are collaborating to build a new test facility on Calspan's 681-acre site in Ashford, NY. Dean **Harvey G. Stenger Jr.** said, "This opportunity with Calspan enables engineering researchers at MCEER and UB's CSEE department to once more push back the boundaries of discovery and develop solutions to address the urgent need for renewal, preservation, and protection of our nation's infrastructure from a variety of hazards and extreme real-world conditions."

The first project will test two full-scale, 250-ton, 72-foot long, single-lane bridges equipped with seismic isolation technology. The tests will take place over a period of five years. The full-scale bridges and their advanced protective technologies will be subjected to environmental and climatic as well as extreme natural hazard conditions, including man-made earthquake vibrations. The project's aim is intelligent renewal and improved resilience of bridges against the effects of such conditions, in response to the nation's need to renew, preserve, rebuild, and repair its aging infrastructure and protect it against a multiplicity of hazards.

Seismic isolation decouples a structure from its foundation, effectively isolating it from damaging ground vibrations. The initial test program will examine the change in properties of elastomeric or rubber isolation bearings in a wide range of temperature settings. Because the project takes place in a region with diverse weather conditions, the results can be applied to bridge code revisions throughout the United States and world.

CSEE's **George Lee**, SUNY Distinguished Professor, is principal investigator for the project, which is supported by funding from New York State and industry donations, including those by Hubbell Galvanizing of Utica, NY, and Dynamic Isolation Systems of McCarran, NV.

Results from the study will help address problems with America's aging infrastructure,

assigned a grade of "D" in a 2009 Report Card for America's Infrastructure, published by the American Society of Civil Engineers. The report also noted that over 26 percent of the nation's bridges are "either structurally deficient or functionally obsolete."

Beginning next summer, and once a week for five years, a device connecting the two spans at the Calspan site will push them apart and release them, simulating an earthquake. The performance of the bridges' bearings will be recorded, to understand how performance levels may change with weather and time. The weekly tests will be conducted and monitored remotely from MCEER facilities at the University at Buffalo in Amherst.

CSEE Professor and MCEER director **Andre Filiatrault** said this is the first project to monitor bearings on a real-life bridge over a period of time, noting that such tests cannot be performed in a lab, as the bridges will be subjected to the area's wide array of naturally occurring weather conditions.

*(L to R): CSEE Professor and MCEER Director Andre Filiatrault, CSEE's SUNY Distinguished Professor George Lee, Calspan Executive Vice President Thomas Pleban, and Dean Harvey G. Stenger Jr., at the new Ashford testing facility. Photo: Doug Levere*



## Hammond: Dean's Award for Achievement



Dean Stenger with Gina Bronkie Hammond

The Engineering School's highest honor, the Dean's Award for Achievement, was earned by **\*Gina Bronkie Hammond** (MS CS '73), a director at Computer Sciences Corporation's (CSC) North America Public Sector, supporting the Defense Division. The award recognizes her career in the leading edge of the computer science and the engineering industries, and her continued career achievements merit our highest regard.

Hammond received a fellowship to pursue her master's degree in Computer Science at UB, as part of a small group of exceptional women pursuing computer science education.

After completing her master's, she joined the burgeoning computer science field, serving in increasingly more responsible positions before

joining CSC, and now has over 35 years of experience in programming, systems analysis, program management, consulting, and contract management.

At CSC, she is actively involved in multiple proposal efforts requiring the development of solutions and service delivery for contracts and task orders in support of Department of Defense enterprise infrastructure and infostructure goals worldwide. Major programs supported include U.S. Military Entrance Command, Joint Improvised Explosive Device Defeat Organization, Explosive Devices Electronic Warfare, and multiple Information Technology efforts at military bases across the U.S. Before her current assignment, she was vice president of CSC's Government-Wide Acquisition Contract Service Center, and from 1999 to 2006, she was vice president of Mission Support Services.

Hammond, a Dean's Advisory Council member, was the first to give a major gift supporting the School's new high-tech building. In recognition, a graduate/undergraduate CSE laboratory will be named for her.

## UB Engineering Alumni Association Scholarships



The UBEAA Scholarship Committee presented their Engineering Alumni Association Scholarships, which recognize "Leaders in Excellence" and encourage students to develop a "Spirit" and a loyalty to the School. Committee members Michael Dray (BS CBE '04) (far left) and Michelle Rhodes (BS CE '99, MS CIE '07) (center), and Brian Peer (BS CE '05) (far right), with awardees (l to r): Chris Llop and Brad Cheetham.

## UB Engineering Alumni Association Board of Directors

- \*James D. Boyle, President (BS CIE '78)
- \*Joseph S. Frandina, Vice President (BS CIE '78)
- \*Stephen P. Buechi, Treasurer (BS CIE '93, MEng '95)
- \*Peter Buechi, P.E. (BS '68 MS '70 CIE)
- \*Michael J. Dray, Secretary (BS CE '04)
- \*Jeffrey Dudek (BS CIE '00)
- \*Stephen J. Golyski (BS CIE '73)
- \*John T. Kociela (BS CIE '68)
- \*Anthony S. Markut (BS IE '80)
- \*Brian J. Peer (BS CE '05)
- \*Michelle C. Rhodes (BS CE '99, MS CIE '07)
- \*Richard A. Rink, P.E. (BS CIE '80)

## Our Heartfelt Sympathies

UB Engineering joins the family and friends of Order of the Engineer member **Javon R. Jackson** (BS EE '09) in mourning his tragic loss. He will always be warmly remembered.



## In Memoriam

UB Engineering offers its sincere sympathy to family, friends, and classmates of those alumni who have recently passed away.

- William J. Atkins, BS EE '52
- Donald A. Ballou, BS ME '49
- Edward R. Belmore, MS CE '73
- Robert L. Benenati, MS EE '72
- John Brucker Jr., BS ME '50
- David C. Brunner, BS EE '51
- Robert E. Bushover, BS ME '51
- John S. Chipchak, BS EE '51
- John H. Dieckman Jr., BS EE '92
- Gary L. Innes, BS ME '66
- Glenn H. Johnson, Jr., BS ME '50
- Anthony J. Nello, BS EE '52
- Gary E. Nichols, MS ME '69
- John Ort, BS EE '68, MS EE '72
- Richard J. Ouimette, BS EE '68
- Karl R. Scherer, BS EE '74
- Scott J. Scupien, BS CIE '95
- Raymond C. Seebald, BS EE '51
- Gary W. White, BS CE '81
- Arnold A. Wosilait, MS CE '67
- Gary L. Wright, MS EE '70
- Thaddeus H. Zabrocki, BS ME '48

## Alums Excel at the National Aeronautics and Space Administration (NASA)



*In the firing room at NASA's Kennedy Space Center, Chris Scolese watched the space shuttle Discovery launch on mission STS-120 in 2007. Image credit: NASA/Bill Ingalls*

### **Two UB Engineering alums have made notable contributions to NASA.**

From the end of January through mid-July of this year, **Christopher Scolese** (BS EE '78) was the acting lead NASA Administrator.

Since 1987, Scolese has held several positions at the space agency, beginning his service at Goddard Space Flight Center, a major NASA space research laboratory and NASA's first space flight center. Scolese became Chief Engineer at NASA Headquarters in September 2005, leading a technical team of 30,000, responsible for the direction, oversight, and assessment of all NASA programs. His current title is NASA Associate Administrator, a position he has held since 2007.

Scolese has been involved with managing NASA's human spaceflight programs (the space shuttle and International Space Station), science missions studying the earth, missions that send spacecraft to distant parts of the solar system and beyond, and the program that will return astronauts to the moon by 2020.

Scolese's many awards include two Presidential Rank Awards of Distinguished Executive, the highest annual award for career Senior Executive Service members of the US government, and three Outstanding Leadership medals – one from Goddard Space Center, and two from NASA. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and a member of the Institute of Electrical and Electronics Engineers.

**Frank Centinello** (BS '04 MS '07 AE), was part of a 50-member operations team at Arizona State University that created and tested a moon-bound camera attached to NASA's Lunar Reconnaissance Orbiter, which recently lifted off from the Kennedy Space Center in Cape Canaveral, Fla.

The orbiter's mission is to record the moon's permanent shadows and illuminations on the surface to better facilitate future landings; it is NASA's first spacecraft to return to the moon.

Centinello is a research analyst on the project with a primary focus on testing the camera's capabilities before it leaves Earth's atmosphere. The measurements recorded will uncover potential landing sites for future human and robotics missions, searching failed sites and stable land masses.

Centinello said this orbiter is providing the "first road maps" of the moon, paving the way for future flights and human habitation of its surface.



*Alumni Frank Centinello*

## Hire UB Engineering Co-op and Intern Students

We encourage our alumni and industrial partners to consider employing UB Engineering students through our Co-operating Engineering Education Program.

Co-op students have completed their junior year, including coursework in their major, and many have business-success skill training through the Engineering Career Institute. They are prepared for challenging, value-added technical assignments.

Internships are also available.

Please consider employing one or more of these students.

For more information, contact:

**Dean C. Millar, Assistant Dean**  
412 Bonner Hall, (716) 645-0971  
University at Buffalo  
dcmillar@buffalo.edu  
[www.eng-intern.buffalo.edu](http://www.eng-intern.buffalo.edu)

Since the early 1990s, the **UB Engineering Alumni Association** has carried on a tradition of giving scholarships to deserving undergraduate students through the **UB Engineering Alumni Association Scholarship Fund**. Please consider continuing this tradition with your donations, which are essential to supporting the fund. Together, we can all work to promote UB Engineering's excellence.

Checks should be addressed to the **UB Foundation** and sent to:

External Affairs  
UB Engineering Office  
412 Bonner Hall  
University at Buffalo  
Buffalo, NY 14260-1900

## 2009 Tailgate

*Alumni and guests enjoyed a record-setting tailgate.*



## UB Career Services: An Alumni Resource

- **Job hunting?** Get job search assistance and access to online postings and interviewing opportunities.
- **Seeking top candidates for your company?** To arrange on-campus interviews or showcase your organization, e-mail [jobs@buffalo.edu](mailto:jobs@buffalo.edu).
- **Have advice for current college students?** Join the **Meet-a-Mentor** program.

Please visit: [www.ub-careers.buffalo.edu](http://www.ub-careers.buffalo.edu).  
Career Services Office, 259 Capen Hall, North Campus, University at Buffalo  
(716) 645-2231

## UB Engineer of the Year Nominations Sought

Each year, the UB Engineering Alumni Association board gives this award honoring a UB Engineering alum or closely affiliated person who has distinguished her- or himself in alumni, community, business, and professional activities.

The board is seeking nominations for the 2010 Engineer of the Year award.

A resume and a brief write-up about the nominee's distinguishing achievements and activities are required. Nominations must be postmarked by January 9th. Please send to: [ub-seas@buffalo.edu](mailto:ub-seas@buffalo.edu), or to:

UB Engineering Alumni Association  
412 Bonner Hall  
University at Buffalo  
Buffalo, NY 14260



The winner will be honored at a ceremony in February, during Engineer's Week, and his or her name will appear on a plaque in the School of Engineering Dean's Office.

Please see <http://www.eng.buffalo.edu/alumniFriendsDonors/aa/engofyear/> to learn of past recipients.

## Alumnus Ryan Puts LEDs on Campus

**Dennis Ryan** (BS AE '79), also a graduate of UB's Center for Entrepreneurial Leadership, founded Solid State Lighting (SSL) Industries, in the UB Technology Incubator. He recently worked to have UB test several LED products, including some that SSL manufactures. In several locations, UB has replaced conventional lamps for LEDs, light-emitting diodes.

The data thus far suggest that, by switching outdoor lights to LEDs, UB's annual carbon emissions will be cut by about seven metric tons, while energy savings for several interior areas are calculated at about 18,500 kilowatts per year. LED street lights may draw as little as about half the energy of existing high-pressure sodium street lights.

The investment may pay itself back in up to three years, with sufficient cost savings to make the investment a sensible one.

The LED installation is in line with UB's plan to go climate-neutral, reducing or offsetting all of its greenhouse gas emissions, as a result of President Simpson's signing of the American College and University Presidents Climate Commitment (see Solar Array article in Research section).



(L to R): Ravinder Bansal, Lester Gerhardt, President Simpson, and Sharad Tak.

## Alumni Achievement Awards

**Lester A. Gerhardt** (MS '64 PhD '69 EE) and **Sharad K. Tak** (MS CS '69) earned Distinguished Alumni Awards, given for exceptional career accomplishments, community or university service, or research and scholarly activity. Ravinder Bansal, a prominent area business associate who serves on the DAC, received the Walter P. Cooke Award, which recognizes non-alumni for notable and meritorious contributions to the university's growth and improvement, and stimulates others to give their active interest and material support to UB.

### Lester Gerhardt (MS '64 PhD '69 EE)

While working for 10 years at Bell Aerospace Corporation in Niagara County, NY, Lester Gerhardt earned his MS and PhD degrees, rose to director of avionics research, and received the Bell Outstanding Management Award in the process.

After leaving Bell, he joined the faculty of Rensselaer Polytechnic Institute (RPI), where he has held many lead positions of successive responsibility, and where he remains a professor and associate dean.

He was a co-founder and chair of the Global Engineering Education Exchange Program, which currently involves more than 80 universities in 17 countries; and was instrumental in establishing RPI's REACH exchange program, which requires an international experience of each engineering undergraduate student.

Gerhardt was one of only nine faculty members in the US recently designated an "agent of change" for efforts to internationalize engineering education. In recognition to his dedication to globalize engineering education, he was the inaugural recipient of the American Society of Engineering Education's Research Administration Award.

He is a fellow of both the Institute of Electrical and Electronics Engineers and the American Society of Engineering Education, holds several patents, was awarded an honorary doctorate by the Technical University of Denmark and served as a delegate to NATO. He actively participates in the UB Engineering School's Dean's Advisory Council (DAC).

### Sharad Tak (MS CS '69)

After earning an EE undergraduate degree from ITT Mumbai, Tak attended UB on a fellowship and was among the first to receive an MS degree in computer science when the degree was first offered here.

Early in his career, Tak established the System and Applied Sciences Corporation, later renamed ST Systems Corporation (STX), which provided programming and systems integration services to governmental agencies including the National Aeronautics and Space Administration, the Federal Aviation Administration, and the Department of Defense.

Tak sold STX to Hughes Aircraft in 1991 and is now an entrepreneur with ventures around the world in infrastructure development (including power plant, refinery and petroleum-exploration activities), information technology, communications, business services and commercial real estate. He consolidated his diverse business interests in 2005 when he formed his ST Group.

Tak was a key volunteer in the UB Engineering School's feasibility study for a proposed fundraising campaign, much of which is designated for the new building.

### Ravinder Bansal

Bansal is chair and CEO of AirSep Corporation in Amherst, which has a majority of UB alumni as senior engineering and research and development staff. They have helped the company become the world's leading manufacturer of PSA-oxygen-generating equipment for use in the industrial and home health-care fields.

In turn, Bansal has been a key contributor to Engineering North, participating in the early planning of the new engineering building and donating generously with his wife, Pratibha Bansal, M.D., to costs associated with the new building, which will have its atrium named in their honor.

## Alumni Membership

UB Engineering graduates have the opportunity to improve their *alma mater* through a joint membership between the Engineering Alumni Association and the UB Alumni Association.

Members can participate in fun events and feel proud about giving back to UB.

### Membership dues:

- Support alumni in 21 cities in the U.S. and 11 international locales, providing important opportunities to network and reconnect;
- Support scholarships for engineering students as well as student events, such as Engineers Week and the Fall Picnic;
- Help produce UB Today, the alumni magazine, and @ub, the University's e-newsletter, sharing the latest accomplishments and remarkable research happening at UB;
- Connect UB alumni to current students through support of the University Student Alumni Board and partnerships with the offices of Student Life, Student Affairs, Athletics, and Career Services; and
- Deliver programs such as mentoring, "Dinner with Twelve Strangers," and Homecoming.

Just by joining the Alumni Association, members can make a direct impact on UB, current students and alumni around the world.

To renew or begin your membership, go to [www.alumni.buffalo.edu](http://www.alumni.buffalo.edu) and click on the

"Membership" tab at the top right.

Then, in the left column, you can join either online or by mail. When you fill out your membership application, be sure to notice the special membership type for UB Engineering alumni.

Wherever this symbol \* appears in *Buffalo Engineer*, a dues-paying alumni member has been named.



(L to R) Front row: Sarbani Banerjee, Margaret Smith, Joe Sprague, Gina Bronkie Hammond, Haleh Mansouri. Back row: Bing Zhang, Vinodh Gopal, Steven Borkman, Venu Govindaraju, Kevin Cleary, Chris Miller, Ross L. Goddard

## CSE's Alumni Symposium

Distinguished alumni, faculty, and friends of the department spoke at the CSE Alumni Symposium event, which welcomed all on the day of the Engineering School's groundbreaking ceremony for CSE's new home.

UB Provost and CSE Professor **Satish Tripath** and Dean **Harvey Stenger** gave the welcome; SUNY Distinguished Professor **Sargur Srihari** gave the CSE Update; ATTO Technology Co-Founder and CEO Tim Klein (BS EE '84, Dean's Advisory Council member) spoke on "Trends in Storage"; EE Adjunct Associate Professor John Schneider (BS '80 MS '87 PhD '90 EE), President and CTO, UltraScan and an industrial research partner, spoke on "Trends and Directions in Biometrics"; and the UB Strategic Strengths in Computing topics "Enabling Discovery and Innovation" and "Smart Environments" were addressed by UB Distinguished Professors **Russ Miller** and **Venu Govindaraju** (MS '88 PhD '92 CS), respectively.

CSE graduate student posters were presented with awards by \* **Gina Bronkie Hammond** (MS CS '73), Dean's Advisory Council member, Director, Integrated Management & Support Services Operations, CSC.

Alumni Updates were given by Gina Bronkie Hammond; **Vinodh Gopal** (MS CSE '97), Senior Staff Architect in Intel's Digital Enterprise Group; and **Bin Zhang** (MS '00 PhD '03 CSE), Senior Research Scientist, Merck & Co.

Another industrial research partner, Paul Buckley, President, Applied Sciences Group, spoke on "IT Industry Move Towards Quality." CSE Professor **Stuart Shapiro** spoke on "AI: Trends and Directions"; CSE Professor **Shambhu Upadhyaya** spoke on "Trends in Cyber Security at UB"; and the Closing Remarks were given by incoming CSE Chair and Professor **Aidong Zhang**.

## UB Engineering Alumni Association Spirit Award

Pictured right: Jim Boyle presented the award to Dan Muffoletto, who accepted on behalf of Tau Beta Pi.

(L to R): TBP NY Nu (NYN) chapter incoming President, Chris Llop; TBP NYN External Vice President, Andy Gaeta; TBP NYN Internal Vice President, Brad Cheetham; UBEAA board member, Tony Markut (BS IE '80); TBP NYN President Dan Muffoletto; UBEAA Vice President, Joe Frandina (BS CIE '78); UBEAA board member, Rick Rink (BS CIE '80); UBEAA President, Jim Boyle (BS CIE '78); UBEAA Treasurer, Steve Buechi (BS CIE '93, MEng '95).



## Five Engineering Students Awarded Prentice Family Foundation Scholarships

A significant gift creating the Prentice Family Foundation's Western New York (WNY) Prosperity Scholarship Program is attracting talented students of the Schools of Engineering, Management, and Medicine and Biomedical Sciences, to remain in WNY and establish careers here. In this inaugural year of the WNY Prosperity Scholarship, five engineering students earned the award.

The twelve-month scholarships will provide generous financial assistance to qualified UB students whose plans connect directly to the economic growth of WNY. The scholarships will cover certain academic year college costs and fund summer internships at leading companies and industries throughout the region.

The program will help to build an educated, innovative workforce by preparing students through pre-internship preparation-and-placement programs, pre-professional networking events and career and academic counseling, and graduate school admission advice.

### **Congratulations to our 2009–2010 WNY Prosperity Scholars:**

- Brandon Brown** (BS MAE '07), AE MS student
- Michael Kandeher**, CS PhD student
- Brianna Clark**, EE BS student
- Deven McMaster** (BS IE '09), IE MS student
- Eben Piazza**, CIE BS student

## RadarCon Best Paper Award

EE's **Edwin De Roux Fuentes** received a monetary grant for his article with EE Professor **Adly Fam** entitled "Mismatched Filters for Frank Polyphase Codes via Sidelobe Inversion," which was selected as a best paper from the EE Travel Grant Competition at RadarCon '09. The travel grants are courtesy of NASA.

## UB Pillars of Leadership

The following UB Engineering students were recognized at the Pillars of Leadership Awards Ceremony, as Pillars in the community during the 2008–2009 academic year.

- Percy Sutton Award: **Kevin Bryant** (EE)
- J. Scott Fleming Award: **Chris Llop** (EE)
- Nancy Welch Award: **Oyinkansola Akintan** (ISE)
- SUNY Chancellor's Awards: **Bradley Cheetham** (MAE); **Daniel Muffoletto** (EE); **John Coles** (IE)

## SAE Clean Snowmobile Challenge

Society of Automotive Engineers (SAE) team members Captain **Greg Verratti** (BS ME '09), Co-Captain **Jake Ennis** (BS ME '09), **Jason Barrett** (AE), **Chris Battaglia** (ME), **Eric Klaben** (ME), **Tim Smith** (ME), and **Joe Vargo** (ISE) participated in the SAE Clean Snowmobile Challenge for the third year, this time at the Keweenaw Research Center at Michigan Technological University, where they earned the Most Improved Award and a Cold Start Award in the Combined Fueled and Zero Emissions categories.

The competition asked students to design a snowmobile that achieves reduced emissions and noise characteristics while keeping performance equal to or better than the performance of stock snowmobiles.

The Clean Snowmobile Team has been fine tuning their innovative turbo-diesel snowmobile for three years. The snowmobile yields an impressive 30mpg, and is extremely quiet.



SAE team members (l to r): Timothy Smith, Joe Vargo, Greg Verratti, Jacob Ennis, Eric Klaben

## Engineering Commencement

Dean **Harvey Stenger** presented this year's students and Provost **Satish Tripathi** conferred degrees to UB Engineering graduates at the ceremony, which was opened by UB President John Simpson. The Banner Carrier was **Kyle Brenzel** (CIE); **Daniel Kehoe** (CE) gave the Salutation; **Daniel Muffoletto** (EE/Physics) gave the Student Address; **Bradley Cheetham** (MAE) gave the Farewell.

UB Engineering is proud of its three graduates who earned the Chancellor's Award for Student Excellence and were recognized at the ceremony: **Bradley Cheetham** (MAE); **John Coles** (ISE); and **Daniel Muffoletto** (EE and Physics).

Bradley Cheetham attended the 2008 NASA Academy at Goddard Space Flight Center, and studied abroad at the University of Technology in Troyes, France. He co-founded and served as President of UB Students for the Exploration and Development of Space, and was Vice President of the NY Nu chapter of Tau Beta Pi.

John Coles served as President of the Intersarsity Christian Fellowship and the Buffalo Chapter of the Institute of Industrial Engineers, and was Vice President of Alpha Phi Mu. He has been involved in emergency preparedness and game theory research. John volunteered extensively in New Orleans and intends to continue doing research in emergency communications and organizational network analysis.

Daniel Muffoletto was a member of the Honors Program at UB. He served as President of the NY Nu chapter of Tau Beta Pi and of the Robotics Club. Through the Robotics Club, he worked to encourage high school students to pursue careers in engineering by visiting local schools and by inviting students to campus.



Daniel Kehoe



Kyle Brenzel



SUNY Chancellor Award winners (l to r): Bradley Cheetham, John Coles, and Daniel Muffoletto



## Gentner and Williams Win a Microsoft Top Award



*Williams (left) and Gentner (right), with a Microsoft judge.*

**Ryan Gentner** (CS) and **Casey Williams** (CompE) won the Tablet PC Accessibility competition at Microsoft's ImagineCup in Cairo, Egypt, one of only 19 total awards in various categories awarded to 148 finalist teams competing from 32 countries.

The two students were part of a project group in a senior level CS class. The group, led by CSE's **Mike Buckley** (BS EE '78), was tasked to "improve the quality of life of someone in the handicapped community, including adults and children, families, therapists,

nurses, or teachers." Gentner and Williams chose to use Tablet PC technology to create a "button builder," which therapists can use to place on screen selectable buttons of any shape, size, color, or image, and then program the response of the device to a button press: a spoken phrase, music, video, or even control of appliances, through a custom designed electrical interface. The device allows therapists to construct a cause-and-effect experience to teach choice making; custom control of a media library for people of limited ability; or an augmentative speaking device for the speech-impaired.

The project caught Microsoft's attention through its clever use of "ink," or writing on screen.

## Graduate Poster Competition

Congratulations to all who participated in the Graduate Poster Competition, organized by Associate Dean for Graduate Studies, ISE Professor **Rajan Batta** and his assistant, **Sandra King**. The following list, by department, indicates each student's work and awards received:

### CBE:

**Folarin Erogbogbo** (PhD CBE '09): "First In-Vivo Cancer Imaging and Lymph Node Mapping Silicon Nanocrystals" (first place); **Meng Horng Lee**: "The Role of JNK Pathway in Cell-Cell Adherens Junctions Regulation" (honorable mention); **Michael Sellers**: "Surface and Grain Diffusion in Tin" (honorable mention)

### CSE:

**Bhaskar Purkayastha**: "Touch-Less Human Computer Interaction Through Multi-Modal Interface" (honorable mention)

### CSEE:

**Seda Dogruel**: "Decision Support Tool for Risk Control of Passively Damped Structures" (honorable mention)

### EE:

**David Senior Elles**: "Dual Band Application of Metamaterial Transmission Lines" (honorable mention); **Edwin De Roux Fuentes**: "Matched Filter for Frank Codes via Sidelobe Inversion" (honorable mention); **Jung Kwun Kim**: "Complex 3-D Microfabrication Using Dynamic Mode Multidirectional UV Lithography and Index Matching Medium" (second place)

### ISE:

**Dapeng Cao**: "Evaluating the Creation and Interpretation of Causal Influence" (honorable mention); **Priyadarshini Pennathur** and **Dapeng Cao**: "Evaluating Emergency Department Information Technology Using a Simulation-Based Approach" (honorable mention)

### MAE:

**Leng-Feng Lee**: "Musculoskeletal Simulation-Based Parametric Study of Optimal Gait Frequency in Biped Locomotion" (third place); **Umamaheswara R. Konda Venkata**: "Source Estimation for CBRN Incidents Based on Field Data" (honorable mention)



*The ASCE team in Alabama with their concrete canoe design.*

## UB ASCE Students Compete and Host Conference

The UB ASCE Student Chapter hosted a first-rate and well run student-led conference, including the Steel Bridge, Mead Paper, Concrete Canoe Design, and CanJam competition events. Canoe races were held on Lake LaSalle.

After the team threw their concrete frisbees, **Scott Stevens** (BS CIE '79) talked to students at a banquet at the Pearl Street Grill and Brewery. Stevens, president of the UB ASCE Student Chapter during his senior year at UB, is now owner and President, Dimension Fabricators. He serves on the Engineering School's Dean's Council and is a major donor.

UB teams placed in every event of the conference with a third place overall in the steel bridge competition, second place overall in the concrete canoe, first place in Mead Paper (engineering ethics), and second or third places in the events of concrete frisbee, mystery event (slide rule), and CanJam tournament. The UB team was recognized overall with the top award for the conference.

Having qualified at the hosted regional competition, the concrete canoe team attended the National ASCE Concrete Canoe Competition at the University of Alabama in Tuscaloosa, on Lake Nicol, where they weathered a tornado during the competition.

ASCE advisors are CSEE Lab Technician **Gary Majewski** and CSEE Instructor **Todd Snyder** (MEng CIE '96)

## CBE Grad Student Indrajeet Singh Receives Perkin Scholarship

2008 Perkin Medal winner Ian Shankland, Technology Director for Honeywell's Fluorine Products business, chose CBE PhD student **Indrajeet Singh** as the Society of Chemical Industry (SCI) America International Group's Perkin Scholarship winner, recognizing his outstanding performance and potential in the advanced study of applied chemistry or related sciences, and in broadening Perkin Medal awareness and contributions to society that this prestigious award represents.

CBE Professor **Sriram Neelamegham** is advising Singh, who has developed novel spectroscopy tools to determine the role of fluid flow in regulating protein structure and self-association/aggregation properties. The research has important applications for vascular disease. Singh wishes to continue research in drug development and disease modeling, focusing on specific drug molecules and their target specificity. His wife, Anuroop, is pursuing a master's degree in Economics at UB.

*(L to R): Michael Campbell, Chairman, SCI America International Group; Anuroop Singh, Indrajeet Singh (CBE), Ian Shankland, Honeywell's Fluorine Products Technology Director, at the award presentation in Philadelphia.*



## 24th Annual Scholarship Reception

The School of Engineering and the UB Engineering Alumni Association (UBEAA) hosted the 24th Annual School of Engineering Scholarship Reception, which was attended by faculty, staff, students, and their supporters.

Dean **Harvey G. Stenger Jr.** gave the Introductory Remarks and Recognitions and presented the awards with CSEE Professor and Chair **A. Scott Weber** and ISE Associate Professor and Director of Graduate Studies **Victor Paquet**.

Congratulations to the exceptional students honored, and their families. Our sincere appreciation goes to the donors for their support. We wish to thank the UBEAA for co-sponsoring this event and donating the flowers worn by scholarship recipients.



CBE student scholarship awardees and faculty, with Fred Braun (BS '72 CIE), donor, second from right

### Award List

American Institute of Chemical Engineers (AIChE) Awards: Outstanding Junior Award: **Emily Leitsch**, CBE; Outstanding Senior Award: **Stephanie Lam**, CBE

American Society of Civil Engineers (ASCE) Julian Snyder Endowment Fund Scholarship: **Rebecca Carmine**, CSEE  
American Society of Civil Engineers (ASCE) Student of the Year Award: **Timothy Sugrue**, CSEE

Robert P. Apmann Award: **Yanping Feng**, CSEE; **Carrie Hinners**, CSEE

Joseph and Adele Augustyn Memorial Book Award: **Jaime Egnaczak**, CBE; **Brian Litterman**, MAE

Association of Old Crows (AOC) Scholarships: **Thomas DiSanto**, EE, **Dan Padgett**, CSE

Babcock and Wilcox Scholarship: **Ping Wong**, MAE

Michael Bauda Memorial Scholarship: **Kimberly Gergelis**, CSEE; **Breanna Stachowski**, School of Engineering

David M. Benenson Memorial Scholarship: **Andrew Hazlett**, MAE; **Christopher Martin**, EE; **Justin Modrzynski**, EE; **Jennifer Myers**, MAE

Joan G. Bennett Memorial Scholarship: **Michael-Dane Alexander**, EE; **Brianna Clark**, EE; **Daniel Muffoletto**, EE

Beth Cheshire Moran Awards: **Regina May**, CSE; **Jennifer Schanke**, CSE

Bird Technologies Fellowship Program: **Xiaoyu Cheng**, EE; **Kyoung-Tae Kim**, EE; **Melroy Machado**, EE

Chemical and Biological Engineering Academic Excellence Awards: **Kyle McHugh**, CBE; **Kevin Pustulka**, CBE; **Jacob Weiner**, CBE

Computer Science and Engineering Awards: Outstanding Junior: Computer Science: **Robert Dygert**, CSE; Outstanding Senior: Computer Science: **Vaibhav Jain**, CSE;

Outstanding Junior: Computer Engineering: **Devanshu Pandey**, CSE; Outstanding Senior: Computer Engineering: **Russell Manzella**, CSE; Outstanding Sophomore: Computer Science or Computer Engineering: **Qian Luo**, CSE

CSEE Chair's Graduate and Undergraduate Recognition Awards: Graduate: **Masamichi Ikeda**, CSEE; Undergraduate: **Lenore Dunnah**, CSEE

UB Engineering Dean's Scholar Program: **Joe Chuang-Cobham**, **Marsha Jarvis-Northrop**, **Grumman Amherst Systems**, **Praxair-William Townsend**, **Malcolm Adams**, MAE; **Ivie Aifuwa**, CBE; **John Coles**, CBE; **David Kennedy**, CBE; **Kayla Kisenwether**, MAE; **John McGreevy**, MAE; **Paul Nixon**,

School of Engineering; **Randolf Zingo**, MAE; **Adam Baugher**, EE; **Kathleen Gajewski**, CSEE; **Lindsey Garay**, MAE; **Jonathan Jones**, MAE; **Steven Kapturowski**, MAE; **Jasmine Lawrence**, MAE; **Garth Lester**, School of Engineering; **Steven Powell**, MAE; **Evangeline Rauch**, MAE; **Aaron Selkridge**, MAE; **Andrew Wise**, MAE

Electrical Engineering Chair's Recognition Award: **Brian McSkimming**, EE

Engineering Alumni Association Scholarships: **Bradley Cheetham**, MAE; **Christopher Llop**, EE

Engineering Cooperative Society Award: **Brianna Clark**, EE; **Thomas DiSanto**, EE

D. Richard Ferguson Memorial Scholarship: **Thomas DiSanto**, EE

Richard E. Garman Undergraduate Scholarship: **Kyle Brenzel**, CSEE; **Patrick Connelly**, CSEE; **Thomas Coyne**, CSEE; **Lenore Dunnah**, CSEE; **Antonio Miceli**, CSEE; **Richard Naumann**, CSEE; **Jay Ring**, CSEE; **Timothy Savery**, CSEE; **Timothy Sugrue**, CSEE; **Andrew Tracy**, CSEE; **Man Wa Wu**, CSEE

Robert H. and Catherine H. Goldsmith Fellowship: **Kar Him Chiu**, CSEE; **James Sloan**, E. **Hung Van**, EE

Matthew R. Grappone Book Awards: **Meredith Canty**, MAE; **Claire Lochner**, EE;

**Roman Solomonyuk**, EE

Matthew R. Grappone Memorial Scholarship: **Julie Cercone**, CSE; **James Whitefield**, EE

UB Engineering Graduate School Ambassador Award: **Nijo Abraham**, MAE; **Chaitrali Agashe**, CSE; **Anish Antony**, EE; **Chandrakanth Boliseti**, CSEE; **Kiarash Mohtashamdowlatshahi**, CSEE; **James Evanko**, CSE; **Theresa Guarrera**, ISE; **Pitfee Jao**, EE; **Qaiser Jeelani Khan**, MAE; **Sha Liu**, CBE; **Yijun Liu**, ISE; **Hassan Masoud**, MAE; **Rajagopal Panchapakesan**, EE; **Shilpa Patil**, CBE; **Venkataramanan Ravi**, CBE; **Gayatri Venugopal**, EE; **Lei Xu**, CSE; **Nasi Zhang**, CSE

Paul J. Koessler Memorial Scholarship: **John Roach**, CSEE

Yong H. Lee Scholarship: **Rohan Sood**, MAE

Joseph Markle Dinner Memorial #4 Scholarship: **Rebecca Carmine**, CSEE

James W. and Nancy A. McLernon Engineering Scholarship: **Kevin Bryant**, EE; **Matthew Cannella**, MAE; **Bradley Cheetham**, MAE; **Jonathan Coles**, ISE; **Lucas Cotterell**, CSEE; **Thomas Disanto**, EE; **Kelly Anne Duval**, CSEE; **Wesley Frechette**, CSEE; **Kathleen Gajewski**, CSEE; **Kimberly Gergelis**, CSEE; **Daniel Gifford**, CSEE; **Andrew Hughes**, CSE; **Aggrey Jacobs**, CSE; **Jacob Joyce**, CSE;

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EE student scholarship awardees and faculty



CSEE student scholarship awardees and faculty

Jeffery Kaminski, MAE; Stephanie Lam, CBE; Emily Leitsch, CBE; Richard Linares, MAE; Srivatsa Mahesh, MAE; Jordan Matthews, MAE; Deven McMaster, ISE; Ryan Miller, MAE; Daniel Muffoletto, EE; Thomas Piwtorak, EE; Tih Han Kenny Sim, CSEE; Rohan Sood, MAE; Daniel Tillotson, CSE; David Van Horn, MAE; Ryan Waite, School of Engineering; Jacob Weiner, CBE; Matthew Widay, CSEE; Min Ping Xie, ISE

The Samuel R. McLernon and the Nancy Stillwell McLernon Memorial Scholarship: Douglas Hannon, School of Engineering Mechanical and Aerospace Engineering Award: Mark Szymanski, MAE

Dean Paul E. Mohn Memorial Book Award: Rene Van Ee, EE

Moog Graduate Fellowship: Erich Devendorf, MAE; Pitfee Jao, EE; Duo Mao, EE

Niagara Specialty Metals: Daniel Potter, MAE

S.P. Prawel Award: John Roach, CSEE; Man Wa Wu, CSEE

Presidential Fellowships: Noah Bednowitz, ISE; Michael Bonarski, MAE; Jeffrey Delmerico, CSE; Chi Lo, CBE; Jonathan Missel, MAE; Nicholas Oliveto, CSEE; Katherine Schadel, CBE

R. R. Rumer Award: Carrie Hinners, CSEE

Senior Scholar Awards: Applied Sciences Group: Bradley Cheetham, MAE; John W. Danforth Company: John Coles, ISE; Megan Hannigan, ISE; UB Engineering: Neal Calvin, CSEE; Andrew Hughes, CSE; Yiwei Oliver Jin, CSEE; Stephanie Lam, CBE; Nathaniel Martin, CSEE; Paul Mongiovi, CSEE; Daniel Muffoletto, EE; Kevin Pustulka, CBE; Jiayi Ren, CSE; John Roach, CSEE; Rohan Sood, MAE; Kelvin Suhendra, MAE; Jacob Weiner, CBE; Erik Zavrel, EE

George G. Schenk Scholarship: Erick Mikida, MAE

Irving H. Shames Outstanding Teaching Assistant Award: Yanping Feng, CSEE; John Veith, CSEE

R. P. Shaw Award: Nathaniel Martin, CSEE

Schomburg Fellowship: Ellen Cardone, CBE; Sabrina Casucci, ISE; Maria Cortes-Delgado, CSEE; Margaret Devendorf, ISE; Hila Dvora, CBE; Tolanya Gibson, EE; Jerome Ndayishimiye, ISE; Shola Olabisi, EE; Jose Sanchez-Ferreira, CSEE; Katherine Schadel, CBE

Naida Irizarry Shaw and Max Kay Scholarship – In Loving Memory of Eleanor Kay: Victor Cavalcanti, CSE

Bhaw D. Shukla Scholarship: Bradley Cheetham, MAE; Robert Smith, MAE

Silent Hoist and Crane Materials Handling Prize: John Coles, ISE; Geoffrey Gross, ISE; Mathews Nelpurackal, ISE; Steven Prentiss, ISE; Robert Welch, ISE; Min Xie, ISE

Felix Smist Scholarship: Stephen Briggs, MAE; Kenneth Dawley, MAE; Kristina Kolp, CBE; Rachel Styn, EE; Charles Tabone, MAE

Frederick Thomas Award: Abdulrhaman Alshibake, ISE; Nicholas Fortenbery, ISE; Keith Mackenzie, ISE

Thomas/Karwan Industrial Engineering Undergraduate Scholarship: Christian Harris-Officer, ISE; John Kostadinov, ISE

Elbridge N. and Stephana R. Townsend Scholarship: Andrew Engelbach-Schafer, MAE

United Illuminating Company Scholarship: Danny Li, EE

Watts Engineering and Architecture Minority Scholarship: Brianna Clark, EE

Thomas G. Wilde Family Scholarship: Shawn Bell, ISE; Shawn Murty, ISE; Yankit Michael Wong, ISE

Xerox/SHPE Scholarship Award: Christopher Barone, MAE; Ron Heichman, MAE; Matthew Pavlovich, MAE

Gustav and Greta Zimmer Research Scholar Awards: Srivatsa Mahesh, MAE; Joel Gabrielson, MAE; Kevin Suffoletto, MAE; Brian Dolan, MAE; Bryan Jones, MAE; Eun Bit Kwak, MAE; Colin Lea, MAE; Richard Linares, MAE; Ryan Miller, MAE; Rohan Sood, MAE; Geoffrey Hohn, MAE; Andrew Hazlett, MAE



CSE student scholarship awardees and faculty and staff, with donor Ted Moran (BS EE '86) (standing, front left)



MAE student scholarship awardees and faculty



ISE student scholarship awardees and faculty

## Celebration: Student Posters

At this year's Celebration of Academic Excellence, an event coordinated by the Center for Undergraduate Research and Creative Activities (CURCA), several students were chosen to participate by the leadership of their schools; the Collegiate Science and Technology Entry Program (CSTEP); and Sigma Xi, the scientific research society. Congratulations to the following students; their names are organized alphabetically by mentor's last name and by their project group.

### CURCA

Deven McMaster & Megan Hannigan, ISE: Professor Rajan Batta; David Hastings, CIE: Professor Andre Filiatrault; Benjamin Knox, AE & ME: Assistant Professor David Forliti; Carrie Hinners, EnvE: Professor James Jensen; Jan Panteli, CE, Assistant Professor E. Manolis Tzanakakis; Bryan Boucher, Geoff Gross, Min Xie, ISE: Special Student Programs Director, William G. Wild, Jr., (BS '83, MS '87 IE); Claire Lochner (EE), Erin Jacklin (EE), Earl Manning, Andrew Koonce (ME), Avi Sankar (CBE), Daniel Snitzer (ME), Nick Catalino (ME), Carl Eckhardt (AE), Rob Cruz (CSEE), Julia Foy (EnvE): William G. Wild, Jr.; Mike DiSanto, EE: Assistant Professor Jennifer Zirnheld (BS '93 MS '97 PhD '04 EE)

### CSTEP

Aggrey Jacobs, CompE/EE: Associate Professor Ram Sridhar

### Sigma Xi Student Presentations, listed by concentration

AE & ME: Thomas R. Leach, Jonathan Missel; CSE: Gabriel Terejanu; ISE: Theresa Guarrera, Priyadarshini Pennathur (presented two projects) MAE: Umamaheswara Konda, Ravi Kumar, Mary Russell; ME & AE: Brandon Brown (BS MAE '07)

## 2009 National Scholars

Two School of Engineering students won prestigious national scholarships: **Christopher J. Llop** is a 2009 Morris K. Udall Scholar; **Claire M. Lochner** is a 2009 Barry M. Goldwater Scholar. Both are EE majors.

Llop was selected as a Udall Scholar based on his commitment to a career in the environment, his leadership potential, and academic achievement. Llop is one of 80 scholars selected from 510 candidates across the US.

While Llop was a chapter president of Engineers for a Sustainable World (ESW), he helped boost student involvement in what became eight sustainable projects. He is involved with ESW National

Headquarters, and will student chair the 2010 ESW National Conference. He is also incoming president of the New York Nu chapter of Tau Beta Pi.

The Barry M. Goldwater Scholarship is awarded to sophomores and juniors with outstanding potential and the intention to pursue advanced degrees in mathematics, the natural sciences, or engineering. Lochner is one of 320 scholars chosen from 1,097 candidates from across the US. The program recognizes more juniors than sophomores; Lochner's selection as a sophomore speaks to her excellent academic and service credentials.

Lochner has been a student assistant and a research assistant. She is active in Institute of Electrical and Electronics Engineers Student Chapter; ESW;



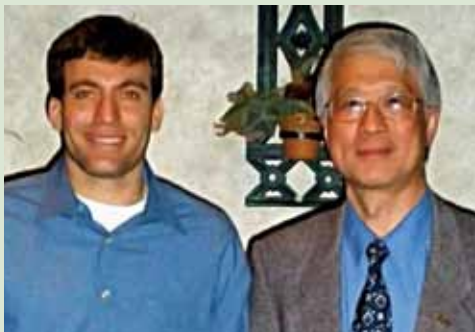
the Society of Women Engineers; the Engineering Impact on Society Group; and the UB Engineering Ambassador program.



## Tau Beta Pi New York Nu Chapter Recognition

Family and friends congratulated the initiates honored at an induction ceremony and dinner.

Tau Beta Pi's New York Nu chapter selected EE **Professor Liu** (below right) as 2009 Professor of the Year, for developing demonstrations and incorporating a remote laboratory in his lectures to enhance the learning experience. CBE PhD student **Dan Kehoe** (below left) was selected as TA of the Year.



(L to R): CBE PhD student Dan Kehoe and EE Professor Liu were honored.

### 2009–2010 Tau Beta Pi New York Nu Officers:

President, **Chris Llop** (EE); Vice President of Internal Affairs, **Chih Yong Lee** (ME); Vice President of External Affairs, **Jenna Curry** (ME); Corresponding Secretary, **Nicholas Fortenbery** (ISE); Recording Secretary, **Marcia Torrico** (EE)



(L to R): Chih Yong Lee, Jenna Curry, Chris Llop.



Nicholas Fortenbery



Marcia Torrico



Graduate student inductees in alphabetical order: Bicheng Chen (CIE), Ying Huang (EE); Jason Jaskowiak (CIE)



Undergraduate inductees, listed in alphabetical order: Ryan Barton (CBE); Lucas Cotterell (CIE); Kelly Duval (EnvE); Jared Evers (EE); Matthew Ferree (EE); Lai Kit Lee (AE); Emily Leitsch (CBE); Christopher May (EE); Michael Meller (ME); Zachary Miller (EE); Andrew Pietka (EE); Ping Wong (ME); Richard Naumann (CIE); Kent Carolus (ME); Rebecca Carmine (CIE)

## Rakesh Jain: Eli Ruckenstein Inaugural Lecture



(L to R): Rakesh Jain and Eli Ruckenstein

Rakesh K. Jain, Andrew Werk Cook Professor of Tumor Biology, Harvard Medical School, and Director, Edwin L. Steele Laboratory of Tumor Biology, in Massachusetts General Hospital's Radiation Oncology Department, delivered CBE's inaugural Eli Ruckenstein Lecture.

"Normalizing tumor microenvironment to treat cancer: From mathematical model to mouse to man" discussed strategies for understanding malignancies, to develop novel therapies for combating them. Jain described the cancer as a "guest" that, while unwelcome, is provided by its host with what it needs to thrive. Tumor environments are surrounded by abnormal blood vessels – not only in their structure, but also in their function, which supports the cancerous growth.

The consequences of this abnormality contribute directly to malignant properties of a cancer, and prevent treatments from reaching and attacking tumor cells. Jain proposed a novel concept that "normalizing" tumor vessels would allow cancer therapies to penetrate the mass and to function more effectively. He showed, in mice and in cancer patients, that drugs originally designed to destroy tumor vessels can, paradoxically, also repair them, creating a window of opportunity to attack the cancer most effectively. This concept is also opening doors to treating other vascular disorders, like macular degeneration, a leading cause of blindness in the US.

In 1973, Jain was a student in a class taught by now-SUNY Distinguished Professor **Eli Ruckenstein** – a National Academy of Engineering member and a recipient of the President's US Medal of Science – with whom he co-authored a paper on thin liquid films.

Jain, a pioneer in tumor biology, drug delivery, *in vivo* imaging and bioengineering, has earned many major awards, and is a member of the Institute of Medicine, the National Academy of Engineering, and the American Academy of Arts and Sciences.

## Congratulations Class of 2008–2009!

When asked recently by *Business First* to forecast the future need for engineers, Dean **Harvey Stenger** remarked, "I believe the demand for engineers will remain broad and consistent in all fields and industries."

Contributing to the New York State and national supply of engineers and applied scientists, this past year the UB School of Engineering and Applied Sciences graduated:

- 521 Bachelors
- 277 Masters
- 56 PhDs

We wish them all great success in their careers.

## Biomedical Engineering Launches

The new Department of Biomedical Engineering, a joint venture between the School of Engineering and the School of Medicine and Biomedical Sciences, is now launching. The department will be led by Professor **Alexander Cartwright**, who recently accepted the leadership position of department chair, while a search for initial faculty members is underway.

The first course offering is BE 101, Introduction to Biomedical Engineering, to be taught by selected speakers from the Schools of Engineering and Medicine, who will lecture on topics critical to the developing biomedical field.

The new department is regarded as a boon for Western New York's budding biomedical industry. The department and local biomedical and bioscience companies have worked closely together in developing the program. "Through partnerships with local biomedical and biotechnology companies, the program will receive input from experts in the industry that will enable the department to successfully address important issues that face our nation today," said Cartwright.

## CEISARE Broadens Recognition

UB's CEISARE, the Center of Excellence in Information Assurance Education, earned additional recognition by both the Department of Homeland Security and the National Security Agency to include a Research designation beyond its former educational charter, for the academic years 2009–2014. CEISARE was selected based on a detailed application and evaluation process. CSE Professor **Shambhu J. Upadhyaya** is CEISARE Director.

## UB Engineering Productivity

UB Engineering Productivity as determined by the American Society of Engineering Education *Profiles of Engineering Colleges*, 2008 Edition

Ranking	Item	Number of Schools Ranked
32nd	Engineering bachelor's degrees awarded	339
29th	Engineering master's degrees awarded	252
43rd	Engineering doctoral degrees awarded	193
36th	Engineering research expenditures	192

## EngiNet™ Offerings

EngiNet™ is principally a graduate-level distance learning program. We offer courses year-round in the following areas:

- Civil, Structural and Environmental Engineering
- Computer Science and Engineering
- Electrical Engineering
- Engineering and Applied Sciences
- Industrial and Systems Engineering
- Mechanical and Aerospace Engineering

See our website [www.eng.buffalo.edu/EngiNet](http://www.eng.buffalo.edu/EngiNet) for class lists and more program information. For additional information, contact the EngiNet™ Office at (716) 645-6865 or [enginnet@eng.buffalo.edu](mailto:enginnet@eng.buffalo.edu).

## New Code of Ethics

**UB** Engineering  
The School of Engineering and Applied Sciences

UB Engineers and Applied Scientists:

- Act with honesty, integrity and fairness
- Show respect for others
- Accept responsibility
- Give credit where credit is due
- Serve the larger community
- Take pride in being a part of UB Engineering

## Future Faculty Workshop

Seventeen students attended the Future Faculty Workshop, hosted by Associate Dean for Graduate Studies, ISE Professor Rajan Batta.

The workshop, which was comprised of three components, a senior faculty panel, a junior faculty panel, and a graduate student panel was well-received by those attending.

Workshop attendees were also invited to a "Target Your Teaching" workshop, organized by UB's Teaching and Learning Center.



Associate Dean Rajan Batta speaks to students at the Future Faculty Workshop

## Underrepresented Students Gain Competitiveness



The SUNY Louis Stokes Alliance for Minority Participation (SUNY LSAMP) and the Collegiate Science and Technology Entry Program (CSTEP) jointly completed another successful summer of providing talented, underrepresented students in STEM (science, technology, engineering and mathematics) and allied health professions with a 7½-week long program.

The overall objective of both organizations is to enhance the students' competitiveness by introducing them to research early during undergraduate years, and by broadening their knowledge and insight into critical issues while developing analytic, leadership, and problem-solving skills.

Listed by concentration, engineering student participants and their advisors were:

- CIE:** Jonathan Rivera with CIE Professor Andrew Whittaker
- EE:** Michael-Dane Alexander with Assistant Professor Jennifer Zirnheld (BS '93 MS '97 PhD '04 EE)
- MAE:** Corinna Joseph with MAE Professor Kemper Lewis; Nancy Morena with MAE Associate Professor Venkat Krovi
- ME:** Buay Nhial, Osaka Shepherd, Christopher Williams; working with MAE Associate Professor Venkat Krovi

Staffing the program on behalf of Engineering was Drexel Gidney, Senior Academic Advisor/Director of Minority Programs and Co-Director of SUNY LSAMP Buffalo Region. He was joined by Elizabeth Colucci, Assistant Administrator Director, University Honors Programs, Volunteer; William Grunert, consultant; and Senior Research Support Specialist Folarin Erogbogbo (PhD CBE '09), Summer Research Methods Seminar Instructor.

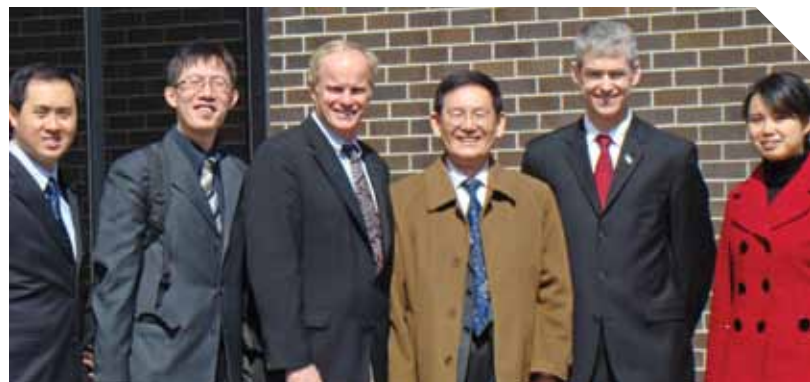
## ERIE Director Rabideau Hosts US Army Corps of Engineers Workshop

Together with the UB American Studies Department and the US Army Corps of Engineers (ACE) Buffalo District, UB Engineering hosted the ACE's national training workshop, "Consulting with Indian Nations."

CSEE Professor Alan Rabideau was the workshop host. He is director of the Ecosystem Restoration through Interdisciplinary Exchange (ERIE), an NSF IGERT funded graduate-training program that emphasizes working with local Indian nations.

This is the first time ACE has sponsored this training workshop with a university, drawn by the ERIE program. The workshop focused on maximizing tribal consultation on environmental projects, and covered topics on Federal Indian policies, ACE policies, and cross-cultural communication history and strategy.

(See back cover for more about the ERIE program.)



*Pictured, (l to r): Paul Yong, UB Economics Business Administration Program Director; Ji Xiaozhe (James), Office of International Exchanges, BUT Office of International Exchanges; Dean Harvey Stenger; Fan Boyuan, BUT President; John Wood, UB Associate Vice Provost for International Education; and Jiang Saying, BUT Deputy Director of the President's Office.*

## Dean Hosts Visitors from Beijing University of Technology

Representatives of Beijing University of Technology (BUT) toured the Earthquake Center and other facilities at UB, while here to re-sign an agreement between the two universities. The agreement calls for the exchange of both faculty and students, as well as collaborative research. The successful, historic partnership with BUT is one of several that UB has initiated with Chinese universities since 1980. During this time, over 100 students and faculty have been exchanged between BUT and UB.

# UB Engineering Faculty Awarded for Outstanding Achievement

## Chancellor's Awards for Excellence in Teaching



Paul DesJardin

The Chancellor's Award for Excellence in Teaching honors those who consistently demonstrate superb teaching at the undergraduate, graduate, or professional level. 2009 recipients are MAE Associate Professor **Paul DesJardin** (BS AE '93) and EE Professor **Dimitris Pados**.

Prior to joining UB Engineering in 2002, **Paul DesJardin** previously was a senior member of the technical staff at Sandia National Laboratories. His expertise includes computational fluid dynamics, multiphase reacting flows, fire and combustion, and fluid-structure interaction. His research is funded by sources including Sandia National Laboratories, the National Science Foundation (NSF) and the Office of Naval Research.

The recipient of an NSF CAREER Award and two Sandia National Laboratories Awards for Excellence, his research has been published in more than 20 scholarly publications.

His ME master's and doctoral degrees are from Purdue University.



Dimitris Pados

**Dimitris Pados** joined UB Engineering in 1997 as an assistant professor, after holding the same position at the University of Southwest Louisiana. His research interests include communications and multiuser systems, adaptive antenna and radar arrays, and

neural networks. His work is funded by the NSF, the US Air Force Office of Scientific Research, the Defense Advanced Research Projects Agency, the Air Force Research Laboratory, and Boeing Corp.

He has served as an associate editor for *IEEE Signal Processing Letters* and *IEEE Transactions on Neural Networks*.

He received a CSE diploma from the University of Patras, Greece, and a PhD in EE from the University of Virginia.

## UB Distinguished Professors

Two UB Engineering faculty members have been named UB Distinguished Professors in recognition of their international prominence and significant research contributions.



Paschalis Alexandridis

CBE Professor **Paschalis Alexandridis** conducts pioneering research on the self-assembly and directed assembly of polymers, supramolecules, and nanoparticles. One-third of his total research funding has come from industry, including Bausch & Lomb and

Xerox. His research papers, published in high-impact factor, peer-reviewed journals, have received more than 3,000 citations.

His numerous awards include the NSF Career Award, the Bodossaki Foundation Academic Prize in Applied Science, the SUNY Chancellor's Award for Excellence in Teaching, and the UB Exceptional Scholar Award for Sustained Achievement. He joined the UB Engineering faculty in 1997 after serving as a postdoctoral associate and assistant professor at Lund University, Malmš, Sweden. He earned a PhD in CE and a master's in CE Practice from the Massachusetts Institute of Technology.



Venugopal Govindaraju

CSE Professor **Venugopal Govindaraju's** expertise in document recognition and retrieval and biometrics focuses on face detection and handwriting recognition. With colleagues, he designed a handwriting recognition system for the US

Postal Service that has saved billions of dollars. He has many publications and five editorships to his credit, and four patents.

Govindaraju is founding director of CUBS (Center for Unified Biometrics and Sensors) and the associate director of CEDAR (Center of Excellence for Document Analysis and Recognition). He has been principal or co-principal investigator of more than \$50 million dollars in research projects. He is a fellow of the IEEE, the Institute for Electronics and Telecommunications Engineers, and the International Association for Pattern Recognition. He has received many awards, including the Hewlett Packard Open Innovation Award, the MIT Global Indus Technovator Award, and the SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities. He is a graduate of the Indian Institute of Technology, Kharagpur, and earned CS master's and doctoral degrees from UB in '88 and '92, respectively.

## 2008–2009 Exceptional Scholars: Sustained Achievement and Young Investigator Awards

The UB Exceptional Scholars Award honors faculty members for their outstanding research performance at different stages of their careers. There are two awards: Sustained Achievement Awards for senior scholars and Young Investigator Awards for untenured scholars who received their terminal degree within the past eight years. Both awards recognize work that has "garnered public and /or professional accolades beyond the norm."



Stelios Andreadis



Jonathan Bird



Rakesh Nagi



Gilberto Mosqueda



Yong-Kyu Yoon

UB Sustained Achievement Award:

CBE's **Stelios Andreadis**; EE's **Jonathan Bird**; and ISE's **Rakesh Nagi**

UB Young Investigator Award:

CSEE's **Gilberto Mosqueda** and EE's **Yong-Kyu Yoon**

## UB Engineering Service Recognition Ceremony

The Annual UB Engineering Service Recognition Ceremony honored those UB Engineering employees who have been employed at the University at Buffalo for 10, 20, 30, or 40 years as of calendar year 2008. Thanks to all for your dedicated and continued service.

This year's honorees are:

**40 Years:** Kathy Dunphy, Raj Kaul (not pictured)

**30 Years:** Wayne Anderson (BS '93 MS '97 PhD '04 EE), Linda Mudd, Ken Peebles, Sargur Srihari



Kathy Dunphy (40 yr)



Wayne Anderson



Linda Mudd



Ken Peebles



Sargur Srihari

**20 Years:** Michael Buckley (BS '78 EE), Richard Dutton (MS IE '93), Stuart Chen, Peggy Lane, James Jensen, Richard Springer, Rohini Srihari (BS ES '74), Moises Sudit, John Van Benschoten

**10 Years:** Carl Alphonse, Stylianos Andreadis, Kirsten Brown, Michel Bruneau, Harsh Chopra, Leo Danilovich, Deanne Henel, Jason Lasker, Victor Paquet, Todd Snyder (MEng CIE '96), Mark Swihart, Bill Wild (BS '83 MS '87 IE)

## UB Engineering Appointments



Aidong Zhang

Professor **Aidong Zhang** accepted the position of CSE Chair for a three-year term. Professor Zhang leads the CSE Datamining, Database, and Multimedia group. She joined CSE in 1994. Her awards include the National Science Foundation (NSF) CAREER Award; a UB Exceptional Scholar Achievement Award; a SUNY Chancellor's Research Recognition Award; and selection as an "innovator" by the Upstate Alliance for Innovation. She has received generous grants from the NSF for bioinformatics research and from the National Institutes of Health, to establish a pre-Center for Biomedical Computing. In addition to her numerous scientific publications, her professional activities include authoring two books and serving as editor for several publications. Zhang is an IEEE Fellow.



Alexander Cartwright

Professor **Alexander Cartwright** accepted two positions: inaugural Chair of the Biomedical Engineering (BME) Department and EE Department Chair. Previously, Cartwright was Vice Provost for UB2020 Strategic Initiatives. He leads the Laboratory for Advanced Spectroscopic Evaluation; he is Director, Institute for Lasers, Photonics, and Biophotonics; Co-Director, Electronics Packaging Laboratory; and a Physics Department adjunct. His research focuses on new materials and devices for sensors and photovoltaics. He is affiliated with the Center for Unified Biometrics and Sensors and the UB2020 Strength of Integrated Nanostructured Systems. His distinctions include a SUNY Chancellor's Award for Excellence in Teaching; a Department of Defense Office of Naval Research Young Investigator Award; and an NSF CAREER Award.

Much appreciation goes to previous chairs SUNY Distinguished Professor **Vladimir Mitin**, who leaves the EE chair after six years of outstanding service, and to CSE Professor **Bharat Jayaraman** for his dedicated service as CSE chair since 2001.



David Kofke

UB Distinguished Professor **David Kofke** was reappointed as CBE Department Chair, for a second three-year term. Professor Kofke's expertise is in molecular simulation with research interests that consider the development and understanding of molecular simulation methods, particularly as they pertain to free-energy calculations and configurational integrals in general. He is also active in development of object-oriented molecular simulation software for education and he is leading the establishment of standards that can unify diverse molecular simulation codes used for research applications. Author of nearly 100 refereed publications, Professor Kofke received a Presidential Young Investigator Award in 1990, the SUNY Chancellor's Award for Excellence in Teaching in 1994, and in Research and Creative Activity in 2004; he is the 2004 recipient of the triennial John M. Prausnitz Award for applied chemical thermodynamics, and in 2007 he was awarded the Jacob F. Schoellkopf Medal from the Western New York Section of the American Chemical Society.



Rakesh Nagi

Professor **Rakesh Nagi** was reappointed as ISE Department Chair, for a second three-year term. Professor Nagi joined ISE in 1993. He recently received UB's Sustained Achievement Award and was noted as one of *Business First's* "40 under Forty" in 2004. His other awards include the SME Milton C. Shaw Outstanding Young Manufacturing Engineer Award (1999); IIE's Outstanding Young Industrial Engineer Award in Academia (1999); and the NSF CAREER Award (1996). Professor Nagi's major research thrust is in the area of production systems and applied/military operations research, with research interests in location, theoretic approaches to facilities design, agile enterprises and information-based manufacturing, just-in-time production of assemblies, and information fusion; his papers have been widely published in academic journals.



Stella Batalama

EE Professor **Stella Batalama** has recently accepted a position as the Engineering School's Associate Dean for Research. Professor Batalama joined EE in 1995. She served the US Air Force Research Laboratory (AFRL), Information Directorate, as the Acting Director of the Center for Information Transmission and Exploitation from August 2003 to July 2004, while on sabbatical from UB. She participated in the UB Provost's Office's Faculty in Leadership Program during 2007-08.

Professor Batalama's current research interests include cognitive radio networks, sensor networks, steganography, steganalysis, watermarking, compressed sensing, code division multiple access communications, and small sample support optimization of adaptive systems. She has been an investigator on research awards from federal agencies (NSF, Air Force Office of Scientific Research, and AFRL); and her research has been reported in over 100 peer reviewed articles.

## Comings, Changings, and Goings

**Elise Allen** is the new Assistant to the EE Chair, she was formerly Assistant to the Vice Provost for Strategic Initiatives, Office of the Provost.

**Betty Brown** has joined the MAE Department as Assistant to the Chair; she was formerly EE Assistant to the Chair.

**Donna George**, MAE Assistant to the Chair since August 1989, has retired. Donna and her husband, Don, will tour the US.



**Timothy Leyh** has been promoted to Executive Director of The Center for

Industrial Effectiveness (TCIE). Tim joined TCIE in 2001 and was Director of Business Development since 2004.

**C. Nick Randell**, former TCIE Director, is now with the Peter and Elizabeth C. Tower Foundation of Getzville, NY.

**Meta Reuse** is now a Secretary in the Dean's Office.

## Faculty Achievements

BME and EE Chair and Professor **Alexander Cartwright** received the Engineering School's Faculty Excellence Award, for diligence in productivity (quantity) and quality in all activities. Cartwright leads the Laboratory for Advanced Spectroscopic Evaluation; he is Director, Institute for Lasers, Photonics and Biophotonics (ILPB); Co-Director, Electronics Packaging Laboratory and is affiliated with UB2020 Integrated Nanostructured Systems; Center for Spin Effects and Quantum Information in Nanostructures (CSEQuIN); and Center for Unified Biometrics and Sensors (CUBS).

CSE's UB Distinguished Professor, CUBS Founding Director and Center of Excellence for Document Analysis and Recognition (CEDAR) Associate Director **Venu Govindaraju** won two 2009 HP Labs Innovation Research Program Awards for his research projects on "Multimodal Command-and-Control by Integrating Two-Handed Gestures and Speech" and "Intelligent Processing of Hand-Annotated Documents," both of which address the HP Labs theme of Immersive Interaction. The awards program is designed to create opportunities for colleges, universities, and research institutes to conduct breakthrough collaborative research with HP.

CSEE Professor **James Jensen** received the Educator of the Year Award from the NY State Society of Professional Engineers' Erie-Niagara Chapter. The award recognized his efforts to promote engineering education and his many years of service to the Professional Engineering Review Course Committee. The committee also acknowledged CSEE administrator **Cherrie Robbins'** efforts.

CBE's UB Distinguished Professor and Chair **David Kofke** presented "The Easy Phases Can Still Provide Interest, Challenge, and Opportunity," on thermodynamics research, as part of Texas A&M University's 2009 J.D. Lindsay Lecture Series, and as the Schlumberger Lecture at the University of Alberta.

EE Assistant Professor **Natalia Litchinitser** published "Loss as a Route to Transparency" in *Nature Photonics*, with Purdue University's Vladimir Shalaev. The paper is a commentary on developing low-loss metamaterials.

CSE's UB Distinguished Professor **Russ Miller**, Senior Scientist at the Hauptman-Woodward Medical Research Institute, presented on high-performance computing at a symposium hosted by the University of Southern Florida.

Samuel P. Capen Chair and EE Distinguished Professor **Paras Prasad**, Director, Photonics Research Lab, presented a plenary talk on "Photonics' Pivotal Role in the Nano/Bio/Info Revolution: New Interfaces" at the OPTO part of the SPIE Photonics West 2009 conference.

CSE Professor, Affiliated Professor of Linguistics and of Philosophy, and Director, the SNePS Research Group, **Stuart Shapiro** was listed in *Masterminds of Artificial Intelligence V1*, by Günter Bachelier.

EE Assistant Professor **Weifeng Su** co-authored *Cooperative Communications and Networking* (Cambridge U. Press), with J. Ray Liu, Ahmed Sadek, and Andres Kwasinski, on cooperative communications and networking.

ISE Assistant Professor **Jun Zhuang** was accepted into the Institute of Industrial Engineers' New Faces of Engineering program, as part of Engineers Week 2009. The program strives to promote the accomplishments of young engineers by highlighting their engineering contributions and the resulting impact on society, and to enhance and improve the image of engineering.



## CBE and EE Greatbatch Professor Takeuchi: Powering Devices



Photo: James Ulrich

*"By increasing the number of sites that transfer electrons, the electroactive sites on the cathode, we can increase the amount of electron and ion transfer, while reducing the distances those electrons or ions have to travel."*

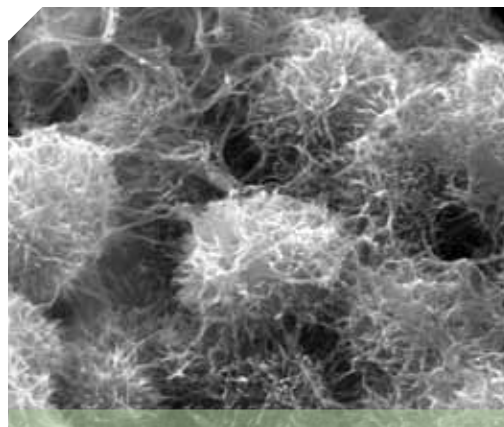
CBE and EE Greatbatch Professor in Power Sources Research **Esther Takeuchi**, a National Academy of Engineering member, is applying her expertise in powering tiny biomedical devices to powering electric vehicles and alternative energy storage devices. Many novel technologies and applications, including some sensor-reliant applications for homeland security, will require better power sources: more cost-effective, efficient, enduring, portable, and stable.

For example, Takeuchi notes that electric vehicles will require not just one battery, but many, challenging researchers to "develop a low-cost electronic system capable of efficiently coordinating and controlling them."

"We are looking at properties such as improving battery rechargeability and decreasing battery weight while boosting power," she said.

One innovative approach involves developing nanostructured metal oxide materials for use in batteries using light-weight, supported structures, which still have high power density.

*(Right) Morphology of candidate material for rechargeable batteries*



See Breaking News about Takeuchi on page 20.

"By increasing the number of sites that transfer electrons, the electroactive sites on the cathode, we can increase the amount of electron and ion transfer, while reducing the distances those electrons or ions have to travel," said Takeuchi. "This allows for a faster response and higher power density."

"Energy storage is critical to the further development of alternative forms of power, such as solar and wind, which are intermittent energy sources," she said. "Therefore, they need a way to store the energy that they generate."

## NYS Funds Stem Cell Research

NYS Governor David A. Paterson announced new stem cell research funding, some of which supports leading-edge research in the new biomedical engineering initiative that joins researchers in the Schools of Engineering and Medicine.

The principal investigators from UB Engineering receiving grants, also active at UB's New York State Center of Excellence in Bioinformatics and Life Sciences, are:

CBE Professor **Stelios Andreadis**, who was funded on two grants for developing a high-throughput technology to monitor changes in gene expression in real-time, as living stem cells undergo differentiation. He also will study hair follicle stem cells as a source of functional smooth muscle cells for use in cardiovascular therapies.

CBE Professor **Sriram Neelamegham**, who will study changes in the activities of specific enzymes that are involved in the formation of carbohydrate/sugar structures on stem cells.

CBE Assistant Professor **E.S. (Manolis) Tzanakakis**, who will develop strategies for generating from stem cells insulin-producing cells useful for diabetes therapies. (For more on this research, see Tzanakakis article on this page.)

## CBE's Tzanakakis Generating Stem Cells



Recent advances in stem cell biology have sparked hopes for therapies against devastating diseases once considered incurable. A prerequisite for realizing stem cells' clinical potential is developing bioprocesses for generating large quantities of these cells or their specific progeny (*i.e.*, neuronal cells, liver cells), to satisfy medical demands.

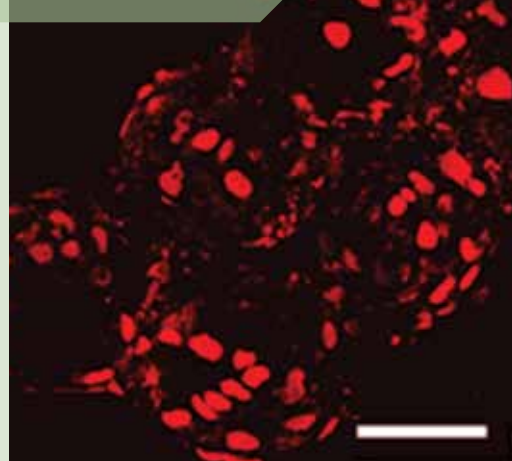
CBE Assistant Professor **E. Manolis Tzanakakis'** group investigates the use of scalable bioreactors in stem cell culture and differentiation to particular cell types. Important to the work is assessing the effects that the bioreactor environment has on the cultured stem cells, since these cells are the actual culture product used in cell therapies. Thus, establishing strategies based on appropriate selection of bioreactor operating conditions can be a daunting task.

Tzanakakis' group has successfully employed microcarrier bioreactors to propagate human stem cells to high concentrations (see photo), as reported in the journal *Tissue Engineering*. Further, these cells were directed toward endoderm cells, from which pancreatic and liver cells originate.

The group's current efforts focus on generating functional insulin-producing cells *en masse* from human stem cells, for diabetes therapies, and heart muscle cells for reconstitution of damaged cardiac tissue (for example, due to myocardial infarction).

The research is supported by grants from the National Institutes of Health, the New York State Foundation for Science, Technology and Innovation, and New York State's Stem Cell grant funding program.

*Human embryonic stem cells cultured on microcarriers. Bar: 100 micrometers.*



## Corso Wins NSF CAREER Award and DARPA Funding

CSE Assistant Professor **Jason Corso** is a 2009 National Science Foundation (NSF) CAREER award recipient for his computer vision research project entitled, "Generalized Image Understanding with Probabilistic Ontologies and Dynamic Adaptive Graph Hierarchies."



For this research, he states that, "from representation to learning to inference, effective use of high-level semantic knowledge in computer vision remains a challenge in bridging the signal-symbol gap."

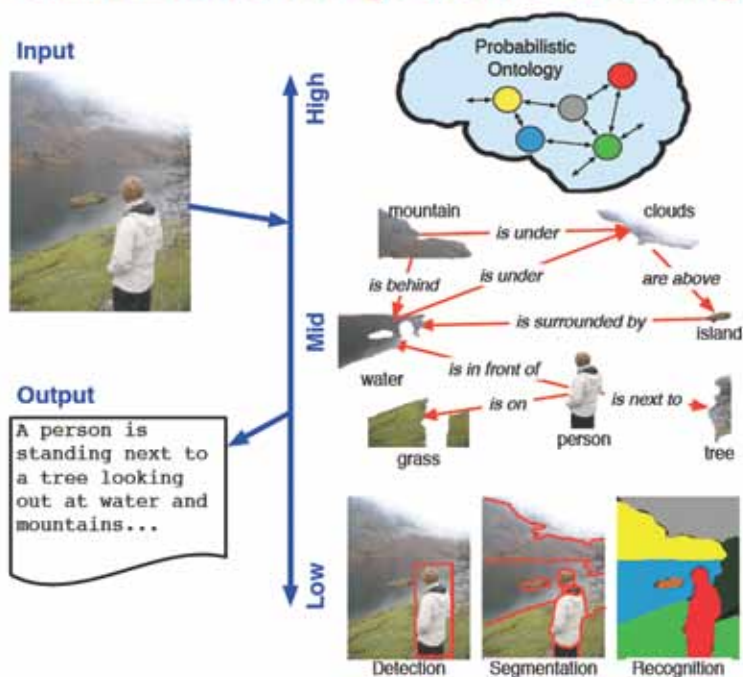
Specifically, his research examines a unified methodology that integrates low- (e.g., pixels and features), mid- (e.g., latent structure), and high-level (e.g., semantics) elements for visual inference. Adaptive graph hierarchies induced directly from the images provide the core mathematical representation. A statistical interpretation of affinities between neighboring pixels and regions in the image drives this induction. Latent elements and

structure are captured with multilevel Markov networks. A probabilistic ontology represents the core knowledge and uncertainty of the inferred structure and guides the ultimate semantic interpretation of the image. At each level, rigorous methods from computer science and statistics are connected to and combined with formal semantic methods from philosophy.

Corso was also awarded a grant from the Defense Advanced Research Projects Agency (DARPA) Computer Science Study Group Program, which funds work in computer science to revolutionize operations at the Department of Defense, rather than make incremental advances.

The first phase of the DARPA award funds work focusing on innovative uses of

## Generalized Image Understanding



automatic computer learning from video. The main objective is the understanding of how probabilistic ontologies of visual phenomena can be induced directly from video, thereby revolutionizing our ability to rapidly learn a probabilistic low-to-high level domain model directly from data, and use the model to automatically infer a comprehensive yet parsimonious semantic description with quantitative underpinnings of video.

## CSE's Miller and "Magic": Powerful Computer Available Worldwide

CSE's UB Distinguished Professor **Russ Miller**, a senior scientist at Hauptman-Woodward Medical Research Institute, has led the rollout of "Magic," a powerful



computer located at UB's North Campus, now available to qualified users worldwide for solving computationally-demanding problems.

Magic cost-effectively solves large computational problems in areas including bioinformatics, computational chemistry, computational fluid dynamics, computational finance, medical imaging, weather, and ocean modeling.

The Miller Cyberinfrastructure Laboratory (MCIL) is taking advantage of recent advances in technologies to link distributed resources, including computer systems, data storage devices, visualization systems, sensors, and a wide variety of instruments and making those resources available worldwide.

Miller is a leader in parallel computing, grid computing, and cyberinfrastructure. Under his direction, and with primary funding from the National Science Foundation and the National Institutes of Health, a Buffalo-based grid was developed as an experiment in creating an institutionally-distributed platform integrating information and computing. This led to the design, implementation, and deployment of the Western New York (WNY) Grid, which aggregated costly computational resources at institutions throughout WNY. The overwhelming success of the WNY Grid led to the MCIL-deployed NY State Grid, based on the Open Science Grid set of grid software.

"A new partnership with NVIDIA and our ongoing partnership with Dell have made possible the acquisition of one of the fastest machines in New York State for solving a large set of scientific, engineering and multimedia problems," Miller said.

The NVIDIA-based GPU-system was acquired with funds from the NSF's Collaborative Research Infrastructure Program, based on a joint proposal from UB, Niagara University, SUNY-Geneseo, and the Hauptman-Woodward Institute.

# CSE Researchers Tops in Two Sections at International Conference on Document Analysis and Recognition

Researchers at the Center for Unified Biometrics and Sensors (CUBS) received top honors at the 10th International Conference on Document Analysis and Recognition (ICDAR), the premier conference on document analysis.



**UB Distinguished Professor Venu Govindaraju**



**CUBS Principal Research Scientist Srirangaraj Setlur**



**CSE Senior Research Scientist Zhixin Shi**



**CSE's doctoral student Xujun Peng**

A CUBS-HP Labs research team earned the Best Paper Award, of 430 submissions to the conference, of which only 87 papers were accepted for oral presentation. The team of CSE's doctoral student **Xujun Peng**; Principal Research Scientist **Srirangaraj Setlur** (MS IE '95); CUBS Director and UB Distinguished Professor **Venu Govindaraju** (MS '88 PhD '92 CS); and R. Sitaram and K. Bhuvanagiri, both of HP Labs, Bangalore, India, was recognized for the paper entitled, "Markov Random Field Based Text Identification from Annotated Machine Printed Documents." The paper was based on work at CUBS under the HP Innovation Research Award (2008-10) for Intelligent Processing of Hand-Annotated Documents (PIs: Govindaraju, Setlur).

In the competition track at ICDAR, the entry submitted by the CSE team of Senior Research Scientist **Zhixin Shi** (MS CS '95), Setlur, and Govindaraju was the best amongst all entries in the line segmentation section of the ICDAR 2009 Handwriting Segmentation Contest. The objective was to automatically separate and extract handwritten text lines. The method was

developed under a research program at CUBS for Arabic Handwriting Recognition sponsored by BBN Technologies (PIs: Govindaraju, Setlur). The competition test set had 200 documents by multiple writers in multiple languages in Latin script; the CUBS algorithm also works successfully on Defense Advanced Research Projects Agency Arabic data sets.

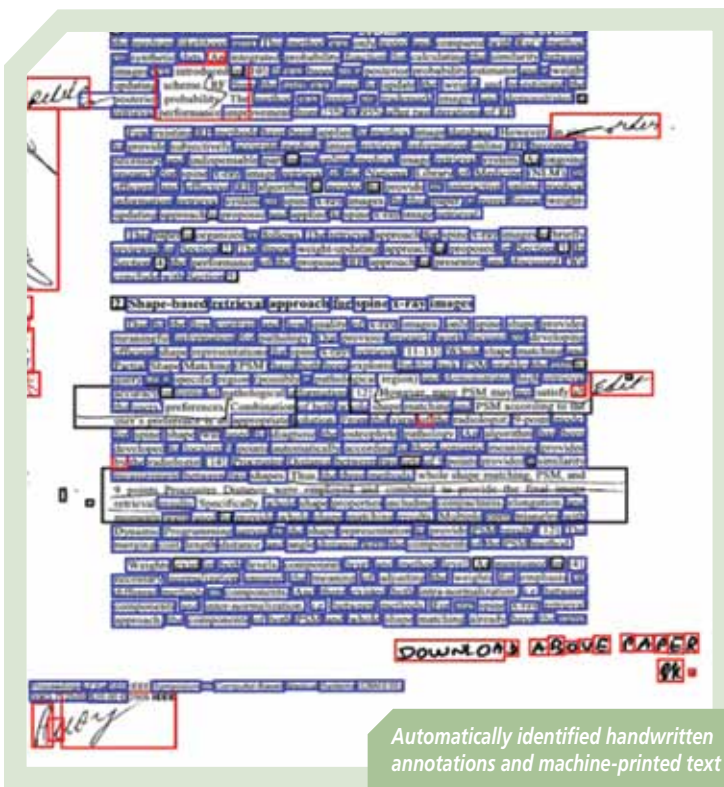


**Greek**

Sample results of the system on documents showing extracted lines in different colors; similar performance is seen on Arabic documents (DARPA data)



**French**



Automatically identified handwritten annotations and machine-printed text

## CSE's Upadhyaya on Zero-Day Strategies

CSE Professor and Center for Excellence in Information Systems Assurance, Research, and Education (CEISARE) Director **Shambhu Upadhyaya** worked with his CSE students **Madhusudhanan Chandrasekaran**, **Horus Alkebulan**, and **Newton Campbell** on "Vulnerability Assessment and Response Tool Against Zero-Day Exploits," a finalist paper in the National Security Innovation Competition. The competition is presented by the National Homeland Defense Foundation, and sponsored by the Colorado Homeland Defense Alliance and the Colorado Springs Technology Incubator; it featured entries promoting national security-related innovations.



## CSEE's Basaran: Carbon Nanotubes Succeeding Metals

Ever-smaller electronic devices requiring more densely integrated circuits are challenging nanotechnology researchers to overcome the damage that metal conductors produce, caused by electromigration and thermomigration, which produce heat and cause premature device failure. CSEE professor **Cemal Basaran**, Electronics Packaging Lab director, and his doctoral student **Tarek Ragab**, have proven that Single-Walled Carbon Nanotubes (SWCNTs) overcome both phenomena, with higher current density producing just one percent of the heat produced by traditional metals, such as copper.



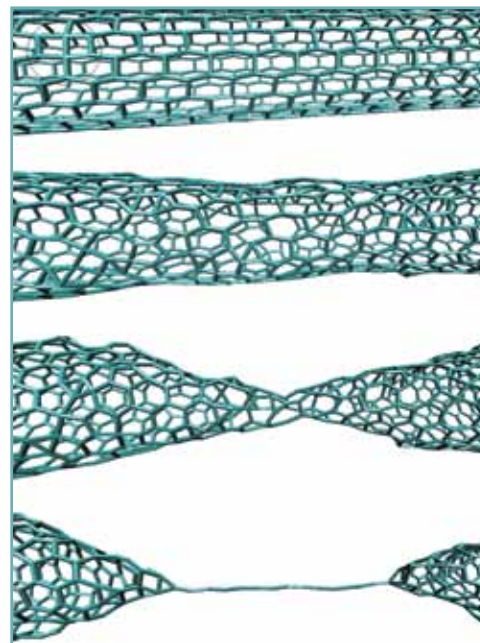
SWCNTs are extremely thin, hollow cylinders measuring no thicker than a single atom and by far stronger than metals. They may replace metals in millions of electronic applications.

Basaran's findings are the first to show mathematically, from a quantum mechanics point of view, that carbon nanotubes do not follow Joules law, where resistance in a circuit converts electric energy into heat.

He explains that, in conventional metals, "conduction causes a scattering of electrons within the lattice of the material so that, as electrons move during conduction, they bump into atoms, creating friction and generating heat, whereas in carbon nanotubes, when electric conduction happens, electrons are

fired straight through the material, so that the electrons have very little interference with the atoms." Thus, the friction they undergo is greatly reduced, giving carbon nanotubes a tremendous advantage over conventional metals.

The unique properties of carbon nanotubes will allow engineers to realize a host of smaller, faster, and more powerful devices that can not exist now. Basaran conjectures that electric cars may be powered by batteries that are carbon nanotube-based.



*Carbon nanotubes are the best candidate to end the metal age in electronics.*

**Basaran's research has fundamentally changed what is known about the high current density performance properties of metals and their limitations.**

## Breaking News

### Takeuchi Earns National Medal of Technology

CBE and EE Greatbatch Professor **Esther Takeuchi** was selected for a 2009 National Medal of Technology. She will receive the award at a White House ceremony in October. Takeuchi joins UB Engineering's faculty Nation Medal recipients – CBE's SUNY Distinguished Professor **Eli Ruckenstein**, who earned the National Medal of Science in 1998, and EE's Emeritus Research Professor **Wilson Greatbatch** (MS EE '56, Hon ScD '84) who was awarded the National Medal of Technology in 1990.

### UB Engineering Research Expenditures at the Top of UB's Record High Output

According to the NSF's Survey of Research and Development Expenditures at Universities and Colleges, science and engineering research expenditures at UB totaled a record \$338.3 million, up by approximately 7.5 percent from the previous year. The increase comes as UB's university-wide research expenditures reached a record high of \$348.2 million in FY 2008, up nearly 7.7 percent.

Engineering was second in total research expenditures in FY 2008, at 18 percent, with the life sciences first. The leading engineering group was MCEER, at \$4.6 million in total expenditures.



### CIWM Hosts New York State Tire Derived Aggregate Workshop

The Center for Integrated Waste Management (CIWM) hosted the NYS TDA Workshop, which featured presentations by CIWM Director, CSEE Professor and Chair, **A. Scott Weber**, CIWM Associate Director **Louis Zicari**, and speakers from several states including Maine, Minnesota, California and South Carolina.

## EE Professor Pados on Digital Steganography

EE Professor **Dimitris Pados** explains that steganography literally means “covered writing” in Greek. “It is the process of embedding and hiding a secret digital signal (hidden message) in another digital signal (image, video or audio), called a cover or host. Steganography attempts to establish covert communication between trusting parties and conceal altogether the existence of – likely an already encrypted – embedded message.”

Pados’ research with his colleague and spouse, EE Professor and Associate Dean for Research **Stella Batalama**, and his Air Force Research Laboratory (AFRL) collaborators led to breakthrough optimal spread-spectrum steganographic algorithms and pioneered the concept of (optimal) multi-signature embedding. “In layman’s terms,” says Pados, “we found the mathematically optimal way to embed the

maximum amount of information with minimum distortion to the host, be it a digital image, video stream, or audio.” The findings led to an Air Force Office of Scientific Research (AFOSR) Research Award and to continued basic research funding thereafter.

Professor Pados’ research work in communications theory and systems has earned him generous federal research funding and best paper awards for articles written with his students. He recently received the 2009 SUNY Chancellor’s Award for Excellence in Teaching.

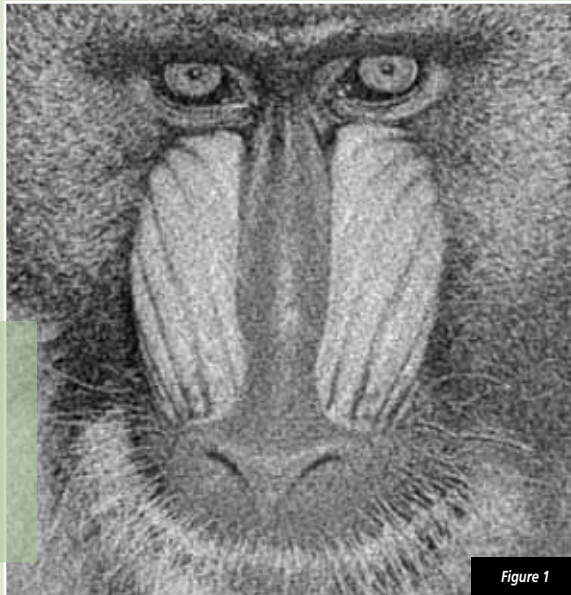


Figure 1

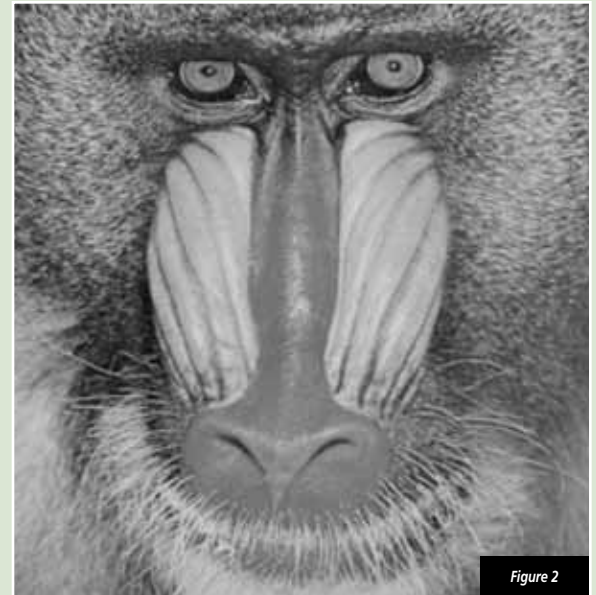


Figure 2

*Pados's technique used on right hand photo (Figure 2) uses an optimal embedding method that is less obvious to the naked eye than the data embedded in the left-hand photo (Figure 1).*

## Engineering the Largest Solar Array in NYS



EE Advanced Technology Applications Research Professor **Mohammed Safiuddin** and EE student **Chris Llop** are working on the UB Energy Subcommittee (EC) to address energy-related elements of the American College and University Presidents Climate Commitment, and the SUNY Energy and Sustainability Policy (ESP), which seek to go “climate-neutral” through

significant reductions of campus greenhouse gas emissions and energy consumption.

Some of this work has been rewarded in the form of a recent New York Power Authority (NYPA) award to UB to fund the UB Solar Project, which will be the largest ground-mounted solar energy project to date in the state, and one of the largest on any campus in the US, according to the American Solar Energy Society. Its 5,000 solar panels will generate enough power for 735 campus apartments housing 2,000 students. Funded by NYPA, the project will reduce UB’s

carbon emissions by more than 500 metric tons per year. It is rated at 1.1 mega watts of electricity. NYPA will work with UB to provide site design, engineering, and construction services for the project, which will foster renewable energy education and research in the Engineering School.

NYS Governor Patterson also selected Safiuddin to serve on the Academic Working Group of a not-for-profit energy consortium that seeks to establish a Smart Grid Innovation Hub.



*Solar panel array proposed for UB's North Campus*

## ISE's Llinas Leading Group in Prestigious MURI Research

The ISE Department's Center for Multisource Information Fusion (CMIF) won a prestigious Multidisciplinary University Research Initiative (MURI) program from the US Air Force Office of Scientific Research for the research project "Unified Research on Network-based Hard/Soft Information Fusion."

MURI supports university research efforts intersecting more than one traditional science and engineering discipline, to hasten the transition of basic research findings to practical application.

This five-year, multi-million dollar research program will study technology for combining observational data from "hard" electromechanical sensors such as radar and imaging systems with "soft" observational data provided by human

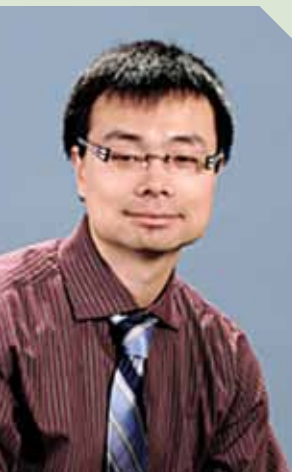
observers and web crawlers, to better understand evolving situations in counter-insurgency environments. The PI for the program is ISE Professor **\*James Llinas** (PhD IE '77), Executive Director of CMIF; the Co-PI is ISE Professor and Chair **Rakesh Nagi**. UB Engineering faculty participants are ISE Associate Professor **\*Ann Bisantz** (BS '89 MS '91 IE), CSE Professor **Stuart Shapiro**, and ISE Research Professor **Moises Sudit**. Participating university partners are Penn State University, Tennessee State University, and Iona College.

The award was received based on the important contribution the work is expected to produce, and the excellent track record of the investigators.

Attendees at the recent MURI conference in Buffalo; ISE Professor James Llinas center front, in blue jacket



## ISE's Zhuang Works toward Optimal Defender Strategies



ISE Assistant Professor **Jun Zhuang** is the principal investigator on "Homeland-Security Games with Non-strategic Players."

The research, supported by the US Department of Homeland Security through the Center for Risk and Economic Analysis of Terrorism Events (CREATE) and the Center for Human Performance and Risk Analysis (CHPRA), in part seeks optimal budget allocations for defense against attackers whose behavior may be non-strategic. Such an attacker may strike certain targets despite observed defense levels protecting it, whereas a strategic attacker will adapt strategies in response to the observed defensive investment.

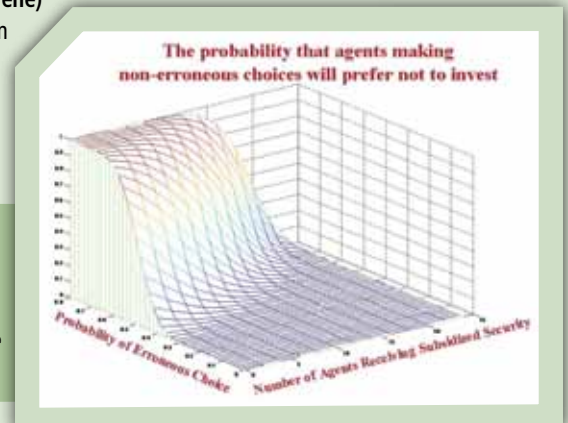
The research also investigates the effects that non-strategic terrorist actions may have on the course of action and the strategies that centralized (governmental) defense and homeland security agencies may choose, and develops methods and techniques for identifying optimal strategies in the face of non-strategic – irrational and/or behaviorally realistic – players.

Related to this research Zhuang, with his graduate students, **Mengran Hao** and **Shilan Jin**, published "Robustness of Optimal Defensive Resource Allocations in the Face of Less than Fully Rational Attackers," in *Proceedings of the 2009*

*Industrial Engineering Research Conference*, which finds that non-strategic behavior may significantly decrease the robustness of a defender's optimal resource allocation, if the allocation is optimized under the assumption that all attackers are fully strategic. As the probability for an attacker being non-strategic increases, the defender's optimal budget allocation eventually goes to cities considered to be pre-determined as chosen attack sites.

The research further suggests the study of the sensitivity of the percentage of non-strategic attackers upon the real defender payoffs, if the defender believes that the attacker is fully strategic, or fully non-strategic. Currently Zhuang and ISE graduate student **Xiaojun (Gene) Shan** are working in this direction.

Optimal budget allocation as a function of the probability for an attacker to be non-strategic



## Prasad Team: Nanorods against Drug Addiction



UB Institute for Lasers, Photonics and Biophotonics (ILPB)  
Executive Director  
**Paras N. Prasad**, SUNY Distinguished Professor of EE, Chemistry, Physics, and Medicine, led a research team of ILPB and Department of Medicine scientists who discovered a nanotechnology treatment involving a stable

nanoparticle that delivers short RNA molecules in the brain to "silence" DARPP-32, a brain protein that is a central "trigger" for the cascade of signals occurring in drug addiction.

Silencing of the DARPP-32 gene with certain kinds of ribonucleic acid (RNA), called short interfering RNA (siRNA), can inhibit production of this protein and thus, help prevent drug addiction.

The new approach may be a safe and efficient way to treating Parkinson's disease, cancer, and other neurologic and psychiatric disorders, which require certain drugs to be delivered to the brain.

The study was published in the online *Proceedings of the National Academy of Sciences* with Prasad and a host of co-authors.

Funding for this research was provided by the National Cancer Institute, the Kaleida Health Foundation, the John R. Oishei Foundation, the US Air Force Office of Scientific Research, and UB's New York State Center of Excellence in Bioinformatics and Life Sciences.

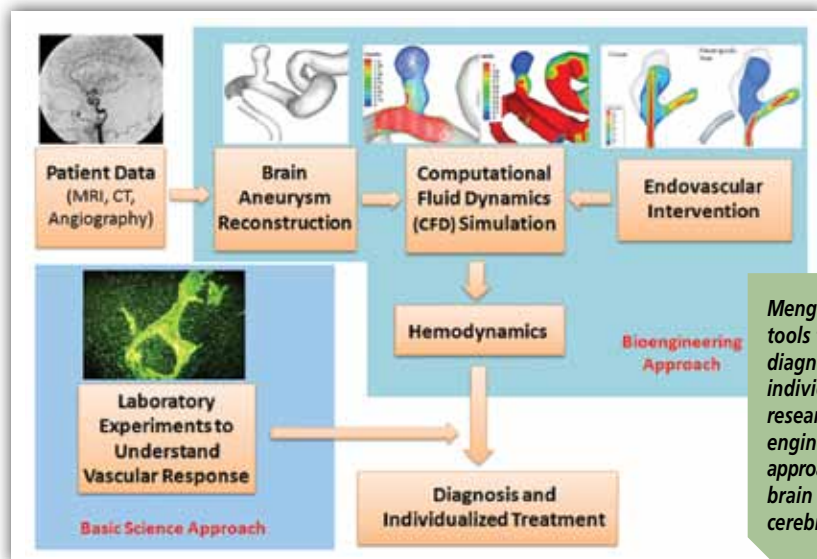
## MAE's Meng Receives Federal Grant to Study Brain Aneurysms

MAE Professor **Hui Meng** is Research Professor of Neurosurgery and Co-Director, Hemodynamics Division of the UB Toshiba Stroke Research Center. She recently received a federal grant to study the causes of brain aneurysms.

The study, funded by the Department of Health and Human Services, seeks better prevention, diagnosis, and treatment of aneurysms by understanding how blood flow causes degradation of arteries in the brain to initiate the aneurysm lesion, and what biological changes are important in this process.

Cerebral aneurysms (brain aneurysms) affect approximately six percent of the general population, often during the fifth and sixth decades of life. These lesions arise as focal out-pouchings of the wall of a cerebral artery and may continue to enlarge until rupture. Ruptured cerebral aneurysms cause subarachnoid hemorrhage (bleeding inside the brain), which is the most severe form of stroke, with half the patients dying within a week. Those who survive are usually left with permanent disability, putting a substantial financial burden on families and the healthcare system.

Meng's study seeks to elucidate the specific hemodynamic and biological mechanisms involved in initiating intracranial aneurysms in order to pave the way for improved diagnostic and prognostic capabilities and the development of more effective prevention strategies and less invasive therapies.



*Meng's research provides new tools to clinicians for better diagnosis, risk assessment and individualized treatment. Her research program combines engineering and biomedical approaches to better understand brain aneurysm and other cerebrovascular diseases.*

## NASA Names Hypersonic Science Centers



Cyrus Madnia

NASA's Aeronautics Research Mission Directorate and the Air Force Research Laboratory's Office of Scientific Research have designated three university and industry partners as national hypersonic science centers: the University of Virginia, Texas A&M University, and Teledyne Scientific & Imaging LLC.

The new centers will advance research in air-breathing propulsion, materials and structures, and boundary layer control for aircraft that can travel at Mach 5, or five times the speed of sound, and faster.

The University at Buffalo joins the University of Virginia team, designated the National Center for Hypersonic Combined Cycle Propulsion. Each center team will receive an annual multi-million dollar award.

For the next 5 years, UB will be the premier place for direct numerical simulation of high speed turbulent reacting flows. MAE Professor **Cyrus Madnia** leads the UB group.





*(L to R): Father and son Michael and David Cadigan, both IBM engineers, hold a 300mm silicon wafer produced in the IBM Silicon Fabricator in Fishkill, NY.*

## Father Son Give to New Building

Michael Cadigan (BS ME '79 and member of the Dean's Advisory Council) and his son, David Cadigan (BS ME '08), both Engineering alumni and both IBM employees, have given a generous gift to the School of Engineering that will name a conference room in the new building in their honor.

"I have been active with the School of Engineering for a number of years. When the new building discussion started, I was excited to join the University Team in Albany discussing the initial funding request. As the project progressed, the thought of providing a personal gift gave me and my son David an opportunity to participate in one of the most important projects for the future of the Engineering School. When I mentioned it to Dave, his response was, 'Heck, yeah!' We are both fortunate to be able to use the IBM matching grants program which made it possible for us to make the kind of impact we wanted by leveraging our personal resources with the match that IBM provides."

Michael Cadigan is General Manager, IBM Microelectronics Systems & Technology Group. David Cadigan is Memory Development Engineer, IBM STG Main Storage Development.

## New Video about School

To view the video presented at the Engineering North groundbreaking ceremony, please visit: [www.eng.buffalo.edu/newbuilding/gb/](http://www.eng.buffalo.edu/newbuilding/gb/). The video highlights the accomplishments of the School, its alumni, and students.

We thank our donors for their generosity.

Please visit:

[www.eng.buffalo.edu/alumniFriendsDonors/annualGivingReport/0809](http://www.eng.buffalo.edu/alumniFriendsDonors/annualGivingReport/0809) for a complete list of our July 1, 2008–June 30, 2009 donors.

We are pleased to say that the UB Engineering Annual Fund has enjoyed steady growth in the past few years.

Your financial support is critical to the mission of the School.

If you're energized by UB Engineering's excellence, and wish to participate in the School's dynamic and continued growth, please consider a gift to the School.

To make a contribution, please visit [http://www.eng.buffalo.edu/alumni\\_friends\\_donors.php](http://www.eng.buffalo.edu/alumni_friends_donors.php) and click on "Donate" in the left sidebar.

Development staff can be contacted anytime at 1.888.205.2609 or directly, below:

- **Tim Siderakis**, Asst. Dean & Sr. Director: [tsiderak@buffalo.edu](mailto:tsiderak@buffalo.edu), 716.645.0970
- **Michael Madonia**, Director: [mmadonia@buffalo.edu](mailto:mmadonia@buffalo.edu), 716.645.0969
- **Jenine Trzewieczynski**, Asst. Director: [jt87@buffalo.edu](mailto:jt87@buffalo.edu), 716.645.0968
- **Donna Linenfelser**, Development Associate: [dfelser@buffalo.edu](mailto:dfelser@buffalo.edu), 716-645-0997



*Development staff (l to r): Tim Siderakis, Donna Linenfelser, Michael Madonia, and Jenine Trzewieczynski*

Again, we thank all of our donors for their generosity.



*National Grid leader Steve Holliday (center, gesturing) at the roundtable*

*Photo: Nancy J. Parisi*

## CEO Energy Roundtable led by National Grid CEO

The Engineering School was instrumental in organizing a CEO Roundtable for National Grid Group, PLC's Chief Executive Officer Steve Holliday, who came to Buffalo to speak and discuss the future of energy and energy infrastructure in Western New York. The participants included prominent individuals, including presidents and high-ranking corporate officials from many of the region's leading companies, National Grid executives, and university principals.

The event was held at Jacobs Management Center, and arranged by the Engineering Development team, which acted as a liaison between National Grid and the companies. Special assistance came from **Dennis Elsenbeck** (M.Eng '96, Dean's Advisory Council Chair), National Grid's Regional Executive Director of Energy Solutions Services.



## National Grid Gift



(L to R): At National Grid's gift presentation: BEAM Board President, Arthur McKinnon, of Moog; National Grid CEO Steve Holliday; Dean Stenger; Buffalo Mayor Byron Brown; and UB President John Simpson. Photo: Nancy J. Parisi

*National Grid, an international energy delivery company, made a generous investment to the Engineering School for creating and enhancing programs that encourage Buffalo Public School students to pursue science and engineering education and careers.* Dennis Elsenbeck (M.Eng '96, Dean's Advisory Council Chair), Regional Executive Director of Energy Solutions Services of National Grid, was integral in coordinating the gift. The contribution will augment existing programs, including the award-winning educational enrichment program BEAM (Buffalo-area Engineering Awareness for Minorities), which prepares underrepresented students for such careers. The gift will also help launch new initiatives that introduce students in grades 6–12 to careers in high-demand engineering fields, like biomedical engineering and green energy. UB Engineering is a founding BEAM partner that houses its offices, as well as hosts BEAM programs like BEAM Trek (see BEAM articles in Pre-College section), summer and regular academic year programs like the Saturday Academies. Since its inception, BEAM has worked with more than 10,000 Western New York middle school and high school students, many of whom have been motivated to pursue science and engineering degrees.

## Greatbatch Honored with Vital Partner Award at UB Business Partners Day



Greatbatch Inc. CEO and President Thomas Hook (center) accepts the Vital Partner Award from UB President John Simpson (right) and UB Provost and Executive Vice President for Academic Affairs, CSE Professor Satish Tripathi (left).

Greatbatch Inc. was honored by UB with its 2009 Vital Partner Award, the highest honor the university gives a company, for its longstanding and enthusiastic support.

Greatbatch CEO and president since 2005, Thomas Hook, accepted the award for the local company, a worldwide leader in the design, development, and manufacture of critical components for implantable medical devices. The company was formed in 1970 by UB Engineering alumnus **Wilson Greatbatch** (MS EE '56, Hon. ScD '84), co-inventor of the first successful implanted pacemaker. Formed while Greatbatch was an assistant professor at UB, the company has grown to become an important local and global resource for implantable medical devices.

Wilson Greatbatch and the company have partnered with UB Engineering in many ways. Greatbatch continues to engage his innovative spirit and visits UB Engineering's ECI program each year to lecture on entrepreneurialism to ECI students, several of whom gain valuable work and professional experience at Greatbatch Inc. through the Co-op program. Two engineering students gained such experience at the company recently.

Greatbatch Inc. also employs numerous UB graduates and interns, and collaborates on research projects and volunteer and advisory committees; in addition, the company provides mentoring to UB students.

In 2007, Greatbatch Inc. donated funds to establish the Greatbatch Professorship in Power Sources Research. National Academy of Engineering (NAE) member **Esther Takeuchi**, one of just 100 women elected to NAE, and often cited as the woman awarded the most US patents, was named to the professorship with a joint appointment in the CBE and EE departments. Before joining UB Engineering, Takeuchi worked at Greatbatch Inc. for 22 years, most recently as chief scientist for the company.

Recently, the company held a ribbon cutting for its new building in Clarence, NY attended by Dean Harvey Stenger.

## Engineering Breaks New Ground

*Continued from page 3*



Architect's rendering of the new engineering building, courtesy of Perkins + Will



## BEAM Trek Discoveries



Seventy Western New York high school students competed to be "Buffalo's Best Engineering Team of the Future" during the Star Trek-themed "BEAM Trek," on UB's North Campus. The title was earned by Williamsville East.

BEAM, Buffalo-area Engineering Awareness for Minorities, encourages school-age students from underrepresented groups to pursue science, technology, engineering, and mathematics.

Students raced against the clock and each other to perform tasks like: building a starship landing platform capable of resisting a catastrophic seismic event (when tested on a mini-shake table); walking a robot (using trigonometry); and running a toy car on environmentally friendly fuels. The event garnered national media attention.

Participating students came from BEAM's Saturday Academy; Buffalo Academy of the Sacred Heart; East High; Hutch Tech; Nardin Academy; Nichols School; Orchard Park; UB Science & Technology Enrichment Program; West Seneca East; and Williamsville East.



BEAM's Tyra Johnson (l) and Marilyn Helenbrook (r)

## UB Engineering Students Inspire Younger Grades to Explore



**Bradley Cheetham** (BS '09 AE & ME), **Jake Joyce** (CS undergraduate), and **Richard Linares** (BS '09 AE) prepared and presented Inspiration from Exploration™, which engaged 250 inner city middle school students at Buffalo Public School 80 with a multimedia presentation on space exploration that showed parallels between past explorers, ranging from Lewis & Clark to the Space Shuttle program, to future explorers – the students themselves.

The program challenged students with the motto "Dream Big, Ask for Help, and Never Give Up," and to think about creating their own future through the inspiring theme of space exploration, as motivation to pursue challenging courses in science, technology, engineering, and math.

## BEAM Sponsorship

BEAM is funded in part by its sponsors, through several events, including the recent Twelfth Annual BEAM Golf Tournament and Fundraiser, held in honor of LPCiminelli's Tyra Johnson.

The BEAM Trek @ Night Fundraiser was a dinner event held at the Buffalo Museum of Science that featured Star Trek actors Robin Curtis and J.G. Hertzler as guests, while BEAM Trek itself involved 14 companies and organizations, each of which sponsored at least one team in the event. For more about BEAM Trek, please see article on this page.

Individuals wishing to learn more about BEAM sponsorship opportunities, please contact BEAM Executive Director \***Marilyn Helenbrook** at 716-645-3066, or [helenbrk@eng.buffalo.edu](mailto:helenbrk@eng.buffalo.edu).

## WNY Cyber Security Workshop Outreach Program Expanded, Thanks to Time Warner

A two-year old program targeted to educating middle- and high-school students in cyber security, cyber crimes, and information assurance has been expanded, thanks to a partnership with Time Warner Cable, who undertook the funding as a National Science Foundation grant ended. Time Warner will fund the program for the next three years.

As the Internet grows steadily in size and convenience, online crime has expanded into an illegal multi-billion dollar industry. The outreach intends to raise awareness of cyber security to help in the fight against such crimes.

The program, carried out in Buffalo middle and high schools, features live demonstrations of cyber security equipment, hands-on activities, and basic lessons on various topics like data encryption, wireless security, digital forensics, firewalls, anti-virus tools and intrusion detection systems.

Professor of Management and CSE Adjunct Professor, **Hejamadi Rao**, said that thousands of students are participating in the program. He is working in this area with CSE Professor **Shambu Upadhyaya** and Geography Professor **Sharmistha Bagchi-Sen**.

## 1970s

**Uday B. Desai**, MS EE '76, is director of the Indian Institute of Technology, Hyderabad. He earned a PhD from Johns Hopkins University, and since 1987, was professor in the EE department at the Indian Institute of Technology, Bombay, India.



Dennis M. Kelleher

\***Dennis M. Kelleher**, BS CIE '78, P.E., is senior vice president and director of Water Resources at H2M, an engineering, architectural, planning, and environmental services firm. He was recently honored by the American Water Works Association's (AWWA) NY Section with its annual John M. Diven Award for his outstanding service. He has been an active AWWA member since 1986 and has been at H2M since 1978.

**Steve Poland**, MS CIE '76, created "BarCamp Buffalo," a networking event for Buffalo-area IT professionals.



Christopher Scolese

**Christopher Scolese**, BS EE '78, was acting as the lead NASA Administrator from the end of January through mid-July of this year. Scolese has been NASA Associate Administrator since 2007. For more, see NASA story in Alumni section.

**Richard Zynda**, PE, BS CIE '70, was named storm water pollution prevention plan manager and project manager of SJB Services, Empire Geo Services, Buffalo, NY.

## 1980s



Alan Commike

**Alan Commike**, BS '89 MS '91 CS, is now chief technology officer of Quantum3D. He holds a patent related to his work in high performance visualization.

**Javaid Laghari**, PhD EE '86, is now a Pakistani Senator and President of the Institute of Science and Technology in Karachi, Pakistan.



Donald Pillittere

**Donald Pillittere**, BS EE '81, wrote a humorous text entitled *Are We There Yet? Diary of a Project Manager*, available from Multi-Media Publications Inc. Pillittere launches major products for companies. He stated that his *alma mater* nurtured the ability to simplify complex issues and to continually "work the problem."



Robert Radley

**Robert Radley**, PE, BS CIE '80, is president of FRA Engineering & Architecture, PC, in Rochester and Buffalo, NY. He was recently profiled in the "Owners, Developers, and Managers" section of the *New York Real Estate Journal*.



David Riklan

**David Riklan**, BS CE '83, recently published *101 Great Ways to Improve Your Life: Volume 2*. He has 20 years of experience in marketing, management, and training for companies including Hewlett-Packard and The Memory Training Institute.

## 1990s



Brian Brockway

**Brian Brockway**, BS AE '90, is vice president of product marketing for CommVault, which provides solutions for the protection and management of electronic data. Brockway earned an MBA from NYU's Stern Business School.

**Timothy Cooke**, BS '97 MEng '04 CIE, was promoted to associate vice president of Cannon Design, an architectural, engineering and planning firm. Cooke, a member of the firm's Construction Services team, joined the firm in 2000.

**Mark DiPasquale**, BS CIE '97, is now senior project engineer in the utility solutions group at Conestoga-Rovers and Associates, a Buffalo-based environmental engineering firm. DiPasquale previously was with URS Corp. and the US Army Corps of Engineers.

**Keith Harlock**, BS CIE '90, of PB Americas, was newly elected to a three-year term as a director for the Engineering Society of Buffalo.

**Andrew Hayes**, BS ME '93, was named engineering manager for Hays Fluid Controls. Hayes also holds an MS in ME from Rochester Institute of Technology.

**Shahram Hejazi**, PhD EE '90, has joined the Alpha Innotech Board of Directors. He is executive-in-residence at BioAdvance, a venture capital organization focused on life sciences, diagnostics and biopharmaceuticals. Hejazi had been president of the Molecular Imaging Business Unit of Carestream Health; president and CEO of Zargis Medical Corp.; and held a leadership position at Seimens Corporate Research. He is an FDA Industry Advisory Panel Member for Molecular and Clinical Genetic Devices, and an Advisory Board Member for Fox Chase Cancer Center, Penn.

**Joseph Kessler**, BS '93 ME '00 EE, a senior engineer at the Niagara Power Project, is now the New York Power Authority's WNY regional manager, the top staff job at the Lewiston-based hydroelectric facility. He joined the Niagara Power Project staff in 2001.

**John LeRoy**, BS ME '97, a shareholder with Brooks Kushman P.C., was named an "Up & Coming Lawyer" by *Michigan Lawyers Weekly*, as announced in *Engineering Business Journal*. LeRoy earned his JD from University of Dayton, Ohio, and his MS in EE from University of Michigan.

**Pawan Vora**, MS PhD '91 '94 IE, published *Web Application Design Patterns (Interactive Technologies)*. He is the founder and president of Alpha Cube, Inc., a user experience design consultancy of software and web-based applications.

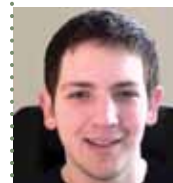


Andreas Polycarpou

**Andreas A. Polycarpou**, BS '90 MS '92 PhD '94 ME, recently became Kritzer Faculty Scholar in the department of Mechanical Science and Engineering at University of Illinois, Urbana-Champaign. Polycarpou is a tribologist who studies friction, adhesion, wear, and the lubrication of interacting surfaces. Among his recent honors and awards, he is an ASME Fellow, and was a Fulbright Scholar in Cyprus during 2007.

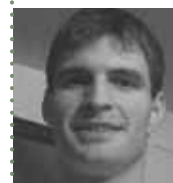
**Steven SanFilippo**, BS '94 MS '96 ME, of Avox Systems, was named treasurer of the Engineering Society of Buffalo for 2008-2009.

## 2000s



Brian Anger

**Brian Anger**, BS '03 MS '04 CompE, is a software development engineer in test at Microsoft, working on the next version of Windows Media Player. Before joining Microsoft, he was an intern at Lockheed Martin and General Dynamics.



Frank Centinello

**Frank Centinello**, BS '04 MS '07 AE, was part of an Arizona State University team that created and tested a moon-bound camera attached to NASA's Lunar Reconnaissance Orbiter. For more, see NASA story in Alumni section.



Scott Ferguson

**Scott Ferguson**, BS AE & ME '02, MS ME '04, PhD AE '08, has joined the MAE Department at North Carolina State University's College of Engineering, as an Assistant Professor. His research interests include design theory, reconfigurability, and multidisciplinary/multiobjective optimization.



Jeremy Gworek

**Jeremy Gworek**, BS '07 MS '09 CIE, was named an assistant engineer in the Facilities and Energy Division of the engineering firm Clough, Harbour, and Associates' Buffalo office.

**Chris Haigney**, BS CSE '07, is a software engineer for Welch Allyn, in Skaneateles Falls, NY. Haigney had been with Lockheed Martin prior to joining Welch Allyn.



Peter Jay

**Peter Jay**, BS '04 ME '05 CE, is now an associate in Connolly, Bove, Lodge & Hutz LLP's Intellectual Property Group, in Wilmington, Del. He represents clients in a variety of areas, including patent litigation, patent prosecution and counseling in the chemical and pharmaceutical fields. He also received a JD from UB.



Michelle Rhodes

\***Michelle Rhodes**, BS CE '99, MS CIE '07, a US Army Corps of Engineers environmental engineer, Buffalo District, has been named the Corps' national "Journeyman of the Year," for superb advocacy in recruiting, developing, and maintaining a world-class workforce for the Corps. Her primary job is project engineer for the Niagara Falls Storage Site environmental project under the Formerly Utilized Sites Remedial Action Program. She is in her tenth year with the Corps. Rhodes is on the Board of Directors of the Engineering Alumni Association (EAA), and its selection committees for the annual Engineer of the Year and EAA Scholarship Awards.

**Jeremy Watts**, BS CIE '06, of the Army Corps of Engineers, was named secretary of the Engineering Society of Buffalo.

**Rebecca Wightman**, BS CIE '00, of William Schutt and Associates, was named vice president of the Engineering Society of Buffalo.

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Please visit  
[www.eng.buffalo.edu](http://www.eng.buffalo.edu)  
to learn about School events.

## Abbreviations Used in the *Buffalo Engineer*

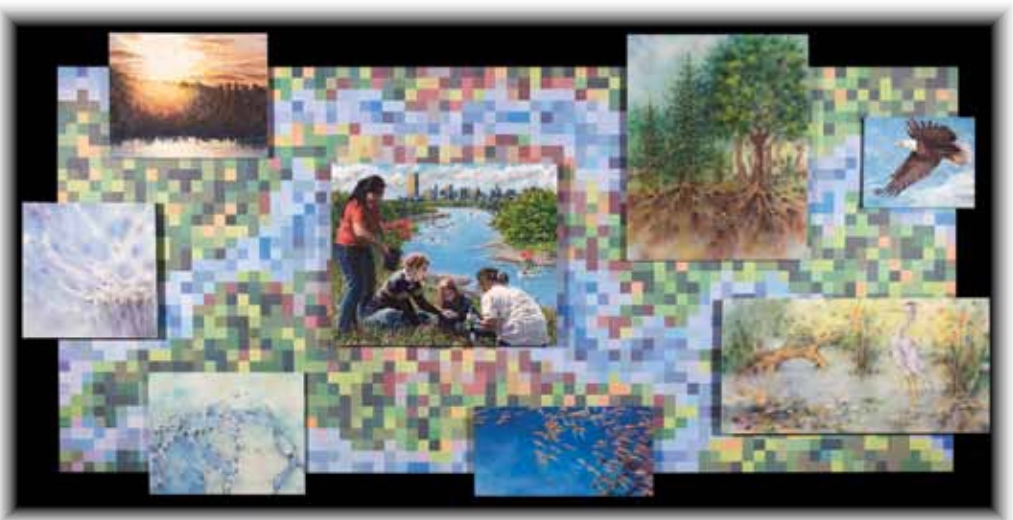
### Departments

BME, Biomedical Engineering  
CBE, Chemical and Biological Engineering  
CSEE, Civil, Structural and Environmental  
Engineering  
CSE, Computer Science and Engineering  
EE, Electrical Engineering  
ISE, Industrial and Systems Engineering  
MAE, Mechanical and Aerospace Engineering

### Degrees

AE, Aerospace Engineering  
CE, Chemical Engineering  
CIE, Civil Engineering  
CompE, Computer Engineering  
CS, Computer Science  
EE, Electrical Engineering  
EnvE, Environmental Engineering  
ES, Engineering Science  
IE, Industrial Engineering  
ME, Mechanical Engineering

\*denotes dues-paying Alumni Association  
members



Aspects of the Ecosystem Restoration through Interdisciplinary Exchange (ERIE) program have been illustrated in a door-sized, three-dimensional painting, "Streams of Thought." Four panels, showing ways that we interact with ecosystems, are attached to the background, which depicts the complexity of interdependent ecosystems through an aerial perspective of streams moving through the landscape.

Artists Gary Wolfe and Priscilla Bowen collaborated, mirroring the ERIE program's collaborations with seven academic departments at UB and other institutions. Directed by CSEE Professor **Alan Rabideau**, the NSF-funded IGERT doctoral training program was launched in 2007 to train environmental specialists in the social and policy implications of their work, as well as its scientific aspects.

A recent reception unveiled the painting, whose permanent home is 202 Jarvis Hall.

This is a publication of the School of Engineering and Applied Sciences Office of External Affairs and the Engineering Alumni Association, University at Buffalo. Anyone wishing more information on the articles contained herein may contact External Affairs: 716.645.0966; 716.645.2495 (fax); or [ub-seas@buffalo.edu](mailto:ub-seas@buffalo.edu). Circulation: 24,000. To save paper and receive **Buffalo Engineer** electronically, please visit [www.buffalo.edu/newsletters/engineering/](http://www.buffalo.edu/newsletters/engineering/) and click "subscribe," in the left sidebar. Then, send a message with the subject line "Unsubscribe" to: [steckler@buffalo.edu](mailto:steckler@buffalo.edu), to remove your name from the paper circulation list. Please indicate your name and address.

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