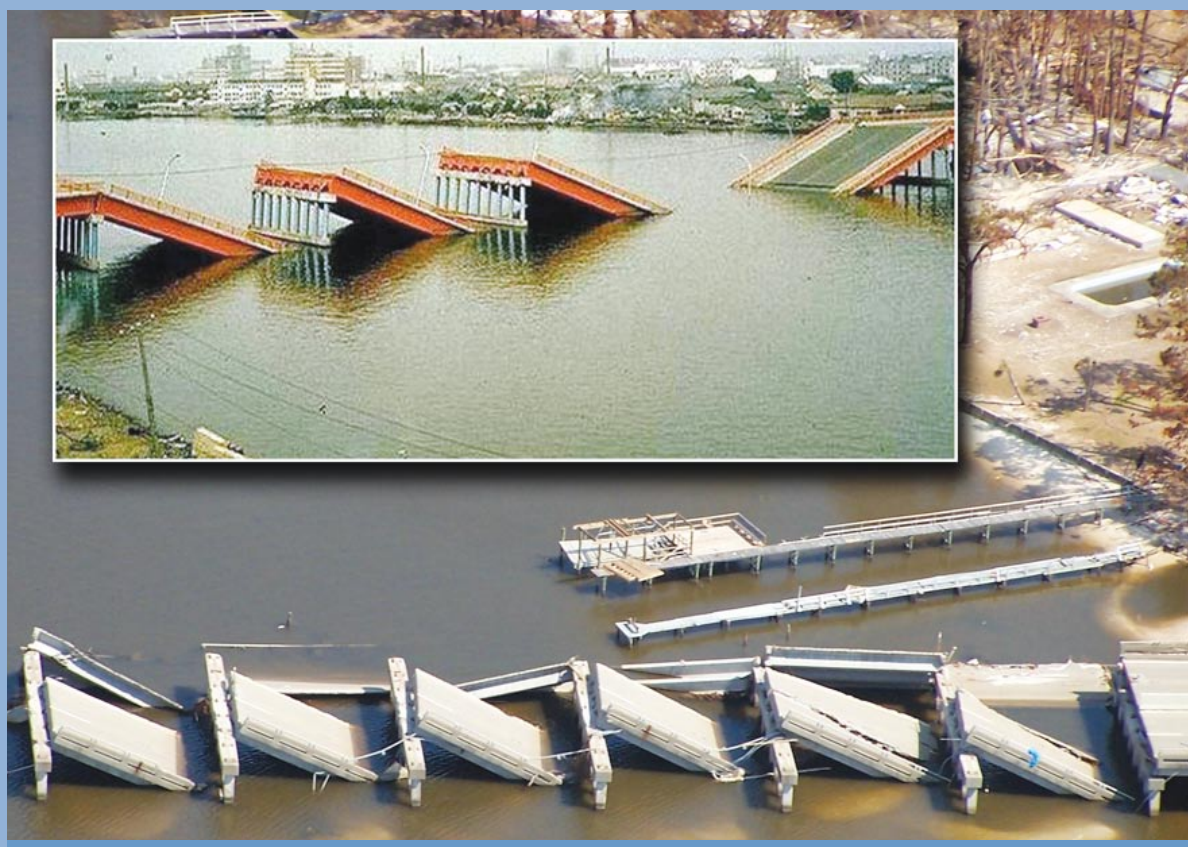
BUFFALOENGINEER

SPRING 2009

National Awards
- BEAM's EPIC Award
- CEISARE's NSF CyberService Award
- NSF CAREER Winners Rudra and Zhong (CSE)

Students
- AE's Linares Top Participant
- 3 from ISE Win Quality Awards
- AIAA Kite Team's High Feat

Gifts
- Bird Technologies Group
- Carleton Technologies
- The Lynches



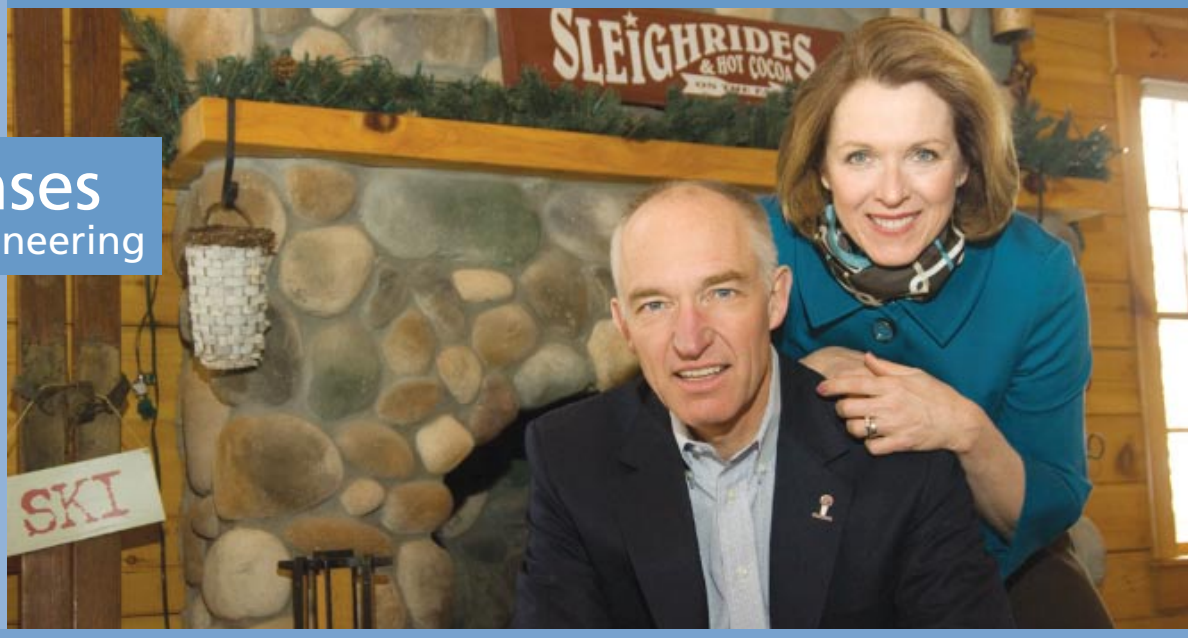
MCEER Defines Resilience

Filiatrault, New Leader

CSEE's Transportation Focus Enhances MCEER

The Stevenses

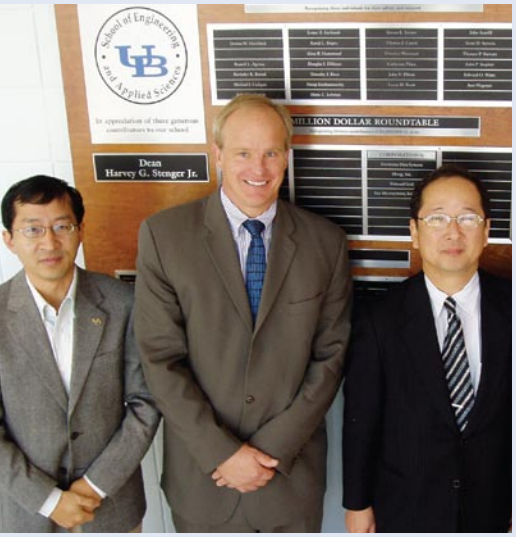
Support UB Engineering



School of Engineering and Applied Sciences

University at Buffalo *The State University of New York*

Message from the Dean:



Dean Stenger *(middle) with Hirohisa Gambe (right) and CSE Professor* ***Chunming Qiao*** *(left)*

This year, the School of Engineering is developing novel approaches for working in an ever-changing and challenging research and education environment. In the process, the School is experiencing growth and building on its past successes.

We thank all of UB Engineering's supporters for their most recent generous donations, which help us to grow and answer these challenges, especially those from **Scott Stevens** (BS CIE '79) and from **Tom Lynch** (BS CE '76). For articles, see pages 3 and 17, respectively.

The School of Engineering's largest research center, MCEER, originally a national center of excellence in earthquake engineering, is growing to encompass research applications in other extreme events under new leadership by **Andre Filiatrault**, CSEE Professor and SEESL Director. A new transportation engineering program available through the CSEE department will also help to broaden research application areas for MCEER.

Additionally, the School will grow through a new NSF Federal CyberService Award granted to UB's Center of Excellence in Information Systems Assurance Research and Education (CEISARE), headed by CSE Professor **Shambhu Upadhyaya**. The award will fund students in cybersecurity, an area of interest to national security.

We also look forward with great anticipation to a new program in Biomedical Engineering (BME), shared with the School of Medicine; and to what will be the biggest physical change for the School – the groundbreaking of the new CSE and EE building.

Looking back, 2008 proved to be an outstanding year for our School, in many respects. UB Engineering received its largest gift ever, from the John R. Oishei Foundation, to fund BME; and we received our largest gift ever from an individual donor – from **Jack Davis** (BS IE '55), naming the clean room of the new building. A steady increase in research expenditures since 2003 was represented in our highest total yet – $62.5 million. As for our student population, the fall 2008 entering graduate student class was the largest in the school's history; and entering freshmen had the highest SAT scores ever. Our School welcomed Dr. Hirohisa Gambe, president of Network Systems Laboratories, Fujitsu Laboratories (Japan), who visited CSE Professor **Chunming Qiao** to discuss research of mutual interest. Gambe presented a lecture entitled "Recent Topics in the Information and Communication Technology World," on related environmental problems and research and development. Gambe is a senior member of IEEE and he is a fellow of the Institute of Electronics, Information, and Communcation Engineers (Japan).

Adding to Engineering's accomplishments in 2008, we congratulate BEAM and its Executive Director **Marilyn Helenbrook**, who accepted a prestigious U.S. Department of Labor Exemplary Public Interest Contribution (EPIC) Award from Labor Secretary Elaine L. Chao, on behalf of the organization.

We will build on the successes of the past and welcome the challenges that come with growth. And again, we thank those who support UB Engineering – our donors, alumni, friends.

Sincerely,

Harvey Stenger

Dean Harvey G. Stenger Jr.

Inside This Issue:

On the Cover:

MCEER investigations of New York's World Trade Center complex following the attacks of September 11, 2001 served as a catalyst for the center's transition to leverage earthquake engineering knowledge to enhance resilience against other hazards.

The bridge photos depict similarities in earthquake damage to a bridge in Japan's 1966 Niigata earthquake (inset), and storm surge damage to a Gulf Coast bridge following 2005's Hurricane Katrina.

Cover photo credits:
Bridge collapse: J.S. O'Connor/MCEER
Inset: NOAA/NGDC
The Stevenses: Mark Schmidt

Departmental Research Highlights:

MCEER: Defining Resilience for Extreme Events

Since its inception in 1986, UB's earthquake engineering center has achieved global stature. It began as the National Center for Earthquake Engineering Research (NCEER), when it was awarded National Science Foundation (NSF) funding as a national center of excellence, directed by **Robert L. Ketter**. In 1997, it became the Multidisciplinary Center for Earthquake Engineering Research (MCEER), one of three such NSF-funded earthquake engineering research centers. Now, with an emphasis on earthquakes as well as other multiple hazards, the center is simply called MCEER.

Taylor Devices' toggle brace installed in the Yerba-Buena Tower in San Francisco is a structural damper configuration developed with MCEER.

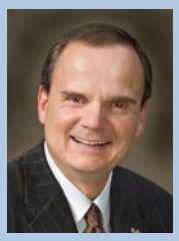
As NCEER, the center pioneered the revolutionary concept of seismic damping, or shock-absorption, for buildings (see toggle brace photo). This development was made possible through synergy with industry, in this case, Taylor Devices of North Tonawanda, in adapting shock absorbing and isolation products – originally developed for defense and aeronautic applications – for use in the protection of buildings and bridges in earthquake-prone areas.

The center was also the first to integrate social science research with earthquake engineering studies, and consequently became known as the Multidisciplinary Center for Earthquake Engineering Research. MCEER was the only center using this approach, by which researchers incorporated economic and social considerations, for example, cost-benefit analyses, into their development of advanced engineering methods for infrastructure protection and emergency planning.

MCEER has also focused on solutions to better ensure operation of lifeline systems (power, water and highways) and hospital services, immediately after a disaster. Center researchers have devised a novel framework to quantify "disaster resilience," so that disaster-stricken areas can better withstand and more readily rebound from natural disasters and other extreme events. MCEER's Resilience concept incorporates "four R's": **Robustness** – ability to survive an impact, and to minimize loss when an extreme event occurs; **Redundancy** – secondary roads, hospitals, bridges, etc., which can absorb the capacity from damaged or disrupted primary systems; **Resourcefulness** – the capability to mobilize resources and react accordingly to minimize damage and disruption; and the **Rapidity** with which recovery can be realized.

Continued on page 4

Filiatrault Elected MCEER Director



CSEE Professor **Andre Filiatrault** has been elected to a two-year term as MCEER director, succeeding CSEE Professor **Michel Bruneau**.

For 20 years, **Filiatrault**'s work has led to improved seismic design standards, through testing of structural and nonstructural building components. With colleagues, Filiatrault developed the world's first and only Nonstructural Components Simulator, an apparatus for subjecting the costly equipment and systems found in critical facilities to vibrations they might experience during a strong quake. The pioneering research helps institutions comply with new legislation requiring facilities like hospitals to remain functional after a quake.

Since 2007, Filiatrault has been director of UB's Structural Engineering and Earthquake Simulation Laboratory (SEESL), which houses twin, movable shake tables capable of real-time seismic testing of large-scale structures. In 2006, he and colleagues from other universities

Continued on page 6

MCEER's Successes

Established by NSF, MCEER's principal sponsors over the past two decades have been the National Science Foundation (NSF); the State of New York, and the Federal Highway Administration (FHWA). Additional support comes from the Federal Emergency Management Agency (FEMA), other state governments, academic institutions, foreign governments, and private industry.

Within MCEER's strategic program, UB Civil, Structural and Environmental Engineering (CSEE) faculty and researchers from other universities have engaged in projects to enhance our nation's resilience against natural and manmade hazards. This successful track record provides a foundation for the UB2020 strategic strength on "Extreme Events: Mitigation and Response." MCEER's experience has given leadership and has resulted in investment, which has provided momentum to the development of this strategic strength. Major MCEER contributions include:

- NSF-sponsored research to improve seismic resilience of lifelines, hospitals, and response and recovery;

Continued on page 6

Generous DAC Member Supports New Building

Scott Stevens (BS CIE '79), a licensed, structural engineer and a director on the Concrete Reinforcing Steel Institute's board, works on a grand scale through his successful concrete reinforcing steel business, Dimension Fabricators, Inc. (Schenectady, N.Y.). Dimensions' nearly 40 employees create spiral cylinders, rebar, cages, threading, and coupling for bridges, commercial buildings, and tunnels. The company has been a welcome presence in the Mohawk River region for over 20 years.

"I was one of the luckier ones," he says. "I majored in civil engineering and stayed with it." He learned early – while building homes in high school – that he liked to create things and he enjoyed the outdoors.

Stevens praised his educational experience. "At UB I was taught how to learn; how to approach a problem and find a solution," he said. "I received a good education for a good price."

Scott's wife, Coleen, is also a UB alum (Physical Therapy '79). Together they have three sons, all interested in civil engineering. Giving back is important to the Stevenses, supporters of many UB programs including athletics; the libraries; and the School of Public Health and Health Professions.

An example of the work of Dimensions Fabricators, Inc.

The couple has given faithfully to the School of Engineering, and this year Scott, a member of the Engineering Dean's Advisory Council (DAC), recognized and answered the call to support the School's new building initiative. The Stevenses pledge of a generous five-year gift will name a space in the new building, an expression of appreciation for their education.

Dean Harvey J. Stenger Jr. said, "We are grateful for the generosity of alumni who recognize the importance of the new building to the school's growth plan. Scott and Coleen are directly helping us to create a solid foundation for the School and for UB."

Duchscherer: UBEAA 2009 Engineer of the Year

David Duchscherer, P.E., is president of Wendel Duchscherer Architects and Engineers, Amherst, N.Y., a nationally recognized specialist in public transportation facility design and planning. He directs the firm's public transportation group, and has been a professional engineer for nearly 40 years, licensed in 17 states.The award was made during UB Engineering's 2009 Engineers Week celebrations.

*(L to R): Presentation of the award, with **Brian Peer**, **David Duchscherer**, **Michelle Rhodes**, **Michael Dray**, and **Dean Stenger**.*

David comes from an engineering heritage; his father, Philip, was named Engineering Manager of the Year in 1981 by the Erie-Niagara Chapter of the New York State Society of Professional Engineers (NYSSPE). In 2007, David earned the Engineer of the Year Award presented by the Erie-Niagara Chapter of the NYSSPE.

In 30 years, the Duchscherer firm has designed about 60 bus maintenance and storage facilities and multi-modal transit terminals nationally. Locally, the firm did the South Campus Light Rail Rapid Transit Station and numerous regional athletic facilities, including the impressive World University Games Stadium on UB's Amherst Campus.

The firm serves 22 local municipalities with a broad spectrum of services, including energy, survey and mapping, parks and recreation, water systems, and highway construction groups.

UB Engineering Alumni Association (UBEAA) board members **Brian Peer** (BS CE '05) and **Michelle Rhodes** (BS CE '99, MS CIE'07) were on the selection committee, which was chaired by **Michael Dray** (BS CE '04). **Dean Stenger** presented the award with the committee.

The award, presented annually by UBEAA, goes to a UB Engineering alum or closely affiliated person with distinguishing activities in alumni, community, business, and professional affairs.

UB Engineering Alums Play Role in Prestigious Award to Greatbatch Alden Plant

UB Engineering alums helped Greatbatch's Alden Plant to win *Industry Week's* 2008 Best Plant Award, which goes to the top 10 plants in the U.S., Canada, and Mexico that are on the leading edge of increasing competitiveness, enhancing customer satisfaction, and creating stimulating and rewarding work environments.

Greatbatch is a developer and manufacturer of critical products used in medical devices for the cardiac rhythm management, neuromodulation, vascular, orthopedic, and interventional radiology markets.

*Seated (L to R): **Peter McLaughlin** (BS IE '99), Quality Engineering Manager; **Katherine Geldard** (BS IE '06), Industrial Engineer. Standing (L to R): **Jessyca (Nadler) Gajewski** (BS IE '97), Continuous Improvement and Materials Manager; **Andrea Morris** (BS EE '04), Reliability Engineer, **Sam Graziano** (BS ME '91), Battery Manufacturing Engineering Manager; **Kathleen (McCusker) O'Shei** (BS CE '92), Environmental, Health, and Safety Manager. Not pictured: **Ryan Carlson** (BS IE '98), Manufacturing Engineer.*

UB Engineering Alumni Association Board of Directors

James D. Boyle President
Joe S. Frandina Vice President
Stephen P. Buechi, Treasurer
Peter Buechi
Michael J. Dray, Secretary
Jeffrey Dudek
Stephen J. Golyski
John T. Kociela
Anthony S. Markut
Brian J. Peer
Michelle C. Rhodes
Richard A. Rink

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
415 Bonner Hall, (716) 645-0971
dcmillar@eng.buffalo.edu
www.eng-intern.buffalo.edu

MCEER: Defining Resilience

Continued from page 3

As MCEER goes forward, it will apply its Resilience framework to other types of disasters, continuing to expand its focus on multi-hazard events for the nation and for New York State, according to MCEER Director **Andre Filiatrault**. This is timely, as the nation's infrastructure is aging and critical roads and bridges require repair and re-building. It is also important as seismic design standards for new buildings grow more stringent; and in the face of other extreme events caused by nature (*e.g.,* hurricanes) and by man (*e.g.,* terrorism). (See cover photos.)

"Through the vision and leadership of its past directors, **George Lee** and **Michel Bruneau**, MCEER has redefined the field of multiple hazard engineering through the concept of disaster resilience," Filiatrault said. "It is critical for the nation's communities to harden their infrastructure, to make them more resilient against potential hazards. Many technologies that MCEER has developed for earthquake engineering applications will be applicable to other hazards as well."

Alums Soaring

Walter Gordon (BS MS AE '80 &'93) and **Greg Steuer** (BS AE '81), both US Air Force Reserve colonels, have been identified as qualified by the 2008 Air Force Reserve Brigadier General Qualification Board and approved by the Secretary of the Air Force as eligible for promotion to the rank of Reserve brigadier general.

UB Engineering Alumni Association (UBEAA) Tailgate

The UBEAA annual tailgate party was enjoyed by alumni and friends, students, faculty, staff, and visitors. This year's football game saw the UB Bulls win a dramatic overtime victory over Army. The event was organized by UBEAA's **Rick Rink** (BS CIE '80) and **Jim Boyle** (BS CIE '78), and Roman Figler of the Society of American Military Engineers, and supported by **Deanie Hedrick**, UB Engineering Dean's Office.

*(L to R): **Bill Swenson**, UBEAA coordinator emeritus; **Daniel Muffoletto**, Tau Beta Pi president; **Mark Tjersland**, Tau Beta Pi member; **Frank Notaro** (BS ME '57), 1989 Engineer of the Year recipient*

*(L to R): **Jim Boyle**, EAA president; **Rick Rink**, EAA board member*

In memoriam – Thomas M. Hajduk (BS EE '80), worked for Moog Inc., specializing in calibrating instruments in the heating-treating process. Hajduk was a well-rounded individual with interests in music, birding, and wildlife.

UB Engineering joins the community in mourning those who lost their lives in the crash of Continental Connection flight 3407. Among the victims was UB Engineering alumnus **Darren Tolsma Sr.** (BS EE '85). We extend our sympathies to all of the families of the accident victims.

Abbreviations Used in UB Engineering News

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

Other

ASCE, American Society of Civil Engineers
AIAA, American Institute of Aeronautics and Astronautics
BEAM, Buffalo-area Engineering Awareness for Minorities
CESAIRE, UB's Center of Excellence in Information Systems Assurance Research and Education
COE, UB's NYS Center of Excellence in Bioinformatics and Life Sciences
CUBS, Center for Unified Biometrics and Sensors
DAC, Dean's Advisory Council
IEEE, Institute of Electrical and Electronics Engineers
MCEER, Internationally recognized centers in earthquake engineering and extreme events
NASA, National Aeronautics and Space Administration
NEES, NSF's George E. Brown Jr. Network for Earthquake Engineering Simulation
NIH, National Institutes of Health
NSF, National Science Foundation
NYSCEDII, New York State Center for Engineering Design and Industrial Innovation
SEESL, Structural Engineering and Earthquake Simulation Laboratory
SENS, Science and Engineering Node Services

UB Career Services: An Alumni Resource

UB Career Services is here to assist alumni who are looking for a job or a promotion, or those seeking to hire employees both in and outside of the Western New York area market.

Among the comprehensive job resources available, alumni may log in to the data system on the Career Services website to find or post positions.

Seeking high-quality job candidates?

UB Engineering graduates have an academic advantage, with experience in applying concepts to real-world challenges. To arrange on-campus interviews or showcase your organization, e-mail **jobs@buffalo.edu**.

Have advice for current college students?

The **Meet-a-Mentor** program is a win-win situation for students and alumni. Mentors determine their own level of involvement in the program, while students tap alum's for insight about their industry, the work world, and job searching. Contact Megan Pendergast at **mrp6@buffalo.edu** to learn more.

Job hunting?

Additional resources available to engineering alumni include: résumé/cover letter critiques, job search and interviewing tips, access to on-line job postings, résumé referral, on-campus interviewing, and individual career counseling appointments. Visit the Career Services office in 259 Capen Hall to speak with a counselor, or call (716) 645-2231.

For more information about all of our programs, please visit:
www.ub-careers.buffalo.edu.

UB Engineering Proudly Remembers Pioneer Dorothy Grasz Price

Dorothy Price (BS IE '49), the Engineering School's first woman graduate, also received a bachelor's degree in secondary science education. She taught physics at Maryvale High School (Cheektowaga) from 1964 until her retirement in 1981.

Price received UB Engineering's first-ever Vital Partner Individual Award in 1999, commemorating the fiftieth anniversary of her graduation.

She advised female students with an aptitude for math and physics to strongly consider engineering, because of the flexibility of career choices that the field offers.

She is survived by her husband, Fritz; a son, James Moynihan; two stepdaughters, Deborah Flarity and Wendy Myers; and a stepson, Daniel Price.

*Then-Dean **Mark H. Karwan** presents Dorothy Gracz Price with the Vital Partner Award, 1999.*

In Memoriam

UB Engineering offers its sincere sympathy to family, friends, and classmates of those alumnie who have recentlypassed away.

Bruce F. Aichinger, BS ME '58
Brian L. Badger, BS ME '92
Elizabeth A. Barry, BS IE '87
Steven H. Brooks, BS IE '50
Richard J. Costello, MS ME '50
Leroy B. Daniels, BS EE '51
Louis J. Detine, BS ME '49
David E. Dietrich, MS '70, PhD CIE '73
Raymond E. Eldridge, MS ME '69
Nicholas P. Efthymiou, BS EE '84
Howard C. Fish, BS ME '50
George A. Giotis, BS IE '49
Glenn F. Guerin, BS IE '53
Lawrence E. Hochreiter, BS ME '63
Henry Kardas, BS ME '53
Michael E. Kraft, MS CIE '87
Earl T. Leverentz Jr., BS IE '52
William H. Meyer, BS ME '51
Orland H. Oswald, BS EE '51
Martin J. Pleuthner, BS ME '49
Gerald Rein, BS ME '50
David P. Rosten, BS EE '89
Stephen E. Rubach, BS ME '65
Donald A. Uhrich, BS IE '61
Russell D. Villarini, BS ME '90
Benjamin F. Weedon Jr., BS ME '50
Richard G. Wicks, BS CIE '71

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** 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.

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 own 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

MCEER's Successes *Continued from page 3*

- An FHWA project on the seismic design and retrofit of bridges and highways, led by SUNY Distinguished Professor **George Lee**;
- CSEE Professor **Andrei Reinhorn**'s project to enhance the resilience of electrical power systems during earthquakes (funded by the California Energy Commission, and Oregon's Bonneville Power Administration, with numerous external strategic partnerships);
- MCEER-deployed reconnaissance teams to disaster stricken areas, such as the World Trade Center in New York City, after 9/11/2001; the U.S. Gulf Coast after Hurricanes Katrina and Gustav; areas affected by the South Asian Tsunami of 2004; and earthquakes in Pisco, Peru (2007), Wenchuan, China (2008); and Bam, Iran (2003), to name just a few.
- A joint initiative with the Pacific Earthquake Engineering Research Center of the University of California, Berkeley, to develop unified design guidelines for bridge bearings and seismic isolation bearings, funded by the California Department of Transportation and led by CSEE Professor **Michael Constantinou.**
- The development and commemoration of the world's only Nonstructural Components Simulator at UB, to study the impacts of earthquakes on building equipment and contents.

Filiatrault *Continued from page 3*

showcased the lab's capabilities with the NSF-funded NEESWood project, in which a full-scale wood-frame townhouse and its furnishings were subjected to powerful quake-like forces. At 1,800-square-feet, it was the largest wooden structure ever shake-table tested in the United States.

Filiatrault has also participated in several earthquake reconnaissance teams, in the US and Japan, and has organized UB and MCEER reconnaissance teams after Hurricanes Katrina and Gustav. He will lead MCEER's program to develop multi-hazard solutions for renewal and resilience of infrastructure in the US and New York State, and will continue to serve the research needs of the earthquake engineering community.

Students

Kite Team Accomplishment at 2008 Niagara Falls International Kite Festival

(R to L): ***Thomas Leach*** *(AE);* ***Ben Richman*** *(AE);* ***Tina Rimbeck*** *(SSI/EnvEng);* ***Anthony Hughes*** *(AE/ME);* ***Chris Ford*** *(AE);* ***Carl Javier*** *(AE)*

UB Engineering's AIAA Kite Team, mentored for four years by **Richard Dutton** (MS IE '93), successfully completed the Homan Walsh Kite Contest re-enactment, named for the 15-year-old who got the first line across the Niagara Gorge in the original 1848 contest, helping construction begin on the area's first Canada-US suspension bridge.

The team flew from Table Rock on the Canadian side to Terrapin Point on the American side, making their accomplishment especially impressive, since that distance is almost twice that covered by Homan Walsh, at the Whirlpool Bridge.

Richard Dutton *with Trophy*

Dean's Scholars at Niagara Falls

Dean's Scholars

The UB Engineering Dean's Scholars program was established in 2007 to provide scholarship support for the most talented incoming engineering freshmen each year. The program, led directly by **Dean Stenger**, enhances student understanding of engineering through personal mentoring and tours of engineering facilities. The 2008 cadre enjoyed the UBAA tailgate party and toured Praxair and Niagara Falls, among other places.

Dean's Scholars at the Praxair plant in Niagara Falls

AE Senior Linares Wins With Team Spirit

Richard Linares

AE senior **Richard Linares** was named top participant in the Society of Hispanic Professional Engineers' (SHPE) Extreme Engineering Challenge, in Phoenix. Linares displayed his engineering ingenuity and leadership qualities while working as part of the winning Intel-sponsored team to have created a water supply system for impoverished Latin American regions. The "Playground H_2O" team, which competed against seven others, had 24 hours to "think green" while designing the water supply system. Both the individual and the team honors awarded Linares with a separate monetary prize.

The SHPE challenge helps develop and promote students' engineering skills by simulating an accelerated working scenario with deadlines, presentations, reviews, and obstacles.

Linares is vice-president of the UB Chapter of Students for the Exploration and Development of Space (SEDS); external vice-president of the UB SHPE Chapter; and a research assistant in the MAE Advanced Navigations and Controls Lab.

Richard Linares *(back row, first on right) with his "Playground H2O" team mates*

He intends to pursue a PhD with a concentration in Dynamics and Controls, with UB on his graduate school short list. Linares credits his mentors, AE Professor **John Crassidis** and MAE Assistant Professor **David Forliti** for their encouragement.

Order of the Engineer at 2009 Engineer's Week

This year's Engineer's Week was a great success, thanks to participants and organizer and Engineering Club Coordinator Greg Robbins. Order of the Engineer inductees are welcomed into the engineering community and take an oath of professionalism. Inductees are shown here, named by discipline, with **David C. Duchscherer** (standing in second row of middle picture). For more photos, see the back cover.

AE and ME:

Matthew S. Cannella, Bradley W. Cheetham, Anne-Marsha M. Joseph, Brian D. Kamas, Oscar Salazar-Cespedes, Benjamin M. Richman

ASE:

Richard Linares, Jeremy M. Marschke, Ryan P. Miller

CBE:

Jacob L. Weiner

CE:

Linda Jules

CIE:

Goktug Aktas, Mohammed A. Alam, Kulak E. Ali, Kyle A. Brenzel, Tomas Cabrera, Neal D. Calvin, Yavuz Cekic, Tina-Kay T. Coburne, Justin C. Darling, John Darougar, Ahmet K. Degerli, Kevin R. DeRoller, Matthew J. Donovan, Lenore A. Dunnah, Emmanuel Giraneza, David Hastings, Timothy F. Kaiser, Alexander S. Kerr, Sean Mckenzie, Dannielle R. McNeilly, Antonio Miceli, Paul Mongiovi, Richard E. Naumann, Ugeur Onel, Eric S. Reis, Jay B. Ring, John P. Roach, Miranda F. Robinson, Greg J. Ryder, Timothy W. Savery, James T. Stahr, Timothy P. Sugrue, Jamey A. Talaga, Jonathan G. Thomas, Zoran Umicevic, Aliberth J. Valdez, Raymond S. Vecchione, Rachael E. Wind, Manwa Wu, Changming Xu, Steven J. Zablocki

EE:

Stuart L. Block, Thomas M. Bohling, Thomas M. DiSanto, Matthew T. Ferree, Nicholis C. Geile, Carolyn S. Hare, Javon R. Jackson, Chang I. Jiang, Chaoxiong Lin, Jian Cheng, Earl W. Manning, Christopher D. Martin, Christopher M. May, Timothy C. Montgomery, Daniel P. Muffoletto, Andrew J. Pietka, Isiah D. Schwartz, Edward J. Sniezak, Alexandria L. Sullivan, Matthew J. Swasey, Kevin J. Wolfe

EE and CE:

Aggrey W. Jacobs, Mark E. Tjersland

EnvE:

Edward M. Bradfuhrer, Carrie K. Hinners, Michael P. Nasca

IE:

Bryan E. Boucher, David J. Chapman, Andrew J. Colaruotolo, John B. Coles, Geoff A. Gross, Megan P. Hannigan, Philip F. Manez, Deven J. McMaster, Jesse D. Parrish, Steven J. Prentiss, Andrew J. Rich, Ili Amirah Sulaiman, Ian R.A. Waite, Christopher M. Walh, Min Xie, Nur Akmar Zannon

ME:

Sarah E. Ajaeb, Saaiba K. Ansari, Jordan A. Astyk, Nicole M. Bertrand, Lauryn M. Brown, Jessica M. Burgholzer, Kevin Bush, Jeremy R. Clement, John K. Durnin, Keith A. Fitzsimmons, Lance M. Humes, Jacob D. Merrill, Michael G. Patti, John M. Robinson, Alexander J. Rossbach, Jason B. Springer, Kyoko Umezaki

UB Robotics

During UB Engineers Week, UB Robotics displayed an autonomous robot, or vehicle that can drive on its own, with onboard camera and GPS. UB Robotics members intend to deploy it in the Intelligent Ground Vehicle Competition (IGVC) in Rochester, Michigan. Last year the team placed tenth out of 47 teams.

UB Robotics team with 2009 vehicle.

Annual Honors Recruitment Dinner

The NY Nu chapter of Tau Beta Pi hosted its Annual Honors Recruitment Dinner, where top engineering students met with companies interested in hiring them. Significant support for the event came from gold sponsors Cobham plc – Carleton and Northrop Grumman-Amherst Systems (NG-AS). A mini Tech Fair was held prior to the dinner, in advance of UB Career Services's Tech Fair, which was held the following day.

(L to R): ***Daniel Muffoletto****, James Wargo (NG-AS), Karen Wright (NG-AS), Jim Talty (Carleton), Paul Crevlin (Carleton), and* ***Andrew Gaeta****.*

Fall 2008 Tau Beta Pi inductees

Tau Beta Pi President ***Daniel Muffoletto****, with ATTO representatives Julie Jelonek (l) and Cheryl Sak (r).*

UB Engineering regrets the passing of outstanding CSEE senior and prior Dean's List recipient, **Erik S. Kohler**, 24, of Solvay, NY.

Students Win CURCA Research Awards

Congratulations to UB Engineering students who won Center for Undergraduate Research & Creative Activities (CURCA) Research Awards with the guidance of their mentors:

- **Anirudda Ahmed Joi** (CBE), with CBE Research Instructor **Gersh Berim**;
- **Benjamin Knox** (ME), with MAE Assistant Professor **David Forliti.**

Human Factors and Ergonomics Society (HFES) Conference Hosted

The UB HFES chapter hosted the Inter-Regional conference once again, with opening remarks by Associate Dean **Robert E. Barnes** and two keynote speakers: NASA's Dr. Mihriban Whitmore and Usability Associates President, Dr. Stan Caplan.

University at Waterloo, University at Toronto, Ryerson University, and Cornell are some of the schools that participated. Megan Mekitiak from Ryerson University won the best speaker award.

HFES Attendees

Education

Cybersecurity Scholarships and Jobs

CSE Professor Upadhyaya

An NSF Federal CyberService Award to the UB Center of Excellence in Information Systems Assurance Research and Education (CEISARE) will fund full scholarships for 10 undergraduate and graduate students over the next four years. The award is part of a national effort to train cybersecurity professionals to fight cyberterrorism and strengthen Internet security. Through CEISARE, directed by CSE Professor **Shambhu Upadhyaya**, students will receive training in fields from computer science to management and law.

Scholarship recipients are guaranteed work with the federal government for two years after graduating, in the Treasury Department, the National Security Administration, or elsewhere.

Upadhyaya will run the program with Professors H.R. Rao (Management), Thomas Cusick (Mathematics), and Mark Bartholomew (Law).

ISE Students Win American Society for Quality (ASQ) Kubisty Scholarships

Congratulations to UB undergraduate ISE students **Ian Waite** and **Mayank Singla**, and MS ISE student **Estelle R. Kone**, who won the ASQ Buffalo Section's Walter F. Kubisty, Jr. Memorial Scholarship for their essays on "What Quality Means to Me and How I Plan to Promote It." Presenting the scholarship checks were Deputy Erie County Executive Al Hammonds and ASQ Scholarship and Conference Chairman John Lupienski.

*(L to R): With Assistant Dean **Dean Millar** (third from left), ASQ scholarship winners **Ian Waite**, **Mayank Singla**, and **Estelle Kone**.*

CSEE Celebrates Fiftieth

2008–2009 marks CSEE's fiftieth anniversary year, whose graduate program was ranked 30th out of 143 by US News and World Report. CSEE boasts national and international faculty experts in computational mechanics, earthquake engineering, environmental systems simulation, geotechnical engineering, large-scale destructive testing of components and systems under extreme conditions, and structural engineering.

The department was established upon the positive recommendation of a feasibility study by **Robert Ketter**, then of Lehigh University. Upon its establishment, Ketter, a respected structural engineer, headed the department, which changed its name in 1997 to recognize its foci in environmental and structural engineering.

CSEE's hallmarks include winning the MCEER location for UB (for more about MCEER, see articles, page 3); housing the recently completed NEES equipment site in SEESL, for evaluating large structural and nonstructural components and systems; its NSF-funded IGERT program in Ecosystem Restoration through Interdisciplinary Exchange (ERIE); and the initiation of its transportation systems engineering program.

CSEE's other state-of-the art resources include: a unique rotating lab facility for studying geophysical flows, including circulation in the Great Lakes; and the multidisciplinary UB Electronic Packaging Laboratory, housed in the CSEE and EE departments, which facilitates research in the development of micro- and nano-electronics packaging; and use of the University's Center for Computational Research, for developing state-of-the-art models of surface and ground water flow and contaminant transport.

Co-op and Study Abroad Offer Valuable Work/ Life Experience

For about three months, EE student **Claire McTaggart** (third from left, in blue) worked in Osaka for Corning Japan. The internship was part of an unparalleled year-long experience that also included study abroad at Konan University in Kobe, and residing with a Japanese family.

At Corning, McTaggart worked as a facility team intern, gaining valuable experience in a bilingual work environment with engineers from various disciplines, as well as a technical understanding of glass manufacturing. EE Research Associate Professor **Douglas Hopkins** was her advisor on the co-op credits she received.

UB Engineering graduated a total of 911 students, with the greatest number of masters awarded since 2004-05, and the greatest number of PhDs since 1996-97 (337 and 64 respectively).

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** for class lists and more program information.

For additional information, contact the EngiNet™ Office at (716) 645-6865 or **enginet@eng.buffalo.edu.**

New Emphases in CSEE and ISE

*(L to R): CSEE's **Qian Wang** and **Adel Sadek***

*(Top to bottom): ISE'S Assistant Professors **Changhyun Kwon** and **Jun Zhuang***

CSEE

CSEE's appointments Assistant Professor **Qian Wang** (left) and Professor **Adel Sadek** are developing CSEE's transportation engineering specialization, to address critical transportation issues facing the US and New York State. The key research areas are transportation systems of the future, traveler behavior, and sustainable systems, with focuses including improving traffic flow and intelligent transportation systems for safer, more efficient travel during inclement weather.

Sadek, an expert on applying advanced computing to transportation problems, was 1998 Milton Pikarsky Awardee for the best dissertation in transportation science and technology, and a 2002 NSF CAREER winner. His research interests include transportation systems modeling and simulation and infrastructure management. Sadek received federal funding to apply computational simulations to driving patterns and behaviors on UB's Amherst Campus.

Qian Wang recently earned a Ph.D. from Rensselaer Polytechnic Institute. Her research includes freight system modeling and transportation economics. She has developed a tour-based travel demand forecasting model that captures multiple-stop journeys, with an eye to understanding the behavioral factors affecting travel for a more precise view of transportation demand.

ISE

New areas of study will be introduced by recent hires to the ISE department, Assistant Professors **Changhyun Kwon** and **Jun Zhuang.**

Kwon recently earned his Ph.D. at Pennsylvania State University. His research interests include revenue management, dynamic pricing, and game theory.

Zhuang, a recent Ph.D. graduate from University of Wisconsin, Madison, focuses on extreme events with research including operations research and decision and risk analysis with applications in homeland security, transportation, and supply chain management. His research is supported by the Department of Homeland Security.

ISE: NIOSH-Funds Occupational Safety and Health (OS & H) Training

A three-year NIOSH grant will allow graduate students in ISE, pharmacology and toxicology, rehabilitation science, and social and preventive medicine to participate in a new OS&H training program, designed to improve the regional workforce's health and safety by increasing the number of qualified OS&H professionals in the region.

UB EE, IE, and ME form 3 + 2 Dual Degree Program with Canisius

UB Engineering has joined Canisius College's 3 + 2 Dual Degree Program in Physics and Engineering, which requires completion of three years, or the equivalent, of liberal arts courses, and basic science pre-engineering courses at Canisius. Students who then complete two years of engineering courses at UB will receive two bachelor's degrees: one from Canisius in physics, and one in EE, IE, or ME from UB.

Each semester, students receive advisement from both Canisius and UB advisors. During the first three years at Canisius, students will take at least one UB engineering course from a UB engineering faculty member; students are included in UB engineering clubs and activities from the start.

***Terry Klubek** with son **Jonathon**, of SENS.*

A reception and dinner were held to honor dedicated UB Engineering staff member **Terry Klubek**, who retired this winter after many years of service to the School.

Faculty & Staff

Achievements

- CBE Professor **Stelios Andreadis** was elected to the American Institute for Medical & Biological Engineering's (AIMBE) College of Fellows for significant contributions to CBE. His research includes gene therapy, tissue engineering of skin and blood vessels, and controlled protein and gene delivery.
- Local station WIVB and Microsoft featured a news story on CSE's **Mike Buckley's** research and work with the Center for Handicapped Children.
- CSE Associate Professor **Hung Q. Ngo's** "A Linear Programming Duality Approach to Analyzing Strictly Nonblocking d-ary Multilog Networks under General Crosstalk Constraints," with CSE students **Yang Wang** and **Anh Le**, was a best paper co-winner for COCOON 2008 (14th Annual International Computing and Combinatorics Conference).
- A recent publication of EE Professor **Gottfried Strasser**, "Grating-Coupled Surface Emitting Quantum Cascade Ring Lasers," was highlighted on *Applied Physics Letters's* front cover. Co-authors were E. Mujagi, S. Schartner, L. K. Hoffmann, W. Schrenk, M. P. Semtsiv, M. Wienold, and W. T. Masselink.

Emeritus Professors Gather

Dean Stenger recognized UB Engineering emeritus faculty with a luncheon and a tour of SEESL.

*(L to R): Professors Emeritii **Dale Meredith** (CSEE), **Herb Reismann** (MAE), **Charlie Fogel** (SEAS), **Bud Prawel** (CSE), **Ken Kiser** (CBE), **Tom Weber** (CBE), and **Don Brutvan** (CBE), with **Dean Stenger** (third from left)*

A Fond Farewell to ISE's Dedicated Bialas

ISE Associate Professor **Wayne F. Bialas's** commitment to students and education was recognized upon his recent retirement. In his 32 years of service, Bialas served on several committees and was a faculty advisor to the UB chapters of Omega Rho, Tau Beta Pi, Institute of Industrial Engineers, Operations Research Society, and the IE Graduate Student Association. His distinctions include four-time recognition as Professor of the Year by the NY Nu Chapter of Tau Beta Pi and founding member of Omega Rho. Bialas was Director of Industrial Engineering Undergraduate and Graduate Studies.

UB Engineering fondly remembers EE's **William C. Willerth,** dedicated laboratory equipment designer, whose vital assistance brought projects to fruition. Willerth retired from UB in 2002.

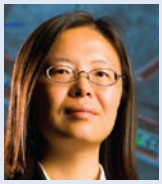
New Faculty

MAE Assistant Professor **John Y. Fu** received his PhD in EE from Pennsylvania State University (PSU) at University Park. Before joining MAE, he was a postdoctoral research associate in Materials Research Institute at PSU. His research includes phase transition phenomena in ferroelectric materials at the mesoscopic scale, novel ferroelectric materials, polymer materials, and the flexoelectric effect in biomaterials.

MAE Assistant Professor **Matthew Ringuette** earned his PhD from California Institute of Technology in Pasadena, in Aeronautics (Fluid Mechanics). His research interests include experimental fluid mechanics, bio-inspired propulsion for autonomous vehicle design, unsteady vortex dynamics, and fluid-structure interactions

CSEE

Adel Sadek



Qian Wang

(See New Emphases article, Education section)

ISE

Changhyun Kwon

Jun Zhuang

(See New Emphases article, Education section)

UB Engineering remembers CBE Furnas Professor Emeritus Sol W. Weller and his wife, Miriam Weller, for their dedication to learning and their generosity to the University community.

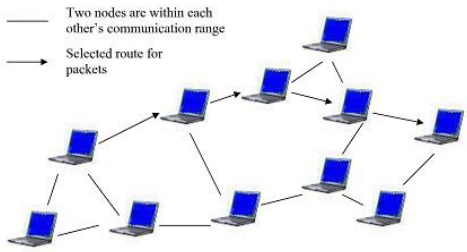
CSE's Rudra and Zhong Win NSF CAREER Award

CSE Assistant Professors **Sheng Zhong** and **Atri Rudra** have received NSF CAREER awards, bringing the CSE departmental total to five CAREER winners in the past five years.

Rudra won his award for "Efficient Computation of Approximate Solutions," which addresses new obstacles to handling larger amounts and greater complexities of data, which traditional notions of efficient computation can not handle. To address the necessity of designing algorithms to compute approximate solutions, the project focuses on fundamental open questions in and applications of "list decoding," a method to handle more errors while approximating traditional "unique" decoding; "sub-linear" algorithms (algorithms that scale well with data, by using amounts of resources that are sub-linear in the input size); and pricing algorithms (which deal with input data that are controlled by selfish agents).

Computer disk drive. Image: Michael Connors, MorgueFile

Zhong earned the award for his proposal on "Enforceable Economic Mechanisms for Cooperation in Wireless Networks." Economic mechanisms are methods that provide economic incentives to stimulate selfish participants to behave cooperatively. The project suggests that such a network is enforceable if it provides sufficiently strong incentives for cooperative behavior and security protection against cheating, and has been systematically evaluated in experiments. The project emphasizes the value of making economic mechanisms enforceable for their effective, practical use to simulate cooperation. The goal of cooperation aims to support the health of the network, so that the performance of the network does not degrade.



Wireless ad hoc network: an example of an economic incentive problem

Chen Builds SnowMan

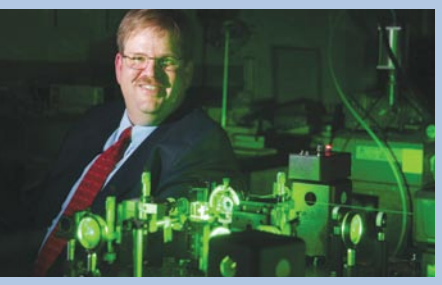
CSEE Professor **Stuart Chen** has designed "SnowMan," a desktop software package that helps transportation engineers cost-effectively design roadways less prone to snow drifts and allows maintenance personnel to more precisely situate snow fences to reduce drifting on roadways.

Contributing to SnowMan's development were **Michael Lamanna** (BS '94 MS '97 CIE), **Darrell Kaminski** (BS CIE '83 ME CIE '90), of the New York State Department of Transportation, and Ronald Tabler of Tabler and Associats (Colorado). SnowMan was funded, designed, and implemented for the New York State Department of Transportation .

"NYSDOT believes the SnowMan software will significantly advance the implementation of passive snow-control measures both within New York State and nationwide," said NYSDOT engineer Joseph Doherty. "We expect improvements in highway safety, lower winter maintenance costs, and reduced impacts on the environment as a result."

Chen unveiled the software this month at the annual conference of the National Academy of Sciences' Transportation Research Board in Washington, D.C.

Cartwright: Solar Energy Collection

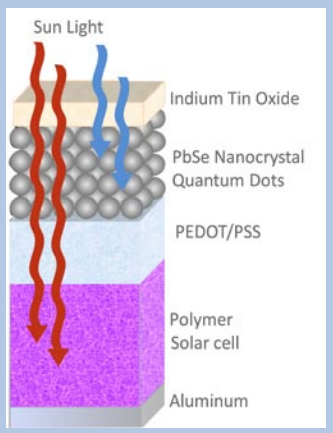


EE Professor and UB's Vice Provost for Strategic Initiatives **Alexander Cartwright** and Distinguished Professor Paras Prasad (Chemistry) have widely published in the past year on work enabling highly efficient solar energy conversion with chemically synthesized semiconductor nanocrystals (quantum dots). These nanostructures have unique optical and electronic properties ideal for efficient light-emitting devices, lasers, and detectors, with applications from biological imaging, to electronics, and photovoltaics. The solution-based processing of these nanostructures may provide low-cost production of next-generation energy conversion devices (particularly photovoltaics).

Their research team is pioneering the nanoengineering of energy converters, achieving charge extraction using multiple exciton generation (multiple electron hole pairs generated from a single photon) and demonstrating a novel device approach to enhance the use of the solar spectrum. The work seeks to shed more light on the underlying physics using ultrafast (femtosecond) spectroscopy to understand the charge transfer and transport dynamics between nanostructured materials, fundamental processes essential for developing efficient photovoltaic devices.

The team recently focused on new fabrication processes using optical lithography to fabricate nanocrystal structures for field effect transistors (FET) and photoconductors, yielding results that maintained the nanocrystal's unique optical properties while enhancing the electrical performance by improving charge transfer between the nanostructures.

As EE post-doctoral fellow **Sung Jin Kim** explained, nanomaterials and nanostructured devices are important for their potential to provide highly efficient future renewable energy systems.



Solar energy conversion

Koffas' Extract Leads to License Agreement

Anthocyanins, naturally occurring pigments and antioxidants, may help in controlling blood glucose levels, aiding weight management and conditions such as diabetes.

Through SUNY's Research Foundation, CBE Assistant Professor **Mattheos Koffas** has been able to develop these molecules for the first time, through a proprietary application licensed to a subsidiary of Irvine, California-based ChromaDex Corp.

Anthocyanins

Koffas said, "While all plants produce anthocyanins, they are challenging to extract and study in well-defined mixtures. Now we can harvest them from a lab to study their antioxidant and other properties. We're especially interested in applications related to treating the metabolic syndrome, i.e., chronic pathological conditions stemming from obesity."

Through the agreement, ChromaDex may produce and market the compounds, making them commercially available for the first time. ChromaDex is a world leader in the development of phytochemical and botanical reference standards and the creation of associated intellectual property.

Govindaraju in a Smart Room

CUBS Director and CSE Professor **Venu Govindaraju** won a competitive Hewlett-Packard Innovation Research Award to do research on getting computers to recognize speech and gestures from a distance. The work is part of an initiative known as ubiquitous, or pervasive, computing, which allows a user to control objects from a distance, instead of by touching a keyboard, mouse, screen, or other controller. Govindaraju said that "the whole human-computer interaction would be very natural." The research grew from work that he and others have done in developing a smart room.

"Suppose I point to a switch and I say, 'Turn on that light,' " Govindaraju said. "Even if there is more than one light switch in the room, a smart room would be able to tell—through the vocal command and by the direction I'm pointing—which light to turn on."

The research was featured in a recent issue of *Mechanical Engineering*.

The HP Labs award will be shared with researchers from the Indian Institute of Technology in Madras, where the principal investigator is Anurag Mittal.

Neelamegham Applies Novel Systems Biology Approach to Study Human Inflammatory Diseases

CBE Professor and CoE investigator **Sriram Neelamegham** co-authored two widely noticed papers. One was originally published in *The FASEB Journal* and the other in *Bioinformatics*.

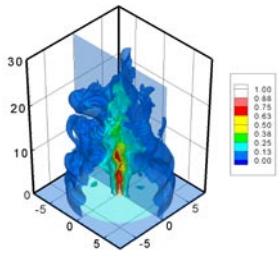
The innovative systems biology approach to understanding cells' carbohydrate structures is leading to a new understanding of how human inflammatory illnesses and cardiovascular disease develop. Supported by NIH grants, the project aims to define novel strategies to perturb the glycome (the complete set of an organism's carbohydrate structures in cells), to identify new targets and molecular therapies to combat a range of inflammatory diseases.

Systems biology is an interactive mathematical and experimental approach focusing on whole systems of complex biological functions and interactions, rather than individual units (a single gene or protein) in isolation.

Madnia: Large-Eddy Simulations for NASA

MAE Professor **Cyrus Madnia** is working with NASA to develop and implement modern large eddy simulation (LES) techniques for high fidelity prediction of high-speed turbulent combustion systems.

The subgrid scale (SGS) closure in LES is based on the filtered density function (FDF) method which is the counterpart of the probability density function (PDF) method in Reynolds averaged simulations, commonly referred to as Reynolds-averaged Navier Stokes (RANS).



Contours of mixture fraction in a turbulent jet as predicted by LES/FDF

Within the past few years, Madnia has made significant progress in the development and implementation of the FDF. As a result, it is currently one of the most robust and also world-wide popular means of performing LES of reacting flows.

The research is of significant interest to the hypersonic air breathing propulsion activities at NASA.

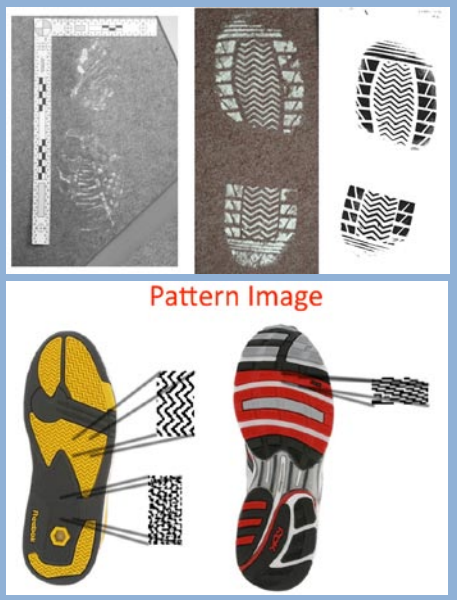
Srihari Advancing Shoe Print Forensics

SUNY Distinguished Professor **Sargur Srihari** (CSE) is developing algorithms for searching and matching shoeprints, a great advance in identifying shoeprints at crime scenes. The research, funded by the US Department of Justice, looks to make a science of shoeprint analysis, which now relies heavily on human knowledge and intuition rather than a set of formal techniques.

Shoeprints are among the most readily available types of evidence at a crime scene.

In order to "develop a software package that could narrow down the possibilities for the examiner to search," Srihari's team created a unique database of positive and negative shoeprint images, by wearing the shoes and taking images of the imprints left after stepping into powder. These images were digitized and matched to available images of the soles of the shoes. The team then classified the prints by pattern.

He describes this as one of his toughest projects, mostly because of the wear and tear that shoes endure.



Shoe print patterns

MCEER, CSEE Bridge With Pakistani Academics

UB Engineering has formed relationships with Pakistani universities and academics to extend knowledge of earthquake and structural engineering.

After Pakistan's devastating 2005 earthquake, the Engineering University at Peshawar entered an agreement with MCEER to do research on reducing seismic damage in Pakistan.

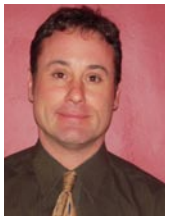
Through another relationship, students from the University of Engineering and Technology in Pakistan (UET) study in UB's CSEE department.

Recently, Ali Syed and Amjad Naseer, professors in the Earthquake Engineering Center of Pakistan's NWFP UET of Peshawar, visited MCEER and SEESL for intensive training in earthquake engineering technologies and testing techniques.

The visiting professors worked closely with **Andrei Reinhorn,** Clifford C. Furnas Professor of Structural Engineering, and with SEESL's technical staff. They learned to operate SEESL's seismic simulation equipment and twin, movable shake tables.

"In seismic testing, UB is among the top few institutions in the U.S. and the world," said Syed, adding that, "Seismic research on bridges has just started in Pakistan, and since this is one of UB's key areas of expertise, we would like to do more with the university."

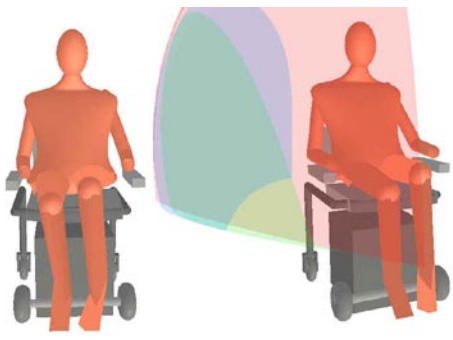
Paquet Works Toward Accessibility



ISE Associate Professor **Victor Paquet's** research on over 300 anthropometric wheeled mobility device users has resulted in an interactive database characterizing body sizes and users' abilities for device designers' use.

The project was funded by the Department of Education's National Institute on Disability and Rehabilitation (NIDRR). Paquet, together with Architecture Professor Edward Steinfeld, received a U.S. Architectural and Transportation Barriers Compliance Board grant to do multi-site research, from which the Board can develop U.S. ADA Accessibility Guidelines.

Also, an RERC grant from NIDRR on Accessible Public Transportation recently awarded to UB in partnership with Carnegie Mellon University will fund a three-year study on how the database can help improve the design of public transportation facilities. The work will be performed in collaboration with Niagara Frontier Transportation Authority (NFTA) in Buffalo and Pittsburgh's Allegheny County Port Authority. A prototype bus with increased accessibility concepts based, in part, on the database, will be constructed and evaluated.



A 3-D model of wheelchair users and their reaching abilities (the colored shells on right) enable designers to create CAD environments or products to evaluate user fit.

CSE's Srihari on National Academy Committee

CSE Professor **Sargur Srihari,** pattern recognition expert, was selected by the National Academy of Sciences to serve with other national experts on its Committee on Identifying the Needs of the Forensic Science Community. The panel's report, "Strengthening Forensic Science in the United States: A Path Forward," was recently released.

Uphadyaya in NSF Study

Professor H.R. Rao (Management), with other UB and University of Maryland researchers, has found that preteens and early teens who were educated on the importance of Internet privacy were more likely to practice online safety than those who were not; with parents as the most influential of all educators for teens. CSE Professor **Shambhu Uphadyaya** participated in the NSF-funded study, which was published in *IEEE Transactions on Professional Communication.*

UB Engineering Partnering for NYS Pollution Prevention

Through the New York State Pollution Prevention Institute (NYSP2I), UB Engineering is partnering with host institution RIT to create a statewide network for technology development and information dissemination in pollution prevention and sustainable design and manufacturing. Other partners are Clarkson University, Rensselaer Polytechnic Institute and New York's Regional Technology Development Centers.

UB Engineering will bring to NYSP2I its many, interdisciplinary assets in green chemistry, sustainable water use, conservation and toxicology and risk reduction. **Dean Stenger** said, "This new venture allows us to strengthen our partnerships with industries throughout New York State with the goal of achieving more sustainable and more efficient operations."

Tsai Finding Uncertainty Is a Key Flood Predictor

CSEE Associate Professor **Christina Tsai** is working to develop more comprehensive models to predict how extreme flow events near lakes and rivers, like hurricane-induced floods, will impact urban areas. This field, known as uncertainty analysis, helps emergency planners to determine and to mitigate damage from floods.

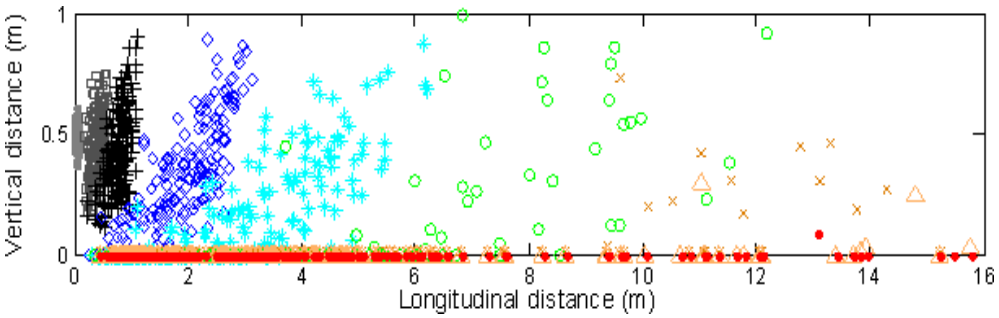
Current models for sediment transport and water quality modeling may not be able to produce probability-based predictions, although in reality flooding and sediment transport involve many random factors.

"The new tools will more precisely reflect the risk potential for specific levels of contamination and sedimentation in rivers and lakes."

Changes in sedimentation as a result of floods can alter the natural morphology of bodies of water, leading to erosion and increased contamination near shorelines.

Tsai's model will simulate contamination and sedimentation processes as random variables influenced by factors like flow turbulence and the uncertainty of when and how floods occur, resulting in a more comprehensive description of these processes.

Tsai received a NSF Faculty Early Career Development Award recently for the project.



Movement of sediment particles in extreme flow events (mean frequency of extreme flow event occurrences =11)

NYSCEDII Study on High-Risk Teen Drivers

NYSCEDII has enhanced its driving simulator, adding fidelity to the passenger compartment experience with all the details of a real car's interior and shell.

NYSCEDII Senior Research Associate **Kevin F. Hulme** designed and operates the simulator. He explained that previously it was more generic. With no roof, it had an "entertainment" feel – fine for simulating a roller coaster – "but for research applications like flight or driving, it didn't feel authentic enough."

The new passenger module enabled Graduate School of Education's Counseling Assistant Professor Gregory Fabiano to secure funding from the UB 2020 Interdisciplinary Research Development Fund to pilot a study of impulsive driving behaviors and inattention amongst teens with ADHD, who are at even greater risk for negative driving behaviors than the general teen population.

Fabiano is lead investigator for the project. Fabiano's team is developing a parent-teen driving program for improving parenting and communications skills using "innovative technology to support treatment efforts."

The researchers hope to use the pilot data to apply for an additional grant from the National Institutes of Health.

Sergeyev Published on "Magic Time Machine" Nano Device

EE Research Associate Professor **Andrei Sergeyev** provided theoretical support for a team publishing research describing

Image courtesy of NASA.

a "magic time machine," a nanosensor capable of detecting light in the THz range, the far-infrared spectrum and longest of the infrared wavelengths, where 98% of the light transmitted since the Big Bang is found.

The team, comprised of researchers from Rutgers University, NASA's Jet Propulsion Laboratory in Pasadena, Calif., and UB, published the paper entitled, "Ultrasensitive hot-electron nanobolometers for terahertz astrophysics," in *Nature Nanotechnology.*

The physicists built the tiny electronic circuit, a hot-electron nanobolometer, using thin-film and nanolithography techniques similar to those used in computer chip fabrication. It is potentially 100 times more sensitive than existing bolometers and operates at very cold temperatures – about 459 degrees below zero Fahrenheit, or one-tenth of one degree above absolute zero on the Kelvin scale.

The technology will help astronomers to observe very distant galaxies as they were in the early universe, and to see the first light in the universe (generated during star and galaxy formation), almost 14 billion years ago. Besides astrophysics, these nanodevices are promising for quantum information technologies and quantum metrology.

We thank our 2007-2008 donors for their generosity. For a complete list please visit: www.engbuffalo.edu/alumniFriendsDonors/annualGivingReport/0708/.

Corporate Generosity

Cobham plc – Carleton

Carleton Technologies, a subsidiary of Cobham plc, has made a four-year commitment to the School of Engineering with a generous gift supporting student MAE scholarships, the Dean's Scholars program, and numerous other engineering programs and events. A classroom in the new engineering building will be named after Carleton.

The gift will also fund sponsorships for the Engineering Career Institute, a unique credit-bearing program supplementing a strong technical curriculum and increasing students' on-the-job effectiveness; UB's National Engineers Week celebration; the Order of the Engineer Induction Ceremony; the Tau Beta Pi Engineering Honors Employment Dinner; and several other UB Engineering programs and events.

Carleton Technologies is based in Orchard Park, with another facility in Westminster, Md. It is a leading designer and manufacturer of high pressure pneumatic components and systems for the aerospace and defense industries, specializing in a range of life support and pneumatic control products.

Bird

A generous gift advancing UB Engineering's RF/microwave systems program will establish the Bird Technologies Group Fellowship Program and name the Bird Technologies Group Microwave Laboratory, to be located in the new engineering building.

EE Professor **James Whalen** and EE Assistant Professor **Yong-Kyu Yoon** will lead the fellowship program, to provide support for three EE students working with faculty on RF research.

Bird Technologies Group, headquartered in Solon, Ohio, is a global supplier of radio frequency (RF) products, systems, services, and educational solutions. TX RX Systems, located in Angola, N.Y., is its communications systems division.

Jack Davis Recognition Ceremony

Dean Stenger hosted a reception and ceremony recognizing **Jack Davis's** (BS IE '55) generous 1.5-million dollar gift to the School of Engineering. Davis, founder and owner of local I Squared R Element Company, spoke of his belief in the US economy and its ability to be mended through internal growth.

*L to R: **Dean Stenger** presented **Jack Davis** with an Engineering Trailer memento. President Simpson spoke at the reception.*

Tom and Arlane Lynch Donation

DAC member **Thomas Lynch** (BS CE '76) and his wife, Arlane, donated a significant gift to the School of Engineering, to recognize the quality engineering education he received. Lynch, who also earned a UB MBA in 1985, attributes his personal and professional success to the "fine practical and academic training" he received at UB, where he acquired the interpersonal, technical, and business skills that gave him "a competitive start and a strong foundation for his life and his career."

Tom is Vice President of the Americas Operations for Bureau Veritas Consumer Products Services (BVCPS) (Amherst, NY), a leading quality assurance provider for global markets. Tom and Arlane reside in East Amherst. They have two children, Dr. Joshua J. Lynch (BS '04 Psychology) and Kelly Lynch.

Said Lynch, "As a DAC member I am pleased to respond to the Engineering School's special need for a new building, and recognize its importance in launching the School to a new level of development and growth."

Dean Stenger lauded the generosity of the Lynch's gift. "We express our gratitude to Tom and Arlane Lynch. Generous sponsorship of the new building is a key element in the Engineering School's expansion and the growth of our region and New York State." For more about the new building, see article on page 18.

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 Engineering School. Engineering Development staff can be contacted anytime at 1.888.205.2609 or directly, below. Thank you! We appreciate your involvement.

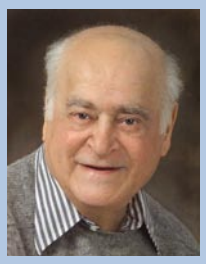
Tim Siderakis, Asst. Dean & Sr. Director: **tsiderak@buffalo.edu,** 716.645.0970

Michael Madonia, Director: **mmadonia@buffalo.edu,** 716.645.0969

Jenine Trzewieczynski, Asst. Director: **jt87@buffalo.edu,** 716.645.0968

Ruckenstein Fund

SUNY Distinguished Professor **Eli Ruckenstein** (CBE), a National Medal of Science recipient and a National Academy of Engineering member and NAE Founder's Award winner, is being honored with a fund supporting CBE teaching and research laboratories and the new annual Ruckenstein Lecture Series.



To join us in honoring Professor Ruckenstein's lifetime of science and engineering achievements, a contribution can be made online by following the link at **www.cbe.buffalo.edu**, or by sending a check made out to UB Foundation, with the memo field indicating: Ruckenstein Fund, to: CBE Department, 303 Furnas Hall, University at Buffalo, Buffalo, NY 14260-4200.

Development *continued*

Dean's Council Meeting Goal-Centered

At the Dean's Advisory Council meeting, twelve School goals for 2008–2009 were proposed, debated, and endorsed. Joseph Brennan, UB's Associate Vice President for University Communications previewed the video clip on EE "Reaching Others".

By task force, the 2008–2009 goals are:

Student Quality, Quantity, and Representation

- Increase underrepresented undergraduate first year and transfer enrollment by thirty percent.
- Aggressively market the new Biomedical Engineering program.
- Increase sophomore to junior retention by five percent.

New Markets for Education and Research

- Launch plan to exceed peer level of PhD productivity.
- Better tracking and improvement of specific measures for PhD students (quality and quantity – placement and selectivity – domestic versus international).
- Maintain incoming graduate class size of 400, and keep degree output above 60 PhDs and 300 MSs per year.

Advancing Resources and Reputation

- Make the top 50 of *US News & World Report* for the next two years.
- Increase philanthropy by sixty percent (from $6.4 to $10.2M in commitments).
- Increase national news placements (two in the past year).

Productivity Excellence and Growth

- Measure and improve how research grants lead to larger and better research grants.
- Improve the reporting, publicizing, and recognition of faculty scholarship.
- Focus university and school attention on revenue generation.

Engineering North Groundbreaking

Please join us for the groundbreaking of the new building, "Engineering North," on April 24, 2009 at 3:00 PM, between Ketter and Jarvis Halls (Amherst Campus).

Designed by renowned architects Perkins + Will, Engineering North will house the departments of Computer Science and Engineering and Electrical Engineering. It will boast a 5,000-square-foot, class 1,000-to-100 clean room, a "cybertorium" with sophisticated communications devices and smart technology, flexible research labs and classrooms, and meeting areas for interdisciplinary work.

Engineering North, and the space it will make available in existing buildings, will allow UB Engineering to expand its teaching and research in high-demand fields, and to meet projected increases in faculty and student enrollment. The new and renovated facilities will enhance the School's ability to contribute to the UB 2020 Strategic Plan, which calls for UB to grow by 40 percent and to invest in areas of strategic research strength: e.g., information and computing technology, integrated nanostructured systems, and mitigation of extreme events and disasters.

Engineering North reflects a true "public-private" partnership between New York State and generous private donors. The State has provided funding toward the construction of the facility. We thank our Alumni, Friends, and Corporate Partners who have already contributed. UB Engineering is continuing to fundraise for this project, which is key to the School's growth. If you are interested in giving to an important part of UB Engineering's future, please call Development at 888-205-2609.

Pre-College

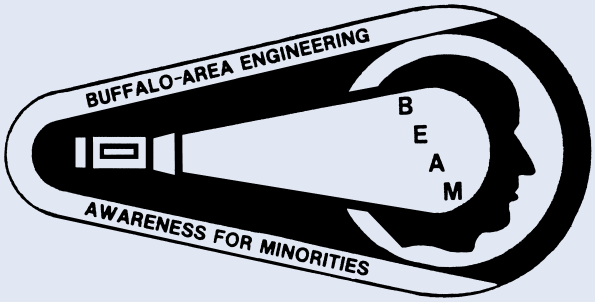
BEAM's Success is EPIC

*BEAM contingent with EPIC award. (L to R): BEAM Board Member, GM Powertrain's Miguel Antonetti; BEAM's Finance VP, Carmen Vella, retired from GM Powertrain; BEAM Treasurer, Fisher Price's Robert Tom; BEAM Marketing Chair, LPCiminelli's Tyra Johnson; BEAM Executive Director **Marilyn Helenbrook**; BEAM Board President, Moog President Arthur McKinnon.*

Buffalo-area Engineering Awareness for Minorities (BEAM) won a prestigious U.S. Department of Labor 2008 Exemplary Public Interest Contribution (EPIC) Award for promoting equal employment opportunity. BEAM's Executive Director **Marilyn Helenbrook** accepted the award from Labor Secretary Elaine L. Chao in Washington, D.C.

The affirmation of BEAM's success comes after BEAM's work with over 10,000 regional middle- and high school students, whose motivation to pursue science and engineering degrees and careers was encouraged through BEAM. BEAM graduates have become engineers and scientists in prominent places, including Fisher-Price, the National Aeronautic and Space Administration, and Northrup Grumman, among others.

UB Engineering headquarters and is an original founding partner of BEAM, which grew from a summer program initiated by CSEE's **George C. Lee**, now SUNY Distinguished Professor. Fisher-Price, LPCiminelli, DuPont, General Motors, Moog and other corporations and engineering firms participate closely in BEAM. Funding for BEAM is made possible through the support of many.



Class Notes

Kevin Becker, BS '07 CE, will marry UB PhD student Theresa Sands (Biophysics). Becker is an associate systems engineer for ATTO Technology, Inc.

James Carlins, MS ME '84, was named global bulk distribution technology manager at Praxair Inc. Carlins joined the company in 1975. He is also a licensed professional engineer and a certified project management professional.

Bob Clerici, MS IE '99, co-founder and vice president of Inergex, Inc., a Buffalo-based professional IT services company, was named to a three-year term on Hilbert College's Board of Trustees.

Jack T. Dennerlein, BS ME '86, married Jeffrey Thomas Gonyeau. Dennerlein (left) is an associate professor of ergonomics and safety at the Harvard School of Public Health. He holds a master's degree in ME from MIT and a PhD from the University of California, Berkeley.

Jacqueline Ann Kuczmanski, BS ME '07, will marry US Navy Ensign **Adam James Phillips** (BS CS '07). Miss Kuczmanski was a member of the ME honor society Pi Tau Sigma. She is an engineer at Crane Aerospace and Electronics in Fort Walton Beach, Florida.

Scott Paddock, BS ME '93, is now senior vice president of Payer Solutions at MedeFinance (Mede), a healthcare performance analytics company. He had served as executive vice president and chief solutions officer at MEDecision, Inc., and prior to MEDecision, was senior vice president of the Applied Technologies Solutions Division of RWD Technologies. He spent over seven years in the health care and technology sectors of General Electric (GE).

Thomas Paolicelli, BS CIE '88, was appointed Executive Director of the New York City Municipal Water Finance Authority (NYW). He had served as Vice President/Senior Analyst in the U.S. Public Infrastructure Team at Moody's Investors Service, and had prior experience with the NYW as Treasurer and as Deputy Treasurer.

Timothy Piotrowski, MS ME & CIE '96, joined Alfred State College as an assistant professor in the Civil Engineering Department of the School of Management and Engineering Technology. Piotrowski was a project architect and director of business development at Habiterra Architects. He served in the U.S. Navy from 1974–78.

Suaad Sait, BS EE & CE '90, was appointed CEO of Reachforce, and Austin, Texas-based company providing data and software solutions that allow B2B companies to specifically target sales and marketing initiatives. He had been the VP and GM of Products & Markets at Pervasive Software. He has also held leadership positions at Ventix Systems, CAP Ventures, and Xerox.

Michael J. Tomarchio, BS ME '08, of Rochester, New York, joined LaBella Associates as a mechanical engineer responsible for the design and development of HVAC systems.

Andrew Worral, BS CompE '04, was named product manager, desktop applications at Synacor, a Buffalo Internet tools and portals builder. He had been chief technology officer for Foupons.com.

Pre-College *continued*

BEAM Student Dinner

UB Engineering sponsored BEAM's 2008 Student Dinner on "Preparing Our Children for the Challenges of the 21st Century." Tables were purchased by companies in support of the event.

Twenty-one high school and four college students were introduced, with brief bios given to the professionals who represented companies and academia.

Dean Harvey Stenger and Robert Tom of Fisher-Price reported on the great success of the inaugural BE-AMazing Race hosted at UB Engineering. Tom, the event's creator, previewed next year's event, to have a "Star Trek" theme.

Students present were also given the opportunity to visit tables and ask questions of the professionals there. A take-off on speed-dating, this feature allowed students to learn pertinent information from companies and schools.

BEAM board members Bob Helenbrook, of JNE Consulting and Engineering and Don Seel, of Erie Community College, debuted a video on BEAM's EPIC award.

BEAM Student Dinner attendees

UB Engineering Supports Tech Savvy 2009: Charting a Pathway to Success

AAUW's Tech Savvy 4 (TS4), with the theme "Charting a Pathway to Success," encourages sixth- to ninth-grade young women to plan their own success and consider technical careers in science, engineering, and math, through fun, hands-on workshops, and sessions for parents, guardians, and educators. Last year's TS3 reached almost 350 young women.

Keynote presenter US Army Major Melissa R. Eslinger is Assistant Professor of Chemistry at West Point Military Academy. Her professional interests include bioterrorism and threat agents. Major Eslinger is trained in oncology, epidemiology, and molecular genetics. She completed her graduate studies at Roswell Park Cancer Institute. Support for TS4 comes from Praxair, UB, UB Engineering, and other partners.

College Computing Fair

The Computer Science Teachers Association's (CSTA) Western New York chapter held a College Computing Fair on regional college options in computing. The fair attracted parents, students, teachers and high school counselors.

Representatives from 13 local colleges showcased the breadth of the computing field and possibilities for study. CSE Teaching Associate Professor and local CSTA President **Carl Alphonce** presented at the fair.

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UB Engineering Calendar

2009 Engineers Week Events

UB Engineering celebrated Engineers Week with many events and celebrations.

(L to R): Back row, with crowns: Mr. & Mrs. Engineer, ***Dan P. Snitzer*** *(ME) and* ***Rita M. Groetz*** *(AE). Front row, their court:* ***Guy S. Tuori*** *(CompE),* ***Joe W. Legasse*** *(CS),* ***Nathan P. King*** *(ME),* ***Liz A. Nowak*** *(EE),* ***Brian Borncamp*** *(CS, intended)*

ASME UB student chapter members, ***Dylan M. Hofsiss*** *(EnvE),* ***Mike Tasevski*** *(ME), and* ***Erin Jacklin*** *(EE) tested their Rube Goldberg machine.*

Story and more photos in Student section, page 8

Friday, April 24

Dean's Advisory Council

Groundbreaking for New Engineering Building at 3PM between Ketter and Jarvis Halls, North Campus

Saturday, May 9

Engineering Commencement

Sunday, August 30

Freshmen Engineering Opening Day

Monday, August 31

First Day of Fall 2009 Semester

Please visit www.eng.buffalo.edu to learn more.

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Debra Steckler, editor
Deanie Hedrick, managing editor

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