

CEE NEWS

CIVIL AND
ENVIRONMENTAL
ENGINEERING
Winter 2012

Carnegie
Mellon
University



**IBM Smarter
Infrastructure
Laboratory**

See story on page 3

CEE Department Head

JIM GARRETT

Dear Friends,

Since I last wrote this letter, we have continued the exciting times here at Carnegie Mellon University as a whole and in Civil and Environmental Engineering, as well. We were all very excited by the announcement of the William Dietrich gift to the university and look forward to the impact it will have on the university. In addition, the university has announced that we will soon start the process of searching for a new president of the university; our current President **Jared Cohon** announced that he will step down in 2013. President Cohon has done an excellent job as President and we will benefit from his contributions to this university for many years to come.

In CEE, we have again had a large number of notable achievements by and recognitions of our students, faculty and staff. While the economic times have continued to be a challenge, the department continues to thrive, which I hope will be conveyed in this issue of our newsletter.

The highlighted theme of this newsletter is the creation of the IBM Smarter Infrastructure Lab at Carnegie Mellon, with generous donations from IBM and the State of Pennsylvania. We have a number of faculty members working on smarter infrastructure research. **Burcu Akinci** and her colleagues and students are doing cutting-edge research on the capture, representation and visualization of building information for use during construction and facility management. **Mario Berges** and his colleagues and students are exploring ways in which data can be collected from various sources and fused together to better understand energy usage in facilities. **Irving Oppenheim** and his colleagues are exploring advanced sensing, signal processing techniques and machine learning approaches for pipeline monitoring. All three of these faculty members lead or co-lead labs related to achieving smarter infrastructure.

We received a number of excellent pieces of news since the last newsletter. **Chris Hendrickson** was elected to the National Academy of Engineering. He joins **Dave Dzombak** and **Jacobo Bielak** as active CEE faculty members who are NAE members; this is tremendously good news for CEE, CIT and CMU. Jacobo Bielak was recognized by the ASCE as a Distinguished Member, joining Chris Hendrickson and Jared Cohon from CEE. In addition to these recognitions, our students and faculty won a number of best paper awards at recent technical conferences, which is a strong testament to the rigorous and high quality research that goes on in this department. A number of alumni also received awards at our Alumni Brunch held this past November: **Tom Krouskop** (CE '63, '64, '71) received the CEE Distinguished Alumnus Award; **Florian Bechtold** (CE '58, '62) received the Outstanding Alumnus Service Award; and **Todd Wilson** (CE/EPP '06) received the CEE Recent Alumnus Award. Three alumni also received university honors during Céilidh '11 as well: **Hillard Lazarus** (CE '70) received an Alumni Distinguished Achievement Award; **Liz Durika** (CE '03) received the Recent Alumni Award; and **Erica F. Spiritos** (CE '11) received a Student Service Award. We are extremely proud of our alumni and pleased to see so many of them receiving much deserved recognition at the university level over the past several years.

We sincerely thank those alumni that have continued to support the department in so many ways: financially, volunteering their time on our Advisory Council, giving seminars, mentoring students, and generally being supportive of our many departmental initiatives. Without such support, we would find it difficult to continue to provide the world class educational environment we strive to offer at Carnegie Mellon. I speak for the entire department when I say we are extremely grateful for this support.



In This Issue:

3 Cover Story

- › IBM Smarter Infrastructure Laboratory

6 Faculty News

- › Bielak Named ASCE Member
- › Maloney Awarded NSF Grant
- › Akinci Receives ISARC Paper Award

7 Department News

- › Universidad EAFIT
- › New Staff Members
- › U.S. News & World Report Ranking

8 Student News

- › Students News Bits
- › CEE Fun Events
- › 2010 Commencement

10 Alumni News

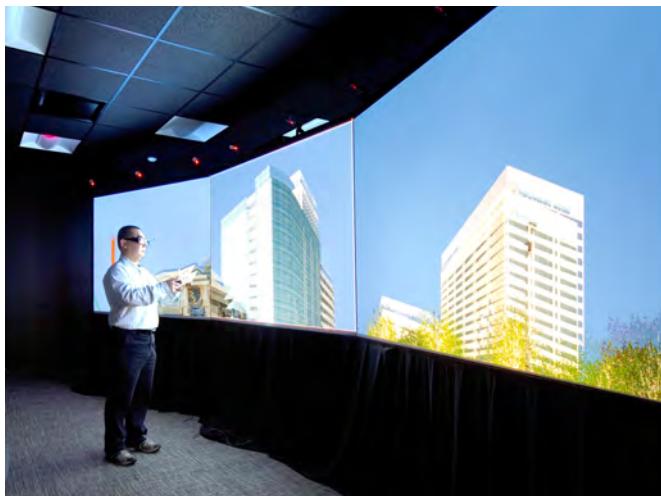
- › Alumni News Bits
- › Paul Rizzo Honored
- › CMU Days Four Decades Ago
- › Céilidh Weekend

IBM Smarter Infrastructure Laboratory



A team of subcontractors examines the intricate and interrelated configurations of the water distribution pipelines, the HVAC ductwork and the electrical lines in a new building. They are looking for any conflicts among these systems and any defects in the implementation of their subsystems design. Such a walk-through is not an unusual activity, except for the fact that this building has yet to be built physically. Instead, the team of contractors is

able to foresee any design, construction or maintenance issues with the help of the technologies available and being researched in the new IBM Smarter Infrastructure Lab in the Civil and Environmental Engineering Department at Carnegie Mellon University which includes 1) the IBM Cloud providing high-powered computing and massive amounts of data storage resources; 2) an extensive amount of advanced software for supporting data collection and advanced analysis of that collected data; and 3) a three-dimensional visualization technology known as the CAVE which uses a set of high-quality projectors each projecting onto its own screen and able to provide a virtual, three-dimensional image of buildings, bridges, HVAC systems, or any other infrastructure system, real or imagined.



The IBM Smarter Infrastructure Lab is part of the Pennsylvania Smart Infrastructure Incubator (PSII), dedicated to the integration of physical and cyber infrastructures in revolutionary ways. PSII's roots lie in CenSCIR, the Carnegie Mellon research center that examines how to employ sensors so as to better manage and operate large infrastructure systems. "Conversations between Bombardier and CenSCIR led to the agreement on a common goal: making Western Pennsylvania a highlight area for cyber physical infrastructure," explains **Matthew Sanfilippo**, Executive Director of PSII and CenSCIR.

PSII Founding Corporate Partners:

Bombardier and IBM

CenSCIR and Bombardier took the idea for PSII to IBM, with the thought that while Bombardier focused on traditional infrastructure like transportation systems, IBM's Smarter Planet initiatives could support the cyber infrastructure side. With the enthusiastic support of **Wayne Balta** (B.S. CE 1982), IBM Vice President of Corporate Environmental Affairs and Product Safety, IBM became a founding corporate partner. Consortium corporate partners soon came on board, including Gannett Fleming, InspectTech, Glodon, OSisoft, Westinghouse Nuclear and TEEC Software Solutions. In addition to Executive

Director Matthew Sanfilippo, three faculty co-directors for PSII were named: **Jim Garrett**, Thomas Lord Professor and Department Head of CEE, **Ed Schlesinger**, David Edward Schramm Professor and Department Head of Electrical and Computer Engineering (ECE); and **Gary Fedder**, Howard M. Wilkoff Professor of Electrical and Computer Engineering and the Robotics Institute at Carnegie Mellon University, and Director of the Institute for Complex Engineered Systems (ICES).

Two facilities were constructed at Carnegie Mellon University's Pittsburgh campus with the support of a Pennsylvania state grant: the Bombardier Smart Infrastructure Collaboration Center, housed in Hamerschlag Hall within the Electrical and Computer Engineering Department, where experts in smarter infrastructure from around the world can connect via a state of the art conferencing system, and the IBM Smarter Infrastructure Lab, located in CEE department facilities in Porter Hall.

Continued on page 4 >

Wayne Balta and Jim Garrett



IBM Smarter Infrastructure Laboratory *continued*

Smarter Infrastructure Research Re-imagined

The IBM Smarter Infrastructure Lab is composed of three parts: the Infrastructure/Facilities Information Modeling Laboratory, where the CAVE is located, headed by CEE Professor **Burcu Akinci**; the Smarter Infrastructure Analytics Lab, co-directed by **Mario Berges**, Assistant Professor of CEE, and **Anthony Rowe**, Assistant Research Professor in ECE; and CenSCIR, co-directed by faculty members **Irving Oppenheim**, Professor of CEE and Architecture and **Jose M.F. Moura**, Professor of ECE, along with Executive Director Matthew Sanfilippo. A high-performance computing center known as the IBM Cloud stores research data for several of the projects associated with these three components, including data collected from sensors located throughout campus. The IBM Cloud allows multiple users to access the data at the same time, fostering collaboration with researchers at Carnegie Mellon and PSII partner organizations.

The IBM Smarter Infrastructure Lab also offers a high quality videoconference room that is connected via the same videoconferencing bridge used to support the Bombardier Center in ECE. This system has been used effectively to have video conference meetings with partners in the lab, including meetings held on a bi-monthly basis with IBM business and research and development personnel.

The immersive three-dimensional visualization environment known as the CAVE can demonstrate how the different complex systems (heating/cooling, water, electric, etc.) in facilities



interact with each other. The user becomes embedded in the environment: if the room temperature fluctuates unexpectedly in one section of a building, HVAC data can be loaded to recreate the system in the CAVE, and the user can walk around the projection to locate the source of the discrepancy. The same type of activity in the real world would involve a considerable amount of labor opening tiles to reach the HVAC system.

Laboratory and Testbed

Professor Burcu Akinci also plans to use the CAVE as part of the International Collaborative Construction Management (ICCM) course that she teaches in conjunction with Technion University in Israel and Middle East Technical University (METU) in Turkey. Students in the course already collaborate via video conferencing and Skype. Since Technion has technology similar to the CAVE, she hopes to add another layer to their collaboration by having students at Carnegie Mellon and at Technion use their CAVEs simultaneously to explore the same environments. The CAVE also has the capability to be used for situation simulation, such as training for first responders, by creating an environment and adding perilous situations for the users to encounter.

Xuesong “Pine” Liu, a CEE Ph.D. student co-advised by Burcu Akinci, Mario Berges and Jim Garrett, has been working on a long-term project involving the creation of a self-monitoring and self-rehabilitating HVAC system. His research has come to life within the IBM Smarter Infrastructure Laboratory. Pine’s enthusiasm for the work is infectious as he pulls back a panel in the video conferencing area of the lab and unlocks the door to the HVAC system he has helped to design. “Not only does the lab provide extreme computing power for monitoring and analyzing the performance of thousands of building components,” Pine shares, “but also the HVAC system



installed in the lab is used as a test bed for research on high-performance and smart buildings.” The HVAC system for the lab monitors itself via a large number of installed sensors and digital controllers to which the researchers in the lab have complete access for support of their research. For example, if the lab has more people in it than usual, the system will detect the higher level of carbon dioxide and pull in more fresh air to compensate and all of these actions are able to be observed by the lab researchers. Artificial situations can also be created to observe how the systems and its control algorithms react. This functionality is much more than what is provided in today’s HVAC systems and thus is another valuable aspect of the IBM Smarter Infrastructure Lab.

The energy usage throughout the IBM Smarter Infrastructure Lab is also monitored, a project of the Smarter Infrastructure Analytics Lab. Professors Berges and Rowe have collaborated for several years in the area of analytic approaches associated with the construction, operation, and maintenance of facilities and infrastructure assets. Their work continues using the IBM Smarter Infrastructure Lab as their test bed; sensors are imbedded throughout the space, measuring the amounts of energy used by the various components of the lab such as computing systems, HVAC system and lighting fixtures.

Real World Applications, Real Time Solutions

In the very near future, when a contractor needs to track down a pesky plumbing or errant electrical problem, instead of peering through holes in moldy drywall, she may be inspecting the entire building’s infrastructure inside the CAVE viewing data collected, stored and analyzed using the same technologies now present in this IBM Smarter Infrastructure Lab. Or, perhaps, the system will have already detected the issue itself, and started corrective measures before the contractor even arrives on site.

IBM Cloud Server

The IBM Cloud Server is composed of eight IBM servers. Each server is powered by two Intel® Xeon® Processors X5670 and equipped with 96 GB memory. Three servers are installed with Windows 7 operating system as well as a variety of applications such as building design and modeling, scientific calculation and laser scanning processing software. Two servers are installed with Windows Server 2008 with server applications such as IBM DB2 and OSIsoft PI server. The remaining three servers run Linux with scientific calculation applications.

CAVE Automatic Virtual Environment

The CAVE (CAVE Automatic Virtual Environment) is a 3 walled EON Icube™. It consists of three 3D projection design cineo12 projectors and three HP Z800 workstations. The workstations are powered by an Intel® Xeon® Processor X5667, 12 GB memory and a Nvidia Quadro 6000G video card with G-Sync II. The main simulation software is EON Studio 7 which provides a modeling and simulation environment for various 3D modeling and interactions.



Collaborative Technology

The meeting space within the IBM Smarter Infrastructure Lab can be used in multiple configurations, such as a high-end video conference room, or as a small distance learning classroom. The space contains a two-camera, high definition video conferencing system, and is able to connect to multiple sites simultaneously via a Tandberg bridge. It has the ability to display the center screen of the CAVE for presentation overflows. Teleconferencing and desktop sharing are also available.

For more information about the Pennsylvania Smarter Infrastructure Incubator please visit <http://www.ices.cmu.edu/psii/>



FACULTY



Professor Chris Hendrickson inducted in the National Academy of Engineering. Pictured below from left to right: Irwin Jacobs (Chair of NAE Council), Chris Hendrickson and Charles Vest (NAE President).



University Professor Jacobo Bielak Named ASCE Distinguished Member



University Professor Jacobo Bielak has been named Distinguished Member of the American Society of Civil Engineers (ASCE). Distinguished Membership is the highest recognition the Society may confer, second only to the title ASCE President. It is reserved for members of the Society who have attained the grade of Member or Fellow and who demonstrate acknowledged eminence in some branch of engineering or in its related arts and sciences.

Professor Bielak is recognized for his pioneering work in creating three-dimensional models that simulate how earthquakes impact buildings, bridges and other critical infrastructures; for demonstrating the use of high performance computing in civil engineering practice; and for educating the next generation of engineers.



Professor Craig Maloney Awarded NSF CAREER Grant



Professor Craig Maloney has been awarded a National Science Foundation CAREER grant for his proposal *Plasticity and Jamming*. The NSF Faculty Early Career Development (CAREER) Program is a foundation-wide activity that offers the NSF's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research. Professor Maloney also recently received NSF funding for his proposal with Professor Amit Acharya entitled *Homogeneous Dislocation Nucleation*.



Professor Peter Adams Honored with Fulbright Award



Professor Peter Adams has received a Fulbright Award to study atmospheric organic chemistry in Bologna, Italy during the 2011-2012 academic year. His visit is hosted by Dr. Cristina Facchini of the Institute of Atmospheric Sciences and Climate of the Italian National Research Council (ISAC-CNR). The Fulbright proposal, entitled *Global Implications of Emerging Organic Aerosol Chemistry*, builds on the atmospheric modeling and analytical chemistry expertise of Drs. Adams and Facchini.

Professor Burcu Akinci and Co-Authors Received ISARC Best Paper Award

Burcu Akinci and her co-authors received the Best Paper Award at the 28th International Symposium on Automation and Robotics in Construction (ISARC 2011) for their paper entitled *Automatic Creation of Semantically Rich 3D Building Models from Laser Scanner Data*. The paper was co-authored by Antonio Adan, Xuehan Xiong, Burcu Akinci and Daniel Huber.



CEE Creates Dual Program with Universidad EAFIT

The Civil and Environmental Engineering Department at Carnegie Mellon has signed a Memorandum of Understanding with Universidad EAFIT to create a dual Ph.D. program. The program will have students spend a minimum of two years at Carnegie Mellon University and a minimum of two years in Medellin at EAFIT. Students must meet the requirements of both universities and submit a common proposal and a common dissertation. The students will be co-advised by faculty at both institutions and their committees will be composed of faculty from both institutions.

EAFIT is a small, private university established in 1960 in Medellin, Colombia. EAFIT has previously sent graduates to the CEE Ph.D. program who have done extremely well. This dual Ph.D. program will help bring excellent Ph.D. students from Colombia to CEE's Ph.D. program. Carnegie Mellon University and EAFIT will both benefit from working together to help advise and graduate these Ph.D. students.



Pictured l-r: Dr. Juan Luis Mejia Arango, Rector of Universidad EAFIT, Dr. James H. Garrett, Jr., Thomas Lord Professor and Dept Head of CEE, Dr. Jacobo Bielak, University Professor of CEE



Universidad EAFIT- Medellin, Colombia

Department Staffing Changes



Anne Fowler joined CEE this summer as the Assistant to the Department Head. Anne holds a MFA in Creative Writing from Chatham University and a BA in Fine Arts from Thiel College.

• • • •



Andrea Francioni Rooney has taken on the department's role as the Director of Undergraduate Programs and Alumni Relations. Patty Langer, who previously held this position, has moved into a part time role as the Event Coordinator for CEE.

CMU Environmental Engineering 7th, Civil Engineering 10th in U.S. News & World Report Rankings

The CEE Department is pleased to announce its Environmental Engineering program ranks 7th and its Civil Engineering program ranks 10th in the latest U.S. News & World Report Best Graduate Program Rankings. The Carnegie Mellon College of Engineering ranks 6th overall.



STUDENTS



CEE Community Events



Yujie Ying Honored with Best Data Sensing and Analysis Paper by ASCE



Ph.D. student **Yujie Ying** received Best Data Sensing and Analysis Paper Honors with the paper *Applications of Machine Learning in Pipeline Monitoring*, co-authored by Joel Harley, James H. Garrett, Jr., Yuanwei Jin, Irving J. Oppenheim, Jun Shi, and Lucio Soibelman. The award was given at the 2011 American Society of Civil Engineers (ASCE) International Workshop on Computing in Civil Engineering (IWCC). The selection committee stated the paper "was a clear winner among the pool of 48 highly qualified DSA papers. It was selected because of the high impact and high intellectual merit of the work that it presented".

• • • •

Jason Marshall Received Best Poster Award at USNCCM



Ph.D. student **Jason Marshall** received a Best Poster Award in the Student Poster Competition at the U.S. National Congress on Computational Mechanics (USNCCM). Jason presented his talk and poster, titled *Multiscale Mechanics with Long-Range Electrostatic Interactions* at the conference, which is held every two years with a large number of national and international participants. Jason is advised by Professor Kaushik Dayal.

• • • •

Nicola Carey Presented at SPIE Smart Structures Conference



CEE undergraduate **Nicola Carey** (Class of 2012) presented the paper *Temperature and Stiffness Correction of Saw Devices for Wireless Strain Sensing*, which she co-authored with Professor Irving Oppenheim (CEE and Architecture). Professor D.W. Greve (ECE) and graduate students T. Chin and P. Zheng, at the SPIE Smart Structures Conference held in San Diego last spring. SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

• • • •

Jessica Wilson Awarded David A. Long Scholarship



CEE Ph.D. student **Jessica Wilson** was recently selected as the 2011 David A. Long Scholarship recipient from the American Water Works Association (AWWA) Pennsylvania Section. The AWWA is an international nonprofit scientific and education society dedicated to the improvement of drinking water quality and supply.

This year, two student recipients were selected to each receive a \$1500 cash award. Jessica received this award at the Annual Conference of the PA Section of the AWWA in April 2011. Jessica, who is advised by Professor Jeanne VanBriesen, also presented a poster at that conference.

• • • •

Omar De Leon Honored with CMU Graduate Student Service Award



CEE graduate student **Omar De Leon** received the Carnegie Mellon University Graduate Student Service Award during a ceremony held on April 7 as part of the Innovation with Impact Celebration of Graduate Student Research during Graduate Student Appreciation Week.

COMMENCEMENT

CEE Commencement Awards 2011

**H. A. Thomas Sr.
Scholarship Award:**
Michael Panzitta

★
**H.A. Thomas Distinguished
Service Award:**
Erica Spiritos

★
**James P. Romualdi
Civil and Environmental
Engineering Award:**
Matthew Pettit

★
**Paul P. Christiano
Student Distinguished
Service Award:**
Chia-Gee (Luke) Chen
Omar DeLeon

★
**Outstanding Teaching
Assistant Award:**
Amit Das

★
**Mao Yisheng Outstanding
Dissertation Award:**
Ricardo Taborda



ALUMNI

Anna Lenhart, CEE Class of 2011, Named Fulbright Scholar

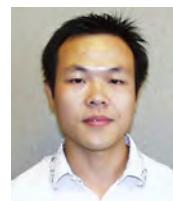


Anna Lenhart, Class of 2011, has been named a Fulbright Scholar. The Fulbright Program is the flagship international educational exchange program sponsored by the U.S. government and is designed to "increase mutual understanding between the people of the United States and the people of other countries".

Anna will be studying biogas digestion and waste management at the University of Nambia's technology campus located in the Oshana region of northern Nambia. Her goal is to help highlight the need for and possible solutions associated with village waste management.

.....

CEE Alumnus Pingbo Tang and Professor Burcu Akinci Honored with Best Poster Award at CII Conference



Western Michigan University Professor Pingbo Tang (*Ph.D. 2009*) and CEE Professor **Burcu Akinci** took Best Poster honors at the 2011 Construction Industry Institute (CII) Annual Conference for their poster *Formalization and Characterization of Workflows for Extracting Bridge Surveying Goals from Laser-Scanned Data*. The objective of the CII Academic Poster Session is to introduce CII members to construction

industry research activities which are outside topic areas of the present portfolio of projects funded by CII and also to expose promising young researchers to CII membership. The best poster was selected by a panel of academic and industry representatives.

.....

CEE Alumnus Dr. Damian Helbling Honored by ES&T



CEE Alumnus **Dr. Damian Helbling** (M.S. 2005, *Ph.D. 2008*) is the lead author on the 2010 Top Science Paper for Environmental Science & Technology. The paper, titled *High-Throughput Identification of Microbial Transformation Products of Organic Micropollutants*, was based on his work as a post-doctoral researcher at Eawag, the Swiss Federal Institute of Aquatic Science and Technology. Dr. Helbling's advisor at Carnegie Mellon was Professor Jeanne VanBriesen.



Paul Rizzo ('63) Honored with Diamond Award

Paul Rizzo ('63) was honored by the Pittsburgh Business Times with a 2011 Diamond Award. The award recognizes regional CEOs and company presidents who exemplify leadership within their organization. Dr. Rizzo, President and CEO of Paul C. Rizzo Associates, Inc., was lauded as a mentor to other engineers and his personal attention to clients' projects at his international engineering firm.



CMU Days Four Decades Ago

E. LOUIS OVERSTREET, P.E. MSCE, 73

f memory, admittedly one nowadays not as retentive as I would like, serves me correctly it was a late sun drenched summer day in 1969 that I arrived at CMU. Our country was approaching the end of a decade where we had experienced more change in a ten year period of time than quite possibly its entire history. We survived the assassinations of President John Kennedy, Dr. Martin Luther King, and Bobby Kennedy. Race riots inflamed many cities mid-decade. Historic civil rights legislative was passed, and protests against the Vietnam War were reaching epic proportions.

My arrival on the campus of CMU was due to a call from a friend, Dr. Norman Johnson. He wanted me to join him at CMU to fully integrate the Carnegie Mellon Action Project (CMAP) into the life of the university; choosing to pursue a master's degree was also available to explore. Upon reflection, the latter consideration was not a major selling point. When one is young, you think you know everything; so more education would merely be a fruitless pursuit.

I went to work with CMAP. Also, at the insistence of Dr. Johnson, I enrolled in graduate school with Dr. Ed Krokosky



as my faculty advisor and Dr. Tung Au as one of my professors. While managing to graduate, this occasion was definitely not my most memorable one of my time at CMU.

Today, I believe it would be honest to say, back then CMU was an island of sanity, in a sea of insane times.

I vividly recall the eclectic mix of drama and engineering students hurrying between classes in a rather tranquil setting that presented a noticeable contrast to the sit-ins and "streaking" that was taking place down the street at the University of Pittsburgh and more serious events on a much broader scale nationwide.

However, the two things that I remember most about CMU is my gaining a full appreciation for how an engineering education can train minds to solve problems and the administrative and faculty leadership of the university putting these minds to work. The result, in four short years, CMU graduated more African-Americans with engineering degrees in 1974 than any university in the country. I remember Leonard Bell accepting the College of Engineering degree on behalf of all students of the college and how proud I was to be a small part of history; oh, I recruited Leonard to come to CMU back in 1970!

CEE Alumni Honored During Cèilidh Weekend

CEE alumni were recognized at both the university and department level during Cèilidh Weekend 2011. The CEE department presented alumni awards during the CEE Alumni Brunch. These awards recognize the dedication, support and contributions of CEE alumni.

CEE Alumni Awards presented:

- Distinguished Alumnus Award - Thomas Krouskop (B.S. CE/BioTech 1967, M.S. CE 1969, Ph.D. CE/BioTech 1971)
- Outstanding Alumnus Service Award - Florian Bechtold (B.S. CE 1958, M.S. CE 1962)
- Recent Alumnus Award - Todd Wilson (B.S. CE/EPP 2006)

The following CEE alumni received Carnegie Mellon University Alumni Awards, which recognize alumni, students and faculty for their service to the University and its alumni for their achievements in the chosen professions.

- **Alumni Distinguished Achievement Award** - Hillard M. Lazarus (B.S. 1970)
- **Recent Alumni Award** - Elizabeth (Higgins) Durika (B.S. 2003)
- **Student Service Award** - Erica F. Spiritos (B.S. 2011)



► Pictured L-R:
Florian Bechtold,
Thomas Krouskop
and Todd Wilson

Civil & Environmental ENGINEERING

Carnegie Mellon

Department of Civil and Environmental Engineering

Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA
15213-3890

Presorted
First Class Mail
U.S. Postage
PAID
Pittsburgh, PA
Permit #251

I2-605 Design and Construction



2008 – MSE Deck off
Wean Hall



2009 – Dietrich College
of Humanities and
Social Sciences Pathway
by Baker Hall



2010 – Bill Brown
Gathering Area –
Biological Sciences

CEE Alumni:
Come back and see us
during Spring Carnival,
April, 19-21, 2012

CEE Alumni Reception
at Spring Carnival
Friday, April 20 4:30 - 6:30 p.m.
Tung Au Lab PH 107E

Contact Andrea Francioni Rooney,
Director of Alumni Relations, by
phone 412.268.9723 or by email at
francioni@cmu.edu for more
information on this event.

CEE Newsletter
Winter 2011

Department Head:
Jim Garrett

Editor:
Mireille Mobley

Writers:
Anne Fowler
Andrea Francioni Rooney
Mireille Mobley
E. Louis Overstreet

Photo credit:
Ken Andreyo
Mireille Mobley

Design:
Dan Hart

www.ce.cmu.edu

Previous issues of the CEE Newsletter
are available at www.ce.cmu.edu/news



Carnegie Mellon University does not discriminate, and Carnegie Mellon University is required not to discriminate, in admission, employment, or administration of its programs or activities on the basis of race, color, national origin, sex, or handicap in violation of Title VI of the Civil Rights Act of 1964, Title IX of the Educational Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973 or other federal, state, or local laws or executive orders.

In addition, Carnegie Mellon University does not discriminate in admission, employment, or administration of its programs on the basis of religion, creed, ancestry, belief, age, veteran status, sexual orientation, or gender identity. Carnegie Mellon does not discriminate in violation of federal, state, or local laws or executive orders. However, in the judgment of the Carnegie Mellon Human Relations Commission, the Presidential Executive Order directing the Department of Defense to follow a policy of "Don't ask, don't tell, don't pursue" excludes openly gay, lesbian, and bisexual students from receiving ROTC scholarships or serving in the military. Nevertheless, all ROTC classes at Carnegie Mellon University are available to all students. Inquiries concerning application of these statements should be directed to the provost, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-6684, or the vice president for enrollment, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-2056.

Carnegie Mellon University publishes an annual campus security report describing the University's security, alcohol and drug, and sexual assault policies, and containing statistics about the number and type of crimes committed on the campus during the preceding three years. You can obtain a copy by contacting the Carnegie Mellon Police Department at 412-268-2323. The security report is also available online.

Obtain general information about Carnegie Mellon University by calling 412-268-2000.