



IOWA STATE UNIVERSITY

CONNECTIONS

The Department of Electrical and Computer Engineering Newsletter for Alumni and Friends | Fall 2007

**Daniels Wins
IBM Faculty Award**

**Aluru Named Finalist
for 21st Century
Achievement Award**

**Student Shares Experience
at Johnson Space Center**

MORE NEWS:

- Grad Programs Rank in Top 25
- New IT Institute Established
- Alumni Return to Recruit



Letter from the Chair

Dear alumni and friends,

Excitement is in the air in the Department of Electrical and Computer Engineering! Many of our faculty have won prestigious awards for their highly innovative research (pages 10 and 11), our program has been reaccredited (page 6), and several of our students enjoyed a successful summer season participating in internships and co-ops around the country (page 12). Plus, our new bachelor's degree program in software engineering, which we administer jointly with the Department of Computer Science, is in full swing (page 6).

In May, we said goodbye to four influential professors in our department—**Ken Kruempel, John Lamont, Ralph "Pat" Patterson, and Steve Russell**. These four professors all were extremely dedicated educators and truly exemplified the teaching element of our educational mission. Read about each professor's career and retirement plans beginning on page 4.

To help us maintain a balanced department, we've hired three new faculty—**Dionysios C. Aliprantis, Sumit Chaudhary, and Liang Dong**. These faculty members' duties will equally emphasize teaching and research (see page 8 for more details on new faculty and staff).

Our building addition also is continuing smoothly and the first phase should be completed in spring 2008. You can get a sneak peek of the building's interior on page 16.

While the university is celebrating its 150th anniversary this year, our department is gearing up for our 100th birthday celebration that will begin in the spring. During our birthday year from 2008 to 2009, we'll have fun events for alumni and students to participate in. We'll also be publishing a new book about our department's history. If you would like to submit pictures or stories about the department for the book, please contact our communications specialist, Dana Schmidt, at (515) 294-3071 or schmidt@iastate.edu. In the meantime, read about eight ECpE alumni and professors who were named to *VISIONS* magazine's list of the top 150 visionaries at Iowa State (page 5). ■

Best wishes,



Arun K. Somani

Department Chair

Anson Marston Distinguished Professor

Jerry R. Junkins Chair Professor



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Photo courtesy of Craig Carroll Photography.

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Cover photo: Asst. Professor Tom Daniels on campus. Photo by Dana Schmidt.

If you're planning a gift to the ECpE department, please visit www.foundation.iastate.edu/gift or contact Keith Fortmann, (515) 294-4280 or kfortman@iastate.edu.

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Departmental Honors and Awards

The Department of Electrical and Computer Engineering (ECpE) congratulates the achievements of the following faculty and staff members:

■ **Tom Daniels**, assistant professor, received a 2007 IBM Faculty Award. (See page 10 for more details.)

■ **Aleksandar Dogandzic** was promoted from assistant professor to associate professor with tenure.

■ **Yong Guan**, assistant professor, was awarded the Iowa State University Award for Early Achievement in Research. The award acknowledges faculty members who have demonstrated outstanding accomplishments in research and/or scholarship unusually early in their professional career. Guan also was named the Litton Assistant Professor in Electrical and Computer Engineering.

■ **Doug Jacobson** was promoted from associate professor with tenure to professor with tenure.

■ **David Jiles**, collaborating professor, has been named a Fellow of the United Kingdom's Institute of Materials, Minerals, and Mining.

■ **Steven Kovarik**, computer support manager, received the Dean's Staff Excellence Award, which recognizes College of Engineering staff members who have exhibited contagious dedication and

superior service to the college, as well as good will to the university and larger community.

■ **Ken Kruempel**, associate professor, received the Iowa State University Division of Student Affairs' Faculty Recognition Award. The award honors Kruempel for his collaboration with the Division of Student Affairs in serving students and supporting student success.

■ Palmer Chair Professor **Chen-Ching Liu**, Professor **James McCalley**, and Associate Professor **Gary Tuttle** each received the 2007 Warren B. Boast Undergraduate Teaching Award. The annual award recognizes outstanding faculty in the ECpE department.

■ Professors **John Lamont** and **James McCalley** each received the 2007 Mervin S. Coover Distinguished Service Award. This annual award is given to faculty and staff for their outstanding service to the ECpE department.

■ **Mani Mina**, senior lecturer, was named a Memorable Teacher by the Center for Excellence in Learning and Teaching. Mina's students nominated him for the award.

■ **Arun K. Somani**, ECpE department chair and Jerry R. Junkins Chair Professor, was named an Iowa State University Anson Marston Distinguished



Vicky Thorland-Oster (right), who won the College of Engineering's Superior Engineering Adviser Award, works with a student.

Professor in Engineering, the highest academic honor bestowed by Iowa State. The title of distinguished professor, first awarded in 1956, recognizes faculty members for exemplary performance in at least two of the following areas: teaching and advising; research, scholarship, or artistic creativity; and extension, university service, or professional practice.

■ **Jiming Song** and **Zhengdao Wang** both were named Harpole-Pentair Assistant Professors in Electrical and Computer Engineering.

■ **Vicky Thorland-Oster**, academic adviser, was named the College of Engineering's Superior Engineering Adviser, an award that acknowledges demonstrated superior advising performance as evidenced by past or present student evaluations, faculty evaluation, and evaluation by the Engineering Classification Officer. ■

ECpE Graduate Programs Rank Among Top 25 Nationally

Iowa State University's Department of Electrical and Computer Engineering is ranked among the country's **top 25 public programs** in electrical and computer engineering, according to the latest graduate and professional school rankings by *U.S. News and World Report* magazine.

The magazine's latest graduate rankings rank Iowa State's ECpE department 24th, and Iowa State's College of Engineering 24th among public universities. The college ranks 45th among all 199 schools granting doctoral degrees in engineering.

Six other Iowa State engineering departments also were ranked in the top 25: aerospace engineering, and industrial and manufacturing systems engineering ranked 15th; materials science and engineering ranked 20th; chemical and biological engineering, and mechanical engineering ranked 22nd; and civil, construction, and environmental engineering ranked 23rd.

In addition, the magazine ranked several Iowa State programs in science and education among the country's top 25 public programs.

"We are pleased that a number of Iowa State's graduate programs in engineering, education, and the sciences are being recognized for their quality," says David Holger, dean of Iowa State's Graduate College. "It is a goal of Iowa State's strategic plan to improve the rigor, challenge, and international reputation of the university's academic programs. We're committed to strengthening the undergraduate, graduate, and professional education offered at Iowa State and to enhancing our students' success on campus and beyond." ■

Regents OK New Information Technology Institute at Iowa State

The Board of Regents, State of Iowa, has approved a new institute that will coordinate research and commercialization in the area of information science and technology. Iowa State University's **CyberInnovation Institute** will build on six IT research centers at the university to provide the infrastructure that can attract large research projects from both the federal government and private industry.

For example, Iowa State's Executive Vice President and Provost Elizabeth Hoffman told the regents Iowa State could be a major player in the Great Lakes Consortium for Petascale Computing, of which it already is a member. The consortium is competing for a \$500 million National Science Foundation grant to build a supercomputer capable of a quadrillion calculations per second.

Iowa State's Vice President for Research and Economic Development John Brighton likened the institute's focus to the burden on Sir Isaac Newton to actually develop the math that allowed him to explain his new theory of gravity more than 300 years ago.

"It's necessary to advance the computer's ability to the depth and degree that is needed in the increasingly complicated and deeper science that is out there," he says.

James Oliver, professor of mechanical engineering with a courtesy appointment in ECpE, and director of the Virtual Reality Applications Center (VRAC)—one of the six centers in the institute—will lead the institute. It will be housed in VRAC and other space in Howe Hall.

The ECpE department's Information Infrastructure Institute, led by **Arun K. Somani**, is highly involved with the new CyberInnovation Institute. ■

—Anne Krapfl, University Relations and Marketing

Kruempel Retires After 50 Years

It's no surprise Professor **Ken Kruempel** related well to his students during his career at Iowa State University. After all, he walked in their shoes 50 years earlier when he came to Iowa State as a college freshman. With the exception of a few years, he's been at Iowa State ever since. This year, he retired from his faculty position.

Kruempel's career started when he earned his bachelor's degree in electrical engineering in 1961 and master's in 1963. After graduating from Iowa State, he and his wife, Beverly, joined the Peace Corps and went to Brazil for a three-year stint.

In Brazil, Kruempel worked in the country's electric cooperative system to take electricity to rural areas. "In Brazil in the 1960s, the people in towns used electricity like we did in the United States, but lines hadn't reached the rural areas," he says.

While Kruempel was building the electric cooperative, his wife started girls' clubs to teach young women—who usually had only a grade school education—the basics of sewing, cooking, and childcare.

When the couple returned to the States, Kruempel went back to school, this time at the University of Wisconsin. Upon receiving his PhD in 1970, former ECpE Department Chair Warren B. Boast hired him as an assistant professor. Kruempel taught for one quarter, and then did something unusual—he asked to take a year off. During that year, he returned to São Paulo, Brazil, to complete

a postdoctoral-like fellowship and teach some graduate-level classes at the University of São Paulo.

Afterwards, Kruempel returned to Iowa State for good. For many years, he taught the sophomore-level electrical engineering course, *EE 201: Electric Circuits*. He says the class is different now than when he first started teaching, mainly because of the use of calculators, computers, and WebCT.

He says developing the EE 201 course to the level it is today is one of his most rewarding achievements. Kruempel also says he intentionally was hard on his students in that class because he wanted them to be careful with their work. "As they did it, they'd complain about the work," he says. "Two or three years later, they'd come back and say they understood why I was so hard on them."

Another major achievement in Kruempel's career came in the 1970s and 1980s when he provided a service to Iowa electric utilities. "We created a large-scale computer program to analyze their electric systems," he says. Because the utilities couldn't have their own computer at the time, they came to campus and purchased time on university computers. By the late 1980s, technology made it easier for the utilities to have their own computers, so they then purchased the software Kruempel had worked on with one of his colleagues.

Throughout the 1990s, Kruempel shifted gears and used his natural knack for being meticulous in his various roles on the Graduate College and Faculty Senate curriculum committees. During this time, he oversaw the computerization of curriculum committee activities.

Now that he and his wife, Beverly, an assistant professor in the College of Human Sciences, are both retired, Kruempel plans to spend more time on a few of his hobbies: gardening, woodworking, and refinishing old furniture. ■



Ken and Beverly Kruempel

Lamont Retires from Iowa State

For Professor **John Lamont**, there's no better job than coordinating senior design for electrical and computer engineering students. And he should know. He's seen more than 2,500 students go through the senior design program since he took it over approximately seven years ago. "I've really enjoyed doing senior design," he says.

In the spring, Lamont, who's worked at Iowa State University since 1987, stepped down from his role with senior design to begin the next phase in his life: retirement.

Under Lamont's leadership, two major changes were instituted to enhance the senior design program: First, Lamont developed contacts with industry clients to connect students with industry professionals on their projects. Today, nearly 70 percent of all projects have outside clients compared to only a few when he started. Second, Lamont created uniformity in the grading of senior design projects by doing all the grading himself.

"I like working with small groups and seeing them confront a problem they haven't seen before and successfully solve the problem," he says. "In senior design, we don't hand-hold the students."

Two of the most memorable projects Lamont's students have worked on include a project for a small Mason City, Iowa, company, MetalCraft, and a project to improve pedestrian safety on Iowa State's campus. For MetalCraft, Lamont's students developed a high-tech transport system to help ensure the quality of metal warranty and serial number plates that were shipped by MetalCraft to its customers such as John Deere and Caterpillar. At Iowa State, students designed and installed crosswalk

signs that light up and flash automatically during class breaks. These signs are located next to the Leid Recreation Center, and were designed to increase pedestrian safety following an accident where a student was hit and killed by a bus.

Prior to coordinating senior design, Lamont served as the first director of the Electric Power Research Center (EPRC) at Iowa State. The EPRC is an academic center that helps to achieve the goals and objectives of the department's electric power program: to educate students at both the undergraduate

and graduate levels to prepare them for employment in many different engineering roles in electric utilities and supporting industries. Lamont also taught at the University of Missouri-Columbia, University of Southern California, and University of Texas at Austin, and worked for the Electric Power Research Institute in California before coming to Iowa State.

In addition to seeing 2,500 students through the senior design program and establishing the EPRC, Lamont considers a major accomplishment of his career to be coauthoring a report on emission dispatching for the City of Los Angeles Department of Water and Power from 1968 to 1973. "We were way ahead of our time," he says. The paper was the forerunner of today's talk about the effects of car emissions on the environment.

Now that he's retired, Lamont plans to finish two research projects—one on evaluating alternate energy sources and the other on creating an inventory software for collectors. He also plans to travel with his wife, Kitty, to Australia and New Zealand this fall, and to visit his daughter and son-in-law in Rochester, Minnesota. ■



John Lamont

Eight ECpE Alumni Named Among Top 150 Iowa State Visionaries

To celebrate Iowa State University's 150th anniversary, *VISIONS* magazine editors compiled a list of the top 150 visionaries in Iowa State history. The individuals helped shape Iowa State and make it the university it is today. The following eight influential individuals who made the cut have ties to the ECpE department:

■ **John Vincent Atanasoff** (MS mathematics '26): Inventor (with Clifford Berry) of the first digital electronic computer; recipient of the National Medal of Technology; mathematics and physics professor

■ **Clifford Berry** (BSEE '39, MS physics '41, PhD '48): Assisted Atanasoff in building both the prototype of the first electronic digital computer and the full-scale machine; went on to obtain 43 U.S. patents

■ **Abdel-Aziz Fouad** (PhDEE '56): Expert in power system stability and control; National Academy of Engineering member

■ **Jerry Junkins** (BSEE '59): Former president and CEO of Texas Instruments

■ **David Nicholas** (BSEE '67, MSEE '68, PhDEE '71): Developed the digital encoding process that led to the development of the first generation of low-cost fax machines

■ **Sehat Sutardja** (BSEE '83): Named 2006 Inventor of the Year and 2004 Entrepreneur of the Year; holds more than 80 U.S. patents

■ **Vijay Vittal** (PhDEE '82): Directed the Electric Power Research Center at Iowa State; member of the National Academy of Engineering

■ **Thomas Whitney** (BSEE '61, MSEE '62, PhDEE '64): Led the Hewlett-Packard group that shrank the calculator to pocket size—a tenth the size of the previous smallest calculator. ■

ECpE Programs Receive Full Reaccreditation

Officials from ABET, the U.S. accreditor of colleges and university programs in applied science, computing, engineering, and technology, visited Iowa State University's College of Engineering and ECpE department last fall. During the 2006-2007 accreditation cycle visit, the evaluators did not cite any shortcomings with the electrical and computer engineering programs, and in August, ABET approved full reaccreditation for the College of Engineering and the ECpE department.

"We are very pleased that we are continuing to run a quality program," says **Arun K. Somani**, distinguished professor and ECpE department chair. ■



Software Engineering Program Takes Off

Iowa State University's new software engineering bachelor's degree is being offered for the first time this fall. Students in the **software engineering degree program** will learn engineering aspects—processes, techniques, and principles—for developing, analyzing, and evolving complex software.

Nearly 20 students are currently enrolled in the program for fall, and that number is expected to grow at a fast rate.

The software engineering program is administered jointly by the Department of Electrical and Computer Engineering, and the Department of Computer Science. The Board of Regents, State of Iowa, approved the program last fall. The ECpE department plans to add two new faculty positions in this area within the first two years of the program. ■

Russell Goes West in Retirement

If you've traveled along the Lewis and Clark Trail in Montana or Idaho, chances are you might have traveled across part of the historic trail rediscovered and recorded by Associate Professor **Steve Russell**. For the last 21 years, Russell has spent his summers camping in a tent out West and using Global Positioning Systems (GPS) and precision information systems to research and record 260 miles of the Lewis and Clark Trail, as well as at least 350 miles of various American Indian trails in the region.

"I solve mysteries with high-tech tools," says Russell. "It's a geek's dream."

This work has made Russell a nationally-recognized figure in trail research. But Russell's notable achievements don't end there. During his career, he's received four U.S. patents—two in nondestructive evaluation and two in communication systems. Most recently, he patented a technology to secure communications systems for commercial aircrafts. This technology would prevent individuals from eavesdropping on or interfering with communication between a pilot and the control tower. Using this technology, Russell says it would be possible to stream information collected from an airplane's cockpit voice recorder and digital flight recorder to a location on the ground instead of storing the information on the airplane only.

Russell, who began working at Iowa State in 1984, also started the department's communications and signals processing group, and worked to get the PhD program approved in that research area. Additionally, he worked with former professor John Bassart at Iowa State University's Center for Nondestructive Evaluation. The duo started

the image-processing leg of the center, which investigates ways to increase the quality of pictures from X-rays and CAT scans.

While at Iowa State, Russell taught mainly electrical engineering classes, as well as *CprE 310: Theoretical Foundations* and *CprE 489: Computer Networking and Data Communications*. "I've taught almost every electrical engineering class," he says.

Russell's favorite thing about teaching is working with students one-on-one. "I also enjoy when students in my class ask

questions so we can have discussions in class, and I enjoy preparing for class to make sure I know the material," he says.

Russell says he's been interested in engineering since he was in first grade. "I knew I wanted to build things—as it turned out, mostly electronic things," he says.



Steve Russell

Before he became a professor in the ECpE department, Russell worked on GPS and other proprietary projects at Rockwell Collins, as well as worked at the University of Iowa's Physics Research Center, the Olathe, Kansas-based King Radio, and Iowa State's former Engineering Technology Program. He received his master's degree from Iowa State in 1973 and PhD in 1978. In 2003, he won the ECpE department's Warren B. Boast Undergraduate Teaching Award.

Russell retired last May and plans to continue his work researching and mapping out American Indian trails during the summers. In fact, he has a new book about his trail research, *Lewis and Clark Across the Mountains*, tentatively scheduled for publication later this fall. He also plans to continue playing the trumpet in seven local jazz, community, polka, and big bands, and is learning to play the trombone. ■

Patterson Says 'Goodbye' to Iowa State

Being an engineer runs in Assistant Professor **Ralph "Pat" Patterson's** family. His father was a civil engineering professor at Iowa State University for several years. His grandfather also was an engineer. So it's no surprise Patterson got hooked on Iowa State and engineering early on when his dad brought him to campus as a youngster in 1946.

Patterson's career at Iowa State began as a student in the early 1960s. After graduating in 1963 with a bachelor's degree in electrical engineering, he was stationed by the Army in Maryland. He spent nine years on the East Coast working in the Nuclear Effects Lab and later for a small general instrumental and electronics services company.

He returned to Iowa State in the 1970s to pursue a master's degree and work with the College of Engineering's freshman engineering division. In 1981, then ECpE Department Chair J.O. Koplin hired Patterson to perform student advising and teaching roles. Shortly after, Patterson initiated one of the first advising centers in the College of Engineering and on the Iowa State campus. "We wanted to have one place for students in the department to get answers," he says.

Patterson dubbed the department's advising center "Student Services." He remained with Student Services as an adviser through 1995, and saw the advising center grow. During that time, Patterson also helped put together the design concept for the electrical engineering senior design course. This course allowed students to work on real-world engineering projects during their senior year. It was a voluntary course for students until the electrical and computer engineering senior design courses were integrated in the 1990s.

"I enjoy teaching, working with, and helping new engineers," says Patterson. "Recently, two students in a CprE 210 class worked their hearts out. They stopped by again and again to get help. That's the kind of student I enjoy."

Another highlight of Patterson's career involved working on the Mobile

Demonstration Lab for Environmental Screening Technology, a unique technology for renovating soils contaminated with lead, chrome, and radioactive materials developed through the Ames Laboratory's Technology Integration Program.

He and his colleagues from multiple engineering disciplines took lab-level technology for contamination of soils and put it into a mobile lab that could be used in the field. The lab has a robotic arm and on-site testing system that does in seconds what would otherwise take six to eight weeks to perform, for a fraction of the cost. "This system gave almost real-time

results," says Patterson. "It was faster, better, and cheaper."

In retirement, Patterson says he plans to thoroughly enjoy being a full-time grandpa. He also traveled to Colorado in June and hopes to visit Scotland this spring. "I may even bring back a set of bagpipes," he says.

In addition to retiring from the faculty at Iowa State, Patterson is also a retired colonel from the Army Reserve. ■



Ralph "Pat" Patterson

Upgraded Virtual Reality Lab is World's Most Realistic

Crews recently completed nearly \$5 million in equipment and technology upgrades that operate Iowa State University's Virtual Reality Applications Center, **C6**. The enhanced room produces virtual reality at the world's highest resolution—more than twice that produced by any other virtual reality room.

C6 now projects 16 times the pixels produced by the original C6. Iowa State's C6 opened in June 2000 as the country's first six-sided virtual reality room designed

to immerse users in images and sound. The graphics and projection technology that made such immersion possible hadn't been updated since the C6 opened.

The difference between the original equipment and the updated technology "is like putting on your glasses in the morning," says James Oliver, the director of Iowa State's Virtual Reality Applications Center and a professor of mechanical engineering with a courtesy appointment in ECpE.

The new equipment includes a Hewlett-

Packard computer cluster featuring 96 graphics processing units, 24 Sony digital projectors, an eight-channel audio system, and ultrasonic motion tracking technology. The project is supported by a U.S.

Department of Defense appropriation through the Air Force Office of Scientific Research.

Five ECpE faculty members—**Viren Amin, Julie Dickerson, Diane Rover, Namrata Vaswani, and Robert Weber**—use the C6 in their research. ■

New Faculty and Staff Join the ECpE Department

The ECpE department welcomes six new faculty and staff members:

Dionysios C. Aliprantis

Aliprantis, a native of Athens, Greece, is joining the ECpE department as an assistant professor. He received his diploma in electrical and computer engineering from the National Technical University of Athens in 1999, and PhD in electrical and computer engineering from Purdue University in 2003. After graduation, he worked as a design consultant electrical engineer and as a computer programmer for the Hellenic Army. Since January 2006, he has worked as a research scientist at Purdue. His research interests include the design, modeling, and simulation of electric machines and power systems; power electronics and controls; and evolutionary optimization methods. In 2002, Aliprantis received the SAE Power Systems Conference Best Paper Award.

Sumit Chaudhary

Assistant Professor Chaudhary comes to the ECpE department from the University of California, Riverside (UCR), where he most recently worked as a postdoctoral fellow. He earned his B.Tech. degree from the Institute of Technology at Banaras Hindu University, India, in 2001, and PhD from UCR in 2006, both in electrical engineering. Chaudhary received UCR's Outstanding Teaching Assistant Award in 2002 and Graduate Research Award in 2005. He has been published in several peer-reviewed publications and holds a U.S. patent. Chaudhary's research has been featured by the American Institute of Physics and American Chemical Society. His research interests are organic semiconductors and nanotechnology, applied to renewable energy conversion and optoelectronics.

Liang Dong

ECpE's new Assistant Professor Dong recently received the 2007 National Outstanding Doctoral Dissertation Award

of China. Dong comes to Iowa State after serving as a postdoctoral researcher at the University of Wisconsin-Madison's Micro/Nano Sensors and Actuators Research Laboratory. He obtained his bachelor's degree in precision instrumentation from Xidian University, Xi'an, China, in 1999, and PhD in electronics science and technology from Tsinghua University, Beijing, China, in 2004, where he won Tsinghua University's Academic 2004 New Star Award. Dong's research interests include MEMS/NEMS, bioMEMS, biosensors, microfluidics, lab on a chip, smart materials, and biomimetics, and their applications in biomedical engineering and health care. He holds two U.S. patents and has one pending. Dong also is extensively published in leading scientific journals.

Cory Farver

Farver joined the ECpE department as a systems support specialist in August. He works with UNIX systems and their related applications, and is responsible for the operation and support of the department's administrative and academic computing facilities, among other duties. Farver earned his bachelor's degree in computer engineering from Iowa State in 2004 and is pursuing a graduate certificate in information assurance. He previously worked as a software developer in Des Moines, Iowa.

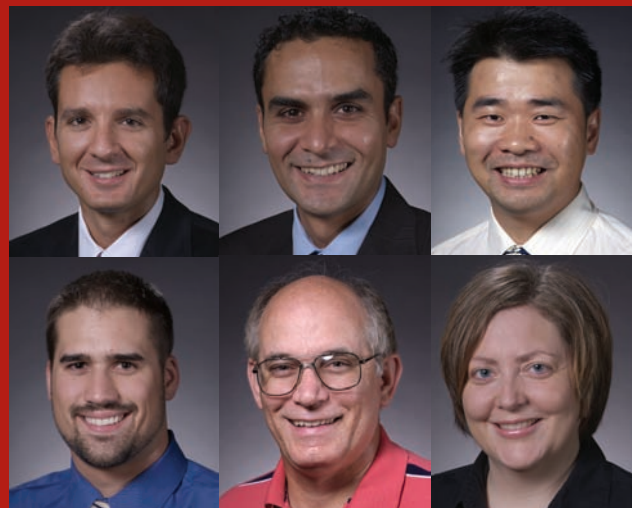
Leland Harker

Harker comes to the ECpE department after nearly 20 years with the Ames Laboratory. Harker is now an electronics technician with the ECpE department. He is responsible for the operation and support of the department's electronics shop, academic

laboratories, and research laboratories, among other duties. He has previous experience as an electronic technician and instructor at various companies, including Control Data in Santa Clara, California, and the National Institute of Technology in West Des Moines, Iowa. He has an associate's degree from the United Electronics Institute.

Sara K. Harris

Harris joined the ECpE department as an administrative specialist in March. Her duties include managing the main office and assisting the department chair with various projects. Prior to assuming this position, she served for seven years as the central Iowa program manager with Kaplan Test Prep and Admissions. Her primary duties involved coordinating, marketing, and staffing classes to prepare high school, undergraduate, graduate, nursing, and medical students for standardized tests and licensing exams. Prior to that, Harris worked for nine years as an administrative assistant with the USDA's Agricultural Research Service, National Animal Disease Center. She received her bachelor's degree in economics from the University of Iowa in 1991 and an MBA, marketing emphasis, from Iowa State University in 1998. ■



Top row: Dionysios C. Aliprantis, Sumit Chaudhary, Liang Dong
Bottom row: Cory Farver, Leland Harker, Sara Harris



Fill out this form online!
Visit www.ece.iastate.edu/alumni (click Alumni News Form).*

We want to hear about your career moves and personal news for future issues of *ECpE Connections*. You're welcome to enclose photos; however, we can't return them. We need your help, too, with gifts to the department's scholarship funds, lab facilities, building improvements, student organizations, and other departmental activities. If you're making a contribution to Iowa State, please consider designating it for the Department of Electrical and Computer Engineering using the form below. Please enclose your pledge or gift with your news, and mail it to: Iowa State University, Department of Electrical and Computer Engineering, Attn: Communications Specialist, 2215 Coover Hall, Ames, IA 50011-3060. Also, feel free to give us a call at (515) 294-2664 or e-mail us at schmidt@iastate.edu (subject line: Newsletter).

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News I'd Like to Share: _____

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- ☐ Other \$ _____

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[†]For more information on the funds, contact Keith Fortmann (515-29404280 or kfortman@iastate.edu).

Thank You!

07 EC8:03

Mailing Instructions: Fill out this form with your updated information, and then detach the form along the perforated edge. Fold the form in thirds so that the ECpE address shows on the outside of the form. Tape the form closed and place your stamp in the labeled box. If you're mailing a check, remember to completely seal the edges of the form or send the form along with the check using a standard envelope.

Daniels Receives IBM Faculty Award

Assistant Professor **Tom Daniels** has won a 2007 IBM Faculty Award. The IBM Faculty Awards program is an annual worldwide competitive cash awards program that fosters collaboration between researchers at leading universities and those in IBM research, development, and services organizations. It also promotes courseware and curriculum innovation to stimulate growth in disciplines and geographies that are strategic to IBM. Awardees are nominated by IBM employees.

"I feel very honored that IBM would nominate me for this award," says Daniels. "I'm certainly ecstatic to get this award."

Daniels was nominated for the award by Garth Tschetter, manager of systems software security development at IBM's Rochester, Minnesota, location, and Iowa State alumnus Sam Ellis (BSCoS '83), manager of BlueGene system software and stream processing development at IBM and IBM customer relations manager for Iowa State University.

This award allows Daniels to work closely with Tschetter throughout the next year to conduct research on security

models for service-oriented architectures (SOAs). "SOAs find ways to build business applications from networks of cooperating services," says Daniels. "It's a structured and flexible way of organizing business processing."

The goal of the technology, Daniels adds, is to help business computer application developers build more secure models. So now instead of having enormous groups of internal business applications, the new methodology will force developers to break those groups down into much smaller pieces that will work together better and more securely.

In addition to collaborating with IBM representatives, the money from the cash award will allow Daniels to hire a graduate student to assist with the research.

Last year, **Brett Bode**, adjunct assistant professor, won an IBM Faculty Award, and previously, **Srinivas Aluru**, professor, received the award.

This award is only one of the research grants Daniels has acquired recently. In 2006, he received a National Science Foundation (NSF) grant to be the single



Tom Daniels

principal investigator on a project aiming to analyze and understand the who, what, when, and where of computer network attacks so people can respond to attacks more efficiently.

Daniels also is involved with research in fingerprinting network devices, technology that prevents users from tampering with and changing network connections, as well as masquerading in local area networks.

Daniels works with Iowa State's Information Assurance Center as well as the Center for Information Protection, an NSF Industry/University Cooperative Research Center headquartered at Iowa State. ■



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Aluru Named Computerworld Finalist for Corn Genome Work

By Mike Krapfl, ISU News Service

You've got tens of millions of short DNA pieces from the corn genome to assemble. So what do you do? Call **Srinivas Aluru**, professor and Stanley Chair in Interdisciplinary Engineering.

Aluru and his research team have come up with supercomputing solutions to assemble and analyze genomes. Their answer is a software technology called "PaCE" that runs on parallel computers—including CyBlue, Iowa State's IBM Blue Gene/L supercomputer—and generates draft genome assemblies in hours or days instead of months.

And that brings researchers that much closer to using their understanding of the corn genome to increase yields, improve nutrition, and boost biofuels production.

The Computerworld Honors Program recognized Aluru's work to crack the corn genome by naming him a 2007 Laureate and a Finalist for its 21st Century Achievement Award during the 19th Annual Laureates Medal Ceremony and Gala Awards Evening in Washington, D.C., in June. The awards honor individuals and organizations that have used information technology to benefit society. The program honored 50 Laureates as Finalists and 10 Finalists as winners of 21st Century Achievement Awards.

"I'm very pleased to bring this honor to Iowa State University," says Aluru. "This is another example of the high quality interdisciplinary work we're addressing

in the plant sciences and information technology."

The corn genome work is a joint project of Aluru and Patrick Schnable, the director of Iowa State's Center for Plant Genomics and a professor of agronomy. Aluru, in fact, invited Schnable to the laureate ceremony.

"We work as a good team and he deserves the recognition as much as I do," Aluru says.

Aluru says two of his doctoral students also made major contributions to the corn genome project: **Scott Emrich**, who graduated this summer, and **Ananth**

Kalyanaraman, who graduated last year.

Schnable says Computerworld's award is great recognition for the kind of science that can happen at Iowa State.

"We've been able to do science that nobody else has been able to do," he says. "We're opening up the genome and putting together the jigsaw puzzle and now we're seeing results."

Every year, the Computerworld Honors Program brings together 100 leaders of global technology companies to nominate individuals and organizations from around the world whose applications of information technology promote social and economic progress. The awards are sponsored by Computerworld, a weekly magazine and Web site for the information technology industry. ■



Srinivas Aluru stands next to Iowa State's CyBlue supercomputer. The IBM Blue Gene/L contains 2,048 processors and can perform 5.7 trillion calculations per second.

Kim Seeks to Improve Cell Phone Technologies

Want a smaller, lighter-weight cell phone with a longer battery life? Associate Professor **Sang Kim** is working on a technology to make that a reality.

Kim is developing a cooperative-relaying technique to improve the reliability of communications and reduce the amount of energy it takes to transmit information in mobile, ad hoc, and sensor wireless networks. This new technique will increase the speed at which these wireless networks—including cell phone networks—can exchange information.

"When I talk on a cell phone, my voice message is sent through someone else's cell phone," Kim says. "The basic idea is that each cell phone alone may have limited capability, but collaboratively a number of cell phones (aka radios) may achieve a significant performance improvement."

Kim's recent research poster on this topic, "Concatenated Random Parity Forwarding in Wireless Sensor Networks," was chosen from a record number of submissions to win a Best Poster Award at the Institute for Electrical and Electronics Engineers' Communications Society Conference on Sensors, Mesh, and Ad Hoc Communications and Networks in June. In the poster, Kim examines how this technology can be used to decrease energy consumption and extend the wireless networks' lifetime.

"When the new technique is applied in cellular phones, the battery life can be extended, phone size and weight can be reduced, and more users can talk at the same time without requiring additional frequency," says Kim.

Kim's research, still in its early stages, aims to determine how to stimulate cooperation between radios and ensure security. This technology could impact areas such as homeland security, emergency response communications, wireless entertainment, and remote health care monitoring, in addition to next-generation cell phones. ■

Simon Shares Johnson Space Center Co-op Experiences

Computer engineering senior, **Cory Simon**, just can't get enough of the Johnson Space Center in Houston, Texas. In the last two years, this National Merit Scholar has completed four cooperative education (co-op) experiences with the NASA center. Simon's most recent tour ended in August, and he's already planning to return once he completes his bachelor's degree. Simon recently told the ECpE department all about his memorable experience.

ECpE: How did you get your co-op at the Johnson Space Center?

Simon: I walked up to the NASA booth

at the Career Fair on campus, handed them my resume, interviewed, and waited for a phone call. About a month later, a woman called me and told me I had a position if I wanted it, and two months later I was in Houston starting work.

ECpE: Why did you want to be a co-op student at the Johnson Space Center?

Simon: Of all the companies I handed my resume to, the work at the Johnson Space Center looked the most interesting, but I didn't realistically think I could get a job there. Now that I have the job, I can't imagine a better place for me to be. I've done tours here in spring 2006, summer 2006, spring 2007, and summer 2007.

ECpE: What have you done at your co-op?

Simon: In the spring and summer 2006, I worked in the Avionics Systems Division to certify a new digital video recorder for flight on the shuttle. I helped prepare it for a microgravity test, performed radiation testing, ran simulation tests with NASA's Electronics Systems Testing Lab, ran electromagnetic interference and emissions tests, and traveled to the Kennedy Space Center in Florida for integration testing

Cory Simon tests the usability of the Astronaut Interface Device he helped create during his co-op at the Johnson Space Center.

inside the Space Shuttle Atlantis. I actually flipped switches, communicated with test technicians, and was responsible for running the test in the shuttle for a while.

In the spring 2007, I was part of the Robotics Division team that developed and tested the Astronaut Interface Device, a wrist-mounted computer that allows astronauts to observe and command multiple robots remotely. I wrote Java graphical user interfaces to display an image from and control cameras on the robot to move and rotate the robot; created software to help other programmers debug their software during development; integrated a GPS unit, push buttons, a joystick, and camera into the software; and wrote and executed plans to test the usability of the device by a person in a spacesuit.

In the summer 2007, I chose to work at a higher management level within Avionics to learn more about how larger projects are managed and to get a different perspective. I learned about the communications and tracking system on the Orion—the new space vehicle that will replace the shuttle and take people back to the moon.

ECpE: What was your favorite part about the co-op?

Simon: At the Kennedy Space Center, I got to go into the Space Shuttle Discovery while it was on the launch pad to help inspect some of our hardware that was thought to have a cabling issue. I sat in the commander's chair facing straight up. It was the coolest thing I've ever done.

ECpE: In April, a gunman opened fire at the Johnson Space Center. What was that experience like and how did it affect you?

Simon: The shooting happened in building 44, where I had worked on previous tours. It's the avionics building, which is separated from other buildings for satellite reception. When the shooting happened I was in building 32, working in



Making a Difference

When **Cory Simon** isn't working at the Johnson Space Center, you'll likely find him volunteering with Habitat for Humanity, mentoring youth, or visiting his hometown high school in Winterset, Iowa, to spark other students' interests in computer engineering.

"Helping people that really need help and knowing that I have made a positive impact on other people's lives is the most rewarding feeling I have ever had," says Simon.

Simon also participates in several student organizations—Eta Kappa Nu, the computer engineering honor society; Tau Beta Pi, the engineering honor society; the National Society of Collegiate Scholars, Robotics Club, and Sailing Club—to name a few. He's also coordinated various team sport activities for other co-op students in Houston, and received numerous scholarships.

Photo courtesy of Cory Simon.

Robotics, a block away from building 44. I first heard of what was happening through an e-mail from my division secretary. The e-mail said not to go outside and that an emergency had happened in building 44. My officemates and I had no idea what was happening, but we closed the door and kept working. More e-mails were sent out with the little detail that people knew and we watched out the window as police cars assembled outside building 44. After about an hour of watching the news, looking out the window, calling people, and exchanging e-mails, we were told it was safe for us to leave, and so a few other co-op students and I left.

ECpE: What have you learned from your co-op tours?

Simon: I've learned how to work effectively in a team of engineers and have a much better appreciation for the importance of teamwork and communication within engineering. I've also learned a lot about NASA and the Johnson Space Center. I've worked with and heard talks from the rock stars of NASA—Chris Kraft, the inventor of mission control; John Young, a famous astronaut who flew on Gemini and Apollo; and Gene Kranz, the flight director during Apollo 11 and 13. Plus, I've learned about systems engineering, how to manage and be part of a team, and more.

ECpE: What are your future plans?

Simon: I plan to return to Iowa State for the 2007-08 academic year, then study abroad in the summer, and graduate in fall 2008. After that, I plan to do a co-op as a graduate student in Johnson Space Center's avionics division in 2009 and attend grad school at Georgia Tech. After grad school, I'd like to start working full-time in the Johnson Space Center's avionics division. ■

New Student Group Established

In January 2007, **Mani Mina**, senior lecturer, along with a select group of ECpE students including graduate student **Sasha Kemmet**, started Critical Tinkers (no, that's not a typo), a team of undergraduate students in electrical and computer engineering who meet weekly to use and develop their critical thinking skills to create exciting projects and get hands-on experience.

"The goal is not only to have fun and learn, but also to work with the student chapter of the Institute of Electrical and Electronics Engineers and the ECpE department to get more students excited about learning and engineering through cool projects and demos, as well as to improve professionalism among students in the department," says Mina.

Last year, the student group developed hands-on demonstrations, projects, and activities for VEISHEA and other events. The group also plans to visit high schools to generate excitement about electrical and computer engineering.

"The group is identifying cool projects and tinkering ideas such as a more exciting tesla coil and a remote control car with different sensors," says Mina. "They're also looking at off-the-shelf possibilities and modifications, as well as design from scratch. Four of the projects have been adopted by the electrical engineering learning community for laboratory activities." ■



Mani Mina meets with students in Critical Tinkers.

Undergraduate and Graduate Student Awards

The ECpE department extends our congratulations to the following undergraduate and graduate students:

■ **Cory Simon**, senior in computer engineering, received a prestigious Tau Beta Pi scholarship. The scholarship recognizes undergraduate students who are members of the national Tau Beta Pi honor society and who exemplify high scholarship, are involved in campus leadership and service, and represent a promise of future contributions to the engineering profession.

■ **Laura Janvrin** and **Vaibhav Kumar**, both seniors in electrical and computer engineering, received the William L. Everitt Award. This award honors outstanding seniors in electrical and computer engineering with an interest in communications and computers.

■ **Phillip Reusswig** and **Hakan Topakkaya**, both graduate students

in electrical engineering, and **Daniel Helvick**, graduate student in computer engineering, received Iowa State University's Teaching Excellence Award. The award recognizes and encourages outstanding achievement by graduate students in teaching.

■ **Zhenhui Shen** and **Changyan Zhou**, both graduate students in computer engineering, received Iowa State's Research Excellence Award, which recognizes graduate students at their time of graduation for outstanding research accomplishments as documented in their theses and dissertations.

For a complete list of all ECpE scholarship and fellowship recipients, visit our Web site at www.ece.iastate.edu/news/recent-news.html (click on the article called "More Than 160 ECpE Students Receive Scholarships, Honors"). ■

Alumni Achievements

The ECpE department congratulates the following alumni on their recent career achievements:

■ **Robert Brayton** (BSEE '56) was presented with the Association for Computing Machinery's Paris Kanellakis Theory and Practice Award. The award recognizes Brayton's groundbreaking work in logic synthesis and electronic system simulation, which led to rapid circuit design technologies in the field of design automation. Brayton was involved in design automation for the consumer, defense, and health care industries. He is a professor at the University of California, Berkeley.

■ **Vamsi Chadalavada** (MSEE '91, PhDEE '94) has won the ISU Alumni Association's Outstanding Young Alumni Award. The ISU Alumni Association established this award in 1968 to recognize alumni, age 40 and under, who have excelled in their professions and provided service to their communities. Chadalavada is the senior vice president for ISO New England in Holyoke, Massachusetts.

■ **Fredric Ham** (BSEE '76, MSEE '79, PhDEE '80) was elected by the International Neural Network Society members to be the society's president for 2007 and 2008. He will be the society's first two-year term president. Ham is a professor of electrical engineering at the Florida Institute of Technology. He holds three U.S. patents and has written more than 100 technical papers and reports, mostly in the areas of neural networks, digital signal processing, and biomedical engineering.

■ **David Lilja** (BSCpE '81) received the Iowa State University College of Engineering's Professional Achievement Citation in Engineering (PACE). This award recognizes superior technical or professional accomplishments in the areas of research, development, administration, education, and other engineering activities. The citation was established

to honor individuals eminently known for their competence and creativity. Lilja is currently an assistant professor in the University of Minnesota's Department of Electrical and Computer Engineering.

■ **M. Fahim Siddiqui** (BSCpE '87) received the University of Missouri-Kansas City's 2006-07 Alumni Achievement Award. He received a master's degree in computer science from that university in 1993. During his career, he has worked in leadership positions at Sprint, Time Warner Telecom, MCI, Enron Energy Services, and ICG Communications. In fact, he was appointed director of information systems at Time Warner Telecom when he was only 28 years old. Siddiqui now runs a Denver, Colorado-based company, Sereniti, which he founded in 2004. The company offers technology and support services for the management and security of home computers. ■

Alumni in the News

Our alumni have been making news around the country.



Here's a sampling of Iowa State newsmakers:

■ **Richard Jacobs** (BSEE '91) recently opened an office of Jacobs Chiropractic and Wellness Center in Gulf Breeze, Florida. After a 10-year engineering career, he attended Palmer Chiropractic College of Florida and graduated as its first valedictorian. *Source: Pensacola News Journal*

■ **W. Anthony "Tony" Will** (BSEE '87) has joined CF Industries Holdings as vice president of corporate development. Will previously was a partner at Accenture, vice president of business development at Sears, Roebuck and Company, and vice president of strategy and corporate development at Fort James Corporation. He also holds a master's degree in management from Northwestern University. *Source: Business Wire* ■

Class Notes

Find out what your college classmates are doing today.

1930s

Otis Miller (BSEE '39) of Colorado Spring, Colorado, stopped by the ECpE department office in May during the ISU Alumni Association's Alumni Days on his way to visit his grandchildren. Miller is retired from Western Electric.



Otis Miller

1960s

Mark Muehlhausen (BSEE '69) of Schaumburg, Illinois, retired from his position as a software quality engineer at Motorola in 2006 after 34 years with the company. He also received his master's degree in quality assurance from California State University, Dominguez Hills, in 2007.

1980s

Alireza Amiripour (BSEE '83) has moved to Burwood, Victoria, Australia. Amiripour is a solutions architect with FUJITSU. E-mail: al.amiripour@gmail.com

2000s

Loc Pham (BSEE '02) of Bloomington, Indiana, is now an electrical engineer with the Naval Surface Warfare Center Crane Division. E-mail: locphamisu@yahoo.com

Visit www.ece.iastate.edu/alumni.html to submit an update on your latest career moves and achievements using our new online form. ■

ECpE Alumni from Rockwell Collins Visit Campus, Recruit Students

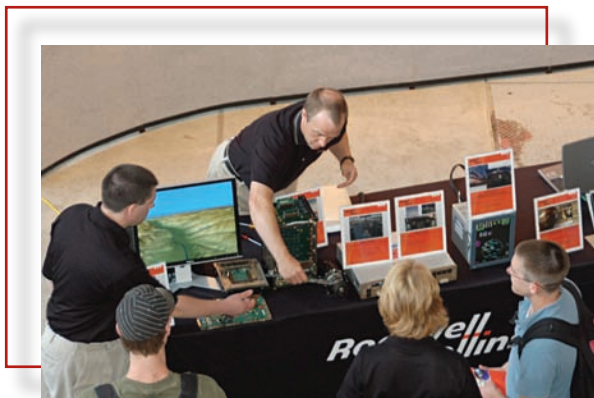
Each year Iowa State University alumni who work for Rockwell Collins return to campus to recruit new talent. Several electrical and computer engineering alumni—including **Radu Denghel** (BSCpE '06), **Tim McCormick** (BSCpE '01), **Matt Poellet** (BSCpE '87; MSECpE '97), **Adriane Van Auken** (BSCpE '01), and **Yifei Wang** (BSEE and BSCpE '03; MSHCI '05)—made the trip to Ames for Rockwell Collins Day, September 5. The crew set up demonstrations of the technology they're working on and answered students' questions about internships, co-ops, and employment at the Cedar Rapids, Iowa-based avionics company.

"It's fun to get to campus and see people," says Poellet, a principal engineer for commercial systems display applications.

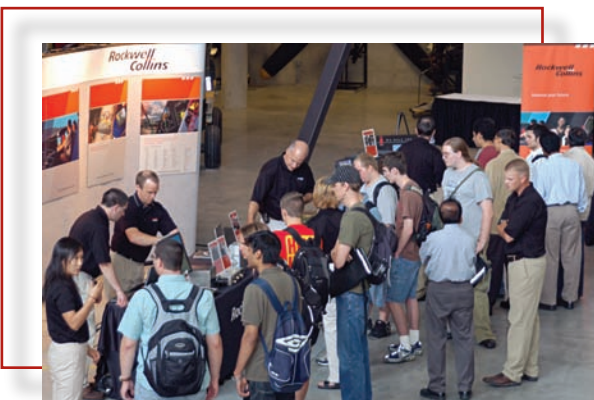
Denghel, the newest Rockwell Collins employee in attendance, started his job as a software engineer in January 2007 and develops software that displays terrain outside the cockpit. "This job is more than I imagined," he says. "It's like writing a computer game."

Wang, a systems engineer since 2005, says she uses many of the things she learned at Iowa State in her current job. "It's challenging, but there are wonderful people to work with," she says.

Two other alumni—McCormick, a senior engineering manager, and Van Auken, a senior software engineer—both got their starts at Rockwell Collins during co-ops and



ECpE alumni Radu Denghel (top left) and Matt Poellet (top right) show students the technology they work on at Rockwell Collins.



Iowa State engineering alumni return to campus to recruit students for internships, co-ops, and full-time employment.

internships in college. "I had a lot of great mentors in my first couple of years, and now I can mentor young engineers coming in," says Van Auken.

McCormick now manages Iowa State students and graduates who work for him on co-ops. "They do an excellent job and it's exciting to see new students coming through," he says.

Many of these alumni also returned to campus for the fall career fair September 18. The career fair drew more than 310 companies recruiting Iowa State engineers. ■

In Memoriam

The ECpE department recognizes our alumni who passed away this past year. This list includes alumni who died between October 2006 and August 2007 (arranged by graduation year, then alphabetical order).

1930s

- **Kendall Bower** (BSEE '38)

1940s

- **Norman Alvis** (BSEE '47)
- **Richard Christian** (BSEE '48)
- **Robert Clark** (BSEE '49)
- **Ward Jensen** (BSEE '40)
- **James H. Miller** (BSEE '48)
- **Maynard Roisen** (BSEE '49; MSNucE '60)
- **Richard White** (MSEE '48)

1950s

- **Charles Davis** (PhDEE '54)
- **Donald Hedstrom** (BSEE '52)
- **William Hughes** (MSEE '50; PhDEE '52)
- **Frederick Kuhlman** (BSEE '53)
- **Robert Stewart** (BSEE '50)
- **Robert Swanberg** (BSEE '51)

1960s

- **Gerald Balm** (BSEE '62; MSEE '63; PhDEE '66)
- **Everett Carter** (CTCprE '64)
- **Earle Davis** (BSEE '61)
- **John Kamm** (CTCprE '64)
- **Donald Klebe** (BSEE '62)
- **Larry Latta** (BSEE '63)
- **Francis Long** (PhDEE '61)
- **Milton Rensink** (BSEE '67; MSEE '71)

1970s

- **Dennis Stoneberg** (BSEE '76)

In May, the wife of former ECpE Department Chair and the late Warren B. Boast, **Ruth Boast**, passed away at age 96. The Boasts were committed to the department and Ruth attended many ECpE events until her death. Warren served as the ECpE department's chair from 1954 to 1975. ■

Calendar of Events

Upcoming events sponsored by the university, college, and ECpE department.

October 20

College of Engineering Alumni Homecoming Tailgate

Scheman Courtyard Tent,
3½ hours before kickoff

November 2

ECpE Fall External Advisory Board Meeting

Coover Hall, 10 a.m. to 4:30 p.m.

November 30

College of Engineering Alumni Holiday Party

In Play, Des Moines, Iowa, Time TBA



Students flock to the Engineering Career Fair each semester to network with prospective employers.

December 7

College of Engineering Alumni Holiday Party

Nancy and Craig Lillis' Home, North Liberty, Time TBA

December 14

Graduate Commencement

C.Y. Stephen's Auditorium, 8 p.m.

December 15

Undergraduate Commencement

Hilton Coliseum, 1:30 p.m.

February 19, 2008

Spring Engineering Career Fair

Hilton Coliseum, 1 to 6 p.m.

April 17 & 18

ECpE Spring External Advisory Board Meeting

Coover Hall, Event times vary

April 24

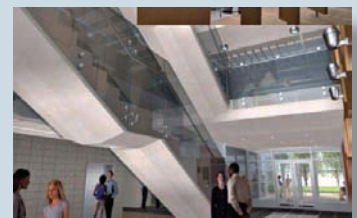
ECpE Spring Awards Banquet

Scheman Building, 5:30 p.m.

Check our Web site at www.ece.iastate.edu for additional details and up-to-the-minute information on departmental events and seminars. For information on events sponsored by the College of Engineering, visit www.eng.iastate.edu. ■

Building Success

The first phase of the Coover Hall Building Project is scheduled for completion in spring 2008. The new building addition will house all teaching labs, three new classrooms, and several research labs. Below are renderings of what the inside of the building will look like when it's finished. For information on donating to the ECpE Coover Hall Building Project, contact Keith Fortmann at the ISU Foundation (515-294-4280, kfortman@iastate.edu). ■



The renderings above show the proposed look of the entryway in the new Coover Hall addition.

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