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Cover Photo
Student Ambassadors promote the School of Engineering to prospective students by giving tours of Eaton Hall, leading student panel discussions, and building relationships with future Jayhawks. EECS Student Ambassadors Jamie Hines, Heather Owens, and Ankit Agarwal are in ascending order on the right side of the Jayhawk while James Waymire, Adam Chura, and Tom Dorsey are on the left.

Cover Design by Janene Synder
Cover Photo by Jill Hummels

EECS News
All EECS newsletters are available on the EECS Web site, www.eecs.ku.edu, with links for additional information.

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On behalf of the students, faculty, and staff of the Department of Electrical Engineering and Computer Science (EECS) at the University of Kansas, I am pleased to present to you our 2007 newsletter.

This past year has been one of superlatives. In FY 2007, our research reached its greatest volume to date with expenditures of over $7.3 million, 33% more than just two years ago. This increase in research activities has allowed us to expand our Ph.D. program. In Fall 2007, we had 70 Ph.D. students enrolled in our program, which makes it the largest class of EECS doctoral candidates.

In the research section, we highlight multiple awards from the National Science Foundation (NSF) and National Institutes of Health (NIH). Additionally, industry has sought out our innovative radio frequency identification (RFID) system, known as the KU-Tag. We also profile our growing computer systems design (CSD) laboratory, specifically research in embedded systems.

Formally named a focus area in 2004, CSD is thriving. Accordingly, we have hired a new faculty member who specializes in computer systems design. Dr. Prasad Kulkarni joined EECS in the Fall of 2007 after receiving his Ph.D. in Computer Science from Florida State University. His research area encompasses compilers, virtual machines, and hardware/software co-design.

With the addition of Dr. Kulkarni, we now have 39 tenure-track faculty slots, the highest number in the Department’s history. We are actively searching for six more faculty members, in disciplines ranging from bioinformatics to electromagnetics.

EECS faculty and student accomplishments further illustrate our banner year. Dr. Ron Hui continues serving as an NSF program manager. He is the fifth EECS faculty member to direct a federal program. Dr. Jim Stiles received a W.T. Kemper Fellowship for Teaching Excellence, the most prestigious teaching award given by KU. Dr. Stiles is the sixth EECS faculty member to receive the Kemper Award! Our undergraduate students captured “Best in Show” at the EXPO for the sixth time in seven years. EECS students also won the Cerner Corporation’s Software Design Competition, in which they competed against universities from across the Midwest.

Most of the student activities, awards, and scholarships are financed by donations from our alumni. The newsletter has an Endowment form that will enable you to contribute to the Department and its many activities.

As we enter 2008, I am enthusiastic about the path we are following. EECS continues to offer excellent undergraduate and graduate education to our outstanding students. We have well-respected faculty and a vibrant research program. By adding facilities and faculty, the Department is expanding in new and exciting areas. I am confident that we are positioning ourselves to continue excelling in the classroom and the laboratory.

Costas Tsatsoulis,
EECS Chair

Perspective
EECS Sums Up FY 2007

Undergraduate students
Electrical Engineering 129
Computer Engineering 108
Computer Science 165

Masters students
Electrical Engineering 72
Computer Engineering 14
Computer Science 52
Information Technology 21

Ph.D. students
Electrical Engineering 24
Computer Science 46

Bachelor degrees awarded
Electrical Engineering 25
Computer Engineering 13
Computer Science 32

Masters degrees awarded
Electrical Engineering 16
Computer Engineering 10
Computer Science 28

Ph.D. degrees awarded 6
Electrical Engineering 4
Computer Science 2

Tenure Track Faculty 39

Research Expenditures $7,370,584

Garmin Establishes Merit-Based Scholar Program

A long-time supporter of EECS, Garmin International has created the Garmin Scholar Program. Scholars will receive $5,000 per year up to four years of undergraduate study provided they continue to satisfy scholarship criteria.

Starting in the fall of 2008, the program will award 15 scholarships.

All students, including international students and current scholarship holders, who meet the criteria are eligible.

Applicants must be electrical engineering or computer engineering majors. Current KU students need a minimum 3.8 cumulative GPA. Incoming freshmen must have minimum composite and mathematics ACT scores of 30 and 32, respectively, and a high school GPA of at least 3.8.

A leader in global positioning system (GPS) technology, Garmin has donated GPS receivers and equipment to EECS. Garmin also employs many EECS graduates at its world headquarters in Olathe, Kansas.

EECS Distinguished Professor and ITTC Director Victor Frost (left) explains the KU-Tag to FCC Commissioner Michael Copps. Copps learned about EECS research and toured ITTC after he spoke at the Rural Broadband Round Table Summit held at KU this summer.
Information Assurance Courses Earn Recognition from Federal Government

The Department received federal certification for its information assurance (IA) curriculum. By successfully mapping EECS courses to government standards, the Department ensures that specific security concepts and practices are being taught. IA methods safeguard data and information systems that are critical to commercial, military, and intelligence activities.

EECS Distinguished Professor and KU Director of Research Information Technology Joseph Evans led the application process for designation from the Information Assurance Courseware Evaluation (IACE) program. Chaired by the Department of Defense and the Department of Homeland Security, the Committee on National Security Systems (CNSS) establishes the national IA standards.

IACE certified EECS for standards 4011 and 4013: the National Training Standard for Information Systems Security (INFOSEC) Professionals and the National Information Assurance Training Standard for System Administrators, respectively.

New Members Join EECS Industry Advisory Board

Tim Johnson, Leon Lake, Farzad Tari and Ben Vos are the newest members of the EECS Advisory Board, which helps guide the Department’s educational and research initiatives. The Board is comprised of leaders in electronics and information technologies.

Front Row (From Left to Right): Farzad Tari, Secure Computing Corporation; Tim Johnson, Garmin International, Inc.; and Leon Lake, Lockheed-Martin

Back Row (From Left to Right): Ben Vos, Sprint; Jeff Fuller, Honeywell FM&T/KCP; Steve Ciccarelli, Qualcomm; George Frazier, Cadence Design Systems; and Mike Sobek, StoreFinancial

Joseph Evans, EECS distinguished professor and KU director of research information technology, examines a student’s progress in class. Evans spearheaded the process of gaining federal certification for the EECS information assurance (IA) curriculum.

Photo by Jill Hummels
Industry Licenses New KU-Tag to Track Assets

Among a myriad of applications, radio frequency identification (RFID) systems can track assets in offices, warehouses, hospitals, and throughout supply chains. Such transparency allows organizations to more accurately and efficiently monitor their resources.

A RFID tag consists of a microchip with an antenna that “listens” for a radio query from an electronic reader. The tag then transmits its unique ID code and other information contained on the microchip. Deemed the next generation bar code, multiple tags can be scanned simultaneously over longer distances without readers needing to “see” the tags—advantages RFID has over traditional bar codes.

However, when RFID tags are placed on or near metal or liquids, performance degrades to the point where tags are no longer usable. Metals and liquids interfere with the operation of RFID tag antennas. ITTC Research Assistant Professor Dan Deavours developed the KU-Tag to solve this problem. It is one of the best-performing, least costly, and thinnest RFID systems specifically designed to work on metal or objects containing liquid.

“The KU-Tag provides a long-needed solution to the RFID industry,” says Toby Rush, president of Rush Tracking Systems, an RFID systems integrator.

Two companies licensed the KU-Tag this spring. In March, Container Technology, Inc., obtained the tag to improve monitoring of its liquid containers. The following month, Kansas City-based Starport Technologies, LLC, bought the right to manufacture and market the KU-Tag system. Starport recently signed a contract to produce 30,000 tags for a Fortune 500 company.

“"The KU-Tag is another important tool in our expanding range of RFID solutions,” says Jeff Nedblake, managing partner of Starport Technologies. “ITTC researchers found an innovative solution to address the metal/liquid problem, which is a common problem we keep hearing from customers.”
EECS Professor Perry Alexander has written the textbook System-Level Design With Rosetta, published by Morgan Kaufmann. The book examines clear code examples and case studies of the system-level design language. A review of the book by Electronic Design can be found online at www.elecdesign.com/Articles/ArticleID/14417/.

EECS Distinguished Professor and KU’s Director of Research Information Technology Joseph Evans’ research was featured in the April 16, 2007, issue of ComputerWorld magazine. The article, “Future Watch: Wireless Wises Up,” highlights Evans’ development of wireless communication protocols for cognitive networks (CogNet).

The New America Foundation, a non-profit, non-partisan think tank, commissioned Joseph Evans to conduct a feasibility study on unlicensed devices operating in TV bands. This spring New America cited the study in comments submitted to the Federal Communications Commission’s Proceedings on Unlicensed Operation in the TV Broadcast Bands.

The study, “Quantifying the Impact of Unlicensed Devices on Digital TV Receivers,” can be found at www.newamerica.net/files/NAF%20Spectrum%20Technical%20Report%20FINALSUBMITTED_0.pdf.

EECS Associate Professor James Sterbenz was selected as an IEEE Communications Society (ComSoc) Distinguished Lecturer. The Distinguished Lecturer Program (DLP) funds speaking tours, greatly increasing the number of technical experts accessible to local IEEE chapters around the world.

In the fall of 2007, the University of Kansas promoted Ron Hui to full professor. Hui joined EECS in 1997 as an assistant professor and was promoted to an associate professor in 2002. His innovative research has led to four U.S. patents. Additionally, Hui continues directing the National Science Foundation’s Photonics and Device Technologies Program.

The Harry Talley Excellence in Teaching Award was given to EECS Professor David Petr at the EECS Banquet in May. Graduating seniors vote on the EECS faculty member who has contributed significantly to their education and developed a strong rapport with students. This is the second time for Petr to win the award. Petr’s previous awards include the W.T. Kemper Fellowship for Teaching Excellence and the Sharp Teaching Professorship.

In May, EECS Professor Chris Allen earned a KU Center for Teaching Excellence award for his graduate teaching. Allen’s past awards include the Kemper Fellowship and the Sharp Teaching Professorship.

EECS Professor Chris Allen explains the answer to a radar systems problem to students. He won a 2007 KU Center for Teaching Excellence award.

Photo Courtesy of University Relations

Continued on Page 8
EECS Professor Jim Roberts received a Distinguished Service Award for University Outreach and Continuing Education from KU Continuing Education in April. This spring he also was elected treasurer and member of the Board of Directors Executive Committee of the National Institute for Pharmaceutical Technology and Education, Inc. (NIPTE).

At the beginning of the 2007 fall semester, EECS Associate Professor Jim Stiles received a visit from the “Surprise Patrol.” KU officials, including Chancellor Robert Hemenway and Provost and Executive Vice Chancellor Richard Lariviere, presented Stiles and 19 others with W.T. Kemper Fellowships for Teaching Excellence and $5,000 checks. A committee of KU students, faculty, and alumni selects the winners.

Stiles has earned two Harry Talley Excellence in Teaching Awards (2004 and 2000), which are voted upon by graduating EECS seniors. Stiles also garnered an Excellence in Teaching Award from KU’s Center for Teaching Excellence in 2000.

Since 2001, EECS Professors Perry Alexander, Chris Allen, Jerzy Gryzmala-Busse, and David Petr have won prestigious Kemper Fellowships.

EECS graduate student Prashanth Chandran (left) and EECS Assistant Professor Erik Perrins pose next to the sign that announces Chandran’s second-place finish in the graduate student division at the International Telemetering Conference (ITC) 2007.

Erik Perrins, EECS assistant professor, was elected a senior member of IEEE. IEEE is the world’s leading professional association for the advancement of technology. He was also asked to serve as an editor for IEEE Transactions on Communications. He will review articles within his area of expertise, modulation and signal design.

Additionally, Perrins’ graduate student Prashanth Chandran won second place in the student paper contest at the International Telemetering Conference. (See above picture) Chandran’s paper, “Symbol Timing Recovery for SOQPSK,” examined research he conducted under the direction of Perrins.

EECS Chair and Professor Costas Tsatsoulis served as chair person of the Midwest Section of the American Society for Engineering Education (ASEE). Founded in 1893, ASEE is a nonprofit organization of individuals and institutions committed to furthering education in engineering and engineering technology. The Midwest Section of ASEE includes universities in Arkansas, Kansas, Missouri, Nebraska, and Oklahoma.
Chen Receives Prestigious NSF CAREER Award

EECS Assistant Professor Xue-Wen Chen earned a Faculty Early Career Development (CAREER) award from the National Science Foundation (NSF). The five-year award is the highest NSF honor given to new faculty. Recipients are selected based on the integration of research and education in their career development plans.

The CAREER program supports the early development of teachers and scholars who are likely to become academic leaders of the 21st century.

Chen is helping provide life-sciences researchers with an unprecedented “big picture” view of humans’ internal processes. Chen extracts patterns from massive biological data sets by using classification, statistical modeling, and other tools to create machine learning methods (MLMs). The efficiency and effectiveness of the advanced algorithms improve as MLMs “learn” from experience and observations.

MLMs have various applications within life sciences such as understanding genetic regulatory networks. In effect, genes have “on/off” switches, and life-sciences research examines what initially triggers these switches and how altered genes affect other molecules. For example with cancer, cells in tissues divide and grow without the usual controls on cell death and cell division. Chen is developing software that can help in the early detection of cancer. Additionally, he is developing technology to identify biomarkers, which are measured to detect a disease or to monitor the effects of treatment. EECS researchers will develop user-friendly software for applications within life sciences.

The NSF award gives Chen additional opportunities to provide EECS student research assistants with special training in bioinformatics. Before receiving the award, Chen created new EECS graduate courses in machine learning, protein bioinformatics, and statistical learning: Bayesian approach.

Gauches Leave University

In the spring, Susan Gauch accepted a position as Department Head and Rodger S. Kline Endowed Chair in Computer Science and Computer Engineering at the University of Arkansas. John Gauch accepted a position as professor in the same department. The Gauches had been at KU since 1993.
What brought you to KU?

I came to KU mainly because of my dual interest in research and teaching. Also, it is a great University. When I came here for my interview, I talked to the faculty, and they seemed really nice.

Can you describe a specific challenge and how you overcame it?

Research problems crop up, and the solutions you have planned do not work out. This is my main challenge. Research is quite a bit of self motivation. When things do not work out, you tend to get frustrated. It is a major challenge to keep your motivation up, and keep faith in yourself and your research.

How do you keep your motivation?

I just keep working at it. I read and think about the problem. Talk to other researchers about it. Students should see what their advisor thinks about where their research is going. And I hope things work out.

Describe a typical day.

On a typical working day if I am not teaching in the morning, I will read papers and work on research problems. I will write down ideas. It is important to write down your ideas because you will forget them. If I am teaching, it is preparing course work and slides.

Can you think of any highlights you have had during your short time at KU?

I really like the town. Work wise, the Department is a highlight. The faculty has greeted me warmly, and EECS faculty members conduct outstanding research.

Tell us a little bit about your research.

My research is mainly in compilers, computer architecture, and embedded systems. Right now, I am just starting my research here. I think it will move more towards virtual machines and hardware/software codesign.
EECS Faculty
2007-2008

ARVIN AGAH
Associate Professor and
Associate Chair for Graduate
Studies
Teaches: Artificial Intelligence,
Software Engineering, and Robotics
Ph.D., Computer Science, University
of Southern California, 1994

PERRY ALEXANDER
Professor
Teaches: Digital Systems Design,
Programming Language Semantics,
Formal Methods, and Compilers
Ph.D., Electrical Engineering,
University of Kansas, 1992

CHRISTOPHER ALLEN
Professor
Teaches: Electronic Circuits,
High-Speed Digital Circuit Design,
Microwave Remote Sensing, and
Radar Systems
Ph.D., Electrical Engineering,
University of Nebraska, 1984

DANIEL ANDREWS
Professor
Teaches: Computer Architecture,
Digital Designs, Embedded and Real-
Time Systems, and Reconfigurable
Computing
Ph.D., Computer Science,
Syracuse University, 1992

SHANNON BLUNT
Assistant Professor
Teaches: Digital Signal Processing
and Detection and Estimation Theory
Ph.D., Electrical Engineering,
University of Missouri, 2002

FRANK BROWN
Associate Professor
Teaches: Artificial Intelligence and
Programming Languages
Ph.D., Intelligentia Artificiosa,
University of Edinburgh, 1978

SWAPAN CHAKRABARTI
Associate Professor
Teaches: Digital Logic Design,
Microcomputer Applications,
Computer Architecture, and Neural
Networks and Fuzzy Systems
Ph.D., Electrical Engineering,
University of Nebraska, 1986

XUE-WEN CHEN
Assistant Professor
Teaches: Machine Learning,
Bioinformatics, and Statistical
Learning
Ph.D., Electrical & Computer
Engineering, Carnegie Mellon
University, 2001

Professor Andrews’ research
is featured on page 26 in the
Computer Systems Design
article.
**TERRY CLARK**
Assistant Professor
Teaches: Bioinformatics, Scientific Parallel Computing, Computational Genomics, and Compiler Construction
Ph.D., Computer Science, University of Houston, 1996

**KENNETH DEMAREST**
Professor
Teaches: Circuits, Electromagnetics, Fiber-Optic Engineering, Microwave Systems, Noise Reduction, Antennas, and Radar Engineering
Ph.D., Electrical Engineering, Ohio State University, 1980

**JOSEPH EVANS**
Deane E. Ackers Distinguished Professor and KU Director of Research Information Technology
Teaches: Network Systems and Internet Routing
Ph.D., Electrical Engineering, Princeton University, 1989

**VICTOR FROST**
Dan F. Servey Distinguished Professor and Director of ITTC
Teaches: Communications and Optical Networks, Signal Analysis, and Communications Systems
Ph.D., Electrical Engineering, University of Kansas, 1982

**PRASAD GOGINENI**
Deane E. Ackers Distinguished Professor and Director of CReSIS
Teaches: Electromagnetics, Advanced Microwave Devices, and Microwave Engineering
Ph.D., Electrical Engineering, University of Kansas, 1984

**JERZY GRZYMALA-BUSSE**
Professor
Teaches: Data Mining, Expert Systems, and Computer Architecture and Organization
Ph.D., Engineering, Technical University of Poznan, Poland, 1969

**JUN HUAN**
Assistant Professor
Teaches: Bioinformatics and Mining Biological Data
Ph.D., Computer Science, University of North Carolina, 2006

**RONGQING HUI**
Professor
Teaches: Microelectronic Circuits I & II, Fiber-Optic Communications, Advanced Optical Communications, and Fiber-Optic Measurements and Sensors
Ph.D., Electrical Engineering, Politecnico di Torino, Italy, 1993
NANCY KINNERSLEY
Associate Professor
Teaches: Discrete Mathematics, Data Structures, Formal Language Theory, and Theory of Computing
Ph.D., Computer Science, Washington State University, 1989

MAN KONG
Associate Professor
Teaches: Data Structures, Analysis of Algorithms, Graph Algorithms, and Programming Language Constructs
Ph.D., Computer Science, University of Nebraska, 1986

PRASAD KULKARNI
Assistant Professor
Teaches: Computer Systems, Compilers, and Virtual Machines
Ph.D., Computer Science, Florida State University, 2007

CARLTON LEUSCHEN
Assistant Professor
Teaches: Electronic Circuits, Radar Systems, and Remote Sensing
Ph.D., Electrical Engineering, University of Kansas, 2001

JAMES MILLER
Associate Professor
Ph.D., Computer Science, Purdue University, 1979

GARY MINDEN
Professor
Ph.D., Electrical Engineering, University of Kansas, 1982

DOUGLAS NIEHAUS
Associate Professor
Teaches: Real-Time Systems, Operating Systems, Software Engineering, and Distributed Systems
Ph.D., Computer Science, University of Massachusetts, 1994

ERIK PERRINS
Assistant Professor
Teaches: Error Control Coding, Digital Communications, Signals and Systems, and Probability and Statistics
Ph.D., Electrical Engineering/Communication Theory, Brigham Young University, 2005

DAVE PETR
Professor and Associate Chair for Undergraduate Studies
Teaches: Circuit Analysis, Signals and Systems, Communications, Random Processes, Network Performance Analysis, and Optimization
Ph.D., Electrical Engineering, University of Kansas, 1990
Glenn Prescott  
Professor  
Teaches: Digital Signal Processing, Digital Communications, Electronic Design, Modulation and Coding, and Linear Systems  
Ph.D., Electrical Engineering, Georgia Tech, 1984

James Roberts  
Professor  
Teaches: Digital Communications, Information Theory and Coding, Wireless Communications, Detection and Estimation Theory, and Electromagnetics  
Ph.D., Electrical Engineering, Santa Clara University, 1979

James Rowland  
Professor  
Teaches: Control Systems, Circuits, and Probability and Statistics  
Ph.D., Electrical Engineering, Purdue University, 1966

Hossein Saiedian  
Professor and Associate Chair for Edwards Campus  
Teaches: Information Security and Assurance and Software Quality Assurance  
Ph.D., Computing and Information Sciences, Kansas State University, 1989

Sam Shanmugan  
AT&T Distinguished Professor  
Ph.D., Electrical Engineering, Oklahoma State University, 1970

James Sterbenz  
Associate Professor  
Teaches: Resilient and Survivable Networking, Mobile Wireless Networking, and High-Performance Networking  
D.Sc., Computer Science, Washington University, 1991

James Stiles  
Associate Professor  
Teaches: Electromagnetics, Electronic Circuits, Microwave Engineering, and Radio and Radar Systems  
Ph.D., Electrical Engineering, University of Michigan, 1995

Costas Tsatsoulis  
Professor and Chair  
Teaches: Multiagent Systems, Artificial Intelligence, Knowledge-Based Systems, and Introduction to Database Systems  
Ph.D., Electrical Engineering, Purdue University, 1987
EECS Banquet Awards

The following students were honored at the 2007 EECS Banquet on May 10.

Richard K. & Wilma S. Moore Thesis Award
This award is given in honor of Richard Moore, EECS distinguished professor emeritus. The best M.S. thesis and Ph.D. dissertation earn the honor. Presented to:  Jordan Guffey (master’s) and John Paden (Ph.D.)

Ellermeier Memorial Award
Robert Ellermeier was a former EE faculty member and associate dean of the Graduate School. A nontraditional student with outstanding scholastic achievement is the recipient of the award. First consideration is given to an EECS undergraduate student, then to an EECS graduate student, and then to students in other Engineering departments. Presented to: Tyrian Phagan

Everitt Awards
The International Engineering Consortium sponsors the Everitt Awards. The Awards are reserved for seniors majoring in EECS who are in the top 10 percent of their class. Winners must be interested in communications and computers and be active in outside activities. Presented to: Ryan Hogan and Travis Case

Paul F. Huebner Memorial Awards
Paul Huebner was a KU graduate with a B.S. in accounting, concentrating in computer science, and a M.S. in computer science. The award is offered to teaching assistants who best exemplify the role of a teacher. It is intended not only to reward good teaching but also to encourage students to consider teaching as a career. Presented to: Matthew Jones, Jonathan Kensler, Benjamin Ewy, Mei Liu, and Alexander Senf

Rummer Design Awards
Professor Emeritus Dale Rummer’s dedication to engineering design was the impetus for this award. The awards are given for outstanding work done by senior students in the capstone design courses in electrical engineering and computer engineering. Presented to: Woods Denny and Chris Coonts (EE) and Travis Case, Mark King, and Randy Rucker (CoE)

Outstanding Senior Academic Achievement Award
Based on overall outstanding achievement, the award is presented to one graduating senior in each of the three majors (computer science, computer engineering, and electrical engineering). Presented to: Joel Van Eenwyk (CS), Steven Tenny (CoE), and Cameron Lewis (EE)

Moore award winner and Ph.D. student John Paden explains his radar research to a member of the KU Math and Science Center program. The program offers college preparatory activities for potential first-generation college students and/or low-income students. EECS students often have opportunities to conduct educational outreach.
Pierce Wins Poster Contest

In November 2006, Levi Pierce earned first place in the master’s division of the KU Graduate Engineering Association (GEA) Research Poster Competition. In the above picture, Pierce is describing his poster, “Determining Contiguous Regions of DNA Response in Nucleosomes as a Foundation for a Computational Model,” to a participant. The poster highlighted his research with EECS Assistant Professor Terry Clark.

Robb Funds Support Travel

The goal of the David D. and Mildred H. Robb fund is to expose EECS graduate students to new, innovative ideas on the KU campus and elsewhere, with preference given to paper presentation, symposia, and seminar participation. All six Robb fund recipients presented papers at the conferences they attended.

Afal Syed; IEEE International Conference on RFID, Grapevine, TX, March 2007.
Ted Weidling; DySPAN, Dublin, April 2007.

Department Announces Scholarship Recipients

EECS presented $166,170 in financial aid for the 2007-2008 academic year. These scholarships are generated from donations to KU Endowment that are specifically designated as EECS scholarship funds.


**Each name that begins a new letter is in blue.**
Undergraduate Spotlight

Meet Heather Owen, EECS Senior

What are your tips for new students?
I would say get involved in your engineering major. Go to office hours and meet your professors, and find something fun outside of engineering that you like to do.

What is your fun thing to do?
Well, right now, I am taking two fun classes. I am taking basketball and kickboxing. I have one every day. They are great ways to relieve stress.

Can you describe a challenge that you encountered at KU and how you overcame it?
When I first came to KU, I had a little bit of trouble adjusting to being in college and being in a new situation. I think getting involved and meeting people through classes really helped me to get to know the School and the people here.

How did you become interested in EECS?
I really enjoyed math and physics in high school. I wanted to keep doing that, but I wanted to do something that was an application of math and physics. I decided to major in electrical engineering, and I have really liked it.

What has your overall experience as an EECS student been like?
The program is great here. You get a lot of hands-on experience with the labs. The teachers really care about the students and how we are doing. If you go and ask for help, there are tons of people who want to help. It is a part of a bigger university so you get all the fun sports teams that go along with it.

Will you be able to graduate in four years?
I came in with a lot of credit hours. I actually thought about graduating a semester early. I hope to be taking a few grad courses in the spring semester. I know it can be difficult to graduate in four years if you do not come in with any credit, but I think it is definitely doable.

Where's your favorite place to study?
On my bedroom floor.
EECS Designs Win in Cerner Competition

By Jill Hummels

In December 2006, EECS students earned first place in the Cerner Corporation Software Design Competition. KU students along with those from Kansas State University, the University of Iowa, and Purdue University presented software they had developed for a specialized PDA. The PDA would present, collect, and tie together patient information and other essential data needed by health care providers. Executives at the Kansas City-based health-care software development firm judged the semester-long projects.

EECS students Samantha Cook, John Heideman, Jeff Unger, and Jonathan VanEenwyk received first place. Members of the winning team each received a PDA.

“The students did an outstanding job. I knew we had the potential to perform well in this challenge,” says Arvin Agah, EECS associate professor and instructor of the Software Development Lifecycle course. “From an engineering perspective, these are strong schools to compete against. All the students had to draw upon their best creative and technical skills in order to succeed.”

Fourteen KU computer science and computer engineering students took part in the course, which employed a videoconference learning environment to connect students from the four universities with professionals at Cerner. The company provided each of the nine student teams with a PDA on which to build, test, and run their class project.

Just as in industry, students also learned the importance of planning.

“This course also teaches them project management,” says Agah. “You can’t be crisis driven. To be good, you have to plan.”

According to Stephen Smith, senior learning strategist with Cerner, Cerner’s associates committed between 500 and 700 hours to developing and delivering the course, above and beyond their day-to-day responsibilities.

“YOU CAN’T BE CRISIS DRIVEN.
TO BE GOOD, YOU HAVE TO PLAN.”

~ ARVIN AGAH
COURSE INSTRUCTOR
“While recruiting is a key component of the program, the relationships that are built between the universities and Cerner create opportunities to collaborate and create business relationships that are beneficial to both organizations,” Smith says.

For students, the course was a way to experience what it takes to move an idea from the product concept stage through rapid prototype development of the product, Agah said.

“The techniques and methodologies they’ve learned in the course can apply to any software development project they work on in the future,” says Agah. “That they were able to work on an actual product in a competitive business environment makes the experience richer and more relevant to their careers.”

EECS Associate Professor Arvin Agah, standing, leads the discussion. Cerner loaned each team a PDA on which to build, test, and run their designs. Each member of the winning team received a PDA.

Photos by Jill Hummels
For the sixth time in seven years, EECS has won Best in Show at the Engineering Expo. The Department’s most popular exhibits at the recent Expo in February 2007 included infrared laser tag and the programmable, buildable robots known as Lego Mind Storms. Additionally, EECS students created a new night vision exhibit with infrared cameras connected to televisions. Expo participants used the cameras to find infrared beacons hidden throughout the room.

“I think the reason we (EECS) have been so dominant is simple: our technology is more interesting and easier to display on a small scale,” says Nicole Schnell, EECS Expo chair. Schnell planned the Department’s activities during the fall semester and did most of the prep work during winter break.

Schnell oversaw approximately 50 EECS undergraduates who participated in the ‘007 Expo: Engineering Undercover. School of Engineering students created dozens of interactive exhibits and contests for Expo visitors just as the Q Branch developed cutting-edge technology for James Bond.

Since 1911, the School of Engineering has held the Expo each year to show young people the possibilities within engineering. The Engineering Student Council organizes the free, public two-
day event, which usually draws up to 2,000 visitors. Many contests are geared toward junior high and high school students, but some have divisions specifically for younger students.

EECS alumnus and Engineering Director for Google Earth Brian McClendon (EE ’86) was the keynote speaker for Expo. He demonstrated what Google Earth allowed users to do, such as viewing a 3-D model of the Eiffel Tower or watching real-time data on the arrivals and departures from the Amsterdam airport. ■

“ENGINEERS DREAM AND THEN BRING THOSE DREAMS TO LIFE.”

~ DEAN STUART BELL
IN OPENING REMARKS AT EXPO

Students win prizes for their engineering feats at Expo (top picture) and also learn about the possibilities within engineering. Since 1911, the Engineering Student Council has held the annual event, which attracts up to 2,000 visitors.

The Google Earth map behind EECS alumnus Brian McClendon (EE ’86) displays real-time data from the Amsterdam airport. The director of Google Earth engineering delivered the keynote address at the Expo.
Graduate Spotlight

Meet Daniel Fokum, second-year EECS Ph.D. Student

What are your top tips for new students?

1. Prioritize tasks appropriately.
2. Set limits on how much time you want to spend on a certain task. Sometimes something is fun, and you can get carried away.
3. Remember to set aside time to spend with friends and family. You can focus so much on school and research that you neglect relationships.
4. Read as much as you can. When you do, keep an annotated bibliography, and you should start this as soon as you get to campus.
5. Be willing to befriend other students and be willing to learn from other people.

Can you describe a specific failure or challenge that you encountered at KU and how you overcame it?

One of the classes I took last spring was pretty demanding. During that class, we talked to the professor about setting up discussion sessions. He did, and we could come in and ask questions. I also started studying with a friend.

My biggest challenge though was moving to Lawrence and having to readjust. I no longer had my friends just down the street. I have come to like Lawrence more and more.

Please explain your research.

I am working on a rail sensor net project. We are going to try and track cargo from a port in Mexico into Kansas City, and I am looking at developing the communication requirements for that project. Right now a lot of this is conceptual, but sensors would be gathering data from a pallet or a case on the pallet. Collected information would be sent to a point on the train where it would be forwarded to an operation center. Companies would have better visibility of cargo being transported.

Why did you choose KU?

My advisor at UMKC earned his Ph.D. here, and he recommended it. There is also a good communications and networking program at KU. My professors are well known in their fields.

Where do you see yourself in the next five years?

I would like to be teaching at a research university. I do not know where, but I would like to be teaching.
Doctoral Graduates

Doctoral degree programs include course work approved by the student’s committee, a doctoral qualifying exam, research skills requirement, comprehensive exam, dissertation or research project, and final oral exam.

Summer 2006
Advisor: Dr. Glenn Prescott

Winter 2006
Advisor: Dr. Hossein Saiedian
Advisor: Dr. Rongqing Hui
Advisor: Dr. Chris Allen

Spring 2007
Advisor: Dr. Rongqing Hui
Advisor: Dr. Man Kong

EECS doctoral student David Janzen (left) accepts an award at the ACM Student Research Competition Grand Finals in May 2006. He placed third in the prestigious international competition. After earning his Ph.D. in 2006, Janzen accepted an assistant professor position in the Computer Science Department at California Polytechnic State University.

EECS Professor Ron Hui (left) and Ph.D. student Biao Fu make adjustments to a RF Spectrum Analyzer. Under the direction of Hui, Fu conducted high-resolution optical performance research.
Master’s and Bachelor’s Graduates

**Summer 2006**
Nour Abdul Fattah, BSCS
Patrick Casteel, MSCS
David Dunson, MSEE
Madhuri Eunni, MSEE
Ashley Frazer, BSEE
Narayanan Govindan Kasi, MSEE
Suman Kansakar, MSCS
Daniel Leung, MSCS
Srikanth Pyneni, MSCS
Senthil Shanmugham, MSCS
Karthikeyan Varadarajan, MSCS
Lalit Venkatesan, MScOE
Adrien Yeganeh, MSCS
Robert Yeganeh, MSCS
Yang Yi, BSEE

**Winter 2006**
Mark Adams, MSCS
Mishari Alnahedh, BSEE
Gopalakrishna Anantha, MSEE
Ragavendra Anantha Padmanabhan, MSEE
Eric Benavidez, BSCS
Kellen Bombardier, MSCS
Gregory Bouzianis, BSCoE
Jose Eduardo Cardoce Cascante, MSEE
Hou Chong, BSCS
Ibrahima Diack, BSEE
Daniel Flanigan, BSCS
Alexander Garrett, MSCS
Christopher Gifford, MSCS
Lauren Haake, BSCoE
Elliott Hoffman, BSCS
Mahender Immadi, MSCS
Dena Jolley-Broderick, BSCS
Mark Kalusha, BSCS
Shankar Koniden, MSCS
Maria Laura, BSEE
Adam Lohoefener, MSEE
Ambika Nanda, MSEE
Kamen Nikolov, MScOE
Linda Ong, BSCS
Andrew Ozor, BSCS
Prabu Renganathan, MScOE
Michael Schwakopf, BSCS
Shalini Sodagam, MSEE
Cody Southerland, BSCS

**Spring 2007**
Temidayo Ajayi, MScOE
Wael Alroumi, BSCS
Raymond Anderson, BSCS
Brett Barker, MSCS
Richard Bauck, BSCS
Eric Bean, MSCS
Patrick Bliven, BSEE
Vincent Buhr, BSCS
Thomas Bulis, MSCS
Mark Cagle, BSEE
Travis Case, BSCoE
Cameron Cederlind, BSEE
Ashwin Kumar Chimata, MSCS
Kevin Collins, BSCS
Samantha Cook, BSCS
Brian Cordill, BSEE
Dinesh Datla, MSEE
Charles Derr, BSCS
Nigel Dunham, BSEE
Kyle Foraker, BSCS
Benjamin Geheb, BSEE
David Gill, BSCS
Ryan Grass, BSCoE
Jordan Guffey, MSEE
Deven Hammerschmidt, BSCS
William Hecker, BSEE
Nikala Heggestad, BSCS
Bao Hoang, BSEE
Ryan Hogan, BSCoE
Allan Jackson, BSCS
Guy Jacobs, MSCS
Gunasekhar Jayaraman, MSEE
Krishna Kotcherlakota, MScOE
Benjamin Ku, BSCS
Matthew Ku, MSCS
Sundara Kumara Vadivelu, MSEE
Hsinlun Lee, MScOE
Cameron Lewis, BSEE
Christopher Lingor, MSCS
Michael Lothyan, BSEE
Aditya Mandapaka, MSCoE
Michael Martz, BSCS
Mark Mattione, BSCS
Douglas McClendon, BSCoE
Phoebe Michels, BSCS
Kay Minn, BSEE
Matthew Pacey, BSCoE
Fernando Padilla Molloja, BSEE
Rodrigo Perea Camargo, BSCoE
Kevin Player, BSEE
Manuel Richey, MSCS
Michael Rink, BSCS
Daniel Rollins, BSEE
Randy Rucker, BSCoE
Amrullah Saidin, MSCS
Vandana Samala, MSCS
Gregory Seibel, MSCS
Aydin Seyedi, BSEE
Kuyilmozhinangai Shanmugasundaram, MSEE
Kapil Dev Siddulagari, MSCoE
Adam Smith, BSCoE
Sripriya Srinivasan, MSCoE
Jacob Staley, BSCoE
Justin Strecker, BSCS
James Sulzen, BSEE
Santhosh Sundararaman, MSCS

Steven Tenny, BSCoE
Alexander Thompson, BSCS
Esen Tunar, BSEE
Joel Van Eenwyk, BSCS
Jonathan Van Eenwyk, MSCoE
Chandini Veeramachaneni, MSEE
Yaoyao Xie, BSEE
Lin Yi, BSCoE

Master
Bolded, blue names graduated with honors
Bachelor
Departmental honors
Distinction
Highest distinction

Computer Engineering major Andy Schmidt (left) and CoE graduate student Temidayo Ajayi stand outside the Lied Center, waiting to begin their commencement ceremony in May. Schmidt walked in May, but officially graduated with honors in August.

EECS Chair and Professor Costas Tsatsoulis congratulates a graduate during the School of Engineering ceremony. The Department had 76 graduates in the spring.
Good Things Really Do Come in Small Packages

EECS Researchers Develop Embedded Elements

The contradictory notion of smaller electronic devices offering increased services is made possible by embedded systems. A combination of computer hardware and software, embedded systems are found in everything from automobiles, medical equipment, and airplanes to vending machines, toys, and mobile phones. EECS researchers specialize in creating new systems, tools, and design methods for fielding next generation embedded systems.

Since computer systems design (CSD) was formally established as an EECS area of concentration in 2004, investigators have secured 12 federal grants and published peer-reviewed articles in 5 journals and 24 conference proceedings. The following highlights a few EECS researchers specializing in CSD.

EECS Assistant Professor Prasad Kulkarni is the latest addition to the Department’s growing CSD focus area. With expertise in compilers, embedded systems, and computer architecture, he will help advance the state of the art in CSD technology. (For more information on Kulkarni, please see page 10.)

EECS Professor Perry Alexander and his research team are developing the official IEEE (Institute of Electrical and Electronics Engineers, Inc.) industry standard for Rosetta, the system-level design language he created. Rosetta facilitates a more efficient production process. Different vocabulary and engineering processes make communication between different disciplines involving complex electronics difficult. Each individual model from each design domain must be consistent with all other system models. Rosetta enables interaction between disparate system models, enabling tools to find errors that only appear when considering multiple perspectives simultaneously.

Alexander’s student research assistants, who have travelled to Australia and Europe to collaborate on Rosetta, participate in the standards process along with refining the system-level design language.

A student research assistant works on a field programmable gate array (FPGA) board. FPGA chips can be repeatedly reconfigured even while in use. The ability to reprogram these chips is critical to the success of embedded systems, a focus of CSD research.

Photo by Megan E. Gannon
After completing his sabbatical at the University of Paderborn in Germany last year, EECS Professor David Andrews has led the effort to formalize a student exchange between the research institutions. Andrews mentored University of Paderborn Ph.D. student Enno Luebbers who spent October at KU. EECS and Paderborn researchers are collaborating on the development of a hybrid threads (h-threads) compiler. Specifically, Andrews is creating a set of tools that enable software engineers to also function as hardware engineers. The h-threads compiler automatically converts C code into the hardware language VHDL. Andrews' compiler more authentically translates unaltered C than any other documented C-to-hardware converter. Using h-threads tools, development and verification of embedded systems can potentially be reduced from months to weeks.

Andrews also recently led the revision of the undergraduate digital design curriculum. The new curriculum introduces the use of modern Computer Aided Design (CAD) tools and systems on programmable chip components. The new courses follow a more holistic integrated hardware/software co-design approach.

CSD researchers collaborated with an international visiting scholar in the fall. Helmut Keller, a professor at the Federal Institute of Technology (TGM Vienna) in Austria, came to work with CSD researchers on high-speed image processing projects. Additionally, he taught an EECS graduate course, Operators for Embedded Signal Processing.

EECS students who focus in CSD receive a hands-on, collaborative educational experience and opportunities to present their work through journal publications and conference presentations. Alumni with a CSD focus work at Intel, Garmin, and other prominent organizations.

University of Paderborn Ph.D. student Enno Luebbers spent October at ITTC. EECS Professor David Andrews mentored the visiting scholar. EECS and Paderborn researchers are working on creating tools to reduce the cost and development-to-market time for embedded systems. Luebbers said his visit had strengthened the collaboration, and he was proud of what they had accomplished.
Compact, Economical Laser Allows Greater Access to Biological Imaging Technology

Advances in imaging and microscopic technologies are giving scientists a “big picture” view of biological systems. New techniques, such as two-photon microscopy, produce three-dimensional (3D) images of living cells at greater depths and higher resolutions than traditional tools.

In two-photon microscopy, an ultrafast laser emits pulsed light, or photons, that excite fluorescent labels attached to molecules. Scientists have observed cell development in hamster embryos, measured calcium in the brains of mice, and monitored the mechanisms in rats’ hearts. Near-infrared laser-based scanning microscopy also reduces photo damage, permitting analysis over longer periods of time. However, the high cost and cumbersome size of the ultrafast laser needed for two-photon microscopy severely limits its practical applications.

EECS Professor Ron Hui is leading multidisciplinary research to develop an affordable, compact laser system that would increase the accessibility of two-photon microscopy. The effort is funded by the National Institutes of Health (NIH). By producing a near-infrared light source, called two-photon fiber-laser excitation (TP-FLEX), Hui will simplify the generation of optical pulses needed for two-photon microscopy. Using a much smaller fiber laser, the TP-FLEX system will be easily transportable unlike conventional, fixed two-photon systems that use large lasers. TP-FLEX will be attached to current biological imaging microscopes that have high-quality lenses.
EECS Ph.D. student Peter Adany adjusts a spectrum analyzer during testing of the optical fiber, the yellow cable. Adany observes how the fiber reacts in different situations and then creates computer simulation models to predict future behavior.

“The breadth of KU research provided me with in-house collaborators for the project, which streamlines the development of a two-photon microscopy system,” says Hui. “There is a great need for accessible biological imaging tools. TP-FLEX, which will be the size of a briefcase, will enable two-photon microscopy to become available to those outside large research centers.”

The KU system will permit the simultaneous monitoring of different biochemical functions through multicolor labeling. With biofluorescent markers attached to specific proteins, various protein and molecular configurations can be distinguished and observed. Thus, scientists can observe multiple cellular events at the same time.

EECS researchers are collaborating with investigators from KU’s Department of Chemistry and the KU Medical Center on the “Portable and Wavelength-Tunable Two-Photon Microscopy” project. The lower cost and portability of TP-FLEX will enable greater accessibility for a wide range of biological, chemical, and analytical applications.

The fiber turns fluorescent as light travels through it. By understanding and controlling the generation of optical pulses, researchers can produce 3D images of living cells at greater depths and higher resolutions.
FIND Researchers Given a Clean Slate Upon which to Develop Innovative Global Network

EECS Distinguished Professor Joseph Evans and EECS Associate Professor James P.G. Sterbenz are helping lay the groundwork for a smarter, more robust network. They are among the first researchers to receive funding from the National Science Foundation’s new Future Internet Design (FIND) initiative. FIND advocates a “clean-slate approach” to the development of a new innovative global network. According to the FIND web site, researchers are not bound by current limitations of the Internet and should focus on designing an ideal network. The new network will include greater security and functionality than today’s Internet.

Evans is developing a structure and protocols, or “code of conduct,” for cognitive radios. Cognitive radios will nimbly navigate the radio frequency (RF) spectrum, reacting to their environment. They seek out unused spectrum and negotiate use of these vacant frequencies with other nearby wireless devices. Cognitive radios jump channels without interfering with existing users, such as television broadcasts. Underutilized TV spectrum possesses empty frequencies, or “white spaces,” that could provide additional capacity to spur on wireless development if the signals can be properly exploited.

Evans’ FIND project builds upon a strong foundation of EECS work with cognitive radios, such as the KU Agile Radio. His research will lead to an open-source cognitive radio software protocol stack (CogNet), which will be evaluated on emerging cognitive radio platforms. The “NeTS-FIND: CogNet—An Experimental Protocol Stack for Cognitive Radio Networks and its Integration with the Future Internet” project is in collaboration with Rutgers University and Carnegie Mellon University.

Developed by EECS Professors Gary Minden and Joe Evans, the KU Agile Radio integrates several advanced technologies to enable better spectrum utilization. Evans’ new NSF project will build upon technology previously created for the Agile Radio and other EECS research projects.

Photo by Megan E. Gannon
Sterbenz’s project will lead to a new thin internetworking layer that serves to bridge various realms of the future “Internetwork,” each of which may have disparate mechanisms, policies, and trust relationships. The post modern (PoMo) network will admit heterogeneity not possible in the current Internet, including mobile, wireless, ad-hoc, and sensor network realms that do not use Internet Protocol (IP) as the network layer mechanism. PoMo also explicitly recognizes trust and policy relationships between realms.

Additionally, EECS researchers are making the future network more reliable. Sterbenz is leading end-to-end transport research with an emphasis on security and intelligence. Authentication will prevent spam and other unwanted messages. The intelligent network will be able to distinguish between a dropped data packet or one that cannot be delivered because of congestion. In the former, the information would be resent immediately, but the network would wait until the congestion had cleared in the latter.

EECS is collaborating with the University of Maryland and the University of Kentucky on the “NeTS-FIND PostModern Network Architecture (PoMo)” project. Sterbenz’s group is working on resilience and survivability of the architecture, in conjunction with Lancaster University.
In FY 2007, actively funded research projects with EECS faculty or research faculty with EECS courtesy appointments as PIs or Co-Is are listed below. The format is: PI co-PIs; funding agency; “title,” start date – end date; and amount.

**Agah, A.;** KUCR/KDOT (flow-through from U.S Dept. of Transportation–Federal Highway Administration); “TRI 2006 Research Program Research Initiation (RI Award): A Realistic Driving Simulator Based on Parallel Computing,” 08/18/06 – 8/17/07; $49,463.


**Allen, C.;** Johns Hopkins University (flow-through from NASA); “Pathfinder Advanced Radar Ice Sounder (PARIS),” 10/3/05 – 6/30/07; $136,000.

**Andrews, D.;** Cadstone, LLC; “Simulation of Rosetta Representations and Evaluations,” 8/15/05 – 5/31/08; $213,305.

**Andrews, D. with R.D. Niehaus;** NSF; “Extending the Thread Execution Model for Hybrid CPU/FPGA Architectures,” 9/1/03 – 8/31/07; $532,357.

**Beach, J. with A.T. Peterson, S. Gauch, and D. Vieglais;** NSF/KTEC; “ITR Collaborative Research: Enabling the Science Environment for Ecological Knowledge,” 10/1/02 – 9/30/07; $697,773.


**Blunt, S.D.;** Office of Naval Research; “Waveform-Diverse Sensors,” 10/1/05 – 9/30/08; $330,701.


**Chen, X.-w.;** U.S. Army Research Office; “Learning from Small Samples with High Dimensionality,” 9/1/06 – 8/31/07; $55,576.


**Deavours, D.D.;** Honeywell; “RFID Tag Performance Analysis,” 9/18/06 – 2/28/07; $50,000.


**Deavours, D.D.;** Praxair, Inc.; “Phase 1: Testing of Commercial Passive UHF RFID Tags on Metal Cylinders,” 5/16/06 – 1/31/07; $29,335.

**Duncan, T. with B. Pasik-Duncan;** NSF; “Stochastic Analysis and Applications,” 7/1/05 – 7/31/08; $429,715.

**Duncan, T. with B. Pasik-Duncan;** NSF; “Stochastic Systems and Control,” 6/1/02 – 7/31/07; $430,600.
Evans, J.; The Carmen Trust; “Graduate Scholarship in EECS; Student: Ju Suyang,” 8/17/06 – 8/16/08; $42,107.

Evans, J. with A. Wyglinski; NSF; “Workshop on Mobile Wireless Technology and the Impacts on Future Internet,” 9/1/06 – 8/31/08; $72,155.

Evans, J. with J. Roberts; New America Foundation; “Quantifying the Impact of Unlicensed Devices on Digital TV Receivers,” 9/1/06 – 9/14/07; $32,000.

Evans, J. with S. Seshan and D. Raychaudhuri; NSF; “NeTS-FIND: CogNet—An Experimental Protocol Stack for Cognitive Radio Networks and Its Integration with the Future Internet,” 9/15/06 – 8/31/09; $349,000.


Fang, J. with G.H. Lushington; KUMCRI (flowthrough from NIH); “K-INBRE: Web Server Tracker, an Automated Literature, Protein/DNA Sequence and Domain Tracking System,” 5/1/07 – 4/30/08; $28,679.

Frost, V.S. with R. Hui; NSF; “NeTS-NR: High-Speed Self-Configuring Networks Based on Cost-Effective Plug-and-Play Optical (PPO) Nodes,” 10/1/04 – 9/30/08; $205,305.

Frost, V.S. with R. Hui; NSF; “SGER: Index Switchable III-Nitride Planar Lightwave Circuits for Optical Communications,” 8/15/05 – 1/31/07; $39,498.

Frost, V.S.; Sprint/Nextel; “Advanced Technology Lab (ATL): Wireless Quality of Service Assessment,” (Gift managed through KU Endowment Association)

CReSIS graduate research assistants conduct experiments in Nichols Hall.
Ph.D. students Eric Howell (foreground) and Daniel Fokum prepare to show technology being developed at ITTC to FCC Commissioner Michael Copps. Tags, like the one held by Howell, could provide real-time data as goods travel through the supply chain.

Minden, G. with J. Evans, A. Agah, and A. Wyglinski; BBN Technologies (flow-through from DARPA); “Adaptive Distributed Radio Open-Source Intelligent Network (ADROIT),” 10/01/05 – 9/30/08, $283,336.


Minden, G. with J. Roberts; NSF; “National Radio Networking Research Testbed (NRRNT),” 10/2/03 – 12/31/07; $1,852,560.


Perrins, E.; RT Logic; “A VHDL-Based Telemetry Waveform Generator,” 5/17/07 – 9/7/07; $21,130.

Perrins, E.; U.S. Army; “New FEC Schemes for Aeronautical TM,” 2/1/06 – 1/31/08; $155,000.

Prescott, G.; Cornell University (flow-through from NSF); “CReSIS International Research and Education Exchange Program,” 1/3/06 – 9/30/07; $138,000.


Tsatsoulis, C.; KTEC; Center for Excellence: Learning the Contents of Images for Image Retrieval,” 8/16/06 – 8/15/07; $40,154.


Graduate student Benjamin Panzer conducts radar testing for his research with CReSIS.
**Books & Book Chapters**


Gauch, S.E. with M. Speretta, A. Chadralmouli, and A. Micarelli; “User Profiles for Personalized Information Access,” Adaptive Web; (Eds.) Peter Brusilovsky and Alfred Kobsa, Springer-Verlag, Ch. 2, 2007, pp. 54–89.


**Journals**


Gauch, S.E. with M. Speretta, A. Chadralmouli, and A. Micarelli; “User Profiles for Personalized Information Access,” Adaptive Web; (Eds.) Peter Brusilovsky and Alfred Kobsa, Springer-Verlag, Ch. 2, 2007, pp. 54–89.


**Journals**


NASA Fellow and Ph.D. student Vijay Ramasami conducts research in ITTC’s Radar and Remote Sensing Lab. Ramasami was one the principal authors on the “Sea Ice Thickness Measurements by a Wideband Penetrating Radar” paper presented at the American Geophysical Union Fall Meeting in December.


ITTC RF Electronics Engineer Dan DePardo refines hardware for EECS Professor Gary Minden’s SensorNet project. Their research led to an article in IEEE Communications Magazine.


EECS Assistant Professor Erik Perrins (left) and graduate student Balachandra Kumaraswamy stand on the roof of Nichols Hall with a HughesNet satellite. Their proof-of-concept communication system is part of the infrastructure for the “Understanding and Forecasting Ecological Change” project.
Adam Hock, senior network systems administrator for the ITTC Bioinformatics Computer Cluster, and Victor Frost, ITTC director and EECS distinguished professor, demonstrate the high-performance computing environment. EECS Assistant Professor Xue-wen Chen and Bioinformatics Specialist Jianwen Fang are among the many KU researchers who use the cluster to analyze and store data.
Ph.D. students Eric Akers, left, and Richard Stansbury conduct field tests on an autonomous mobile rover (MARVIN II). They published the results with their advisor EECS Associate Professor Arvin Agah in two conference proceedings.


Conferences


Alexander, P. and D. Burke; “Supervisor VP and Secure Boot;” Trusted Research Platform Face-to-Face Meeting, Beaverton, OR, August 2006. (Invited)


Bilgen, M. with J. Gauch, R. Loganathan, M.D.
Alanezy, E. Popel, T. Alrefae, and I.V. Smirnova;
“Gaining New Insights on the Relations Between
Structure, Property, and Function in Diabetic
Heart using Elastography Imaging,” Fifth Int. Conf.
on the Ultrasonic Measurement and Imaging of Tissue
Blunt, S.D. and K. Gerlach; “A Generalized
Formulation for Adaptive Pulse Compression
of Multistatic Radar,” Fourth IEEE Workshop on
Sensor Array and Multi-Channel Processing (SAM),
Blunt, S.D. and P. Yatham; “Waveform Design for
Radar-Embedded Communications,” 2007 Int.
Waveform Diversity & Design Conf., Pisa, Italy, June
Blunt, S.D. and T. Higgins; “Achieving Real-
Time Efficiency for Adaptive Radar Pulse
Compression,” 2007 IEEE Radar Conf., Waltham,
Blunt, S.D. with K. Gerlach and T. Higgins; “Aspects
of Radar Range Super-Resolution,” 2007 IEEE
Radar Conf., Waltham, MA, April 2007,
pp. 683–687.
Burke, D. and P. Alexander; “Introduction to Trust
Relations,” High Confidence Software Symposium
(HCSS’07), Baltimore, MD, May 2007. (Invited)
Challum, V. with A. Chandramouli and S.E. Gauch;
“Contextual Search Using Ontology-Based
User Profiles,” Recherche d’Information Assistée
par Ordinateur (RIAO ’07): Large-Scale Semantic
Access to Content (Text, Image, Video and Sound),
Pittsburgh, PA, May/June 2007.
Chalishazar, N. with A. Lohoefener, J.A. Roberts,
and G. Prescott; “Mobile Line-of-Sight Radio
Propagation Modeling for Polar Regions,”
American Geophysical Union Fall Meeting, San
Chandramouli, A. and S.E. Gauch; “A Co-operative
Web Services Paradigm for Supporting Crawlers,”
Recherche d’Information Assistée par Ordinateur
(RIAO ’07): Large-Scale Semantic Access to Content
(Text, Image, Video and Sound), Pittsburgh, PA,
May/June 2007.
Chen, X.-w. and J. Jeong; “Minimum Reference
Set Based Feature Selection for Small Sample
Classifications,” in Proceedings of the 24th Int. Conf.
on Machine Learning, Vol. 227, Corvallis, Oregon,
Clark, T.; “DNA Sequence Annotations as a Basis
for Modeling Nucleosome Positioning,” Beijing
Genomics Institute, Beijing, China, July 2006.
(Invited)
Datla, D. with R. Rajbanshi, A.M. Wyglinski, and
G.J. Minden; “Parametric Adaptive Spectrum
Sensing Framework for Dynamic Spectrum Access
Networks,” 2nd IEEE Symposium on New Frontiers
in Dynamic Spectrum Access Networks (DySPAN),
Dublin, Ireland, April 2007.
Datla, D. with R. Rajbanshi, A.M. Wyglinski, and G.J.
Minden; “A Statistical Approach to Spectrum
Measurement Processing,” in Proceedings of the
2007 Virginia Tech Symposium on Wireless Personal
Communications, Blacksburg, VA, June 2007.
de Meer, H. and J.P.G. Sterbenz, (Eds.); in Proceedings
of the Int. Workshop on Self-Organizing Systems 2006,
Deavours, D.D.; “From Pilot to Production: Practical
Considerations in Your RFID Deployment,” RFID
World 2007, Grapevine, TX, March 2007. (Tutorial)
Duncan T.E. with B. Pasik-Duncan and L. Stettner;
“Remarks on Risk Sensitive Adaptive Control of
Markov Processes,” in Proceedings of the 45th IEEE
Conf. Decision & Control, San Diego, CA, Dec. 2006,
pp. 2861–2865.
Duncan, T.E. with B. Maslowski and B. Pasik-
Duncan; “Some Solutions of Semilinear Stochastic
Equations in a Hilbert Space with a Fractional
Brownian Motion,” in Proceedings of the 45th IEEE
Evans, J.B.; “CogNet - An Architecture for
Experimental Cognitive Radio Networks within
the Future Internet,” 1st ACM/IEEE Int. Workshop
on Mobility in the Evolving Internet Architecture

EECS Assistant Professor Shannon Blunt, left, evaluates calculations with EECS Ph.D. student and
U.S. Navy intern Tom Higgins. The researchers had
two papers published in the Proceedings of the 2007
IEEE Radar Conference in April.

Photo by Jill Hummels
Evans, J.B.; “Breakout session reports,” LSN Workshop on Future Internet and Experimentation Facility Design (with GENI as an Example Proposed Initiative), Arlington, VA, July 2006.


Gauch, S.E.; “Personalized Search Based on User Search Histories,” Information Sciences and Technology Colloquium Series, Penn State, Nov. 2006. (Invited)


Torry Akins, ITTC research associate, is working on a sensor component for the Polar Radar for Ice Sheet Measurements (PRISM) project. Akins collaborated on the “Synthetic Aperture Radar Imaging of Ice bed Interface” paper, which EECS Distinguished Professor Prasad Gogineni published.


EECS graduate student Madhuri Eunni refines a prototype of the KU-Tag, which can be seen at the bottom left. The innovative KU-Tag is profiled on page 6. Eunni wrote “A Novel Planar Microstrip Antenna Design for UHF RFID” paper that was published in the Proceedings of the 4th Int. Conf. on Computing, Communications, and Control Technologies.


Ph.D. students Rakesh Rajbanshi (standing) and Tim Newman along with master’s student Jordan Gufey (in the back) prepare for a presentation at the 2nd IEEE International Symposium on Dynamic Spectrum Access Networks. Rajbanshi’s paper, “Feasibility of Dynamic Spectrum Access in Underutilized Television Bands,” was accepted for the conference.

Photo Courtesy of Rory Petty


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Alumni Spotlight

Meet Denise Moore (CS, ’86), Director of the State of Kansas Division of Information Systems and Communications and Chief Information Technology Officer for the Executive Branch

What are your top tips for students?
I think it is important to complete an internship before graduating. Having experience in your field of study when you enter the job market is a real plus. I know many IT departments, particularly in state government, want to hire interns, especially in the summer. If your school has an internship program, make use of it. Let people know that you are looking for an internship, and contact companies that you would have an interest in working for in the future.

Please describe a challenge that you have encountered in the work force and how you overcame it.
Being a female in a male dominated profession has presented a number of challenges. Several years ago I became the first woman IT Director for a state agency. I had to attend a meeting of other state IT Directors but was not afforded the same stature as my colleagues in similar agencies. I was straightforward with the person leading the group, and we resolved the matter. It is typical to encounter these situations in a predominately male dominated profession. I found it important to not overreact, but at the same time, address the situation directly.

What does a typical day for you look like?
I don’t think I have typical days. Routine is not something I expect, which is probably why I enjoy the work I do. A lot of computer science and technology is about solving problems both at the technical and management levels. My daily work includes providing direction, advising, and making decisions in collaboration with many different people. So many things come to my attention on a daily basis I have to move quickly and decisively. Sometimes getting people working together effectively is one of the most important aspects of my work.

What are your favorite memories from EECS and/or KU?
One of the best things, when I look back on my experience, was the challenging curriculum. There was a good camaraderie among the students, and we accomplished a lot of complex assignments. Those were actually enjoyable times. Working collaboratively with a diverse group of people is something that has served me well in the workforce. This was my second degree, and I was an older student when attending KU. One of the things that stands out for me is being pregnant with my second child. She will be graduating from KU this year.

Do you have any insights or parting comments you’d like to share with students?
I have a few general observations about entering the workforce. Try to be open-minded about job opportunities. Speaking from my own personal experience, the best opportunities are not necessarily the planned ones. Interview those interviewing you to see what vision they have and what directions they want to go. Make sure it is a good fit for you, and there is opportunity for growth. Be prepared for your interview. When you get the job you want, dig in, work well with others, and volunteer for new projects or tasks, especially if they are over your pay grade.
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Patents


