EECS Department

Spring 2010 Newsletter

Chair’s Comments

As this is our first department newsletter since fall 2005, and our first ever as an Electrical Engineering and Computer Science (EECS) Department, we have much to share. In fall 2005, we were two departments: Electrical and Computer Engineering (ECE) and Computer Science (CS). After serving as chair of the ECE department for five years, Dr. Edwin Sawan stepped down in summer 2006. Dr. Steven Skinner served as chair of the ECE department from 2006 to 2008. It was Dr. Skinner, along with the chair of the CS department, Dr. Rajiv Bagai, who laid the groundwork for the merger. In the summer of 2008, the two departments merged, and Dr. Sawan graciously agreed to come back and serve as chair of the combined department for one year. In the summer of 2009, my term as chair began.

The merger is only one part of the many changes that have taken place during the last five years. In 2007, the College of Engineering moved into the 44,700-square-foot Engineering Research Laboratory Building. This building houses the following department laboratories: Dr. Ward Jewell’s Power Quality Laboratory; Dr. Steven Skinner’s Quantum Computing Laboratory; Dr. Vinod Namboodiri’s Wireless Networking and Systems Laboratory; and Dr. Ravi Pendse’s Advanced Networking Research Center, and CISCO Technical Research Center.
We have made numerous changes to our teaching laboratories. The Electronics Labs in Wallace Hall (WH) 330 and 331 have been updated with new furniture and virtual instrumentation. The Power Labs in WH 315 and 316 have also been updated with modern equipment. A new Wireless Teaching Lab was established in Jabara 249 (JB). Finally, new computers were purchased for the computing lab in WH 323.

Our curriculum is much broader than it was five years ago. Our department offers three Bachelors of Science (BS) degrees: Electrical Engineering, Computer Engineering, and Computer Science. We offer three Masters of Science (MS) degrees: Electrical Engineering, Computer Networking, and Computer Science. The MS degree in Computer Networking is one of a few of its kind in the country. We also offer a Doctor of Philosophy (PhD) degree in Electrical Engineering.

Our undergraduate degree programs aim to prepare our students for both graduate school and the engineering work place for many years to come. As a part of the College of Engineering’s Engineer of 2020 program, all undergraduate students must complete, in addition to their required course load, three of the following six activities: 1. Undergraduate Research; 2. Cooperative Education or Internship; 3. Global Learning or Study Abroad; 4. Service Learning; 5. Leadership; and 6. Multidisciplinary Education.

More important than our buildings or curriculum are our people. We have five new assistant professors. Dr. Preethika Kumar is in the quantum computing area, and Dr. Yanwu Ding is in the communications area. In the networking area, we have Dr. Bin Tang, Dr. Neeraj Jaggi, and Dr. Vinod Namboodiri. Dr. Ward Jewell, who is not new, has been selected by the College of Engineering for the 2010 Dwane and Velma Wallace Excellence in Research award. Under Dr. Ravi Pendse’s leadership, WSU, in conjunction with LSI, launched the Center for Storage Networking Research. Dr. Sawan received the 2009 WSU academy for Effective Teaching Award. We would like to thank Dr. Sawan, Dr. Paul York, Dr. Larry Paarmann, and Dr. Shang Chou (CS) who all retired after many years of service.

Of course, the reason we have a great curriculum, excellent labs, and superb faculty is our students. We had almost 900 students in our seven degree programs last fall. This number is up 9% from fall 2008.

Even more impressive than the number of our students is the quality. This spring Tooran Emami, Kenny Wong, and Masakki Takahashi will be recognized by the Graduate School for the Outstanding Doctoral Dissertation, Dora Wallace Hodgson Outstanding Doctoral-Level student, and Dora Wallace Hodgson Outstanding Master-Level student, respectively. Visvakumar Aravinthan was selected for the 2010 Dwane and Velma Wallace Outstanding Graduate Teaching Assistant Award. Finally, Jenice Doung, a future computer engineering major, was awarded a $48K Gore Scholarship. This award, which is the largest undergraduate scholarship offered in Kansas, recognizes excellence in leadership and academic performance.

As a part of our merger, the EECS department office is now in Jabara 249. If you are in town, please come and visit us.
**Computer Networks MS degree**

Last year, the Department of Electrical Engineering and Computer Science started offering a new graduate degree in the area of computer networking. This area has become an essential component of any effort for economic and social progress. Demand for networking experts is expected to multiply exponentially during the next two decades, as more small businesses and individual citizens “go online.”

As hardware technology continues to advance at a very high rate, computers will become even more integrated into all sectors of our society. Indeed, we have started to witness “society” being redefined at a global scale, where business owners, doctors, engineers and other professionals can provide their services across the Globe in real time. Most organizations have started to encourage their customers and employees to utilize online services. Such unprecedented integration of computer technology into various aspects of ordinary life will make it very difficult for any individual citizen or business of any size to remain offline for any period of time. This is certain to increase the demand for networking experts who would design, deploy, support, and maintain computer networks. According to the Bureau of Labor Statistics (BLS), “growth in network and computer system administrator jobs will be much faster than average” in the next ten years. As posted on www.bls.gov, employment in the computer networking area has been projected to increase by 53% by 2018. Graduates of this new program will have expertise in both hardware and software technologies which will prepare them for a successful career to meet the growing demand for networking experts. A degree with a title that accurately reflects a student’s educational background is certain to enhance employment opportunities.

For more information, contact Dr. Rajiv Bagai, graduate coordinator for the MS in Computer Networking. His e-mail address is rajiv.bagai@wichita.edu

**New Data Storage Research Center**

The Center for Storage Networking Research (CSNR), which opened December 3, 2009 under the Advanced Networking Research Center (ANRC), performs state-of-the-art theoretical and experimental research in the field of Storage Area Networking. Dr. Ravi Pendse is the director of this new center which represents a collaboration between industry and academia. Drs Vinod Namboodiri and Neeraj Jaggi are involved in its research which will focus on storage system advancements in areas such as performance, scalability, energy efficiency and security, and will potentially influence the design and evolution of future data storage systems.

The center’s website is: http://webs.wichita.edu/?u=ANRC&p=/csnr/index/
Our Students

The Department of Electrical Engineering and Computer Science has 524 undergraduate students and 362 graduate students. The computer science program has 206 students, the computer engineering program has 118 students and the electrical engineering program has 200 students. The MS in computer networking has 24 students, the MS in computer science has 81 students and the MS in electrical engineering has 221 students. The Ph.D. in electrical engineering has 36 students.

Faculty Promotions

Prakash Ramanan from Associate Professor to Professor.

Faculty awards

Ward Jewell received the 2010 Dwane and Velma Wallace Excellence in Research Award.

Preethika Kumar was nominated for the 2010 Dwane and Velma Wallace Excellence in Teaching Award.

Edwin Sawan received the Academy for Effective Teaching Award and was selected to be a member of the Academy itself in November 2009.

John Watkins was Chief Guest at 2009 India Night.

Funded Faculty Grants

Bagai


Jaggi


Jewell


Twomey’s Targeted Funding for Sustainable Energy Solutions), June 2008 - December 2009, $213,322.

Ward Jewell (PI), Mladen Kezunovic (Co), Communication Requirements and Integration Options for Smart Grid Deployment, PSerc, June 9, 2009 - August 2011, $75,000.

Ward Jewell (PI), Shmuel Oren (Co), Chen-Ching Liu (Co), Yihsu Chen (Co), Technical and Economic Implications of Greenhouse Gas Regulation in a Transmission Constrained Restructured Electricity Market, PSerc, June 1, 2008 - August 31, 2010, $76,000.

Malden Kezunovic (PI), Ward Jewell (Co), Integration of Asset and Outage Management Tasks for Distribution Applications, PSerc, June 1, 2007 to August 31, 2009.

Don Russell (PI), Ward Jewell (Co), Carl Benner (Co), Comparative Characterization of Parallel Distribution Sensors under Field Conditions, PSerc, June 1, 2007 - August 31, 2009, $25,000.

Namboodiri

Ward Jewell (PI), Vinod Namboodiri (Co) and Malden Kezunovic (Co), Communication Requirements and Integration Options for Smart Grid Deployment, PSerc, June 1, 2009 - August 31, 2011, $160,000.

Ramanan

Don Malzahn (PI), P Ramanan (Co), J. Steck (Co), E. Markle (Co), MESTT, NIAR - Boeing, KS, July 2009 - June 2010, $25,000.

Skinner


Tang


Chunsheng Ma (PI), Bin Tang (Co), Understanding the Climate Change in Great Plains: Source, Impact, and Migration, NSF EPSCoR, October 2009 - October 2014, $90,000.


Watkins


L. Whitman (PI), B. Gile Laflin (Co), K. Sochinske (Co), J. Watkins (Co), and J.
Steck (Co)., Great Expectations: Engineers in Kansas Scholarships (GEEKS), NSF, July 2008 - June 2013, $599,953.

Faculty Presentations

Jaggi


Kwon


Published Papers and Proceedings

Ding


Jaggi


Jewell


Kwon


Tze Wang and Hyuck M. Kwon, “Joint Source Coding and Higher-Dimension


Namboodiri


Pendse


Ramanan

Sawan


Tang


Watkins


T. Emami and J. Watkins. “Robust Performance Characterization of PID


**Faculty Research Interests**

**Rajiv Bagai:**
Web Anonymity
Data Models
Deductive Databases
Logic Programming
Programming Languages

**Yanwu Ding:**
Signal Processing and Communication Systems, including Cognitive Wireless Networks, Cooperative Systems, WCDMA

**Keenan Jackson:**
Algorithms, Encryption
Computer Graphics

**Neeraj Jaggi:**
Energy Efficiency
Adaptive and Distributed Algorithms
Spatio-Temporal Correlations in Sensor Networks
Mac Layer Misbehavior Detection and Reaction
Fairness Aspects in Wireless Networks

**Ward Jewell:**
Power Systems
Power Quality
Distributed Generation
Renewable Resources
Distance Learning
Preethika Kumar:
Quantum Computing Architectures
Designing One-Dimensional and Two-Dimensional Architectures for Quantum Computing
Quantum Shift Registers and Wires for Quantum State Transfer
Quantum Error Correction and Fault-Tolerant Quantum Computing
Physical Implementations of Algorithms on a Quantum Computer

Vinod Namboodiri:
Wireless Networking
Mobile Computing
Energy-Intelligent Computing
Energy-Efficient and Sustainable Computing
Communication in Smart Electric Grids
Pervasive Healthcare Technologies

Ravi Pendse:
Computer Architecture
Networking

Hyuck Kwon:
Wireless Mobile Communications
Communication Systems
Information Theory
Satellite Communications
Smart Antenna
CDMA
MIMO

Prakash Ramanan:
XML
Database Systems
Data Structure
Information Retrieval Algorithms

Steven Skinner:
Quantum Computing
Optical Networking

Bin Tang:
Algorithmic Aspects of Data Intensive Sensor Networks (DISNs), in the context of Cyber-Physical Systems (CPS)
Temporal and Spatial Statistical Modeling of Data

Asrat Teshome:
Power Systems
Power Electronics
Control Theory

John Watkins:
Robust Control
Fault Detection and Isolation
Active Magnetic Bearings
Networked Control Systems
Time-Delay Systems
Spacecraft Dynamics and Control
**Donations**

If anyone wants to make a donation to the EECS department, here are a couple of easy ways to do it.

If you want to use a credit card, go to
https://secure.wichita.edu/foundation/newgift1.asp and under gift designation, select other and specify the department fund name (EECS) and number (27660). After you hit submit, you will be given a donation # and will be able to enter your credit card information.

If you prefer to write a check, make it payable to the Department of Electrical Engineering and Computer Science and send it to the following address. Your check will be deposited in the department’s foundation account.

Judie Dansby  
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EECS Department  
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Thank you for any gift that you choose to make. It will benefit current and future students, faculty, staff and programs in the EECS department. All donations are tax-deductible.