

# 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 Doun, 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](http://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](mailto: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**

Rajiv Bagai (PI), Bin Tang, Neeraj Jaggi

(Co), Design and Development of a Multi-server Anonymizer, Navy Engineering Logistics Office (subcontracted from Acxiom Corporation), January 2009 - April 2010, \$335,292.

### **Jaggi**

Neeraj Jaggi, Algorithm Design for Sensor Networks with Renewable Energy Sources, Office of Research Administration, Wichita State University, July 2009 - June 30, 2010, \$4,500.

### **Jewell**

Don Gruenbacher, Bill Kuhn, Chris Lewis, Medhat Morcos, Bala Natarajan, Anil Pahwa, Noel Schulz, Caterina Scoglio, Ward Jewell. Kansas Wind Energy Consortium, DOE, January 1, 2010 - December 31, 2011, \$80,000.

William Schulze, Ward Jewell, Daniel Tylavsky, Shmuel Oren, Yihsu Chen, James, Bushnell, Siny Joseph. Impacts of National Environmental Regulation on the Electric Power Industry, PSERC, June 1, 2010 - August 31, 2012, \$60,000.

Ward Jewell, Shmuel Oren, Yihsu Chen, Jams Bushnell, Siny Joseph, Interactions of Multiple Market-based Energy and Environmental Policies in a Transmission-constrained Competitive Electric Market, PSERC, June 1, 2010 to August 31, 2012, \$66,000.

Ward Jewell, Coskun Cetinkaya, Networked Monitoring and Control of Small Interconnected Wind Energy Systems, US Department of Energy (Part of Prof. Janet

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

S. R. Skinner (PI), J.E. Steck (Co), M. Harder (Co), J.B. O'Loughlin, Electromagnetic Characterization of Composite Fuselages, NIAR/Industry/State Research Program, July 2009 - June 2010, \$160,000.

### Tang

Bin Tang, A Simulation Framework for Modeling, Analyzing, and Evaluating Data-Intensive Scientific Workflows, WSU URCA, July 2009 to June 2010, \$4,500.

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.

Rajiv Bagai (PI), Bin Tang, Neeraj Jaggi (Co), Design and Development of a Multi-server Anonymizer, Navy Engineering Logistics Office (subcontracted from Acxiom Corporation), January 2009 - April 2010, \$335,292.

### Watkins

J. Steck (PI), K. Rokhsaz (Co), S. Bruner (Co), D. Kimball (Co), J. Watkins (Co), K. Barnard (Co), and T. Karcz (Co), Aeroelastic Modeling Effects and Flight Test Demonstration of Resilient Adaptive Flight Controls on a General Aviation Test bed: Dynamic Inverse and Adaptive Critic Methods, NASA EPSCOR, May 2009 - June 2012, \$749,952.

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**

Neeraj Jaggi, “Multi-sensor Event Detection Under Temporal Correlations with Renewable Energy Sources.” WiOpt 2007 (7<sup>th</sup> International Symposium on Modeling Optimization in Mobile Ad Hoc and Wireless Networks, June 2009.

### **Kwon**

Hyuck M. Kwon, “NASA’s L&M Surface Communication Systems with Efficient Miniature Antennas.” Kansas NASA EPSCor Program Symposium, Wichita State University, November 2009.

Hyuck M. Kwon, Erik Perrins, and Yang-Ki Hong, “Part I: Introduction and MIMO Channel Capacity Analysis; Part II” Fabrication and Characterization of RPA (Ring Patch Antenna) and CPA (Circular Patch Antenna); Part III: High-Performance Communication Systems for Miniaturized Applications.” NASA/JSC, Houston, Texas, June 2009.

Hyuck Kwon, “NASA’S L&M Surface Communication Systems with Efficient Miniature Antennas.” NASA EPSCoR CAN Workshop, Wichita State University, April 2009.

## **Published Papers and Proceedings**

### **Ding**

Y. Ding, M. Uysai, “Optimum Power Loading for Non-coherent Frequency-Selective Relay Channels.” Proceedings of the IEEE International Military Communications Conference (MILCOM), November 2009.

Y. Ding, M. Uysai, “Multi-Relay Cooperative OFDM with Amplify-and-Forward relaying” (invited paper). Proceedings of the IEEE Radio and Wireless Symposium, January 2009.

### **Jaggi**

Neeraj Jaggi, Koushik Kar, and Ananth Krishnamurthy, “Rechargeable Sensor Activation under Temporally Correlated Events.” Springer Wireless Networks Journal, Vol. 15, No. 5, July 2009.

Neeraj Jaggi and Koushik Kar, “Multi-sensor Event Detection under Temporal Correlations with Renewable Energy Sources.” Proceedings of the International Symposium of Modeling and Optimization in Mobile Ad Hoc and Wireless Networks (WiOpt), June 2009.

### **Jewell**

Ward Jewell, Ted Grossardt, Keiron Bailey, and Ramandeep Gill, “A New Method for Public Involvement in Electric Transmission Line Routing.” IEEE Transactions on Power Delivery, Vol. 24, Issue 4, Oct. 2009.

Timothy J. Browne, Gerald T. Heydt, Jonathan W. Stahlhut, and Ward T. Jewell, "Innovative Concepts in Power System Instrumentation." *Journal of Electric Power Components and Systems*, Vol. 37, Issue 4, 2009.

Doug, Y.; Aravinthan, V.; Kezunovic, M.; and Ward Jewell, "Integration of Asset and Outage Management Tasks for Distribution Systems." *Proceedings of the Power and Energy Society General Meeting, 2009. (PES'09, IEEE)*, July 2009.

Piyasak Poonpun, Matthew Riddel, and Ward Jewell, "Solar Generation Prospects and Effects on System Optimal Power Flow." *Proceedings of the 2009 Frontiers of Power Conference*, October 2009.

Perlekar Tamtam and Ward Jewell, "Commercially Available Technologies for Electricity Storage." *Proceedings of the 2009 Frontiers of Power Conference*, October 2009.

### Kwon

Seok Bae, Yang-Ki Hong, Jae-Jin Lee, Jeevan Jalli, Gavin Abo, Won-Mo Sung, Gi-Ho Dim, Sang-Hoon Park, Jun-Sig Kum, and Hyuck M. Kwon, "Co2Z Hexaferrite T-DMA Antenna for Mobile Phone Applications." *IEEE Transactions on Magnetics*, vol. 45, no. 10, October 2009.

Chandana Jayasooriya, Hyuck M. Kwon, Seok Bae, and Yang-Ki Hong, "Miniaturized Multi-mode Circular Patch Antennas for MIMO Communications." *IEEE Vehicular Technology Conference 2009 Fall*, September 2009.

Amitav Mukherjee and Hyuck M. Kwon, "A Coalition Game Framework for Scheduling Cooperative Diversity Networks." *IEEE Vehicular Technology Conference 2009 Fall*, September 2009.

Amitav Mukherjee and Hyuck M. Kwon, "Interleave-Division Multiple-Access Systems with IRA Coding and Adaptive Pilot Symbols." *IEEE Vehicular Technology Conference 2009 Fall*, September 2009.

Seok Bae, Yang-Ki Hong, Jae-Jin Lee, Jeevan Jalli, Gavin Abo, Won-Mo Sung, Gi-Ho Dim, Sang-Hoon Park, Jun-Sig Kum, and Hyuck M. Kwon, "Co2Z Hexaferrite T-DMA Antenna for Mobile Phone Applications." *IEEE International Magnetics Conference*, May 2009.

Seok Bae, Yang-Ki Hong, Jae-Jin Lee, Jeevan Jalli, Gavin Abo, C. Jayasooriya, and Hyuck M. Kwon, "MIMO 2-Ring Patch Antenna (2-RPA) for W-LAN Applications." *Korean Magnetics Society 2009 Summer Conference*, May-June 2009.

Amitav Mukherjee and Hyuck M. Kwon, "CSI-Adaptive Encoded Pilot Symbols for Iterative OFDM Receiver with IRA Coding." *IEEE Vehicular Technology Conference 2009 Spring*, April 2009.

Amitav Mukherjee and Hyuck M. Kwon, "Group Diversity on the Uplink of a Dense Coded-Cooperative Network." *IEEE Vehicular Technology Conference 2009 Spring*, April 2009.

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

Modulation.” IEEE Vehicular Technology Conference 2009 Spring, April 2009.

Jie Yang, Larry Paarmann, Hyuck M. Kwon, and Wenhao Xiong, “Biological-Vision Inspired DSA System for UAVs.” Biosignal 2009, January 2009.

### Namboodiri

Vinod Namboodiri, “Are Cognitive Radios Energy Efficient? A Study of the Wireless LAN Scenario.” Proceedings of the 28<sup>th</sup> IEEE International Performance Computing and Communications Conference (IEEE IPCCC) December 2009.

### Pendse

Hiren, G.; Qasaymeh, M.M.; Pendse, R.; Sawan, M.E.; Nizar T., “Semiblind

Multiuser MIMO Channel Estimators Using RP and RRQR Methods.” Seventh Annual Communication Networks and Services Research Conference, 2009.

Heba S.; Hire, G.; Qasaymeh, M.M.; Nizar, T.; Sawan, M.E.; Pendse, R., “High Resolution Joint Time Delay and Frequency Estimation.” IEEE, SARNOFF ‘09, 2009.

Qasaymeh, M.M.; Nizar, T.; Hire, G.; Sawan, M.E.; Pendse, R., “RRQR Based Closed-form Blind Carrier Offset Estimator for OFDM Systems.” International Conference on Telecommunications, ICT ‘09, 2009.

Qasaymeh, M.M.; Hire, G.; Nizar, T.; Pendse, R.; Sawan, M. E., “Rank Revealing QR Factorization for Jointly Time Delay and Frequency Estimation.” IEEE 69<sup>th</sup> Vehicular Technology Conference, VTC Spring 2009.

Hire, G.; Qasaymeh, M.M.; Tayem, N.; Pendse, R.; Sawan, M.E., “Subspace Based Blind CFO Estimation for OFDM by Exploiting Used Carriers.” IEEE, SARNOFF ‘09, 2009.

Hire, G.; Qasaymeh, M.M.; Nizar, T., Pendse, R.; Sawan, M.E., “Efficient Structure-Based Carrier Offset Estimator for OFDM System. IEEE 69<sup>th</sup> Vehicular Technology Conference, 2009.

Qasaymeh, M.M.; Gami, H.; Tayem, N.; Sawan, M.E.; Pendse, R., “Joint Time Delay and Frequency Estimation Without Eigen-Decomposition.” IEEE Signal Processing Letters, Vol. 16, No. 5, 2009.

Mereddy, Sandeep Reddy, Jaggi, Neeraj; Pendse, Ravi, “An Adaptive Algorithm for Sensor Activation in Renewable Energy Based Sensor Systems.” 5<sup>th</sup> International Conference on Intelligent Sensors, Sensor Networks and Information Processing (ISSNIP), 2009.

### Ramanan

P. Ramanan, “Worst Case Optimal Algorithm for Xpath Evaluation over SML Streams.” Journal of Computer Sciences, Vol. 75, No. 2009.

## Sawan

Hiren, G; Qasaymeh, M.M.: Pendse, R:  
Sawan, M.E.; Nizar T., “Semiblind Multiuser  
MIMO Channel Estimators Using RP and  
RRQR Methods.” Seventh Annual  
Communication Networks and Services  
Research Conference, 2009.

Heba S.; Hiren, G; Qasaymeh, M.M.; Nizar,  
T.; Sawan, M.E.: Pendse, R., “High  
Resolution Joint Time Delay and Frequency  
Estimation.” IEEE, SARNOFF ‘09, 2009.

Qasaymeh, M.M.; Nizar, T.; Hiren, G.;  
Sawan, M.E.; Pendse, R., “RRQR Based  
Closed-form Blind Carrier Offset Estimator  
for OFDM Systems.” International  
Conference on Telecommunications, ICT  
‘09, 2009.

Qasaymeh, M.M.: Hiren, G.: Nizar, T.;  
Pendse, R.; Sawan, M. E., “Rank Revealing  
QR Factorization for Jointly Time Delay and  
Frequency Estimation.” IEEE 69<sup>th</sup> Vehicular  
Technology Conference, VTC Spring 2009.

Hiren, G.; Qasaymeh, M.M.; Tayem, N.;  
Pendse, R.; Sawan, M.E., “Subspace Based  
Blind CFO Estimation for OFDM by  
Exploiting Used Carriers.” IEEE, SARNOFF  
‘09, 2009.

Hiren, G.; Qasaymeh, M.M.; Nizar, T.,  
Pendse, R.; Sawan, M.E., “Efficient  
Structure-Based Carrier Offset Estimator for  
OFDM System. IEEE 69<sup>th</sup> Vehicular  
Technology Conference, 2009.

Qasaymeh, M.M.; Gami, H.: Tayem, N.;  
Sawan, M.E.; Pendse, R., “Joint Time Delay  
and Frequency Estimation Without Eigen-  
Decomposition.” IEEE Signal Processing  
Letters, Vol. 16, No. 5, 2009.

## Tang

Xianjin Zhu, Himanshu Gupta, and Bin  
Tang, “Join of Multiple Data Streams in  
Sensor Networks.” IEEE Transactions on  
Knowledge and Data Engineering, Vol. 21,  
No. 12, December 2009.

Bin Tang, Zianjin Zhu, Anad Prabhu  
Subramanian, and Jie Gao, “DAL: A  
Distributed Localization in Sensor Networks  
using Local Angle Measurement.”  
Proceedings of the IEEE International  
Conference on Computer Communications  
and Networks (ICCCN’09), August 2009.

Masaaki Takahashi, Basit Hussain, and Bin  
Tang, “Design and Implementation of a  
Web Service for LiteOS-based Sensor  
Networks.” Proceedings of the CCM/IEEE  
International Symposium on Information  
Processing in Sensor Networks (IPSN’09),  
April 2009.

## Watkins

T. Emami and J. Watkins, “A Unified  
Approach for Sensitivity Design of PID  
Controllers in the Frequency Domain.”  
WSEAS Transactions Journal of Systems  
and Control, Vol. 4, No. 5, May 2009.

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

Controllers in the Frequency Domain.”  
WSEAS Transactions Journal of Systems and  
Control, Vol. 4, No. 5, May 2009.

M. Cao, J. Watkins, and R. O’Brien, “A  
Graphical User Interface (GU) for a Unified  
Approach for Continuous-Time Compensator  
Design.” Computers in Education Journal,  
Vol. 19, No. 1, January 2009.

T. Emami and J. Watkins, “A Unified  
Approach for H-infinity Complementary  
Sensitivity Design of PID Controllers  
Applied to a DC Motor with Communication  
Delay.” ASME International Mechanical  
Engineering Congress and Exposition,  
November 2009.

T. Emami and J. Watkins, “A Unified  
Approach for Weighted Sensitivity Design  
and PID Controllers.” ASME Dynamic  
Systems and Control Conference, October  
2009.

L. Whitman, Z. Toro-Ramos, and J. M.  
Watkins, “A Practical Faculty Mentoring  
Program.” ASEE Midwest Section Annual  
Conference, September 2009.

T. Emami and J.M. Watkins, “A Unified  
Approach for Sensitivity Design of PID  
Controllers in the Frequency Domain.” 8<sup>th</sup>  
International Conference on Applications of  
Electrical Engineering, April 2009.

T. Emami and J. Watkins, “Robust Stability  
Design of PID Controllers for Arbitrary  
Order.” 41st Southeastern Symposium on  
System Theory, March 2009.

## **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

OFDMA

Cooperate Communicaitons.

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

Wichita State University

EECS Department

Senior Administrative Assistant

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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.