

FUTURE**IIE FACULTY & STAFF**

- **R. Bruce Robinson**
Interim Department Head
- **Rapinder Sawhney**
Associate Professor
Associate Department Head
- **Alberto Garcia**
Professor
- **Gregory A. Sedrick (UTSI)**
Dean for Academic Affairs
Professor
- **Charles H. Aikens**
Associate Professor
- **Denise F. Jackson (UTSI)**
Associate Professor
- **Xueping Li**
Assistant Professor
- **Yuanshun Dai**
Assistant Professor
- **Xiaoyan Zhu**
Assistant Professor
- **Joseph Wilck**
Assistant Professor
- **Haitao Liao**
Assistant Professor
- **Robert E. Ford**
Lecturer

Laboratory Affiliates

- **P. David Halstead Director**
Biomechanics Lab
- **Edward Mel Cook**
Asst. Director Biomechanics Lab

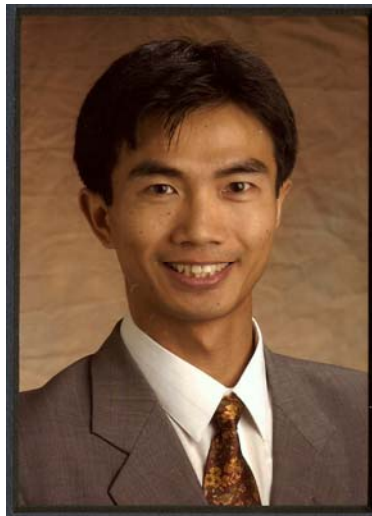
Staff

- **Diana Bishop**
Business Manager
- **Sharon Sparks**
Accounting Specialist 1

*Department of Industrial and Information Engineering***Two New Educational Options for IIE Students**

Effective this fall, qualified students in Industrial Engineering can now choose a five year program that leads to both a BS and MS degree. A key aspect of the program is that up to nine hours can be counted towards both degrees. Five year BS-MS programs in engineering is a growing trend to meet the demand for a greater body of knowledge going into the engineering workforce. Several IE students have already elected this path. Details of the degree requirements can be found at http://catalog.utk.edu/preview_program.php?catoid=1&poid=188.

Another option which hopefully will be available in fall 2010 is a minor in engineering entrepreneurship. This minor will be open to all engineering students and will expose them to the broad range of skills required to succeed in technologically-based entrepreneurial enterprises. Students will be introduced to successful engineering entrepreneurs as well as learn the fundamentals of intellectual property protection, understand ethics in business, practice communication skills, understand the due diligence process, and analyze technology trends. They will also learn how to write a proposal, what are the challenges of management, and what are the elements of starting a company. The proposed option has been approved by the College of Engineering and is making its way through the approval chain. It is planned that the IIE department will take the lead role in the minor with Dr. Lee Martin overseeing the program.

Focus on Faculty: Dr. Xueping Li**A New Level of Learning**

The College of Nursing and the College of Engineering have developed a new learning tool—**iCare**. **iCare** is an educational software program that integrates electronic health records (EHR) into a simulated learning tool for students. Developed by Tami Wyatt and Matt Bell of the College of Nursing and **Xueping Li** and **Yo Indranoi** of the Industrial & Information Engineering Department, **iCare** helps prepare future nurses for the demands and evolving healthcare climate in the 21st century and the benefit of training with electronic health records in an educational environment. **iCare** allows students to learn about EHR systems before graduating, instead of on the job.

iCare was tested in the spring of 2009 with numerous nursing students and faculty and was used for the first time fall of this year in the curriculum and classroom setting.

With assistance from the **University of Tennessee Research Foundation**, further testing will occur with other universities across the U.S. The **iCare** team is also forming a company to take their product to the national market, with the aid of the **UT Center for Entrepreneurial Growth** partnership with Tech2020.

Message from Interim Department Head Dr. R. Bruce Robinson Ph. D., P. E.

CEREMONIAL GROUND BREAKING FOR THE NEW CEE/IIE BUILDING



Please join us for the ceremonial groundbreaking for the new CEE/IIE building from 1:30 to 3:00 PM, Tuesday, December 1 with refreshments afterwards. The ceremonies are tentatively scheduled to be at the site of the new building parking lot east of Neyland Stadium. Watch for the formal announcement in the next few weeks on the College of Engineering or Industrial and Information Engineering web-sites. This will be a beautiful new facility and be a great boost to both programs.



UT Knoxville Adds Lean Management Office to Finance Division

Planning for significant budget cuts, the University of Tennessee, Knoxville, has established a *Lean Management Office* as a permanent function of the campus administration. With support of the UT Knoxville administration, **Dr. Rupy Sawhney** and his team of industrial engineering graduate students laid the groundwork for the office last fall by beginning their evaluations of several campus operations.

Dr. Sawhney is a nationally recognized lean management expert and has delivered results for numerous companies and agencies around the globe. His UT team have already undertaken projects that will save UT Knoxville more than \$445,000 this year.

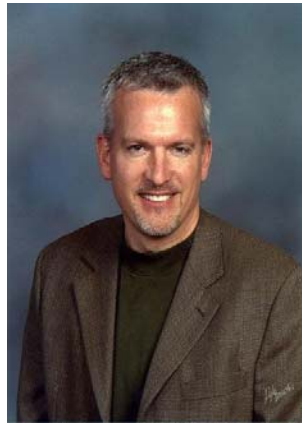


They include the move to all-electronic tuition billing, changes to UT Police Department's patrol car use and bring campus mowing and leaf removal back to in-house staff instead of contractors.

Dr. Sawhney's team will publish case studies so that other universities can benefit from their research and implementation experience. Current lean projects include a comprehensive look at renovation and construction functions performed by Facilities Services and account processes related to research contracts.

Congratulations to Joe Stainback

Joe Stainback has been elected to the board of directors for the Anderson County Chamber of Commerce. Joe is one of the IIE Department's Ph.D. students and is a department manager with B & W Y-12.



One had to cram all this stuff into one's mind for the examinations, whether one liked it or not. This coercion had such a deterring effect on me that, after I had passed the final examination, I found the consideration of any scientific problems distasteful to me for an entire year

Albert Einstein

NSF Gives \$10 Million Grant for Nautilus Supercomputer

UT has received a \$10 million grant from the National Science Foundation to develop a computer with the ability to process the vast amounts of data generated by the current system of the foundation's computer around the U. S. The new computer, *Nautilus*, will be housed in UT's Joint Institute for Computational Science which is located on the Oak Ridge National Laboratory campus.

Working for both UT-Knoxville's College of Engineering and ORNL, Dr. Sean Ahern has been given the task of crafting and directing the Center for Remote Data Analysis and Visualization. His co-investigator is Dr. Jian Huang of the Electrical Engineering and Computer Science Department.

"In my opinion, **Nautilus** holds a tremendous potential to impact the UT community, in which many researchers rely heavily on cutting-edge digital resources," **Xueping Li, director of Intelligent Information Engineering and Systems Laboratory**, said. "This unprecedented visualization and data analysis facility will lower the barriers for many academic members across a broad array of research to exploit cyber-infrastructure".

Institute of Industrial Engineers Student Chapter

The University of Tennessee-Knoxville Institute of Industrial Engineers Student Chapter will host the 2011 Mid-Atlantic Regional Conference. The Mid-Atlantic Region includes: Maryland, Washington DC, Virginia, West Virginia, Tennessee, North Carolina and South Carolina; which includes Industrial Engineering programs from Clemson University, East Carolina University, Morgan State University, North Carolina A & T, North Carolina State University, South Carolina State University, Tennessee Tech, University of Tennessee-Chattanooga, University of Tennessee-Knoxville, Virginia Tech and West Virginia University. **Financial support and sponsorship will be greatly appreciated from individuals and organizations.**

The Institute of Industrial Engineers Student Chapter received a **Bronze Award** for their efforts during the 2008-2009 academic year. The Gold, Silver and Bronze awards are given based upon points scored. The intent is to provide a simple measurement system that will permit chapters to see improvement trends and to track progress. It also provides visibility so that a chapter's accomplishments can be recognized and rewarded.

The student chapter president for 2008-2009 was Sean McKnight (UTK IIE Class of 2009). The current student chapter officers are President—Samantha Lee, Vice President—Travis Feigerle, Secretary—Maggie Shaw, Senior Treasurer—Kevin Woods and Junior Treasurer—Colton Griffin. The faculty advisor is Dr. Joe Wilck.

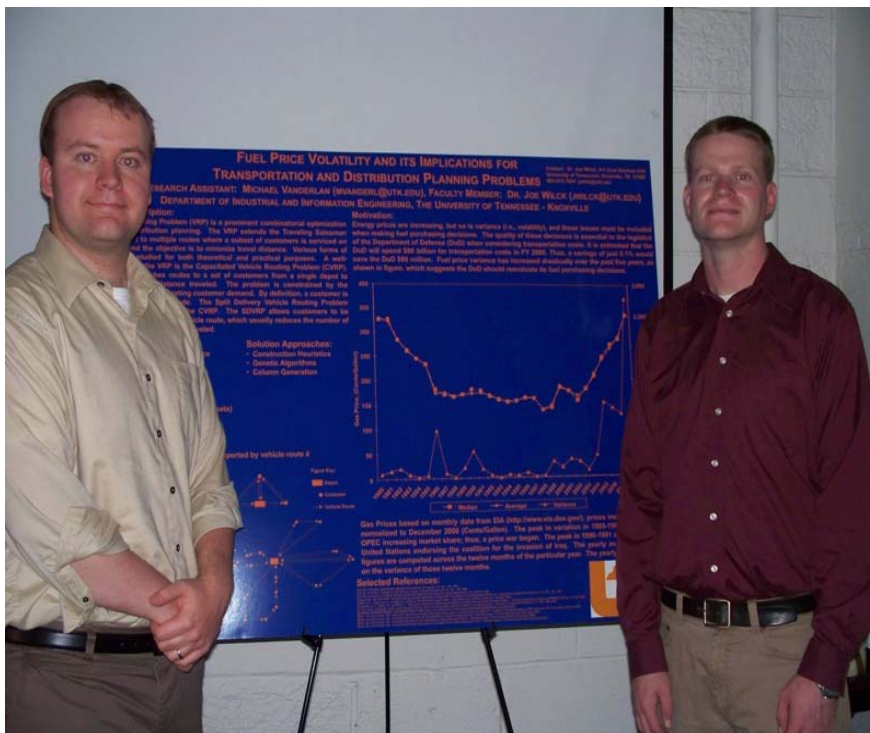
Student Chapter Now on Facebook

IIE Student Chapter can be found on Facebook at "Institute of Industrial Engineers- UTK Chapter #871". Please search for the Chapter and we encourage all students and alumni to join.

Upcoming Student Conference

The 2010 upcoming Student Conference will be at North Carolina A & T January 29–31, 2010.

Department of Defense Energy Day



Undergraduate Research Assistant Michael Vanderlan under the direction of Assistant Professor, Dr. Joe Wilck displayed his current research "*Fuel Price Volatility and its Implications on Transportation Planning Problems*" at the Department of Defense Energy Day in October.

The research is based on an innovative way to model vehicle routing to include fuel purchasing decisions. This is important because fuel prices are not only increasing but also the volatility of that cost is increasing. It is becoming harder to plan due to the unknown future of fuel price. This research will enable the DoD to reevaluate its fuel purchasing decisions.

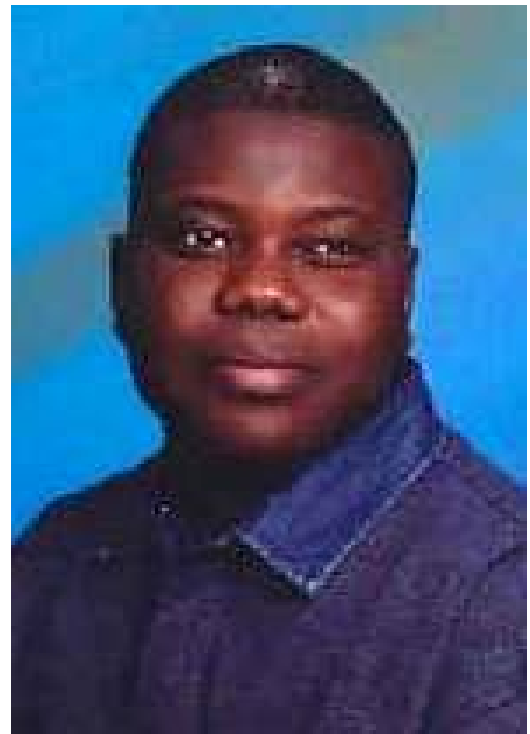
Welcome to New Adjunct Faculty

The IIE Department is pleased to welcome two new adjunct faculty members.

Dr. Femi Omitaomu is an Adjunct Assistant Professor in the Department of Industrial and Information Engineering at the University of Tennessee and a Research Scientist in the Computational Sciences and Engineering Division at the Oak Ridge National Laboratory. He received his B.S. degree in Mechanical Engineering from Lagos State University, Nigeria in 1995, his M.S. degree in Mechanical Engineering from the University of Lagos, Nigeria in 1999, and his Ph.D. degree in Industrial and Information Engineering from the University of Tennessee, Knoxville in May 2006. His research areas include streaming and real-time data mining, optimization techniques in data mining, network modeling and analysis, and disaster risk analysis in space and time. His areas of application are high-priority domains such as transportation security and electric power grid.

Dr. H. Lee Martin, under the direction of Dr. Rupy Sawhney with funding support from the National Science Foundation, is establishing the curriculum and program necessary for a Minor in Engineering Entrepreneurship. The "E-ship" minor will expose students to entrepreneurship as a viable career path for engineers. By involving successful area technology entrepreneurs to "tell their stories" and gaining student access to university intellectual properties through the UT Research Foundation (UTRF), this effort will serve as a catalyst for students to start businesses.

Key pieces are now in place to create a successful process including a new on-campus incubator facility, mentoring assistance through Technology2020, an active innovation and entrepreneurship track in the MBA program and the cooperation of UTRF to create innovative approaches to the transfer of technology to startup enterprises. Dr. Lee Martin is constructing the coursework that will serve to undergird the program. His prior experience as executive director of the Tennessee Technology Development Corporation and as a successful technology entrepreneur provides a unique skill set to establish this effort. Those interested in the possibilities of **"come for a degree ... leave with a company!"** should contact Dr. Martin at hmartin1@utk.edu.



IIE Publications

Referee Journals

Song, L., X. Li, and A. Garcia-Diaz, "Metamodel Analysis on Multi-Echelon Supply Chain Simulation Experiments," accepted for publication, Int. J. Industrial and Systems Engineering

Ko, Y-D., Y. Jeong, M. K. Jeong, A. Garcia-Diaz, and B. Kim, "Functional Kernel-based Modeling of Wavelet Compressed Optical Emission Spectral Data: Prediction of Plasma Etch Process," accepted for publication in IEEE Sensors Journal

Yanzhen Li, Rapinder Sawhney and Joseph Wilck, IV (2009) "Applying Bayesian Network Techniques to Prioritize Lean Six Sigma Efforts", International Journal of Production Research (IJPR)

Xueping Li, Rapinder Sawhney, Eric Arendt and Karauppucharny Ramasamy (2009) "A Comparative Analysis of Management Accounting Systems", International Journal of Technology Management (IJTM)

Krishnan, K., Jithavech, I.*, and Liao, H.T., "Mitigation of Risk in Facility Layout Design for Single and Multi-Period Problems", International Journal of Production Research, pp. 5911-5940, Vol. 47, No. 21, 2009

Li, Z.J.*, Liao, H.T., and Coit, D., "A Two-stage Approach for Multi-objective Decision Making with Applications to System Reliability Optimization", Reliability Engineering & System Safety, pp. 1585-1592, Vol. 94, No. 10, 2009.

Neff, K.J., Schwartz, J.S., Henry, T.B., Robinson, R.B., Moore, S.E., and Kulp, M.A. "Physiological Stress in Native Southern Brook Trout During Episodic Stream Acidification in the Great Smoky Mountains National Park." Archives of Environmental Contamination and Toxicology, (2009) 57:366–376.

Articles in Conference Proceedings

Baek, S. H., Y. Dai, and A. Garcia-Diaz, "Human Decision Making Process Based Data Mining Approach Using High-Dimensional Data for Discriminant Analysis", Proceedings of the 4th INFORMS Workshop on Data Mining and System Informatics, San Diego, CA, October 10, 2009

Liao, H.T., "Remaining Useful Life Prediction for a Unit under Time-varying Operating Conditions", Proceedings of the 15th ISSAT International Conference on Reliability and Quality in Design, San Francisco, California, August 6-8, 2009

J.H. Wilck and T.M. Cavalier "A Column Generation Procedure for the Split Delivery Vehicle Routing Problem," INFORMS Annual Meeting, San Diego, CA October 2009.

C.J. Capizzi and J. H. Wilck., "Simulating a Government Contract Closeout Process," INFORMS Annual Meeting, San Diego, CA, October 2009

J.H. Wilck and T.M. Cavalier, "A Genetic Algorithm for the Split Delivery Vehicle Routing Problem," INFORMS IIE Annual Conference, Miami, FL, May 2009

IIE Publications (continued from page 6)

Articles in Conference Proceedings-(Cont.)

Yuerong Chen and Xueping Li (2009), "*Conflict and Cooperation of Scheduling in a Two-echelon Supply Chain*", Proceedings of the 2009 Industrial Engineering Research Conference, May 30 - June 3, Miami, FL. pp. 1357-1362.

Yuerong Chen and Xueping Li (2009), "*The Effect of Customer Segmentation on an Inventory System in the Presence of Supply Disruptions*". Winter Simulation Conference (WSC 2009), forthcoming Dec 13-16, Austin, Texas.

Jiao Wang, Xueping Li and Rupy Sawhney (2009), "*Precedence Constrained Scheduling to Minimize Maximum Job Cost on Identical Parallel Machines*", Proceedings of the 2009 Industrial Engineering Research Conference, May 30 - June 3, Miami, FL, pp. 2067-2072.

Dengfeng Yang, Jiao Wang, Xueping Li and Rapinder Sawhney (2009), "*Modeling, Identifying and Mitigating Global Supply Chain Risk Management*", Proceedings of the 2009 Industrial Engineering Research Conference, May 30 - June 3, Miami, FL, pp. 1339-1344.

Yanzhen Li, Gagan Rajpal, Rupy Sawhney and Xueping Li (2009), "*Enhancing Lean Sustainability via Bayesian Network Techniques*", Proceedings of the 2009 Industrial Engineering Research Conference, May 30 - June 3, Miami, FL. pp.1171-1178 .

Chayawat Indranoi, Tami Wyatt and Xueping Li (2009), "*Development and Usability of iCare: An Electronic Health Record System*", Proceedings of the 2009 Industrial Engineering Research Conference, May 30 - June 3, Miami, FL. pp. 797-802.

Yuerong Chen and Xueping Li (2009), "*Conflict and Cooperation of Scheduling in a Two-echelon Supply Chain*", Proceedings of the 2009 Industrial Engineering Research Conference, May 30 - June 3, Miami, FL. pp. 1357-1362.

Laigang Song, Xueping Li, and Alberto Garcia-Diaz (2009) "*A New Quantitative Measurement of Bullwhip Effect*", Proceedings of the 2009 Industrial Engineering Research Conference, May 30 - June 3, Miami, FL. pp. 1333-1338.

Book Chapters

Sawhney, R.S., "*Integration and Management of Supply Chains*", *Industrial Operations Systems*, K. Abedini, editor, 2010 (accepted)

Sawhney, R.S., "*Enhancing Lean System Reliability*", *Industrial Operations Systems*, K. Abedini, editor, 2010 (accepted)

Sawhney, R.S., "*Utilizing Six Sigma Methodology to Understand Production Processes*", *Industrial Operations Systems*, K. Abedini, editor, 2010 (accepted)



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