

Department of Industrial and Information Engineering

Spotlight on Students



Greg Cox and Reid Gillam, this year's Outstanding Undergraduate Award recipients

Greg is very active in the Industrial Engineering Program and says, "IE is a versatile degree and I will be able to use it in all my endeavors. I established great relationships with the best faculty on campus which helped me get the most out of my college career."

Greg is a member of the National Society for Collegiate Scholars, Deans List, and American Society for Engineering Management. He currently serves as the Vice-President of UT's student chapter of the Institute of Industrial Engineers. Greg is the recipient of the General Engineering Scholarship and the Tennessee Trustee Scholarship at the University.

Greg participated in the College of Engineering Co-op program with one of the world's largest water heater manufacturers, American Water Heater Company. Greg solely managed several large capital projects including the construction of an 800' conveyor system and established a continuous improvement team. Greg spent last summer building a shaved ice business from the ground up where he was able to use a lot of his education. The business is still thriving although he has relinquished his responsibilities, "it was the best summer of my life and I gained a lot of confidence, I was sad to see it go."

Greg will be graduating this May and is currently exploring his opportunities after graduation. He must decide whether to prepare for graduate school, or start a career.

Reid Gillam, a senior in I&IE, is a native of Bell Buckle, TN. After graduation he will begin working for Techmer PM, a Clinton, TN based company that specializes in polymer additive and colorant systems. As an engineer, he will help design each high quality project-specific polymer to the needs of the customer in a time sensitive manner.

Of his involvement with the IE department Reid says, "I have developed close relationships with several professors. These mentors encouraged me to set ambitious goals for my career, taught me how to think outside the box, and apply my leadership skills to many different types of situations."

During his co-op at Sea Ray Boats, Reid had the opportunity to apply many of his IE skills to real world problems. Throughout his four-semester co-op he had the chance to be a large part of several projects including a million dollar expansion of the Riverview Facility and a plant-wide changeover from producing Sport Boats to Sport Cruisers. He helped develop procedures for integrating new models and predicting labor hours for models in the design phase.

Reid is the current president of The student chapter of the Institute of Industrial Engineers and has been a member of IIE for three years. Concerning his involvement in the organization, he states, "IIE has done more than give me the opportunity to enhance my leadership skills. I have had the opportunity to attend the National IIE Conference in Atlanta last summer and three Regional IIE Conferences: one at UT, one at N.C. State, and one at West Virginia this spring. Through these experiences I have grown close to several colleagues I consider life-long friends and who will be there in the future to help me with career decisions and to solve IE problems."

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Congratulations to our Fall 2005 Graduates

Undergraduate

Michael E. Anderson
Su-Young Han
Carl A. Scott
Jonathan S. Stokes

Nathan E. Bragg
Angela S. Miller
Jason D. Smith

Justin R. Hall
Janakkumar P. Patel
William E. Sonnenburg

Graduate

Bobby A. Dixon
Amanda R. Hicks

Ernest L. Greene
David L. Schardt

Brian K. Gullett
Andrew C. Thompson

Doctorate

Ammar M. Aamer

C. Randy Hudson
Chad Toney—SU05

Hui Sun

From the Department Head's Desk



Dr. Adedeji B. Badiru
Department Head

Dear Alumni and Friends:

Spring has sprung once again and we are all delighted. This issue of Information Times has several exciting updates. We have a record production of Ph.D. students this academic year – four graduated in Summer and Fall 05 and three more are expected to graduate this Spring and Summer. The increasing enrollment and graduation of Ph.D. students have fueled an increase in our research productivity. But more remains to be done in order for us to measure up competitively in our benchmarking exercises. At the undergraduate level, we are experiencing a decline in enrollment very much along the line of a national trend. This has led us to institute a more proactive recruitment plan. Several of our advisory board members, alumni, and friends are playing active roles in the recruitment effort. We have included the IIE-sponsored *Introduction to IE* video on our department website. To view the video, please go to: <http://www.engr.utk.edu/ie/> and click on the Icon for “What is Industrial Engineering.” We welcome your comments and feedback on the redesigned website. We are also planning to develop a customized department video featuring our alumni in their various professional roles in business, industry, and government. If you are interested and capable of helping us with that outreach project, please feel free to contact me.

We are hosting several international visiting scholars and a Fulbright scholar this year. You will read about them in this newsletter. We, once again, hosted a group of students from Hanbat National University in South Korea this year.

We thank our alumni and friends for joining us in our continuing journey of excellence in teaching, research, and

service. Please don't forget that we are still running our “Sponsor a Bench – Give a Scholarship” development program. This is a unique opportunity for you to make a contribution to the future of the department. We look forward to working with you in this regard.

With best regards to all,

A handwritten signature in black ink that reads “Adedeji Badiru”. The signature is fluid and cursive, written over a white background.

Adedeji Badiru
Professor and Department Head

Sponsor a Bench – Give a Scholarship

We thank our alumni for their continuing support. Our “**Sponsor a Bench—Give a Scholarship**” program is still going on. The program involves naming benches in the department hallway after scholarship donors who make a pledge of at least \$5000. Each sponsored bench carries an inscription of the sponsor's name.

We will appreciate new and continuing participation in this student-centered program. Our “**hall of knowledge**” can use more “benched” names. We call on our alumni to get *benched in the stadium to sponsor a scholarship*. Additional information about the bench sponsorship program can be obtained from Patty Shea, Director of Development for the College of Engineering. She can be contacted at (865) 974-2779 or pwshea@utk.edu.



Recent Journal Publications

- Badiru, Adedeji; O.A. Omitaomu; and A.S. Asaolu; "Eyewitness Information Management System Using Neuro-Fuzzy Classification Schemes," published in the *Journal of Information Science & Technology*, Vol. 2, No. 3, 2006, pp. 1-16.
- M.K. Jeong; J.C. Lu; and N. Wang; "Wavelet-based SPC Procedure for Complicated Functional Data"; *International Journal of Production Research*, Vol. 44, No. 4, 2006, pp. 729-744.
- E.J. Pellman; D.C. Viano; C. Whithnall; N. Shewchenko; C.A. Bir; and P.D. Halstead; "Concussion in Professional Football: Helmet Testing to Assess Impact Performance – Part 11," *Neurosurgery*, Vol. 57, No. 6, 2006, pp. 1-18.
- Byoung-Hak Yang; Adedeji B. Badiru; and Sirisha Saripalli; "A Facility Resource Scheduling for Two Stage Supply Chain," *Journal of the Korean Institute*, Vol. 10, No. 1, 2005, pp. 67-78.
- Olufemi Omitaomu; Levi D. Smith; Adedeji B. Badiru; "The ENGINEering Economic Analysis (ENGINEA) Software: Enhancing Teaching and Application of Economic Analysis Techniques," *Computers in Education Journal*, Vol. XV, No. 4, 2005, pp. 32-38.
- H.W. Cho; K.J. Kim; and M.K. Jeong; "Multivariate Statistical Diagnosis Using Triangular Representation of Fault Patterns in Principal Component Space," *International Journal of Production Research*, Vol. 43, No. 24, 2005, pp. 5181-5198.

Recent Research Grants

- **Halstead, Dave**, "Evaluation of impacted headgear using a new test method," Protective Headgear Association, \$15,000.
- **Ford, Robert**, "Compare the Retro-reflectivity of Pavement Marking Materials," Tennessee Department of Transportation (TDOT), \$48,535.
- **Kong, Dongjoon**, "Research Experience with International UG Students, second year," Hanbat National University, South Korea, \$16,500.
- **Ding, Fong-Yuen**, "Proper Implementation of Supplier Capacity Analysis Software," Various Sources, \$14,994.
- **Sawhney, Rupy**, "Searching for Measures that Drive Performance," Eastman Chemical, \$32,092.
- **Sawhney, Rupy**, "Refine Assessment Methodology of BHI's rotary steerable assembly products," BP American and Baker Hughes Inteq, \$165,000.
- **Sawhney, Rupy**, "AP index validation for oil refinery," Fluor Global, \$41,101.

Student Research Awards & Fellowships



- Jingxu (Jason) He, Dr. Fong-Yuen Ding's Ph.D. student, has been awarded a 2006 SARIF Summer Graduate Research Assistantship by the Office of Research.



- Yi Fang, a Graduate Assistant of Professor Myong Jeong, was awarded the Hilton A. Smith Graduate Fellowship for the academic year 2005-06. The Fellowship award of \$15,000 began in August 2005 and will continue until May 2006.

Society for Maintenance and Reliability Professionals (SMRP)



Dr. Sawhney

Dr. Rupy Sawhney, professor in the Department of Industrial and Information Engineering and one of his grad students, Soundararajan Kannan, were highlighted in the Society for Maintenance and Reliability Professionals (SMRP) quarterly newsletter for work they are doing surveying and cataloging existing Standards that apply to Maintenance and Reliability. Working with the COE's Maintenance and Reliability Center (MRC), they have identified over 3,000 U.S., Canadian, and International standards to date and mapped them to the five sectors of the SMRP's Body of Knowledge. The area of Maintenance and Reliability has become a core area of competence. A seminar on Lean Maintenance to be taught by Ricky Smith, co-author of "Lean Maintenance" and Dr. Rupy Sawhney, is scheduled for June 13, 2006. In addition, Dr. Sawhney is leading tracks at the 2006 MARCON program scheduled for May 2006 with Ricky Smith, co-author of "Lean Maintenance" and Bob Williamson of Strategic Work Systems.

Faculty Dinner

A faculty dinner was held on February 14, 2006 at the UT Conference Center. The dinner, arranged by the Research committee headed by Dr. Sawhney, was sponsored by CIS. The dinner accompanied a presentation by Dr. Sawhney on his research work in the area of system reliability improvement for the British Petroleum – Baker Hughes International project. This was a first in a series of monthly meetings scheduled by the Research committee for the rest of the year with the purpose of fostering research collaboration between faculty. The meeting will provide the faculty with an opportunity to share their research efforts and open areas of collaboration. These monthly meetings will be accompanied by dinner sponsored by CIS.



IIE Award Recipients—CoE 2005-2006 Honors Banquet—April 11, 2006

Faculty/Staff Awards:

Outstanding Advisor Award	Dr. Robert E. Ford
Alpha Pi Mu-Outstanding Instructor of the Year	Dr. Dukwon Kim
Outstanding Researcher Award	Dr. Rapinder S. Sawhney
Outstanding Service Award	Dr. Denise F. Jackson
Outstanding Research Promise Award	Dr. Myong-Kee (MK) Jeong
Outstanding Support Staff	Louise A. Sexton

Student Awards:

Outstanding Undergraduate Students	Reid B. Gillam and Gregory C. Cox
Outstanding Graduate Student	Yanzhen Li
Outstanding Ph.D. Student	Aruna B. Bagchi
Highest Scholastic Achievement Award	
Sophomore	David M. Zeanah
Junior	Sarah A. Yoder
Senior	Amy E. Bugyis and Mary E. Thomas

Six Sigma Presentation

Mr. Eric Lussier, a member of our Industrial Advisory Board, gave an exciting presentation on Six Sigma to Dr. Aikens' IE 300 class in Fall 2005. The presentation included a series of "games" to test how well the audience pays attention to quality details of a product. Pictures below show Mr. Lussier and students during the presentation.



Welcome to our Fulbright Scholar, Dr. Tzong-Ru Lee



Dr. Lee, Tzong-Ru is a professor in the Marketing department and the chairman of the Institute of Electronic Commerce in the National Chung Hsing University in Taiwan. He received his BS and MS degrees in National Chiao-Tung University in Taiwan. He received his Ph.D. degree from Texas A&M University, Texas, USA. He served at Texas Instruments (TI) in Dallas before he joined academia. His research mainly focuses on marketing, supply chain management, application of electronic commerce and management science. He publishes in journals such as International Journal of Physical Distribution & Logistics Management, and Simulation Practice and Theory. He has also published 4 joint books. At present, he is the associate editor of the International Journal of Customer Relationship Management (IJECRM).

Welcome to our International Visiting Scholars

- ✿ Mr. Hsing-Ya Chang, a PhD student at the National Sun Yat-Sen University, Kaohsiung, Taiwan, will be visiting UT from March 2006 to March 2007. His major research area is SCM (Supply Chain Management), co-opetition (cooperation and competition), innovation, and new technology start-up firms. His ongoing research topic is to compare different cultures in business cooperation and competition, especially in the collaboration design environment. He has approximately ten years working experience in the sales field and has even been the branch office manager at his last company, Phitech Co, which specializes in selling and maintaining network backbone equipment. He holds an M.S. and a B.S. in Aeronautics & Astronautics Engineering from National Cheng Kung University, Tainan, Taiwan.
- ✿ Dr. Jai-Sang Koh will be visiting UT during 2005/2006. Dr. Koh has worked for ETRI (Electronics & Telecommunications Research Institute), located at Daeduk Science Complex, South Korea since 1982. He received a BS in IE from Korea University, and MS and Ph.D. in IE from Chonnam National University. He has been involved in national projects in Electronics Switching Systems (TDX: Time Division Switch), Optical Transmission Systems as a team leader of Reliability Engineering. Recently he prepared and established a new national project on FTTH (Fiber To The Home) which can provide a broadband multimedia service. His ongoing research area is the heuristic optimization for designing telecommunications networks. He has been conducting collaborative research with Dr. Myong K. (MK) Jeong in the area of "quality of service of high-speed networks."
- ✿ Dr. Seong-Jun Kim will be visiting UT during 2005/2006. Dr. Kim is an Associate Professor of industrial and systems engineering, Kangnung National University, Korea. He received a BS in applied statistics from Yonsei University, Seoul, Korea in 1989 and an MS and Ph.D. in industrial engineering from KAIST (Korea Advanced Institute of Science and Technology), Taejon, Korea in 1991 and 1995, respectively. He was a visiting scholar of industrial engineering, Texas A&M University in 1999. His research interests include data mining and quality engineering. He has publications and research funding in robust parameter and tolerance designs, multivariate SPC enhanced with machine learning, wafer map inspection systems in IC fabrication, and tree-based classifications for data mining. Dr. Kim has also been working as a quality consultant at Samsung Electronics and LG Chemistry. He has been collaborating with Dr. Myong K. Jeong in the areas of statistical process control enhanced with artificial intelligence and multivariate classification tree for data mining.

Welcome to Dr. Greg Sedrick

We are delighted to welcome Dr. Gregory A. Sedrick to the Engineering Management faculty at UTSI (University of Tennessee Space Institute) in Tullahoma. Dr. Sedrick joined our faculty in Spring 2006 as a Professor of Industrial Engineering and serves as the Executive Director of The New Economy Institute (NEI) that manages the Workforce Aging Management Program (WAMP) Initiative in seven congressional districts of the Tennessee Valley Technology Corridor. He has held numerous positions including serving as the State Executive Director of the Tennessee Small Business Development Center Network, Dean of the School of Engineering and Engineering Technology at Letourneau University, Vice President of Academic Affairs at Chattanooga State Technical Community College, Interim Dean of the College of Engineering and Computer Science at UT Chattanooga and Professor of Engineering Technology at MTSU. Congressman Wamp's Earmark for the WAMP initiative provides free training to Engineers, Scientists, Technicians and Mathematicians (STEM) for career development. Dr. Sedrick is working with other IE faculty to develop a comprehensive student recruitment plan for the department.



Badiru Elected Fellow of Nigerian Academy of Engineering



Prof. Adedeji Badiru, Professor and Department Head, was elected and inducted a Fellow of the Nigerian Academy of Engineering. His citations for the election included promotion of excellence in engineering theory and practice, analysis of technical issues, and the provision of independent expert advice to the nation of Nigeria. Prof. Badiru is also a fellow of the Institute of Industrial Engineers and he is a registered Professional Engineer (PE). He is the author of several technical papers and books. He is the editor of the recently published Handbook of Industrial & Systems Engineering. He is a member of several professional associations including Institute of Industrial Engineers (IIE), Society of Manufacturing Engineers (SME), Institute for Operations Research and Management Science (INFORMS), American Society for Engineering Education (ASEE), Project Management Institute (PMI), and New York Academy of Science (NYAS). He is a member of Phi Kappa Phi, Tau Beta Pi, and Alpha Pi Mu.

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Formation of the Intelligent Information Engineering and Systems Laboratory (IIESL)

The Intelligent Information Engineering and Systems Laboratory (IIESL) is a research group in the Department of Industrial and Information Engineering at the University of Tennessee, Knoxville. Research at IIESL focuses on the generation, processing, analysis, retrieval, and use of information in engineering systems in the vision of management of "Information Engineering" which arises from the convergence of information technologies in traditional engineering systems. The lab investigates new approaches to information processing, information retrieval, information security and assurance, and data/web mining.

IIESL currently includes two faculty members (Drs. Myong K. Jeong and Xueping Li), one PostDoc, two visiting scholars, and 8 Ph.D. students in a diverse set of research projects. Current research projects are data mining approaches to intrusion detection systems, QoS for high-speed networks and wireless sensor networks, GRID Scheduling, and data mining and knowledge discovery for functional and spatial data.

IIESL is located at 301 East Stadium Hall. The lab homepage is at <http://www.engr.utk.edu/ie/IIESL.htm>.

UT Exhibition of Undergraduate Research—Francesca Warner

Undergraduate student, Francesca Warner, (Mentor-Dr. Adedeji Badiru), recently had a display at the UT Exhibition of Undergraduate Research on March 31, 2006. Dr. Randy Hudson, Francesca's ORNL mentor, provided the topic area, Cogeneration (Combined Heat and Power or CHP), which is the simultaneous production of electricity and heat, both of which are put to productive uses. The basic principle of cogeneration is that, in order to maximize the many benefits that arise from it, systems should be designed and installed according to the heat demand of the application. With the plot of energy profiles, an energy decision maker can more quickly arrive at the best composition of combined cooling, heating, and power applications. The outcome of the project can be applied to commercial buildings, industrial buildings, as well as residential buildings. Francesca will also be participating in the upcoming TLSAMP conference taking place at the University Center on April 7. We are very proud of Francesca!



Rockin' Researcher—Dave Halstead



Dave Halstead, Director of the **Sports Biomechanics Impact Research Laboratory** was asked to play drums at the Rock and Roll Hall of Fame in Cleveland, OH during the XXth Congress of the International Society of Biomechanics during the summer of 2005. Dave can be seen drumming in the above photos.

Seminar—Sports Biomechanics Impact Laboratory Research—Dave Halstead

Dave Halstead, Director of the UT Sports Biomechanics Impact Research Lab, conducted a seminar on March 8, 2006 on the nature of his research. An abstract of the seminar is below:

The human machine is surprisingly resistant to some types of major insults yet easily, and at times, permanently damaged by other apparently less violent events. Attempts to understand and minimize these injuries through the application of biomechanical analysis and intervention research are growing. The Sports Biomechanics Impact Lab at UT is on the leading edge of test surrogate development as well as data acquisition and human tolerance understanding. Come and learn how this unique lab is changing how we play, and developing new methods for prevention and treatment of some types of catastrophic injury.

Hanbat National University—South Korea Undergraduate Students



The department hosted a group of eight undergraduate students and a professor from Hanbat National University of South Korea for three weeks (January 24 – February 14). The purpose of the visit was to introduce international undergraduate students to research practices in the US within Human Factors and Ergonomics research programs. The Hanbat National University received a five-year grant for “Developing senior welfare infrastructure and training undergraduate students toward becoming experts to support silver industries,” from the Korean Ministry of Education & Human Resources in 2004. This group was one of fifteen groups sent to different countries and regions. The visiting students participated in classroom activities with UT I&IE students, visited a nursing home and businesses in the Knoxville area, and had cultural experiences through going to churches, shopping, and social events. They also went on trips to Washington, D.C. and Atlanta. The visit was completed by giving a presentation to faculty and students and receiving an individual certificate of completion signed by Dr. Badiru and Dr. Kong. The students gave a presentation at their university in late March.

THE UNIVERSITY of TENNESSEE

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