The LSU 2006 ECE Robotics Team placed second in the robotics competition at the IEEE Region 5 Annual Conference in San Antonio, Texas. In order to participate, the students were required to design a robot to sort items in a mock warehouse environment. Each robot was required to identify and retrieve four colored cans and deliver them to a predetermined location. The team’s autonomous robot, called “The GeauxBot”, measured 7” in diameter and retrieved the painted soda cans in the competition arena. The arena was marked with painted lines to aid movement through the eight mock rooms. Advisor Bryan Audiffred states, “Having placed first and second the past three years, LSU has developed a reputation as THE team to beat. It’s an event on practice night when LSU first starts testing as everyone scrambles to benchmark their own performance. When an average robot makes an error in competition everyone says ‘Awwww!’ When we make an error everyone mumbles with secret delight!”

The team’s work began in the fall semester for the spring competition and was funded by the Electrical and Computer Engineering Department. Students who participate are mostly junior and senior electrical or computer engineering students. They work on their own time and receive no class credit. They have full creative control and only receive minor direction from the faculty advisor. It is an excellent opportunity for them to apply and expand their practical capabilities. “We’ve been working on the project since October,” said Scott Padgett, electrical engineering junior and team member. “We had group meetings every other week and we came back over the Christmas holidays and put it all together.” With two first place and one second place finish in the last three years, they are well on their way to establishing a dynasty.

The 2007 competition will likely see two LSU entries due to the volume of interested students. While the rules are still under development, it is clear that the new competition will increase in complexity, requiring radio communication, artificial intelligence, and obstacle avoidance. It is the perfect opportunity to pit LSU students against their peers at other universities.

Video clips and photos of the competition can be found at:  http://www.ece.lsu.edu/audiffred/ieee.html
Having been appointed chairman from August 21, I feel honored and slightly intimidated to be following in the distinguished footsteps of Dr. Alan Marshak and Dr. Keming Zhou, my two immediate predecessors, who both did such an excellent job of guiding this Department. I’d like to take this opportunity to thank Dr. Zhou for undertaking the responsibilities of the Chair so professionally and for positioning the Department so effectively for the next chapter in its history. We are all delighted that Dr. Zhou intends to remain in the Department as a Professor so that he can continue his ground breaking work on advanced control theory.

I am expecting the new challenges facing me here will make this the most exciting, as well as the most difficult, job I’ve undertaken. But I am certain that with the help of the excellent team of faculty and staff that we have here, this Department is poised for some very significant imminent breakthroughs.

I have recently committed the Department to making lifelong connections with its Alumni. I sincerely hope that this new policy will benefit all of us. We will be providing timely information about the Department and programs using emails, newsletters, and the alumni website.

And we are already seeing some excellent new developments. Nine new faculty members have been hired since July 2002. This significant injection of new talent has substantially helped ECE. We now have 28 full time faculty as well as Visiting Professors and adjunct faculty. Two faculty members hold the title IEEE Fellow. We are extremely grateful to those of our Alumni and friends who have so generously supported our Revitalization campaign which together with support from the College of Engineering, has allowed us to establish new laboratories for Capstone design projects, Control Systems, and DSP. Such contributions are now starting to represent a significant resource for the Department’s programs and services. If you would like to make a contribution, or have a vision for making an innovative gift, please visit our website or contact me directly.

We genuinely appreciate your past support and involvement with the ECE family of faculty, staff, students, Alumni, and friends. I hope many more of you will feel encouraged to support us in our new Alumni program.

Clive Woods
MA., D.Phil., D.Sc. (Oxford)
Department Chairman
Voorhies Distinguished Professor

Quick Bio
- Born in Leicester, England
- An accomplished Pianist
- Member of Faculty at Sheffield and Iowa State University before joining LSU in Summer 2006
- Authored more than 90 research publications

Honors and Awards for ECE Faculty

Dr. Ramanujam is awarded research grant

Dr. Jagannathan Ramanujam was awarded a National Science Foundation grant of $75,000. His research is based on Search Based Model Driven Framework for Compiler Optimizations. The award is effective from May 2006 to April 2009.

John Scalzo wins Tiger Athletic Foundation Teaching Award

ECE instructor John Scalzo was awarded the TAF teaching award at a ceremony on May 9, 2006. This award is presented annually to faculty in recognition of outstanding undergraduate classroom teaching. John has been an ECE faculty member since August 1999 and is currently the Undergraduate Coordinator in addition to teaching courses in Electronics, Linear Systems and RF Design.

Dr. Srivastava is promoted to Professor

Dr. Ashok Srivastava, an associate professor in ECE has been promoted to the rank of professor. His areas of specialization include low power VLSI circuit design, VLSI design for wireless communications, RF MEMS and integrated circuits, smart sensors and radiation-hardened integrated circuits.
ChevronTexaco Scholarship
Paxton Kennedy
Brandon McGovern
William H. and Tanya B. Ditto Scholarship
Kathryn Roussel
George Reymond Scholarship
Lindsay Lefever
Justin Geurcio
Robert G. Flory Scholarship
Tommy Nguyen

2005-2006

SCHOLARSHIPS

ChevronTexaco Scholarship
Paxton Kennedy
Brandon McGovern
William H. and Tanya B. Ditto Scholarship
Kathryn Roussel
George Reymond Scholarship
Lindsay Lefever
Justin Geurcio
Robert G. Flory Scholarship
Tommy Nguyen

CHINYERE IFEOMA NWABUGWU, a Nigerian native studying at Louisiana State University, has been awarded a scholarship from Tau Beta Pi, the engineering honor society, for the 2006-2007 year. Nwabugwu, the daughter of Ifeyinwa and John Nwabugwu, will receive a cash award of $2000 for her senior year of engineering study. Tau Beta Pi is the world’s largest engineering society. Membership represents the highest honor to be obtained by an engineering student and is awarded on the basis of scholarship and exemplary character.

Nwabugwu is a 2002 graduate of Federal Government College, Warri, Nigeria, and is now an honors student majoring in electrical and computer engineering with minors in mathematics and computer science. She is vice president for the Society of Black Engineers, undergraduate representative for the Faculty Senate’s Courses and Curricula Committee, and student government senator for the College of Engineering.

She was listed among the Top Ten Freshmen of her university, recently received the Outstanding Junior of College of Engineering award, and was recognized by the Mathematics Department for her academic excellence in mathematics. Nwabugwu is a member of the Louisiana Alpha Chapter of Tau Beta Pi, the Eta Kappa Nu, the National Society of Collegiate Scholars, and the Mortar Board National Senior College Honor Society.

Tau Beta Pi scholarships are awarded to junior members on a competitive basis of high scholarship, campus leadership, service and promise of future contributions to the engineering profession. Nwabugwu is an example of these characteristics and more.

CONGRATULATIONS CHINYERE!

Two electrical and computer engineering students, Anshul Tandon and Chinyere Nwabugwu—were selected as the College of Engineering’s Outstanding Sophomore and Junior, respectively, and honored at the Chancellor’s Honors Convocation Friday, April 28, 2006. Tandon is a sophomore double-majoring in Computer engineering and computer science with a perfect 4.0 GPA.

He attended the International School in Bangalore, India and St. Mary’s International School in Tokyo, Japan. He has received the UCFY Outstanding Freshman Award, the ChevronTexaco Scholarship, the Golden Oaks Award, and the International Leaders of Tomorrow award. He is currently the president of Tau Beta Pi, the Engineering Honor Society, and Eta Kappa Nu, the Electrical and Computer Engineering Honor Society. He has published four articles in the online Journal of Young Investigators and is fluent in English, Hindi, and Japanese.

Nwabugwu, an Electrical and Computer Engineering junior, attended high school at Federal Government College Warri in Delta State, Nigeria.

She currently serves on multiple committees and councils, is an active member of several student organizations and honor societies and volunteers with numerous service programs. She plans to pursue her doctoral degree in the area of digital signal processing and wireless communication. She researched at California Institute Technology and will be interning with Chevron in New Orleans this summer. After graduation, she intends to join the Teach for America Corps and wishes to help the number of women in technical fields.

We are extremely proud to have such outstanding students in our Department.

Congratulations to these two students!!
Ourso-Romine Scholarship to be Awarded

The Clint Ourso and Jennifer Romine Scholarship has been awarded for the first time this academic year. It was funded by a recent contribution from Clint Ourso and Jennifer Romine establishing the endowed scholarship fund for ECE undergraduate students which bears their names. Both Clint (ECE '93) and Jennifer are LSU graduates.

Clint is currently a project manager with Volition, Inc. Jennifer is pursuing a PhD in political science at the University of Illinois. They live in Champaign, Illinois but have strong family and other ties to LSU and Louisiana. One very strong tie is their love of LSU men’s and women’s basketball.

The ECE Department is grateful for their help and we send our sincere thanks.

Xilinx, Inc. and Alum Upgrade Lab

Recently Gabriel A. DeSouza contacted Mrs. Anita Schreiber, a 1985 ECE graduate and current member of the ECE Advisory Board. She is currently managing the Embedded Processing Applications team within the Processing Solutions Group of Xilinx, Inc.

Gabriel is a talented Instructor in the ECE Department and sought her assistance concerning programmable logic devices for Digital Logic Lab improvement. Mrs. Schreiber guided him to the Xilinx Cool Runner Complex Programmable Logic Device’s (CPLD), and Xilinx Programmable Logic design tools to be used in the Digital Logic Laboratory. With this equipment we will be able to expose students to programmable logic devices, thus enhancing their educational experience.

Gabriel and the Department would like to extend thanks to Xilinx for their donation and to Mrs. Schreiber for her help and guidance.

Revitalization News

It is our great pleasure to report that we have made significant progress in the Departmental infrastructure improvement in the last year or so with the help from many of our Alumni (through the Departmental revitalization program) and the College of Engineering. In particular, we built a new RF/Communication lab which is being used now for undergraduate communication courses. We started building a Field Programmable Gate Array (FPGA) lab and enhanced the senior capstone design lab and the undergraduate control system lab. We have further enhanced the Digital Signal Processing Lab by adding extra DSP workstations and with new emulators. This new DSP lab will not only serve the DSP courses but will also be used in a computer programming course. We have also been able to replace/add two Linux servers and some Sun workstations serving the whole department. The renovation and furnishing for more than 20,000 square feet of lab and office space have now been completed giving the Department space for further expansion and better serving our students.

Of special note are the contributions of Shell Oil Company, Mr. Edwin “Burt” McNeil, EE ’46, as well as those of Carolyn and Mark Guidry, both EE ’59, through their foundation. The recognition plaques shown are located at the entrances to the labs.

We genuinely appreciate past support and involvement of our Alumni. Although limited, contributions are already making an impact in our Revitalization program. We hope everyone will feel encouraged to continue supporting us in our efforts.

www.ece.lsu.edu
Louisiana State University will lead an eleven institution collaborative research effort in Radio Frequency (RF) Sensor Technologies. Electrical & Computer Engineering professor Morteza Naraghi-Pour is the principal investigator and the technical lead for the entire project. For its effort LSU has been awarded $735k by Clarkson Aerospace/Air Force Research Laboratory/Sensor Directorate (AFRL/SN). The Co-PI's are Guoxiang Gu, Jorge Aravena, Kemin Zhou, Marty Feldman, Theda Daniels-Race and Bryan Audiffred, all from the ECE Department, and Rajgopal Kannan of Computer Science.

This project started last year where LSU was awarded $490k by Clarkson Aerospace/Air Force Research Laboratory to lead Southern University, Baton Rouge and Grambling State University for research in Radio Frequency (RF) Sensor Technologies. Professor Naraghi-Pour was the PI and Professors Gu, Aravena and Zhou were the Co-PI's.

The objective is to conduct basic research and exploratory and advanced development of RF sensors to meet Air Force Aerospace Global Awareness, Precision Engagement, Survivability, and Life Cycle Cost needs for space, air and ground sensor systems. AFRL/SN is developing, demonstrating, and improving RF devices, components, sub-systems, and systems for active and passive sensing, intelligence gathering, surveillance, reconnaissance, self protection, and other applications from multiple aerospace platforms.

At LSU, the research involves development, analysis and evaluation of advanced digital signal processing (DSP), communication and networking algorithms and protocols in order to enable and enhance communication, localization and tracking of targets, and surveillance and information gathering capabilities of sensor networks.

The other, companion, institutions will also be involved in developing advanced components and/or receiver structures for the next generation of adaptive and medium-aware radio systems. This year three other Louisiana universities are in the group of eleven: Southern University (SUBR), Grambling State University and Louisiana Tech University. The remaining universities are Rice, Michigan State, Texas A&M, Georgia Tech, Texas Southern, Tennessee State and Prairie View A&M.
Micro Engineering a Macro Image

Materials smaller than the width of a human hair can be used to modify images at a scale of one five-thousandth of an inch to create an improved, high-definition reproduction. At least, that is the goal of a pair of LSU engineers who are paving the way to the next generation of imaging systems for use in digital cameras, surveillance equipment, medical scanners and satellites.

Jin-Woo Choi and Bahadir Gunturk, both assistant professors in the Department of Electrical Engineering, are harnessing the powers of hardware and software to create an imaging system that can take multiple images of the same scene and combine the best elements of those images to create a high-definition image. Inside the camera, resolution and dynamic range—the range between the lightest and darkest colors in the image—could be dramatically improved over today’s standards.

“Most consumers today use computer software to adjust their photos to get more detail out of them,” says Gunturk. “Our new system will hopefully eliminate some of that work to create a vastly improved image.” To begin Choi is leading the hardware development aspect of the project. To allow the camera to take four different images, the image sensor must move. So, Choi is developing micro actuators that can slightly and accurately move the sensor horizontally and vertically along the image plane. Micro-actuators are made of special materials that are typically less than the width of a human hair. They expand and contract when electrical voltage is applied to them and Choi is aiming to create new micro-actuators with that property. The sensor could then take different shots of the same scene.

Gunturk is responsible for creating the high-definition copy from these images using a concoction of mathematics and image-acquisition modeling. To accomplish that, he is writing various algorithms for the camera to follow in constructing the final image.

Ultimately, the camera will combine all of the common elements for each of the images taken and use the algorithm programming to fill in any missing data.

Their research has tremendous possibilities for future applications. Outside of digital photography, it could be used to improve the power of surveillance equipment and in medicine it could allow for more precise identification and location of tumors. To Choi and Gunturk, these micro-actuators and tiny pixels can make a big difference.
Tell Us About Yourself

________________________________________
Full name

________________________________________
Current Address

________________________________________
City, State, Zip

Degree Year: __________________
Email: __________________________

With your permission, all of the information you have provided above, EXCEPT YOUR ADDRESS, will be placed in The Roster available to fellow graduates. In addition, we welcome personal statements and information about your family, career, etc. that you wish to make available to ECE alumni and Friends. These statements will also be integral to The Roster, which is available via the ECE Alumni website at http://www.ece.lsu.edu/alumni.

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Is your gift eligible for a corporate matching gift? Yes_______ No_______
Fill out below for donations using credit card or call (225)578-5244

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Credit Card Number: __________________________

Credit Card Expiration Date: (month/year) ____________________
Rhett Smith joins Industry

Rhett Smith, our Computer Manager, recently left LSU to join NRG Energy and will be working out of New Roads. This is a step up for him and his considerable talents will be well received. We wish him the very best and want him to know that the department appreciates his creative efforts in building our computer infrastructure over the last 13 years.

Rhett received his B.S. in Electrical Engineering at LSU in May 1991. After graduation he continued working with the U.S. Department of Agriculture installing an automated water table control project at Ben Hur Farm. Upon completion of the installation, he accepted a position with the LSU Biological and Agricultural Engineering Department as a Computer System Administrator. In August of 1993, Rhett joined the Electrical and Computer Engineering Department as a Computer Analyst and was promoted to Computer Manager in 1998. By the time he left, Rhett was managing more than 350 computers and 13 servers, providing services for more than 600 users.

ECE Welcomes Mr. Kerry Lee

The Department would like to announce that Mr. Kerry Lee has joined the ECE staff at the rank of Administrative Coordinator 3. Lee comes to us straight from the Global War on Terrorism, serving in South West Asia as a strength accountability manager. His position primarily serves as assistant to the Graduate Advisor. His additional duties include coordination of assistantship evaluations, assisting with the administration of qualifying exams, and keeping departmental graduate student records.

Lee is from the New Orleans area and attended Louisiana Tech University where he majored in Electrical Engineering, but ended up in the Army following a college football injury. Lee and his wife of 2 years, Jennifer, have a one year old son named Jahlen. He enjoys football, basketball, writing and most of all spending time with his family.

We are so fortunate to have such a great addition to our department staff!