Message from the Department Head
Dear friends:

As this year of 2003 comes to a close, there are a couple of things I would like to share with you.

1. Robert Marion Kennedy passed away this year at the age of 97. Marion Kennedy held firm convictions in the necessity of creating the highest standards in education. In order to turn out high caliber students into the workforce, he felt we must enable students and faculty to aggressively pursue education and research interests and goals. Towards this end, he gave generously to establish one chair, two professorships and many scholarships in the department.

In memory of his love for the department and all that he has given us, we dedicate this issue of our newsletter to this outstanding Aggie.
What is remarkable to me is that, while Marion was not an extraordinarily wealthy person, he personified the spirit of giving. He set an example that people of reasonable means can make a difference in the life of an educational institution and everyone involved in it.
I have many fond memories of my visits with Marion over the past six years. We will miss him, but his memories will always be alive and his gifts will continue to help and inspire students and faculty. Although he is not physically amongst us anymore, he will continue to be of service to his alma mater, his country and society in general.

2. As a part of the Vision 2020 reinvestment plan, the Department of Electrical Engineering has been designated a signature department. Currently, we have 51 tenured/tenure-track faculty in the department. As a result of this reinvestment plan, the department is expected to grow to 70+ tenured/tenure-track faculty in the next four to five years. This will bring new strengths in research and in the overall quality of education that we can provide to our young minds. We are poised at the threshold of a period of accelerated growth, change and challenge. Changes that we anticipate will put us in the driver’s seat of cutting edge technologies. There is much to look forward to in the coming years, both in terms of opportunities as well as challenges. I know you will share our excitement as we embrace the future.

Electrical engineering graduate remembered

This newsletter is dedicated to electrical engineering graduate, Robert Marion Kennedy, who passed away earlier this year.

From witnessing the initiation of the 12th Man Tradition to donating more than 2.6 million dollars to Texas A&M University, Robert M. Kennedy epitomized what it meant to be an Aggie.

Kennedy, who was born in Dallas in 1905, was married 49 years to Hazel Davis Kennedy, a 1926 graduate of Texas Christian University. He earned his bachelor’s degree in the electrical engineering department in 1926 at Texas A&M, and spent the following seven decades helping the department and university in many ways.

“Mr. Kennedy loved Texas A&M University, Aggie football and the Department of Electrical Engineering,” said Dr. Chanan Singh, Department Head and professor in the electrical engineering department.

This love of A&M can be shown in Kennedy’s overall giving to
Texas A&M, which totaled over $2.6 million. Of that amount, more than $1.8 million funded the following in electrical engineering: The Robert M. Kennedy ’26 Chair in Electrical Engineering; The Robert M. Kennedy ’26 Professorships in Electrical Engineering (Professorship I and Professorship II); and 13 scholarships - 12 scholarships in the Kennedy Scholars Program and one scholarship in the Bolton Scholars Program. Other donations to the electrical engineering department included a painting called “Bay of Naples, Italy,” which was painted by G.L. Cameron, a student of Pablo Picasso, and Kennedy’s Aggie ring.

“I believe it says a lot about Mr. Kennedy’s devotion that he planned for his ultimate gift, after his lifetime, to include an endowed faculty chair and two endowed professorships, all in electrical engineering at Texas A&M University,” Singh said.

Kennedy, a Life Senior Member of the Institute of Electrical and Electronics Engineers, also was a charter member of the Century Club and later became a permanent member, with the gift of a “Double Diamond” endowment. He also made a Founder’s gift to the George Bush Presidential Library Center, was a Reveille member of the 12th Man Foundation and had made a gift to the Corps of Cadets’ “Brick fund.”

Other memberships for Kennedy at Texas A&M included the Forsyth Heritage Society and the Texas A&M Foundation “University Associates.”

The proof of Kennedy’s dedication to Texas A&M will also be remembered through his donation to the Jon L. Hagler Center—the new Texas A&M Foundation Building. Kennedy funded a room there that was named the Robert Marion Kennedy ’26 Seminar Room.

These gifts and all his other contributions to the university defined Kennedy as a true Aggie, born in a family of Aggies.

Prior to his days at Texas A&M, Kennedy had several cousins who had begun to make a name at Texas A&M and in College Station. Francis Kamp McGinnis ’00, was president of the Alumni Association [later the Association of Former Students] from 1910 - 1911. Another cousin, Nestor M. McGinnis ’08, was former mayor of College Station and was reportedly responsible for most of the landscape of College Station. Perry T. McGinnis ’14 and Charles T. McGinnis also were among Kennedy’s cousins who made Texas A&M their alma mater, making Texas A&M and the electrical engineering department a large part of his family’s history.

“Mr. Kennedy thought the world of the EE department,” said David Wilkinson, former development officer for the Dwight Look College Of Engineering at Texas A&M. “He didn’t talk specifically about any personnel. Instead he talked about how hard it was, how the guys who went through the same ELEN class stuck together, worked together, and helped each other get through school.

“He was always real big on character and values, he always talked about that. No matter how the conversation started, he would get around to character and values . . . and how Texas A&M instilled these upon him early on . . . and how hard work, character and value helped him do so well later in life.”

These achievements can be shown by his distinguished career and through his military honors.

Following graduation from Texas A&M in 1926, where he won the “Distinguished Student” award for his grade point average, Kennedy began working with Southwestern Bell in Dallas. He later transferred to St. Louis and then finally retired in 1970 with the title “Transmission Engineer,” and was named a member of the Telephone Pioneers of America.

His job duties included dealing with the Federal Communications Commission in Washington, supervising the construction permits and licenses for 440 radio stations and putting up long-distance relay circuits for toll lines.

During his time with Southwestern Bell, Kennedy saw many changes, from the initiation of an employee’s union to a change in the role of telephone operators to switching from manual to dial phones.

Kennedy, a life member of TAU BETA PI and a licensed professional engineer since 1938 (the first year it was established by Texas Legislature), also served five years active duty in World War II as a colonel after graduating from the war department’s School of Military Government at the University of Virginia.

He spent more than two years overseas and was awarded military honors for his service under generals Dwight Eisenhower and Omar Bradley. The “Knight of Luxembourg’s Grand Ducal Order of the Crown of Oak” and “Croix de Guerre,” were awarded to Kennedy for his leadership and bravery for helping the people of Luxembourg get food, fuel and medicine, despite the German threat.

But even throughout the excitement of World War II and the changes occurring in the engineering field, Kennedy couldn’t forget his alma mater.

“During our talks, it became clear to me what a man of principle Mr. Kennedy was and how much he loved his country and his alma mater,” Singh said. “I can tell you he was an equally strong football fan and always kept me up-to-date with his analysis of the latest game or the most recent high school recruit. He never failed to watch the Thanksgiving game between A&M and the University of Texas.”
In 1965 Intel co-founder Gordon Moore observed that the number of transistors in a silicon computer chip was doubling every year. What has become known as Moore’s Law has held true—within an adjustment to 18 months rather than every year—for more than three decades.

A researcher from Texas A&M University has shown that the laws of physics are close to catching up with Moore’s Law in a way not widely thought about. The culprits are heat and thermal noise, according to Laszlo Kish, an associate professor in the Department of Electrical Engineering.

“You have to look at power dissipation speed and noise as fundamentally interrelated aspects,” Kish said. “This problem-triangle, as a whole, is not very well-known because we have not reached the limits, yet.”

Today’s circuits measure 100 nanometers, or about 50 times smaller than the diameter of a red blood cell. To keep pace with Moore’s Law, circuit size will have to shrink to about 40 nanometers by the end of the decade.

According to Kish’s calculations, the overlooked effect of power-speed-noise will make circuits of that size unreliable, and as chips get faster and carry out more calculations per second, they must also dissipate more energy and make more bit errors. “Today the chips are at the limit as far as power dissipation is concerned,” he said.

To compensate for this, chipmakers have been decreasing supply voltage in order to keep power dissipation manageable, and making the chips more sensitive so that they work using the lower-voltage signals. But as circuits continue to decrease in size and their supply voltage continues to grow weaker, Kish said energy generated by thermal noise will start to interfere with electrical signals, which will increase chip errors. Moreover, the increasing bandwidth (speed) is the third factor of increasing bit error frequency because it is speeding up thermal noise.

“There is a fundamental interrelation between noise, information, speed and dissipation,” he said.

Kish adds that not only is there a limit to how low transistor size and voltage can go, but that limit is closer than we think. Decreasing gate length in the complementary metal oxide semiconductor (CMOS) chips used in most computers today from 100 nanometers to 40 nanometers will increase bit error rate by many orders of magnitude which is enough to cause serious problems.

Kish estimates the thermal noise is poised to become a serious issue at the beginning of the next decade. Transistors can be made smaller and can run bit error-free if the supply voltage is large enough. Then the problem of overheating logic chips, where 100 millions of transistors have to be packed on a small area, looks unavoidable.

“Moore’s Law will end in 6-10 years, depending on several factors,” he said. “There are factors, but roughly this is true.”

Kish said, however, the effects could already be causing problems in today’s smallest integrated circuit prototypes due to a synergistic enhancement by cross talk noise cause by switching transients by standard operation of logic circuitry. His prediction means that at some point in the not-too-distant future, computer clock frequencies will reach their physical limit, unless researchers can find a way around the problem.

EE Faculty members construct new approach to recitations called “Design Studio”

Faculty members at Texas A&M University have constructed a new approach, which they call “Design Studio,” to recitation sections of their sophomore circuits course, ELEN 214. Formerly, recitations were problem-workout sessions; now recitations expose students to design principles.

Faculty members present students with problems that often have conflicting criteria that need to be balanced and have multiple solutions. These modules were created under the direction of Drs. Jo Howze and Prasad Enjeti, electrical engineering professors, and Graham Booker. Design studio problems for the circuits course can be accessed at http://www.foundationcoalition.org/resources/ee/index.html.

The design studio approach not only shows students that there is more to electrical engineering than analyzing circuits, it also provides a venue for exposing them to various fields that they might like to study. Problems are stated in words, sometimes with no circuit diagram. After using design studio, students asked many more questions in class.

“On occasion, students have presented me with a solution that is more novel, cheaper or more functional than my own. They learned more through this design studio than they did through problem-workout sessions. They were challenged with problems that required thought and careful consideration. The modules were designed to show the students that the real heart of engineering is solving problems with no single solution,” said Booker.

“Traditionally, engineering has been taught with a ‘from the bottom up’ approach. Engineering is actually from the top down. You go from the need and carry it to the next level… As research became more important for universities, we got out of balance. The goal is to get students excited about engineering—the goal is retention,” said Howze.

“We wanted to get more done and we wanted the students to be challenged,” adds Enjeti.

The driver for the design studio concept is several open-ended, top-down electrical engineering circuits problems that have numerous solutions and often either have missing information or too much information. Additional real-world constraints (such as efficiency, size, weight, power requirements, cost and manufacturability) were introduced as appropriate.

Students were asked to consider trade-offs among various constraints in generating alternative solutions and selecting an desirable solution. Students were divided into groups; each group received a specific problem assignment each week. A teaching assistant explained the problem and supervised the design process involved, along with the constraints. The design studio links details each design problem.

This enhancement has been funded by a Texas Work Force Development grant sponsored by the Texas Engineering and Technical Consortium (TETC). For more information about TETC, visit http://tetc.engr.utexas.edu.
On December 12, 2001, Vijay K. Bhargava (right) participated in the one hundred year anniversary celebration of Marconi’s first transatlantic wireless experiment at a receiving site on Signal Hill, near St. John's, Newfoundland, Canada. He discussed this historical event during the Department of Electrical Engineering’s Distinguished Lecture Series, tracing the tremendous progress made in the last two decades of Wireless Internet access.

Among other things, Bhargava described several techniques such as: space-time codes, turbo, convolutional and Reed-Solomon codes, multiuser detection, source coding and encryption, which have served as enabling techniques for sophisticated wireless systems. He also briefly discussed the current malaise afflicting the wireless industry and possible recovery scenarios.

Bhargava received the B.Sc., M.Sc. and Ph.D. degrees from Queen’s University, Kingston, Canada in 1970, 1972 and 1974 respectively. Currently, he is a Professor of Electrical and Computer Engineering at the University of Victoria and holds a Canada Research Chair in Wireless Communications. He is a co-author of several books, and his research interests are in multi-media wireless communications.

Bhargava also is an editor for the *IEEE Transactions on Communications* and the *IEEE Transactions on Wireless Communications*. He is a Past President of the IEEE Information Theory Society and has been nominated by the IEEE Board of Directors for the Office of IEEE President-Elect in this year’s election.

The Department of Electrical Engineering presents a year-long program of lectures to broaden the horizons of faculty, students and friends interested in the progress of electrical engineering. Experts from industry and academia are invited to lecture on topics of widespread interest to the discipline.

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**Baker Hughes Foundation endows Texas A&M engineering scholarships**

Baker Hughes executives were on the Texas A&M University campus in May to announce an $80,000 gift that will generate multiple engineering scholarships each year, including scholarships for the Department of Electrical Engineering.

“The Baker Hughes Foundation has been a strong partner of our college for many years. This most recent gift is greatly appreciated and will help deserving young people obtain their engineering education,” Dr. G. Kemble Bennett, vice chancellor and dean of engineering, said.

Since 1980, Baker Hughes has contributed $796,840 to Texas A&M programs, including an endowed faculty chair in the petroleum engineering department.

“I am proud that Baker Hughes has continued its commitment through the years to Texas A&M University and deserving students in the engineering college. Texas A&M is one of the designated core universities for Baker Hughes in which we recruit tomorrow’s best engineering professionals. Due to the caliber of the students and demanding curriculum, we have found through the years that these students are well prepared to transition into productive roles within our organization,” said Phil Vogel, vice president, Western Hemisphere Operations, Baker Oil Tools.

Also representing Baker Hughes at the campus ceremony was Tom White, vice president, Human Resources, Hughes Christensen.

The endowed fund will support three annual scholarships in its first year. Recipients will be sophomores, junior or seniors pursuing a degree in one of seven departments in the Dwight Look College of Engineering: chemical, civil, electrical, engineering technology and industrial distribution, industrial, mechanical or petroleum engineering.

Preference will be given for students with financial need whose parents are Baker Hughes employees at the time of application. The scholarships are renewable if recipients continue to meet eligibility criteria.

The Baker Hughes Foundation administers gifts on behalf of Baker Hughes Incorporated, a leading provider of drilling, formation evaluation, completion and production products and services to the worldwide oil and gas industry.

Contributed by Exa York
Ehsani leads new frontier in transportation

Passing the gas station without stopping to refuel as often and breathing cleaner air may be the future of transportation because of work done by Texas A&M University electrical engineering faculty member, Dr. Mehrdad Ehsani, in designing advanced motors for more efficient cars and building cars that combine the gasoline engine and the electric motor.

The new generation of cars, called hybrids, provides better fuel economy and lessens the environmental impact of motorized vehicles. In designing the right motor for each application -- i.e., cars, trains, airplanes, spacecraft, etc. -- instead of using one generic type of motor and applying a “plug and play” approach, Ehsani hopes to provide the next step in transportation technology.

“It is important to build a smarter vehicle rather than try to increase production of fuel because those resources will eventually run out,” said Ehsani, who is the director of the Power Electronics & Motor Drive Laboratory at the Texas Engineering Experiment Station (TEES) and conducts the Advanced Vehicle System Research Program at Texas A&M University. “It is easier to develop a vehicle that runs cleaner and more efficiently than to convince the public to reduce the amount of driving they must do.”

Researchers in the Advanced Vehicle Systems Research Program are working to develop advanced vehicles with better fuel economy and solve the problem of poor air quality caused by road vehicles.

The group won one of the largest grants to date from the Texas Higher Education Coordinating Board’s Advanced Technology Program and first developed the Electrically Peaking Hybrid Vehicle (ELPH). ELPH combines a gas engine with an electric motor to improve fuel economy, air emissions and overall performance of the vehicle.

The research team also has discovered what an automobile “wants” from its power source. Having characterized that mathematically, a motor can be created to perform to the automobile’s specification, increasing fuel efficiency and reducing excess emissions.

In addition to the advanced and hybrid vehicles, the researchers are working in fuel-cell-hybrid drive trains with advanced and diversified fuel sources. One is a fuel-cell-hybrid-powered locomotive, which solves the problem of pollution from sources other than road vehicles, as in areas like Dallas and Houston with high locomotive traffic.

While automobile companies and energy companies are also looking to the future, Ehsani said the advanced vehicle program, in partnership with the oil industry of Texas, could become the fuel technology for the future.
The Department of Electrical Engineering at Texas A&M University would like to thank the following supporters for their contributions to our Annual Fund. This fund was established for scholarships, recruiting and other items not covered by state or tuition in order to compete for the retention of the finest students and faculty. Support of our annual fundraising campaign in the past four years has been very helpful to the growth of the department.

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YES! I Want to Support the Department Of Electrical Engineering
This section features alumni news

Rodney Boehm '78
Rodney Boehm currently is in charge of the Sales for the Optical Transport products at Fujitsu Network Communications Inc. Upon graduating from TAMU with his ME in EE with a specialty in communications theory, he started his career with Bell Laboratories in North Andover MA designing digital microwave transmission equipment. Upon divestiture, he joined Bellcore where he and Yau Chau Ching developed the initial concepts behind the SONET (Synchronous Optical Network) standard. He introduced these concepts into various standards bodies and worked the specification in numerous national and international standards bodies until it was a complete standard. It has now become the standard by which all optical communication equipment now interfaces throughout the world and it now represents a total market size of over $10B in the U.S. alone. Boehm now works for Fujitsu Network Communications Inc. in Dallas and credits his early training from the electrical engineering department for much of his success. He has a son who is a mechanical engineering student at Texas A&M.

Samuel D. Rodriguez '97
Samuel D. Rodriguez recently received his Professional Engineer's License in Texas. Rodriguez joined QuadTech Inc. a Mechanical/Electrical/Plumbing consulting engineering firm in 1998, where he is currently a Senior Associate with the firm. He received his Bachelor of Science Degree in electrical engineering from Texas A&M University in 1997. He began his career in engineering over nine years ago and is currently the Project Manager for several of the firm's engineering projects throughout the state.

Karl Schwerdt '96 (MS)
Karl Schwerdt was married in April 2001 to Florence Duchene-Schwerdt and is now living happily with his wife and her three children 45 minutes from Eurodisney in the south of Paris, France. Schwerdt finished his Ph.D. in computer science from the Institut National Polytechnique de Grenoble, France, in May 2001. He is now working as an engineer and consultant for a French company called B2i in a suburb of Paris.

Anthony Wood '90
Anthony Wood, the creator of the ReplayTV digital television recorder, recently began working at Roku, his latest consumer electronics effort, whose first product is a media player for high-definition TVs. With the new company, Wood hopes to target a high-end market of big screen TV buyers that may also desire using the advanced visual quality of the screen to display more than just programming. Wood's last invention, ReplayTV, first unveiled in 1998, is just starting to hit a mainstream stride. The digital video recorder (DVR) is key in the competition between satellite and cable TV providers. In 2002 Wood left ReplayTV, which is now owned by Digital Networks North America, a subsidiary of D&M Holdings.

Unlike ReplayTV, the Roku device does not include a hard drive or any kind of recording option. Wood says other products are in the works at Roku, which is privately held and situated in Palo Alto, California.

We want to hear from you!!!

If you are a graduate in electrical or computer engineering from the Department of Electrical Engineering at Texas A&M we would love to hear how you're doing. You can email your information to deana@ee.tamu.edu, or if you prefer, you can mail us news about your career, family or anything else to:

Deana Totzke, Currents Editor
Department of Electrical Engineering
TAMU 3128
Zachry Engineering Center
College Station, TX 77843-3128

Please notify us of any address changes so we can continue giving you news from the department.
Deepa Kundur

Dr. Deepa Kundur was born in Toronto, Canada. She received the B.A.Sc., M.A.Sc., and Ph.D. degrees all in Electrical and Computer Engineering in 1993, 1995 and 1999, respectively, at the University of Toronto, Canada.

As of January 2003, she joined the electrical engineering department where she is a member of the Wireless Communications Laboratory and holds the position of assistant professor. Before joining Texas A&M, she was an assistant professor with the Edward S. Rogers Sr. Department of Electrical and Computer Engineering at the University of Toronto, where she held the title of Bell Canada Junior Chair-holder in Multimedia and was recently the recipient of the 2002 Gordon Slemon Teaching of Design Award and the 2002 Best Electrical Engineering Professor Award (Spring), presented by the ECE Club.

From 1999-2001 Kundur was an Associate of the Nortel Institute in Telecommunications where she conducted research in the area of multimedia security and worked on enabling networking technologies for enhanced digital rights management (DRM). In 2002, she was a member of the Bell University Labs in Toronto, where she was involved in research focusing on mobile DRM.

Kundur’s research interests include multimedia security, digital rights management, digital watermarking, video encryption, steganography, sensor network security, nonlinear dynamic information processing algorithms, hardware implementation of communication algorithms and sensor fusion.

Theresa Maldonado

Dr. Theresa Maldonado joined Texas A&M University as a professor in the electrical engineering department, Associate Director for the Texas Engineering Experiment Station and Associate Dean for the Dwight Look College of Engineering.

She previously served as Associate Vice President for Research and Associate Dean for Research and Graduate Studies at the University of Texas at Arlington. She was also the Director of the Institute for Nanoscale Science and Engineering Research and Teaching at UTA. She served as Program Director at the National Science Foundation from 1999-2001 in the Engineering Research Centers program. From 1980-1986 she was a Member of Technical Staff at AT&T Bell Laboratories in Atlanta.

Maldonado’s research interests are in anisotropic optical materials and waveguides, nonlinear optics, electro-optics, integrated optics, fiber optics, diffractive optics and electromagnetics. She received her Ph.D. in 1990, her M.S.E.E. in 1982 and her B.E.E. with Highest Honors in 1981, all from the Georgia Institute of Technology.

Honors include receiving the Communications and Information Technology Ontario (CITO) R&D Award for support of innovative technology development and sound business planning and the National Research Council (NRC) Industrial Research Assistantship Program Small Projects Grant to support a research-intensive wireless LAN technology that he co-invented. He received several prestigious scholarships and fellowships while at the University of Toronto.

Takis Zourntos

Dr. Takis Zourntos began working as an assistant professor in January 2003 in the Analog and Mixed Signal area. He received his Ph.D. in electrical engineering-electronics in 2002, his M.A.Sc. in electrical engineering-Control Systems in 1996 and his B.A.Sc. in Engineering Science in 1993, all from the University of Toronto.

His research interests include mixed-signal integrated circuits for communication and instrumentation applications, nonlinear/adaptive control and signal processing.

Previously Zourntos was the co-founder/System Architect at Protolinx Corporation in Toronto and served as a consultant for the Uniphy Networks Inc. in Toronto and the Department of Electrical and Computer Engineering at the University of Toronto.

Honors include receiving the Communications and Information Technology Ontario (CITO) R&D Award for support of innovative technology development and sound business planning and the National Research Council (NRC) Industrial Research Assistantship Program Small Projects Grant to support a research-intensive wireless LAN technology that he co-invented. He received several prestigious scholarships and fellowships while at the University of Toronto.

Jim Ji

Dr. Jim Ji began working for the department as an assistant professor in the fall of 2003 in the Biomedical Imaging and Genomic Signal Processing area. He received his bachelor's and master's degrees from Tsinghua University in Beijing, China in 1996 and 1997 respectively. He received his Ph.D. in Electrical and Computer Engineering from the University of Illinois at Urbana-Champaign in March 2003.

Previously Ji served as a research and teaching assistant at Tsinghua University and the University of Illinois. His research interests are in magnetic resonance imaging and medical image processing.

Honors include the Seshu-Sandrum Fellowship, the Zhong-wang Outstanding Graduate Student Prize and a graduate college conference travel grant.
Making Waves

Faculty Awards

Ali Abur
Dr. Ali Abur was elected to the rank of Fellow of the Institute of Electrical and Electronic Engineers (IEEE), one of the highest distinctions for the organization.

Abur, a professor in the department, is one of 17 faculty members to reach the rank of Fellow. This is considered a significant honor since the number of IEEE members who may be advanced to Fellow grade in one year is 0.10 percent of the total 320,000 Institute membership.

Abur also received the American Electric Power Faculty Fellowship from the Dwight Look College of Engineering to recognize his contributions to the Texas A&M University System Engineering program.

Abur began working at Texas A&M in 1986. He obtained his B.S. in electrical engineering from the Middle East Technical University, Ankara, Turkey in 1979, and his M.S. and Ph.D. degrees from The Ohio State University in 1981 and 1985 respectively. Current research interests include power system state estimation, electromagnetic transients and fault location, simulation and modeling for power quality assessment.

He conducted several projects funded by the National Science Foundation (NSF) in the areas of robust state estimation, network observability analysis and the use of amperemeasurements in state estimators. He also had projects involving issues of power quality and fault location. He has developed two graduate level courses on power system state estimation and electromagnetic transients and was the recipient of the NSF Research Initiation Award in 1988.

Ed Dougherty
Dr. Ed Dougherty, professor in the department, recently was elected chair of the Society of Industrial and Applied Mathematics (SIAM) activity group on imaging science and had a paper accepted to the Proceedings of the National Academy of Science, which represents joint work with MDACC and Tampere.

SIAM is designed to advance the application of mathematics and computational science to engineering, industry, science and society; promote research that will lead to effective new mathematical and computational methods; and techniques for science, engineering, industry and society and provide media for the exchange of information and ideas among mathematicians, engineers and scientists.

Dougherty also was named a Texas Engineering Experiment Station (TEES) Fellow.

He received his Bachelors of Science and his Masters of Science in mathematics from Fairleigh Dickinson University in 1967 and 1969, respectively. He earned another Masters in science in computer science from Stevens Institute of Technology in 1986 and his Ph.D. in mathematics from Rutgers University in 1974. Dougherty is considered a leader in the study of the Human Genome Project by measuring gene activity with engineering techniques such as signal processing, pattern recognition and image analysis. He is the editor of several technical journals and has chaired a number of conferences.

Mehrdad (Mark) Ehsani
The Institute of Electrical and Electronics Engineers (IEEE) has named Mehrdad (Mark) Ehsani, professor of electrical engineering at Texas A&M, recipient of the 2003 IEEE Undergraduate Teaching Award for his “inspirational teaching of undergraduate students in the fields of interest of IEEE.”

Ehsani also received a “Spirit of Innovation” award from the Technology Licensing Office (TLO) with his graduate student, Sebastien Gay, for the “200th Disclosure.” Their invention, related to new design features for hybrid vehicles they developed at the Texas Engineering Experiment Station, was the 200th invention disclosure submitted to the TLO by A&M System researchers since its formation in 1992.

Ehsani established one of the country’s first motor drive and power electronics programs at Texas A&M in the early 1980s. Ehsani also has directed the Texas Applied Power Electronics Center and currently directs the Advanced Vehicle Systems Research program.

A Fellow of the IEEE, Ehsani has served on many of its committees, including chair of education for the IEEE Power Electronics Society. His honors also include a Halliburton Professorship, Dresser Industries Professorship and Ruth and William Neely/Dow Chemical Fellowship at Texas A&M. A registered Professional Engineer in Texas, Ehsani earned his bachelor’s and master’s degrees in electrical engineering from the University of Texas at Austin. He earned his doctorate in electrical engineering from the University of Wisconsin-Madison.

Prasad Enjeti
Dr. Prasad N. Enjeti, professor for the department, was recognized as one of four faculty members to receive The Association of Former Students college-level Distinguished Achievement Award in Teaching.

Enjeti began working for the department in 1988. His primary research interests are advance converters for power supplies and motor drives, power quality issues and active power filter development, utility interface issues and “Clean Power” converter designs. He has two United States patents and has licensed two new technologies to the industry. Enjeti also was elected to the rank of IEEE Fellow in 1999.

He received his bachelor’s degree from Osmania University in India, his master’s degree from Indian Institute of Technology in Kanpur, India and his doctoral degree from Concordia University in Montreal, Canada.

Costas Georgiades
Dr. Costas Georgiades, professor for the department and the Telecommunications and Signal Processing Area Leader, received the E.D. Brockett Professorship from the Dwight Look College of Engineering. Georgiades, the inaugural holder of the Delbert A. Whitaker Chair in Engineering, also is a Fellow of the IEEE.

Georgiades received the B.E. degree with distinction from the American University of Beirut in June 1980, and the M.S. and D.Sc. degrees from Washington University in May 1983 and May 1985 respectively. He has been with the electrical engineering department since 1985. His general interests are in the application of information, communication and estimation theories to the study of communication systems, with specific interest in optimum receiver design, mobile radio, spread-spectrum, multichannel modulation, space-time coding and optical systems.

Phillip Hemmer
Dr. Phillip Hemmer received the Ruth and William Neely ’52/Dow Chemical Fellowship. Hemmer joined the department as an associate professor in January 2002. He received his bachelor’s degree from the University of Dayton in 1976 and his Ph.D. in Physics from MIT in 1984.

His interest areas are in solid materials for quantum optics, especially “dark resonance” excitation, materials and techniques for resonant nonlinear optics, phase-conjugate-based turbulence aberration and compensation, spectral holeburning materials and techniques for ultra-dense memories and high temperature operation, quantum computing in solid materials, quantum communication and teleportation in trapped atoms, holographic optical memory materials, smart pixels devices, optical correlators, photorefractive applications, atomic clocks and laser trapping and cooling.

Honors include a National Science Foundation Fellowship, Summa Cum Laude from the University of Dayton, and Hemmer received the Air Force Research Laboratory Chief Scientist’s award, AFOSR Star Team Award three times. He also is a member of the Optical Society of America, SPIE and American Physical Society.
Hamid Toliyat
Dr. Hamid Toliyat, professor in the department, received the E.D. Brockett Professorship from the Dwight Look College of Engineering. He began working at Texas A&M in 1994. His research interests include power converters for electric machines, novel electric machines for different applications, DSP control of variable speed drives, simulation techniques such as finite elements analysis and Pspice and Saber, condition monitoring and fault diagnosis of electric machinery, electric and hybrid electric vehicles and active power filters for power systems networks.

Toliyat received his bachelor’s degree from Sharif University of Technology in Iran, his master’s degree from West Virginia University and his doctoral degree from the University of Wisconsin-Madison. Toliyat also has received the Select Young Faculty and the Select Young Investigator Awards from TEES, the Space Act Award from the NASA Inventions and Contributions Board and was selected as a Webb Faculty Fellow.

Karan Watson
Dr. Karan L. Watson, dean of faculties, associate provost and professor of electrical engineering at Texas A&M, has been elected a Fellow Member of the American Society for Engineering Education (ASEE).

Watson holds bachelor’s, master’s and doctoral degrees in electrical engineering from Texas Tech University. She came to Texas A&M in 1983. Since her arrival, she has served in a variety of leadership positions within the college including assistant dean of graduate and special programs, associate dean of graduate and undergraduate studies and head of interdisciplinary engineering programs. Watson also is a Regents Professor. Before joining the faculty at Texas A&M, she served on the faculty at Texas Tech and worked in industry.

Sonny Matous
Sonny Matous received the Outstanding Staff Award. Recipients of these awards are nominated by their fellow co-workers for their outstanding work performance. The objective of this award is to recognize support staff and faculty members for their continuous endeavors towards excellence and promotion of the continued success of the department.

Matous is a staff assistant in the electrical engineering department and joined the Wireless Communications Group in 1998. She has been employed by Texas A&M University since 1992. In 1999, she received a recognition certificate from IEEE for organizing the Vehicular Technology Conference held in Houston, TX.

Carolyn Warzon
Carolyn Warzon also was a recipient of the Outstanding Staff Awards for her outstanding work performance.

Warzon, a staff assistant in the department of electrical engineering’s computer engineering program, began working for the department in 1996, after transferring from the Department of Chemical Engineering. Another recent accomplishment includes winning the College of Engineering’s Outstanding Staff Award.

The following recent graduates have elected to pursue careers in the academia:

Bei Gou joined the University of Texas at Arlington in the fall of 2003. His advisor was A. Abur.

Sangho Choe joined the Catholic University of Korea. His advisor was C. Georgiades.

Dalton receives graduate fellowship
Recently an electrical engineering Ph.D. student, received a prestigious fellowship from the Armed Forces Communications and Electronics Association (AFCEA) Education Foundation.

Lori Dalton, who began work on her Ph.D. during the spring 2003 semester, was awarded the nationwide fellowship of $15,000 from the AFCEA for her research on Space-time coding.

In addition to the AFCEA award, Dalton recently received a university-wide Graduate Merit Fellowship with an award of $31,000.

Rodenbeck receives graduate fellowship
Chris Rodenbeck, an EE Ph.D. student has received a 2003-2004 graduate fellowship from the Texas Space Grant Consortium (TSGC).

A research assistant and lab manager in the Electromagnetics & Microwave Laboratory, Rodenbeck has worked on a number of research projects, including the development of a new, low-cost beam steering technique that will ultimately allow for more technological advances in wireless communications.

Rodenbeck’s main interests are microwave circuits and wireless systems for next-generation satellite communications.
<scholarships and fellowships>

undergraduate

AMD Undergraduate Research
Jeffrey Compton
Cody Dowling
Guarav Garg
David Hoelscher
Samia Islam
John W. Lee
Arif Oduncu

Bolton Scholarship/Kennedy
James Arnold
Joshua Baer
George Buckmaster
Jacob Chacko
Priya Damle
Guarav Garg
Jacob Glowkowski
Michael Graham
Michael Hall
Michael Hanna
Han Hoang
David Hoelscher
Samia Islam
Matthew Jones
Dennis Mallory
John Paul Martinez
Cheryl Mazurowski
Kyle McGeehee
Tyrel Parks
Chad Pinyoprasaruk
Thomas Walling

Bolton Scholarship/Whitaker
Jon Gardiol
Christopher Sconyers

EPPE
Clay Berry
Crystal Ceo
Jason Edward Cooley
Cody Dowling
Jonathan Endicott
David L. Hoelscher
Jeff Holly
Patrick Luther
Emily S. White

Friends of EE
Adrian Gonzalez
Gregory Hajovsky
Jeff Holly
Alison Jones
Anthony Lau
Patrick Luther
William Mitchell
Eric Schrock
Steven Sinclair
Benjamin Vail
Jeffrey Wischkemper

Fluor Aggie Endowed Scholarship
Matthew Freeman
George Millas
Emily White

Fluor Daniels
Jaideep Jhangiani
Charles Koch
Sendi Kusnadi
Duc Phan Le
John Wahnyko Lee
Benjamin Longenecker
Hoyt McMillian
Luis Mendez
Brandon Moore
Ryan Morris
Matthew Osterhaas
Phuc-Loc Ngo Phan
Brett Sommers
Reuben Terry
Benjamin Vail
Daniel White

Fred D. Lege III Scholarship
Daniel Humphrey
Matthew Murray
Brandon Tumer

Lewis M. Haupt Scholarship
Aaron Patton
Lisa Zhohar

Kevin D. Faske Scholarship
Sara Jeanne Barnard

Kennedy Scholars
Joel Abraham
Darren Ahr
Vijay Balasubramani
Rajan Chandra
Sean Close
Jeffrey Compton
Visan Gashi
Yifei Gou
Richard Hall

Marvin W. Smith Scholarship
Matthew Freeman
Evan Gardner
Laura Gurley
Phillip Hanna
Daniel Humphrey
Daniel Pinkerton
Marcus Rendon
Andrew Singh
Clayton Spoor
Jeremy Todd Townsend

M.J. Pickett Memorial Scholarship
Anand Chawla
Jason Cooley
Ross Cooper
Eve Klopf

MTT-S
Aaron Scher

Raymond Van Hook
Idan Anis
Alan Cooper
Travis Ernst
Kendra Johnson
Wayne Kanemitsu
Daniel Limbrick
Lauren Mitchell
Philipus Oh
Sean Zich

Robert D. Chenoweth
Jason Cooley
Karl Jablonski
Erik Johnson

Robert Kennedy Scholarship
Sanjti Kusnadi
John Wahnyko Lee
Phuc-Loc Phan
Aaron David Scher
Daniel Brent White

Shell Chemical
Feyza Berber
Rishi Chaturvedi
Jianhong Chen
Patrick Chinery
Raghav Dube
Prabhavathi Kareeswaran
Haobin Li
Sang Wook Park
Yong Wook Shin
George Thomas

Willard P. Worley Scholarship
Ruchna Bhagat
Eva Gardner
Jennifer Guillickson
George Millas
Antonio Tellez
Jeremy Townsend
Russell Wedelich

William Schula
Andy Tang

Applied Materials
Chang-Seok Shin

College of Engineering
Julio Ayala
Elaine Locke

Computer Engineering
Jennifer Dworak

Department of Education
Bradley Cobb
David Dorsey
Nathan Mickler
James Wingfield

Ebensberger Graduate Fellowship
Jin-Yi Lee
Mary McDougall

Electrical Engineering Department
Prabha Acharya
Ravish Ailinani
Camelia Al-Najjar
Feyza Berber
Udit Budhia
Ming Hung Chang
Rishi Chaturvedi
Jianhong Chen
Lin Chen
Patrick Chinery
Ming Wai Choy
Alexandra Czarlinska
Parikshit Deshpande
Puneet Dhawan
Raghav Dube
Kais Eldat
Hicham Fidel
Manisha Gambhir
Ravindra Garach
Adrian Gonzalez
Xin Guan
Greg Hajovsky
Jun He
Agustin Jinwo Hong
Jeungpyo Hong
Yi Huang
Saurabh Jain
JaeHoong Jeong
Jing Jiang
Nan Jing
Yuntaoqin Jiraraksookpattana
Burak Kelleci
Changdong Kim
Min-Seok Kim
Young Bok Kim
Praveen Kota
Prabhavathi Koteswaran
Deepak Kumar
Harini Kuppussamy
Anthony Lau
Hyun Nam Lee
Myung Jun Lee
Haobin Li
Melissa Lipscomb
Chao Liu
Xiaojun Liu
Hai Lui
Ian Macpherson
Bilal Malik
Nabeel Malik
Chad Marquardt
Robert Milliken
Umora Nidhi
Kyoung-Lee Noh
Arif Oduncu
Prem K.S. Pabbiliserry
Joongskul Park
Sang Wook Park
Sanhoon Park
Kankan Peiris
Rui Qiang
Nouman Raja
Anand Rajaram
Narayan Ramachandran
Aravindan Ramarathinam
Vishnu Ramassamy
Yu-Jun Ren
Sungkyu Seo
Chunkyung Seok
Vikram Seth
Bo Shen
Yong Wook Shin
Jong Bum Son
Xuefeng Song
Ravi Srivastava
Nikolaos Stefanou
Anees Sultanwal
Raja Tammam
Rajeshwary Tayade
George Thomas
Haitao Tang
Goinath Vagesan
Mandar Wagmode
Xiadong Wang
Jiong Wu
Hong Xiao
Yufei Xiao
Hao Xu
Henry Wijaya
Jiong Yan
Yeo Jun Yoon
Gang Zhang
Bing Zhao
Boran Zhao
Jun Zhu

EPPE Fellowship
Peyman Niazi
Nadar Amin Aziz Samaan
Slavko Vasilic

Fouraker Fellowship
Julio Ayala
Elaine Locke
Aaron Scher

General Electric Scholarship
Krishna Kurpad
Hyokwon Nam

Graduate Merit Fellowship
Lori Dalton
Johnny Lee
Andrew Puryear
Kelly Wong

Motorola
Xiaohua Fan
Sivansankari Krishnanj
Rangakris Sriyavan

National Instruments
Aaron Van Slyke

National Science Foundation
David Brown
Seong Soo Kim
Krisha Kurpad
Elaine Locke
Susan Mathew
Hyokwon Nam
Jason Payne

Nortel Networks
Arzu Karear

Regent's Graduate Fellowship
Brion Ryan

Rocketships Fellowship
Farmer Bahmani
Mingding Chen
Burak Kelleci

Telecommunications Fellowship
Ryong Kim
Christopher Rodenbeck

Texas Instruments
Hasam Aslanzadeh
Mohammad Boroujeni
Kif Fai Chan
Sicheng Chen
Shanfeng Cheng
Xiaohua Fan
Sivakumar Ganesan
Jinghua Li
YunChu Li
Zuemi Liu
Arun Ramachandran
R. Santhakumar
Keliu Shu
Cui Su
Taner Sumesaglam
Radhika Venkatasubra

TxECE
Kapill Bhattach
Arzu Karear
Lingjia Liu
Qian Xu

Watermark Initiative
Jae Hoon Kwon
EE welcomes new development officer

Jack O’Brien graduated from Texas A&M with a B.S. in Political Science in 1995. After graduation, he worked as the lead Transfer Admissions Counselor at The University of Houston for two years. It was there that he discovered his desire to help people, particularly students at the college level.

After the University of Houston, O’Brien worked for the United Way of the Texas Gulf Coast as one of the managers in the Fund Development department. Strategizing on ways to provide funding for those in need in the Houston community allowed him to discover another avenue to help people, through fundraising from both the corporate level and individuals.

O’Brien carried this experience to his next position as director of Institutional Advancement at Strake Jesuit College Preparatory in Houston. While at Strake, he served as chair of the Former Student Advisory Board for the Department of Political Science at Texas A&M. It was there that O’Brien learned of opportunities with the Texas A&M Foundation and jumped at the opportunity to carry his experiences back to his Aggie home of College Station.

Currently, O’Brien works in the College of Engineering as a development director for the Departments of Electrical Engineering, Computer Science and Electronic Technology and Industrial Distribution.