

Tau Beta Pi Fellows 2001 - 2002



Centennial Fellow No. 16 - Mark E. Rentschler, E.I.

After a spring course in mechatronics at the University of Nebraska, Mark realized that he eventually wants to work in the field of robotics, mechatronics, and MEMS. He performed theoretical research on the dynamic simulation of a prototype Mars roving vehicle, and most recently for his honors thesis, he has been working on developing remotely controlled barrel robots to be used on highway construction projects. Internships with railroad and aircraft companies have taught him valuable skills in research, design, and testing. During an exchange program in France last summer, he learned more about the integration of systems in the automotive industry. His personal aspiration is to develop better robots for planetary exploration and to contribute to restoring a greater image to NASA and to re-ignite burning questions surrounding our solar system and our galaxy. He has been a NASA Hartmann fellow and has received an NDSEG fellowship to continue graduate research in mechanical engineering at MIT this fall. Mark was president of Pi Tau Sigma, treasurer of the Neihardt Council, and a research assistant and tutor.



Fife Fellow No. 49 - Joel W. Branch

Joel will receive two certifications during the summer—in Java programming and in Microsoft systems—and is planning to earn an M.S. in computer science in the fall at Rensselaer Polytechnic Institute. Graduating first in his class at Howard University, he plans to focus his studies in distributed computing and fault-tolerance networking, areas that he hopes to strengthen during an internship. He envisions himself working for a software engineering or information technology company, ultimately establishing his own business specializing in the design of innovative technological solutions for personal and business communications. His experience in computer-networking technologies has involved examining GPS systems and designing and implementing a pervasive Internet storage solution to the personal consumer management of large, on-line digital media content. Joel is Vice President of Tau Beta Pi's DC Alpha Chapter, is a member of the NSBE, ACM, Howard University Society of Systems and Computer Science, and is a mentor for Inroads, Inc.



Fife Fellow No. 50 - Michael A. Chapp

The top engineering student in his class at Michigan State University in East Lansing, Michael has majored in mechanical engineering while participating in four cooperative education work rotations with General Motors. A grant to pursue biomedical research, focusing on an alternative to knee and hip replacements, provided challenges that eventually permitted him to travel to the Helmholtz Institute in Germany. There, he engaged in biomedical research designing an orthopedic surgical adapter for robotic tools. He enjoys research and hopes to become a university professor. He plans to attend the University of California, Berkeley, in the fall to continue his studies in nano-technology in order to gain an understanding of energy conversion and thermal properties of nano-structures. As an undergraduate, he enjoyed intramural ice hockey and soccer and has been captain of the volleyball team. A student member of the Society of Automotive Engineers and SWE, he has been active in Tau Beta Pi's Michigan Alpha Chapter and held offices in Phi Kappa Psi service organization.



Fife Fellow No. 51 - Kevin J. Mack

Kevin completed his undergraduate education at Rensselaer Polytechnic Institute in Troy, NY, in just three years, graduating at the top of his engineering class of more than 500 seniors. An electrical engineering major, he has tackled various specializations within computer science engineering—working with many popular microprocessors, learning chip architecture, and creating an integrated embedded control system from a car equipped with an electrically actuated steering mechanism and a DC geared drive motor. He will be attending Stanford University in the fall. Kevin is an RPI medal winner and the recipient of an alumnus scholarship. For two years he was employed as a teaching assistant. He was initiated into Eta Kappa Nu, Tau Beta Pi, and Alpha Pi Nu honor societies and attended the campus honors convocation reserved each year for those in the top 10% of the class. Kevin is a lifetime member of the IEEE. He played intramural division I basketball for two years, as well as playing on the RPI table-tennis team.

Fife Fellow No. 52 - Katherine S. Tyldesley

Kate majored in electrical engineering with a minor in computer science while an undergraduate at the University of Arizona in Tucson. She has taken a wide-ranging array of courses, including communications and signal processing, digital systems, electronics/microelectronics, computer systems, and electromagnetics—a strong foundation for



her continuing studies in VLSI design and digital communication systems. During the past two years, she has been a co-op student with IBM. There, she has received a firm understanding of the process of hardware design and had exposure to VHDL as a tool. After completing a master's degree at Arizona State University, she plans to work in hardware design and product development, concentrating on VLSI design for communications applications. Kate was Recording Secretary of Tau Beta Pi's Arizona Alpha Chapter last year and has served as the president of SWE and corresponding secretary for the IEEE campus chapter. Since 1998, she has been active in the Tucson community and its prisons as a project facilitator for the alternative-to-violence program.



Spencer Fellow No. 46 - Kevin C. Foye

Number one in his engineering class at the University of Wisconsin-Platteville, Kevin has received a teaching assistantship and stipend to continue his studies in civil engineering at Purdue University. He expects to complete a master's and doctorate in geotechnical engineering, focusing on tunnel construction and underground structures. Ultimately, he hopes to teach at the university level. A musically gifted clarinetist, he has performed with the marching, pep, and symphony bands, as well as with the university and musical pit orchestras. He has entered the concerto aria competition and played with the clarinet quartet for the past several years; he was privileged to perform last year at Carnegie Hall with his wind ensemble. He served as webmaster to Alpha Lambda Delta, as an editor to Chi Epsilon, and as Corresponding Secretary to Tau Beta Pi's Wisconsin Epsilon Chapter. He has been a member on the steel bridge and concrete-canoe committees of the ASCE campus chapter.



King Fellow No. 40 - Jacqueline H. Cole, E.I.

During her undergraduate studies in mechanical engineering at Auburn University, Jacque discovered that she most enjoyed her classes in dynamics, system dynamics and controls, and finite-element analysis. She gained valuable design experience through her participation in the SAE's mini Baja and formula teams over a four-year period: she was captain of the women's mini-Baja team in 1997-98 and the formula SAE design team leader this past year. Although her experiences have been in the automotive industry, her personal interests are in biomechanics and joint prosthetics. Her extracurricular activities have helped her develop her leadership, interpersonal, and time-management skills, which she can apply to prosthetic design/fabrication techniques, project management, and ergonomics. A campus leader, she has been president of both the Society of Women Engineers and the Society of Automotive Engineers and active in the ASME. She received both a Phi Kappa Phi scholar achievement award and an SAE outstanding student officer award and will attend Cornell University in the fall.



Sigma Tau Fellow No. 28 - Amita Pugalia

Graduating at the top of her class at the University of Oklahoma last December, Ami majored in electrical engineering and plans to continue her graduate work in robotics at Stanford. During recent years, she successfully completed several projects that incorporated design simulation, testing/debugging, and formal documentation and presentation. Her projects included: a triple-channel optical command link prototype; an audio processor; a generic data acquisition and processing program, which was implemented using LabVIEW; and an autonomous sumobot that "fights" other robots. Employed with a major technology firm, she was engaged in the design of an interactive website for administrative use and customer service. An Oklahoma State regents scholar, Ami was on the OU president's and dean's honor rolls each semester and was elected to Tau Beta Pi and Eta Kappa Nu. She was a member of the University of Oklahoma Engineer's Club, the IEEE and SWE, and enjoyed intramural sports, swimming, Indian classical dance, and ballroom dancing.



Stark Fellow No. 25 - Blake W. Stuart, E.I.

Blake graduated from the University of Alabama in Tuscaloosa this May with a B.S. in mechanical engineering. He has received an NDSEG fellowship and a graduate research assistantship to continue his research at his alma mater. As an undergraduate, he worked as the assistant manager of the computer-based honors lab for three semesters, designing, installing, and maintaining the lab for the honors program. The program allows honor students to conduct their computer-oriented research under the direction of senior faculty. Blake has contributed to the research efforts of the faculty through the use of finite-element modeling and data acquisition and already has two publications to his credit. He is also interested in propulsion systems and, ideally, would like to work for NASA or a NASA contractor. He used his computer skills as webmaster for the ASME and his organizational skills as Vice President of Tau Beta Pi's Alabama Beta Chapter. He was elected to Mortar Board, Omicron Delta Kappa, Pi Tau Sigma, Gamma Beta Phi, Alpha Lambda Delta, and Phi Eta Sigma honor societies.

Williams Fellow No. 22 - Kelly A. Horton



A May graduate of Manhattan College in Riverdale, NY, Kelly has been offered a teaching assistantship in Columbia's mechanical engineering department while she works on her master's degree. Planning to be a practicing professional before further work towards a doctorate and a possible teaching career, she has enjoyed tutoring and her time as a teaching assistant. For two summers, she was employed in internships in New York City, one with a consulting firm in its HVAC group where she used AutoCAD, and another with a power company, working on a project surveying and documenting the headquarters' steam system. Her goal is to be a creative design engineer and to become professionally licensed. Kelly has assumed leadership positions with most of the technical and honor societies relating to her interests, treasurer of ASME and SWE, president of Pi Tau Sigma, and Recording Secretary for Tau Beta Pi's New York Xi Chapter. She is a student member of ASHRAE and wrote for Manhattan Engineer.



Deuchler Fellow No. 22 - J. Dalton York

A chemical engineering graduate of Tennessee Technological University in Cookeville, Dalton decided to pursue graduate research in the fields of air pollution and atmospheric chemistry. He made this decision following an introductory class on air-pollution engineering and employment as a co-op student since 1998 with a chemical and vinyl company. There, he monitored gaseous pollutants released into the atmosphere following the reaction process. Ultimately, his goal is to become an environmental consultant, helping government and industry solve problems dealing with air quality and pollution control. He will begin a doctoral program at the University of Illinois at Urbana-Champaign in the fall. An honors graduate and Eagle Scout, Dalton was elected to Alpha Lambda Delta, Mortar Board, and Phi Kappa Phi. He held offices in Tau Beta Pi's Tennessee Gamma Chapter, which he served as Secretary, and Omega Chi Epsilon—he was the fall 1998 president and 2000-01 vice president. He is a member of the NSPE. For the past three years he has played the violin, and he is learning to play the mandolin.



Maddox Fellow No. 6 - Darren A. Rand

President of Tau Beta Pi's New York Iota Chapter at the Cooper Union for the Advancement of Science & Art, Darren contributed much to the campus community as an electrical engineering major. A member of Eta Kappa Nu, he and other Tau Bates helped that organization create a tutoring program. New York Iota members also organized a pi (3.14)-mile run held this spring in Central Park for all Cooper students. During the past four seasons, he has played on the varsity tennis team, serving the past two years as captain. The team has had a winning streak, including 10-1 record and a third-place standing in the conference last year. He also exhibited team leadership as an employee at IBM, where his group designed and presented a promotional toy for students in grades 7-12 and won a design contest. Having excellent communication skills, Darren has contributed numerous articles to the school newspaper. This fall, he will be attending Princeton for graduate school to study optoelectronics, hoping to improve flat-panel display technology.



Matthews Fellow No. 4 - Brenda E. Shonkwiler

An honors student majoring in civil engineering at Oregon State University in Corvallis, Brenda will be attending Cornell in the fall to continue graduate work in structural engineering. She plans to enroll in a one-year program culminating in a design or thesis project, learning more advanced methods of analysis and design: behavior of reinforced concrete structures, steel and metal structures, and earthquake hazard risk. Last summer she interned with a consulting firm in Portland, analyzing lateral and gravity loads for a variety of buildings. After receiving her degree, she plans to earn her P.E. and structural engineering licenses. Working full time for a consulting firm, she hopes to design office buildings, high-rise hotels, and assemblies. A campus leader, Brenda served as Vice President of Tau Beta Pi's Oregon Alpha Chapter, president of the Earthquake Engineering Honor Society, and treasurer of the ASCE student chapter. She was also active in SWE. Her paper on the Tacoma Narrows Bridge catastrophe is being published in the fifth edition of Work in Progress, a college writing text.



Nagel Fellow No. 4 - Brent D. Weinberg

Enthusiastic about applying advancements in biotechnology to the medical field, Brent has decided to pursue both an M.D. and a Ph.D. degree. He will begin by enrolling in the doctoral program at Case Western Reserve University this fall. His experiences have uniquely suited him for graduate school in both these areas. He studied engineering science at the University of Tennessee, Knoxville, while supplementing his studies with classes in the physical sciences and in analytical problem solving. During his summer research experiences at UT-Memphis, he learned matrix programming and wrote image-processing algorithms, collected data for publication, and refurbished and rebuilt an electron accelerator for mammography studies. He worked in a molecular diagnostics laboratory in New York City in the summer of 1999. As an undergraduate research fellow in medical biochemistry last summer at Texas A&M, he described the positions of nascent proteins during translocation. Brent was President of Tennessee Alpha and elected to Phi Kappa Phi and Mortar Board.

Tau Beta Pi Fellow No. 643 - Jennifer M. Buckley

Number one in an engineering class of nearly 4,000 at the University of Delaware, Jenni plans



to pursue her doctorate at UC, Berkeley. Majoring in mechanical engineering, she hopes to develop a biomechanical model for adolescent idiopathic scoliosis, a lateral spine deformity which occurs during puberty in one-to-two percent of the population. On the theory that uneven stress distributions on the spine's growth plates are magnified during the adolescent growth spurt, Jenni hopes to develop a comprehensive biomechanical model incorporating biological factors, such as growth sensitivity to load and muscle rigidity, into current finite-element models. Specialists might then be able to recommend the appropriate brace fit and wear time. She has been on the varsity women's crew team that won a regatta championship, has ridden with two cycling teams, was named the 1999 Mid-Atlantic District 20 women's rider of the year, and has been a member of the Westminster Road Warrior Running Club. She is a Goldwater and SWE national scholar and is a member of both the ASME and SAE.



Tau Beta Pi Fellow No. 644 - Michel A. Call

Number one in an engineering class of more than 1,300 students at the University of Missouri-Rolla and a 2000 Tau Beta Pi Scholar, Michel has received an NDSEG fellowship in nuclear engineering. He has already begun his graduate work at his alma mater. Under the direction of Dr. Akira Tokuhiko, director of the UMR nuclear reactor, Michel has performed an independent study project on experimental methods in multiphase flow. He plans to study at Keio University in Japan during the summer months, while working toward developing accurate numerical simulations of bubbly air-liquid flows. He is becoming more fluent in Japanese and has served two years in a church in Japan as a missionary representative of his church. On campus, Michel has been active in the student chapter of the American Nuclear Society, in Tau Beta Pi's Missouri Beta Chapter, and in a special undergraduate research project in conjunction with the OURE scholarship program. He was elected to Phi Kappa Phi and holds the rank of Eagle Scout. He also enjoys intramural sports.



Tau Beta Pi Fellow No. 645 - Rokhaya Diop

A January graduate of the City College of New York, with a degree in mechanical engineering, Rokhaya is continuing her studies there in bioinformatics. She became interested in bioengineering research while working alongside post-doctoral students at the University of California, San Diego. The project was an attempt to clarify the causes of arteriosclerosis. Excited by the potential in this field and the explosion of genomic information provided by powerful database-management systems, she decided to pursue her doctorate to obtain the necessary background in molecular biology, mathematics, and computational-modeling methods. She has already begun a research project at New York's Mount Sinai Medical Center. Eventually, she hopes to mentor women and minorities in science and engineering; she has already served as a tutor for the campus mathematics lab and for the school's premedical program. A campus leader, Rokhaya was President of Tau Beta Pi's New York Eta Chapter, vice president of the American Institute of Aeronautics and Astronautics chapter, and active in the ASME.



Tau Beta Pi Fellow No.646 - Mohamed Y. El-Naggar

Engineering class at Lehigh University, Mohamed plans to pursue his graduate work in MEMS at Caltech in the fall. During his undergraduate years, he practiced engineering in both industrial and research-oriented settings, having completed two assignments at an area firm where he worked with chemicals used in semiconductor production. His campus research work involved a feasibility study to develop a fused-deposition modeling technique using aluminum alloys. Continuing his studies of the deposition process in graduate school, he hopes to be able to establish complete computer control over the deposition of complex 3-D objects, laying the foundation for new production techniques. He was the Lehigh delegate to the 1998 National Model United Nations Conference in NYC, played intramural soccer, served as TBP Treasurer, and was active in Phi Beta Kappa, Pi Tau Sigma, Phi Eta Sigma, and the ASME. He won the Wei and the Alumni Association prizes for excellence and leadership.



Tau Beta Pi Fellow No.647 - Mark E. Hixson

Mark plans to begin working toward his doctorate in bioengineering and neuroscience at the University of California, Davis, this fall. At the graduate level, he will continue to build a foundation in the basics of bioengineering, taking courses in biomechanics, neuroanatomy, and neural networks, A.I., and programming, later focusing on computational modeling of functionality. He is the top engineering graduate of the University of Tennessee, Knoxville, where he has garnered numerous awards—the C.W. Keenan outstanding student in chemistry award, a G.E. scholarship, an engineering merit-based scholarship, the bicentennial scholarship, and a National Merit finalist scholarship. Participating in the campus-wide honors program, he was elected to Tau Beta Pi and Phi Kappa Phi honor societies. With wide-ranging capabilities and interests, Mark was a writer and editor for the Daily Beacon, a volunteer at the Knoxville Museum of Art, an event coordinator for the Center for the Study of War and Society, and a researcher in the neuroscience lab. He also enjoys intramural sports.

Tau Beta Pi Fellow No. 648 - Jesse D. Hwang

Dynamics/control is Jesse's primary interest as he continues his graduate work at Stanford University this fall. An electrical engineering graduate of Yale University, he designed and



constructed a mobile Dynamics/control is Jesse's primary interest as he continues his graduate work at Stanford University this fall. An electrical engineering graduate of Yale University, he designed and constructed a mobile robot programmed to follow a winding racetrack along the ground—for his senior project. The project involved using LEDs, phototransistors, and a microcontroller using a mixed analog/digital implementation. His graduate research might address such issues as how we impart intelligence into robot vehicles so that they can recognize obstacles and redirect their paths without human input. Jesse would explore both the actual hardware and the complex systems, as well as the abstract mathematical control. During the summers, he worked at Los Alamos and Lawrence Berkeley National Laboratories; he is an author of several papers presented at international workshops. An ASME student member, Jesse enjoys competitive ballroom dancing.



Tau Beta Pi Fellow No.649 - Heath T. Keene

A May graduate in mechanical engineering from Texas Tech University, Heath plans to continue his studies in electrical engineering at his alma mater. First in his class, he was given a chancellor's fellowship to continue his research into a novel solution for long-lasting, ultra-efficient taillights for automobiles at the school's pulsed-power laboratory. The project's goal is to use radio-frequency technology analogous to the use of halogen lamp bulbs. The research will continue through 2003. During a summer in Austin, Heath worked on a project to design and implement a LabVIEW-based digital modulation and demodulation toolkit. Upon graduation, he plans to pursue a career in radio-frequency hardware design. A presidential scholar and a member of the university's honors college, He was elected to Tau Beta Pi, Eta Kappa Nu, and joined the IEEE and the NSPE. He has demonstrated the use of robots to middle- and high-school students in computer and science classes. For six years, he has played bass guitar with a local band that is producing a second CD of original music.



Tau Beta Pi Fellow No. 650 - John F. Langford, Jr.

A co-op student and graduate of Tennessee Technological University, J.J. will be attending the University of Delaware in the fall to continue his studies in chemical engineering. He is interested in many aspects of the field, including kinetics, transport phenomena, materials research, and process design and control. Mindful of the safety and environmental issues involved in the chemical-process industry, he hopes to design products that might eliminate costly environmental and safety problems and still maximize profits. Quality production standards have been a concern in his co-op experience with a leading powdered-steel producer, where he worked on developing a new rangetop heating element. In addition to a near-perfect GPA, J.J. has held several campus leadership positions, including President of both Tau Beta Pi's Tennessee Gamma Chapter and the AIChE chapter. He was an author of the paper "Teaching Thermodynamics Using Four Dimensions" presented at the fall 2000 AIChE national convention. He also enjoyed intramural sports.



Tau Beta Pi Fellow No. 651 - Janice J. Li

Excited by the ongoing technological revolution, Janice is strongly motivated by the advances in information technology—high-speed communications, global networking, and the evolution of microprocessors. She is preparing to take an active part. The top-ranking electrical engineering graduate at Caltech, Janice has received a tuition fellowship and stipend from Stanford University, where she has enrolled in the M.S./Ph.D. program, focusing her studies in the new arena of wireless Internet applications. She enjoys research and development and hopes to become involved in a start-up firm. Her current research involves creating an omnidirectional camera—just a few millimeters in size—to replace existing techniques used in gastrointestinal endoscopy. For a couple of summers, she has worked with a major chip producer on its 64-bit Itanium processor—fabricating, validating, and testing. On campus, she has served as Vice President of Tau Beta Pi's California Beta Chapter and as a private tutor. An avocation is playing the flute.



Tau Beta Pi Fellow No. 652 - Jie De Jacky Liang

The top engineering student at the California Institute of Technology, 23-year-old Jacky has been guided by the words of Albert Einstein, who wrote, "Concern for man himself and his fate must always form the chief interest of all technical endeavors. . . ." Always trying to bridge the gap between the theories learned in class and hands-on engineering practice, Jacky has worked on a variety of research projects. He discovered that his enthusiasm is nested in computer hardware, electronic circuits, and chip design—in various applications from parallel super computers to consumer electronics. Believing that dynamically reconfigurable architectures will become pervasive in many designs in the short term, he plans to focus his attention in these areas at Stanford. Academically gifted, he received the 2000-01 Caltech upper-class merit award and another prize for his work as an undergraduate teaching assistant. He served as Treasurer of Tau Beta Pi's California Beta Chapter and was chosen for the Milken scholarship and election to Sigma Xi.

Tau Beta Pi Fellow No. 653 - Shaun M. Lippow

Excited about being able to perform advanced research at the molecular level at MIT, this



chemical engineering major looks at graduate school as being “the playground of the mind.” A superb student, Shaun is the number-one graduate of an engineering class of 1,000 students at the University of Wisconsin–Madison. He categorizes his interests as two-fold, methods and issues. Wanting his work to apply to society’s problems, he hopes to help solve major global energy issues—fuel efficiency, renewable resources, and developing technologies. Planning to become a professor, he has already begun to integrate research and education; tutoring and teaching have played a significant role already. A Goldwater scholar, Shaun has worked for 30 months in the chemistry lab, including independent research experiments on stereochemically regular forms of polypropylene. The unanticipated results are being documented for publication. An AIChE student member, he was elected to Tau Beta Pi and Phi Kappa Phi honor societies and served as vice president of the Ballroom Dance Association.



Tau Beta Pi Fellow No.654 - Andres E. Losada

A May graduate in industrial engineering from SUNY at Buffalo, Andres will be attending Purdue University this fall to continue graduate work in operations research. He will concentrate on applied statistics and stochastic optimization, later planning to enter the practical field as an operations research analyst. He became interested in the field while working on a project his junior year; his research thesis involves discrete optimization methods. Andres has received industrial, university, and departmental scholarships. He has been an undergraduate teaching assistant in an introductory C/C++ programming course and has been president of Omega Rho, the operations research and management science honor society. He was elected to Tau Beta Pi and Alpha Pi Mu honor societies and is a member of the Institute of Industrial Engineers and the Institute of Operations Research and Management Sciences. He enjoys sports and was a member of the university intramural indoor soccer team and an intramural basketball team.



Tau Beta Pi Fellow No.655 - Aaron C. Morris

President of Tau Beta Pi’s West Virginia Beta Chapter at West Virginia University Institute of Technology, Aaron has received a graduate assistantship from Carnegie Mellon University. He holds two undergraduate degrees—electrical engineering and computer science—and has been student administrator of the college’s computer lab. He plans to study robotics and artificial intelligence and has participated in the IEEE summit robotic competition held each May. Another academic competition required much of his time—preparing for the ACM international programming competition. Team communication and time-management skills are required in addition to programming knowledge. Aaron is a member of the IEEE, the NSPE, and served as vice president for the local ACM chapter. Many of his volunteer activities are in conjunction with club memberships and have included organizing and overseeing a programming competition for high-school students, as well as assisting with a math and science quiz bowl. He has tutored students in all levels of math and in C/C++ programming and physics.



Tau Beta Pi Fellow No.656 - Christine B. Ng, E.I.

Christine has received an NSF fellowship and will be attending MIT this fall. A University of California, Berkeley, graduate in civil and environmental engineering, she maintained a 4.0 scholastic standing, graduating at the top of her class of 2,500 engineering students. Her summer internships have shaped and reinforced her interest in the effects the civil engineering industry has on the environment. Realizing that professionals consider environmental regulations while planning projects, she sees a need to integrate environmental management into project planning. Thus, she plans to pursue dual master’s degrees—civil and environmental engineering—with MIT’s technology and policy degree. Early in her career, she plans to work for a consulting firm to help private firms and government agencies improve their environmental performance. Christine was active as a member of the Regents’ and Chancellor’s Scholars Association, Tau Beta Pi and Chi Epsilon, and the student chapters of the ASCE and SWE, which she led as president.



Tau Beta Pi Fellow No.657 - John J. Perkowski, III

The top engineering graduate at the University of Miami and first in his class in biomedical engineering, John will begin study this fall toward his M.S.E.E at his alma mater. A year later he would like to begin studies in health sciences and technology to build a framework that would balance the clinical side of medicine with the machine-oriented engineering side. Two summer internships with a development team working on neural-network software helped to focus his research interest in control techniques that deal with functional electrical stimulation systems and active assistive prosthetics. A recent R&D project involved designing a product with its commercial possibilities foremost—writing a business plan and grant proposal, learning about patents and intellectual property law, and working with a design team to create a prototype simulator. The National Inventors and Innovators Alliance awarded John and his team a \$13,500 grant to continue their work to develop an arthroscopic knee simulator; it may warrant a patent. John served as treasurer of the campus biomedical engineering society and was a dorm residence assistant.



Tau Beta Pi Fellow No.658 - Neal R. Scruggs

The top graduating engineer from the University of Kentucky, Neal majored in chemical engineering and minored in mathematics as a participant in the honors program. For two years, he was president of the university's academic team. He was the spring 2001 President of Tau Beta Pi's Kentucky Alpha Chapter and was active in the AIChE, which he represented on the Engineering Student Council. His NSF-REU sponsored summer research at the University of Connecticut, where he worked on developing conductive polymer-based sensors to detect volatile organic compounds in the vapor phase, has contributed to his career interest. His team proved that those with sensors fabricated from polyaniline are capable of detecting and discriminating among 24 functionally diverse organic compounds. His poster presentation of this work won first place at the 2000 national conference of the AIChE. Neal's goal is to develop sensor arrays capable of detecting and identifying a wide range of compounds at low concentrations. He will attend Caltech next year to pursue a doctorate in sensor technology.



Tau Beta Pi Fellow No.659 - Erin M. Selser

California Zeta Chapter President and vice president of SWE at Santa Clara University, Erin graduated at the top of her engineering class while majoring in electrical engineering. Her minor is in physics. Through her choice of undergraduate classes and her internship, she has prepared herself for further studies in wireless-communication technologies. Through her work experiences, she has become familiar with local and wide area networks, communications test equipment, and performance measurements. In graduate school at Stanford, she hopes to continue research into third-generation wireless standards and smart-antenna technology. Ultimately, her career goal is to work as a professor at a research institution and "to promote and defend high standards for the benefit of humanity and teach students to use their knowledge wisely and conscientiously." This past year, Erin was active in the IEEE student group and served as director of the Montgomery Inn computer center project, which teaches basic computer skills to the homeless.



Tau Beta Pi Fellow No.660 - Shawn C. Shadden

Graduating at the top of his class of more than 1,600 students at the University of Texas at Austin, aerospace engineering major Shawn C. Shadden has won an NSDEG fellowship to the California Institute of Technology. Primarily interested in control systems and their applications to guidance and navigation, he would like to investigate technologies for developing autonomous systems. He will therefore obtain a Ph.D. in dynamic systems and control. He has summer experience as a research assistant, exploring the use of BPS for attitude control of an ISS-based synchronous transmitter/receiver, and as a summer intern, developing a high fidelity, nonlinear 6-DOF simulation model of a tailless fighter aircraft. Shawn enjoys the multidisciplinary nature of control engineering and hopes to make a worthwhile contribution to technology. Elected to several honor societies—Tau Beta Pi, Phi Kappa Phi, and Sigma Gamma Tau—most of his time was spent tutoring and mentoring. During the past year, he has contributed to a research group comprised mostly of graduate students.



Tau Beta Pi Fellow No.661 - Amy E. Vaughn

Engineering graduate of Auburn University. She has won a National Science Foundation fellowship and will be attending Vanderbilt University this fall. In graduate school, she plans to conduct research in biomedical engineering. Her recent research involved the visualization of cardiac deformation and strain using a virtual-reality modeling language to determine the viability of myocardial tissue by developing a more powerful means for viewing data. Her research underscored the importance of advancements in biomedical engineering and the great potential to improve the quality of life for those suffering from disease. The top graduate in a class of 600 engineering students, Amy was elected to several honor societies, including Tau Beta Pi, Eta Kappa Nu, Phi Eta Sigma, and Alpha Lambda Delta. She was involved in the IEEE student chapter and Silver Wings service organization, participated in the BUDDY program with underprivileged children, volunteered at a local women's center, and helped a sight-impaired fellow student.



Tau Beta Pi Fellow No.662 - Byron M. Yu

Among the top 1% of students graduating in engineering from UC, Berkeley, Byron has received an NDSEG fellowship to study at Stanford in the fall to continue research in communication technologies. As an undergraduate, he has worked with his major professors on several research projects, including power reduction in optical communication systems and the channel capacity of multi-antenna wireless systems. Last summer in Paris, he investigated image watermarking capacity with a French professor. His research projects have involved the three major subfields of communications—optical, wireless, and signal processing. His goal is to lead a technical team in developing cutting-edge communication technology. To develop a solid foundation in business, Byron plans to earn an M.B.A. His leadership experience includes his tenure as president of the campus chapter of Eta Kappa Nu, which he also served as treasurer for two terms. He is a member of the IEEE student branch and has contributed many hours as a volunteer in local neighborhoods.

Tau Beta Pi Fellow No.663 - Rashid Zia

Rashid is excited about investigating unexplored boundaries where biology and electronics



converge and feels that the technology now being researched, such as BioMEMMS, novel drug-delivery systems, and nano-technology will produce many advances in medical diagnoses and treatment. He hopes to develop these as an entrepreneur and later to share his research as a professor in academe. This fall he will study electrical engineering at Stanford University under an NDSEG fellowship. At Brown University, he participated in an NSF-funded undergraduate program in biophysical computing and computational dynamics and has already published and presented his work. "Nano-Electronic Potential of Molecularly Engineered Metallic-DNA" was the topic of his senior honors research, and his project, the "Potential of Carbon Nanotubes as Novel Drug Delivery Systems," was presented last summer at an international conference in Iran. Rashid was Vice President of the Rhode Island Beta Chapter, president of the model United Nations team, and served as a teaching and research assistant.