

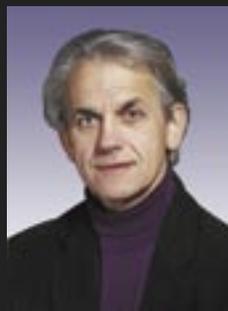


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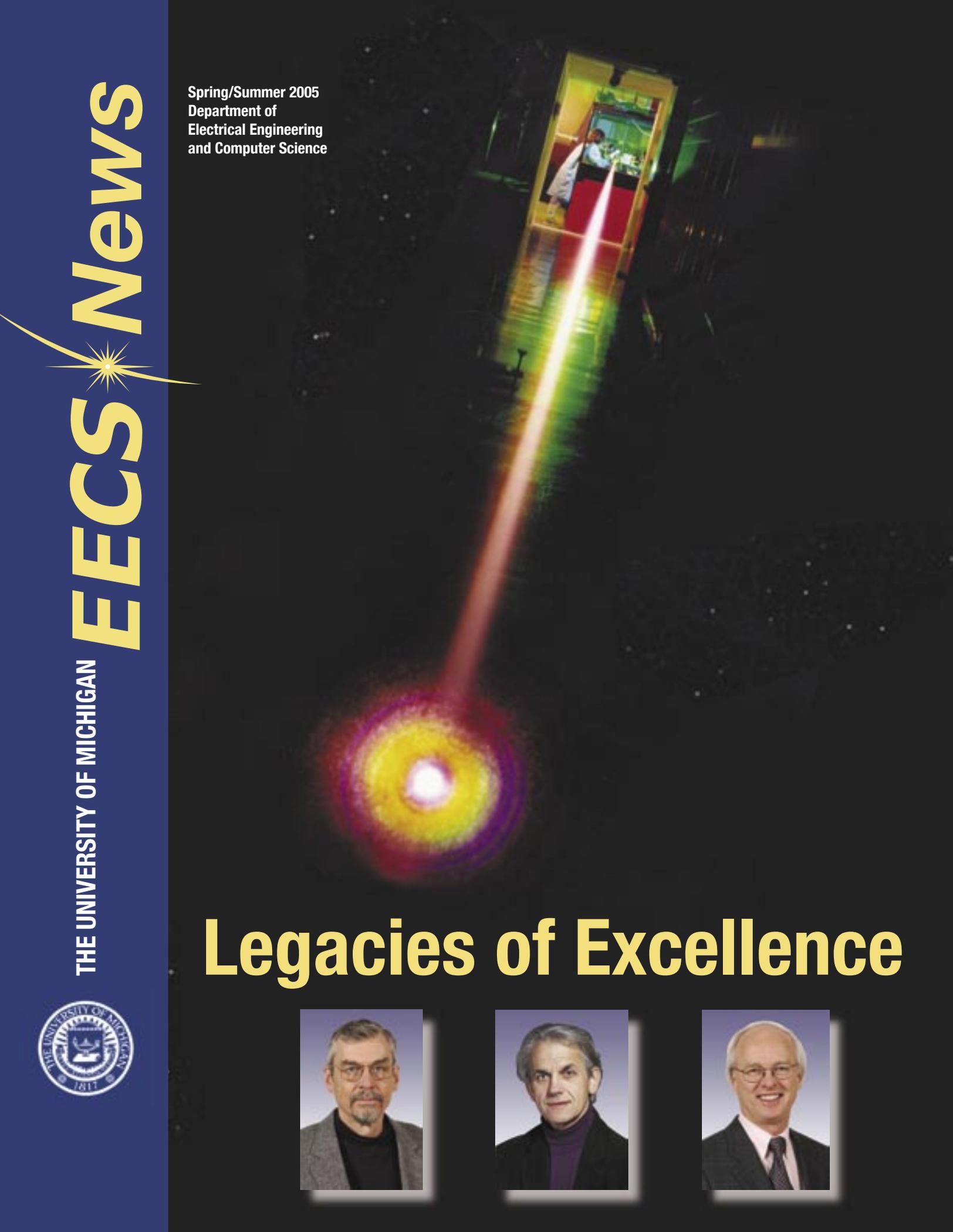
EECS

News

Spring/Summer 2005
Department of
Electrical Engineering
and Computer Science



Legacies of Excellence



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Legacies of Excellence

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A Message from the Chair



I write this near the end of April on a day when tulips are buried in snow. Ann Arbor's weather truly is fascinating! Our commencement exercises will occur this coming Saturday, and EECS proudly will send out into the world its newest B.S., M.S., and Ph.D. graduates. I am pleased to say that our College of Engineering commencement speaker is EECS alumnus Larry Page, co-founder of Google. Many of our graduates will go on to do spectacular things in their lives, but Larry Page sets a high bar.

Our construction projects are moving ahead. I had the opportunity to tour through the new CSE Building just last week. Each time I have this opportunity, the visit reinforces the notion of just how special this facility will be for our students and faculty. Completion is still scheduled for the end of this calendar year. We are looking forward to making preparations for festivities to kick off the opening of this marvelous new facility. Speaking of facilities, on April 15 the College of Engineering hosted the groundbreaking for the \$30M expansion and renovation of the clean room in our Solid State Electronics Laboratory (SSEL). Actually, the laboratory facility has been renamed the Michigan Nanofabrication Facility (MNF). The expansion and renovation will enhance the capabilities of the MNF in all areas of semiconductor device and circuit fabrication, microsystems and MEMS technologies, nanoelectronics, nanophotonics, and nanobiotechnology. Both Jerry Levin and Ann Lurie, who are helping lead the 150th Anniversary CoE fundraising campaign, were on hand, as well as Mary Sue Coleman, President of the University, and Dean Stephen Director. We are excited about the discoveries that will come from this new facility, whether they be a higher-frequency transistor, a new infrared detector, or a new biochip for sensing the environment.

EECS has four faculty retirements this year. Gérard Mourou retired in December 2004. Prior to joining the UM in 1988, Gérard was a professor in the Institute for Optics at the University of Rochester. Gérard is a pioneer in the field of ultrafast optics. He is the inventor of chirp-pulse amplification and one of the prime developers of lasers for precision eye surgery. At U-M he established and directed the Center for Ultrafast Optical Science (CUOS), which spun off numerous start-up companies. Gérard is a member of the National Academy of Engineering.

In May we have three upcoming retirements. Dave Anderson retires after 35 years on the faculty. He established the program in signal processing in EECS and he is a former Associate Chair for Systems. Dave is well known for his research with Ken Wise, Jamie Hetke, and Daryl Kipke on micromachined neural probes. Dave established the Center for Neural Communication Technology in EECS, which has manufactured and distributed probes to neuroscience laboratories throughout the world. Toby Teorey retires after a career spanning more than three decades at U-M. He initiated software engineering and database courses and he authored leading textbooks on the subject of databases. He served as Associate Chair for our CSE Division and he has been spearheading ABET accreditation of our undergraduate programs in CS and CE. In addition, he has been head of the faculty planning committee for the new CSE Building. We shall miss Gérard, Dave, and Toby, but expect to still see them often. Each of these faculty members is profiled in this issue of EECS News, and so you can read much more about them here. Our fourth retiree is Professor George Haddad, long-time Chair of EECS. George's colleagues and the Department will be hosting a symposium in his honor on September 30. We look forward to featuring a profile of George's career in our next issue of EECS News.

I just recently attended the national Electrical and Computer Engineering Department Heads meeting. The hottest topic featured throughout that meeting was the coupling of biology with electrical and computer engineering. I was proud to be able to say that our faculty in EECS already have made this connection at Michigan. We have significant and expanding research in the areas of bioMEMS, biophotonics, biocircuits, and bioinformatics. It certainly is helpful to have a leading medical school a stone's throw from our department. Instead of a single biology thrust, we have biology-related research integrated throughout much of the department. As this research continues to grow, I think we can expect implications for our curriculum. As usual, Michigan is a leader, not a follower.

I close with a quote from a speaker at that same meeting, who was from General Electric. "We need not just people who can think outside of the box, but people who can think in multiple boxes." Our goal at the University of Michigan is to prepare students who can do both.



David C. Munson, Jr.

David Anderson: Making the Connection



"I'm currently working on a research grant with the Kresge Hearing Institute. Our company, NeuroNexus, will also keep me busy," said retiring faculty member David Anderson. Standing at the crossroads of engineering and neurophysiology,

Anderson made his home in both areas. "Michigan is almost unique in having a top ten Medical school and a top ten Engineering College in the same location. No other institution has a combination of such quality," said Anderson.

Anderson made the switch from computer engineering to bioengineering in graduate school at Wisconsin, ultimately finding his research home in the Laboratory of Neurophysiology. "It was an incredible place to be in the 60's for neurobiology," Anderson stated. "That was the time that computers emerged into physiological studies." The first lab he built after arriving at U-M in 1970, still in operation, was the Neural Signal Processing Lab at Kresge, which is now part of the Otorhinolaryngology Department. "I've always been involved in auditory neurophysiology, that's the thread throughout my career," said Anderson.

Connecting with NASA

Through a physician colleague at Kresge, Anderson became interested in the vestibular system – the system of sensors in the inner ear which controls one's sense of movement and balance. With his unusual blend of skills, flight surgeons from NASA enlisted Anderson to help them understand the causes of motion sickness. This research led to an experiment that flew on Spacelab 1. "The equipment for the experiment was built here at Michigan," he notes with Wolverine pride. The work involved the anti-gravity reflex (H-reflex), a term for the changes in the spinal cord that modulate with different levels of gravity. "If you drop out of a tree, your muscles have to adjust to absorb the landing. When you go into zero gravity, some interesting things happen with these reflexes." Eventually the team set up a large testing facility at Edwards Air Force base where vestibular and biomedical tests continued. During this time, one of the PhD

students in this group, Mehdi Hatamian (MSE, EE '78; PhD, EE '82), developed a video analysis system to analyze eye movements for vestibular studies, now one of the standard ways for reading eye rotation in clinics. Hatamian, VP of Engineering, DSP Microelectronics at Broadcom, said that "working with Dave and having him as my advisor was the best thing that could have happened to me. Dave helped me to become efficient, and was a true friend."

Legacy of the Michigan Probes

Anderson's training as an engineer, his experience in neurophysiology, and the need for more experimental data from the brain, led to his interest in multichannel neural probes. Through micromachined neural probes, Anderson tries to understand and optimize the interface between the probe and the cellular world. Together with Professor Kensall Wise and assistant research scientist Jamille Hetke, and thanks to continual funding through the National Institutes of Health (NIH), he has devoted more than two decades of research to developing what is, in effect, a microelectronic interface to the brain.

In 1994, Anderson established the Center for Neural Communication Technology (CNCT) in the EECS department, through which the probes were distributed to neuroscience laboratories throughout the world. This distribution enabled other researchers to use the probes in a variety of ways, and their feedback led to continual improvements. Steven Bierer, postdoctoral student at UC San Francisco in the Department of Otolaryngology, credits Anderson with helping to "orchestrate a notable paradigm shift in the research area of electrophysiology – the study of brain function by measurement of its electrical properties." These probes became known simply as the "Michigan Probes." It is expected that the devices will be used to find solutions for epilepsy, Parkinson's, deafness, blindness, and many other diseases.

The probe technology has evolved to the point where it has become the basis for the startup company NeuroNexus (N2T). Called the most "notable spinoff from neurotech research institutions" by the Neurotech business report, the new company maintains strong ties to U-M, and will continue to fabricate probes in the Solid State Electronics Laboratory. Anderson is a founder of the company.

Another outgrowth of the Michigan Probe technology and research has been the establishment of the NSF Engineering Research Center (ERC)

in Wireless Integrated Microsystems (WIMS) at Michigan, directed by Wise (see <http://www.eecs.umich.edu/wims>). Anderson has been involved with the Center from its beginning, in 2000.

Connecting Through Service

Throughout these busy years running labs in both engineering and the medical school, Anderson was called upon to serve his academic community in significant ways. From the beginning of his time at Michigan, he was active in the bioengineering program, serving as director 1978-86. Under his leadership, the program grew into a model for interdisciplinary activity involving faculty from various departments in the College of Engineering and the medical school. Such fluid collaboration “is one of the great strengths of Michigan,” said Anderson.

In 1985, he was called upon by Dan Atkins, then Associate Dean, to serve as chair of a newly created Computer Aided Engineering Network (CAEN) executive committee, a position he held 1985-89. At this critical time, “Dave was a major player in creating the leading edge computing and information environment that faculty, students and staff now take for granted. He was always calm and thoughtful but passionate about doing the right thing and selfless in creating opportunities for others,” said Atkins.

Anderson was asked to become the Associate Chair of the EECS for the Systems Division in 1988, a position he held until 1995. Colleagues appreciated his ability to get faculty to work together harmoniously.

Anderson was also a member and/or chair of several committees that fell under the oversight of the Provost's Office, and is most proud of his work as chair of the flexible benefits committee. “Chandler Mathews and I spent the 93/94 academic year with our committee consulting with the 18,000 members of the various constituencies of the University, and arrived at a system which added considerable value to the benefits program.” This program is still in effect today.

Connecting with Students

Jamille Hetke, who came to U-M in 1985 as a Master's student in bioengineering, and is now a testbed leader at WIMS and co-founder of NeuroNexus, has worked with Dave her entire career at U-M. “He works with you on an equal level. He's been a mentor and a friend, a collaborator, a really great person to work for.”

James Weiland (BSE, EE '88; MS, EE-Systems, '95; PhD, BioMed '97), assistant professor of Ophthalmology and Biomedical Engineering at U. of Southern California, said Anderson “had a clear vision of what important research questions needed to be addressed. To make the neural probes work, we needed to bring together electrical engineering,

materials science, mechanical engineering, and neuroscience.”

Karim Oweiss (PhD, EE-Systems '02), assistant professor at Michigan State University in the ECE department, sums up Anderson's influence by saying, “The best way to measure someone's achievements is the impact this person has had on another's life, career, and endeavors. Dave had that great impact on my career, and it ultimately shaped the way my professional experience was developed.”

Daryl Kipke (BSc '85; MSc, Bio '86; MSE, EE-Systems '88; PhD, Bio '91), associate professor of biomedical engineering at U-M, and Acting President of NeuroNexus, is a past student of Anderson who worked with the probes back in the 1980's. Kipke appreciates what Anderson has contributed to signal processing and systems engineering, adding “In just the past five years, Dave has developed new algorithms for neural signal processing. He's advanced the concept of the probe as a sensor that sits within an entire system to provide the appropriate function.”

Anderson taught the first digital signal processing course, which was to become EECS 451, offered at U-M in the early 1970's. Now a staple in the curriculum, it took several years and Anderson's persistence before being fully integrated into the department's curriculum. “The number of students now who go through 451 is huge,” says Anderson.

Continuing Contributions

Anderson will retire only in the sense of being able to concentrate solely on specific projects of his own choosing. He will continue his research with neural probes, expanding into the area of mid-brain implants that can be used as an auditory prosthesis, and expects to continue his relationship with the Kresge Hearing Research Institute, NeuroNexus and the ERC. Anderson's BME PhD students Francisco Martinez, Hubert Lim and Andre Snellings, who are also affiliated with prosthesis projects in the Medical School and WIMS, are continuing work on different aspects of the deep-brain implants, which have implications for the treatment of Parkinson's disease, and deafness. Says Anderson of his retirement, “I'm just leaving behind some things and pursuing more of the fun work and play.”



This simple but effective brain interface from the late 80's still gives hundreds of neuroscientists access to reliable signals from neural circuits.

“Michigan is almost unique in having a top ten Medical school and a top ten Engineering College in the same location. No other institution has a combination of such quality.”

G rard A. Mourou:

In Pursuit of New Directions in Science



G rard A. Mourou, A.D. Moore Distinguished University Professor of Electrical Engineering and Computer Science; Director, Center for Ultrafast Optical Science

For nearly 30 years, Professor G rard A. Mourou has pioneered the field of ultrafast lasers and their applications in scientific, engineering, and medical disciplines. Sixteen of those years have been at U-M. Mourou officially retired this past December 2004, and while taking on a new position in his native France, he maintains close ties with his friends and colleagues at the Center for Ultrafast Optical Science.

Mourou became involved in ultrafast optics in the early 1970s when the field was in its infancy. At the  cole Polytechnique in Paris, he established a new group to perform some of the first experiments using ultrashort-pulse lasers to study molecular dynamics. He also performed seminal experiments on high-power, high-speed photoconductive switching in semiconductors—work that spawned an entirely new subfield of ultrafast optics: ultrafast optoelectronics (the coupling of ultrashort laser pulses with electronics).

Before joining the University of Michigan in 1988, he was a professor and member of The Institute of Optics at the University of Rochester, New York, where he became known as one of the world's leaders in the development of ultrafast lasers.

The invention for which Mourou is perhaps best known—and which has had the greatest scientific impact—is the technique of chirped pulse amplification (CPA) of ultrashort optical pulses. Before CPA, the attainable power of laboratory-size lasers peaked at about 1 gigawatt. With CPA, terawatt peak powers were achieved on a laser that could fit on a table-top, advancing the limits by three orders of magnitude. To date, several lasers have been made using CPA that have, very briefly, produced peak power far in excess of the continuous world electrical grid power production. It is a technique used in thousands of lasers today to study physics, chemistry, biology, materials science, nuclear engineering, and medicine, and to perform tasks from precision machining in materials processing and surgery to particle acceleration for medical diagnostics. CPA is an achievement for which Mourou has been recognized with major awards, including the R. W. Wood Prize by the Optical Society of America (OSA), and the Harold E. Edgerton Award by The International Society for Optical Engineering.

After arriving at U-M, Mourou quickly established the NSF Science and Technology Center for Ultrafast Optical Science (CUOS) in 1991. Mourou said, “My vision for CUOS was to have as many different activities as possible, relying on one thing: *shophausen*—everything in-house. CUOS brings together electrical engineering, materials science, biomedical engineering, physics, and chemistry. During this time, more than 100 PhD students have been trained in CUOS laboratories. And there have been many discoveries, including some very important inventions and discoveries.”

CUOS Inventions and Discoveries

Throughout his career, Mourou has been granted 18 patents, with additional patents in progress. His preference is to conduct research in a university setting, and move the technological innovations into the marketplace. Since moving to Ann Arbor, he has been remarkably successful at this process, enriching the area as a result. It is estimated that companies that got their start in CUOS research laboratories have created about 200 new high-level jobs in Michigan alone, making Ann Arbor a focal point for laser research.

Four companies have been started by former CUOS scientists, with Mourou's encouragement and direction; all but one are local. These are: Picometrix (fast measurement instrumentation, Steve Williamson and Janus Valmanis), Clark-MXR (scientific lasers and micromachining, Philippe Bado), Translume (waveguide optics, Philippe Bado) and Intralase (precision surgery, Ronald Kurtz and Tabor Juhasz). CUOS also has attracted companies to Ann Arbor such as IMRA-America, a leading company in short-pulse lasers. These companies have attracted more than 10 million dollars in NSF Small Business Innovation Research Programs.

When Steve Williamson, President and CTO of Picometrix, and Janus Valmanis left CUOS to form their company, Mourou supported their efforts by offering them a lab to develop their first product. “This product is still the world's fastest photo detector,” said Williamson. He adds, “G rard did this because he has in his own marrow the desire to see this technology move from the laboratory into the industrial setting. There are dozens of companies that he has either directly or indirectly touched in this quest.”

“Nothing will stop the flow of discoveries.”

Intralase grew from an inspiring talk Mourou gave at the Kellogg Eye Center, which attracted the attention of Dr. Ronald Kurtz. With the use of lasers with sufficiently short optical pulses, the company was able to do eye surgery without leaving any tears of the surrounding tissue. This activity was originally supported in a CUOS lab, and continues even today.

Ted Norris, interim director of CUOS, says, "CUOS was really an experiment on how to do interdisciplinary research at a university, and it was a tremendous success. What I really learned from Mourou is a fearless pursuit of new directions in science. He is an extraordinary mentor."

Mourou's scientific achievements have earned him the honor of being elected as a member of the National Academy of Engineering. He was awarded the 2004 IEEE/LEOS Quantum Electronics Award, and the 1999 IEEE D. Sarnoff Award. He is an IEEE and OSA Fellow. In France, Mourou was awarded the Chevalier de l'Ordre des Palmes Académiques for his pioneering work in ultrafast optics, notably the invention in electronics of the electro-optic sampling technique, and in physics the technique of CPA, which opened up the field of Strong-Field Relativistic Physics, and applications ranging from micromachining to precision eye surgery.

Reflections on the Past, and Future Directions

Mourou recently reflected on his discoveries at his retirement party this past December, to a room filled with friends, colleagues, and admirers, recalling the kilohertz lasers, micromachining and laser surgery without collateral damage – which will lead to "fantastic surgery," and the powerful new laser, HERCULES. He has worked tirelessly and enthusiastically to bring excellent scientists to Michigan, and to share the resulting breakthroughs with others. He arranged research collaborations with scientists in France and Japan, bringing scholars to CUOS, and has organized and given countless conferences and talks. He co-founded the Ultrafast Conference, now a major conference in the field, and founded the Picosecond Electronic and Opto-electronic Conference.

It is fitting that a year before his retirement, Mourou's research group gave the world HERCULES (High-Energy Repetitive CUos Laser System), built by research scientist Dr. Victor Yanovsky. Mourou says, "The ultra-fast laser pulse generated by HERCULES is 50 times more powerful than all the world's power plants combined." HERCULES' laser is so compact and intense that it could revolutionize the way cancer is treated.

CUOS also now boasts a kilohertz high field laser called the Lambda cubed laser. John Nees, associate research scientist, is conducting experiments on this laser – generating new pulses of light that are attoseconds in duration instead of femtoseconds. An attosecond is used to measure the time it takes for an electron to circle a nucleus. Through research in the attosecond domain, and through higher intensity lasers, there may be a way to pursue one of Mourou's guiding lights for High Field science, which is to break down a vacuum and essentially create matter from "nothing."

Norris, interim director of the center, said "CUOS currently holds the world's record for the highest peak power of any laser on the planet. That was set just last May, so we continue to be at the frontier."

New Beginnings

Mourou, who has dual French and American citizenship, returned to his native France this past December to continue his scientific research. His new research home is the Laboratoire d'Optique Appliquée in Paris. CUOS researchers are still in touch with Mourou on a regular basis.

"The future of CUOS is bright," said Mourou. "Nothing will stop the flow of discoveries."



Ultrafast, Chirped Pulse Amplification (CPA) laser. The long filament is a result of channeling. [Photograph by William Pelletier, Photo Services, Inc.]

Toby Teorey:

Database Researcher and Author



When Toby Teorey began his career at Michigan in 1972, President Richard Nixon was in the White House, Atari introduced the computer game of Pong, and the Dow Jones Average just passed 1000. “The Students for a Democratic Society

(SDS) had run its course by then, but Ann Arbor was still a hotbed of political activity,” Professor Teorey says, “though not as hot as Wisconsin.” Teorey now looks forward to a somewhat quieter, though still very active life following his retirement this May 2005.

Teorey came to Michigan upon completing his PhD at the University of Wisconsin. He had already served as an electronics data processing officer in the U.S. Air Force from 1965 to 1969. Stationed in Washington, DC, he also offered his time as a White House Social Aide for President Lyndon B. Johnson from 1966 to 1968, attending 25 state dinners.

Teaching the Best and the Brightest

In his first semester at U-M, Teorey taught data structures and a seminar in performance evaluation. He remembers fondly his two best students from that time: Bill Joy (BSE, CE '75), co-founder of Sun Microsystems, and Randy Frank (BSE, CE '73), who became the director of U-M's Computer-Aided Engineering Network (CAEN). Teorey also recalls Nancy Benovich Gilby (BSE, CE '85; MSE, CSE '87), who went on to build a series of successful startup companies before her current role as President and CEO of PocketThis. “I was really impressed with the quality of students we had here!” exclaimed Teorey.

Teorey initiated software engineering and database management courses, as well as a graduate course in database, and a professionalism course for seniors. “I'm happy to see those still being a major part of our program,” he says. He is currently involved in revising the undergraduate computer science curriculum.

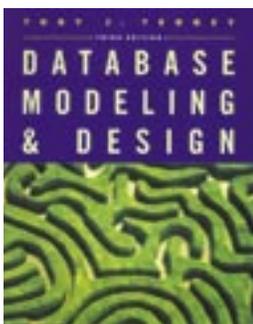
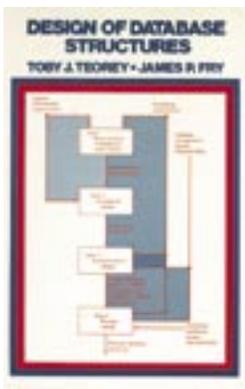
Teorey began writing books that would both enhance his students' education, and that could be used by the general practitioner in computer science in database design. His first book, *Design of Database Structures* (1982, co-authored with James P. Fry), was essentially the first database design book on the market, and has been sold in 15 countries. His second book, *Database Modeling & Design*, originally published 1990, is in its third edition. A fourth edition is already planned, and will be published as two books; the first on Logical Design should appear in late 2005, and the second on Physical Design one year later.

Teorey co-authored two more books, *Practical Debugging in C++*, and *Practical Debugging in Java*, for his students, and is about to publish his fifth book, tentatively titled, *Getting Started in the IT Business: Essays on the Critical Knowledge Needed for Success*. This latest book is a series of essays by experts in a variety of fields, including Intellectual Property, Starting a New Business, Software Quality, Teambuilding, Ethics, and Consulting. “We feel that this is going to be an important book for seniors that need to be exposed to the issues they're going to face in the business world,” explains Teorey.

Software Licensing at CITI

Teorey's experience with software licensing at the Center for Information Technology Integration (CITI), during the late 80's and 90's, provided excellent background for his fifth book. Teorey worked with CITI since its inception in 1986. “We at Michigan were leaders in the computer mainframe area since the 1960s,” Teorey says. “Our Michigan Terminal System (MTS) was exported to several dozen other universities and established U-M's name in the area of timesharing and virtual memory. CITI was formed by Professor Dan Atkins and Dick Phillips to essentially jumpstart the University to start to think about network computing at a time when desktop computers started to proliferate.”

At CITI, Teorey and his students researched network performance analysis, and created NetMod, a software tool to help people design local computer networks and configure them for the anticipated workload. NetMod was one of the first 10 software products produced by the U-M Technology Transfer Office in the early 1990's.



At that time, “the Tech Transfer Office was just getting started. They hired Michigan MBA students to market the product,” and sold over 100 copies, mainly to Fortune 500 companies, universities, and government agencies. The experience that the students and I got was tremendous,” said Teorey. “We learned about marketing, and maintaining your product. I took my experience from this into the classroom and upgraded our software engineering class,” Teorey added. “So it went full cycle.”

U-M Database Group, Past and Future

Prior to his involvement in CITI, Teorey was an active member of the Database Systems Research Group at U-M (see: www.eecs.umich.edu/db). This group has a distinguished history, graduating several leaders in the field, including: Ed Birss (VP, Apple Computer), Sham Navathe (professor and head of database group, Georgia Tech), Mike Wilens (founder and CEO, COSI), and Don DeSmith (founder and CEO, Servant Systems).

The Department has an excellent record for graduating leaders in the field of databases throughout its history. These include: E.F. Codd (inventor of the relational model of data, d. 2003), David DeWitt (see alumni awards), Usama Fayyad (see alumni notes), Kevin O’Connor, Larry Page (founder of Google), and Michael Stonebraker.

EECS faculty involved in the current Database Group include H.V. Jagadish and Jignesh Patel, as well as Viviane Jensen, Martin Strauss (also Dept. of Mathematics) and Dragomir Radiv (School of Information). This group’s goal is to build the data management infrastructure for the 21st century. With the work of Jagadish and Patel, the group has a strong bioinformatics effort.

Patel said that Toby “has made fundamental contributions in the area of database design, and his textbook on the subject is still considered to be the authoritative source of database modeling and design.” Jagadish adds that “Toby has been a pillar of strength not just for us as database colleagues, but for the department as a whole. I cannot imagine a more thoughtful and helpful colleague.”

Serving Students and the Department into the Future

Teorey actively served the department throughout his career in a variety of ways. He was a founding member of the Software Systems Lab, and its director between 1991-93. He was Associate Chair for the CSE Division 1994-97, and the CSE faculty search chair between 1990-97, overseeing the hiring of Peter Chen, Farnam Jahanian, Sugih

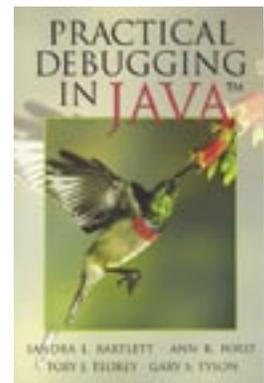
Jamin, Trevor Mudge, Marios Papaefthymiou, Steve Reinhardt, and Michael Wellman. Ed Davidson assumed the role of Associate Chair following Teorey. He said “Toby steered CSE through a critical period of emerging strength. His gentle management style, infinite patience, and persistent encouragement did much to develop faculty leadership and collegiality.”

Throughout his career, Teorey set a high standard for serving our students. He made himself available to current and prospective students even during the summer months. One such student would write to Teorey nearly two years after speaking with him at an open house for prospective students, “I thank you for taking the time, all so long ago, to talk to a high school junior and show him that you make of college what you want of it. That one afternoon made my decision much easier for me than for many others.”

Amjad Umar received his PhD under Teorey, and went on to be the director of distributed systems research at Bellcore, before starting his own wireless communications company. “To a great extent, I owe my professional success to Toby. I couldn’t have finished my work without his ‘gentle touch’,” said Umar.

Teorey has been an active supporter of women in computer science, specifically CSAM (Computer Science Alumnae of Michigan) since their inception in the early 1990’s. He has also actively supported minority engineering students through activities such as the ScholarPower Awards, now in its fifth year.

Even after retirement, Teorey will continue to serve the department as he guides the CSE Division through another ABET review, and oversees the move into the new CSE building early in 2006. “I plan to make full use of my emeritus office,” Teorey says. “I took a tour of the building recently. We saw the labs, offices, classrooms. The students will have a café. It’s getting exciting!”



Arbor Networks, Inc. has been in the news recently. Founded by Prof. Farnam Jahanian, the computer security company is working with 18 network providers to combat large-scale hacker attacks.

Prof. Ken Wise received the Small Tech Industry Pioneer Award at the 5th Annual Emerging Industry Symposium, sponsored in part by the U-M Office of Technology Transfer.

Tech Transfer: Update

Much has happened since we included a story about Tech Transfer activities in EECS in our 2003 newsletter. EECS filed 79 invention disclosures in FY04. Four new companies have established official ties to the department since FY03; each company grew from research and intellectual property that originated in EECS. All of these companies reside in the area (Soar Technology has a second office in Florida). A brief summary of these companies follows.



Mobius Microsystems Inc.
www.mobiusmicro.com

Dr. Michael McCorquodale (PhD EE, 2004), Prof. Richard Brown (EECS adjunct faculty, Dean of Engineering at U. Utah)

Michael McCorquodale, founder and CTO of the company, patented the Copernicus Clocking Solution, which grew out of research conducted in the EECS Department while a student of Prof. Brown. Through this device and other techniques, Mobius empowers integrated circuit designers and manufacturers to achieve previously unattainable levels of analog and mixed-signal integration across all process technologies. "We make our customers' products better, get them to market more quickly, and improve their bottom line," says McCorquodale. Mobius currently has 6 EECS alumni on staff.



NeuroNexus Technologies

www.neuronexustech.com
Prof. David Anderson (EECS, Bioengineering, Otorhinolaryngology), Jamille Hetke (EECS), Daryl Kipke (Bioengineering, EECS)

NeuroNexus Technologies (N2T) supplies implantable microscale probe systems for establishing chemical and electrical interfaces to the nervous system. The company will commercialize neural probe technologies that were developed over nearly two decades of research in the department, led by Prof. Ken Wise and David Anderson. NeuroNexus supplies microprobes to scientists and researchers throughout the world for medical and scientific applications. N2T is focused on 'making the connection' to the brain.



Opteos, Inc.

www.opteos.us
Dr. Kyoung Yang (Ph.D. EE, 2001), Dr. John Whitaker (EECS Research Scientist)

Opteos, Inc., co-founded by Dr. Yang, Dr. Whitaker, and EMAG Technologies, Inc. (founded in 1994 by EECS faculty and an alumni partnership), specializes in products and services for RF, microwave, and millimeter-wave measurements and diagnostics. Instruments and components for nondestructive, nonintrusive electric-field measurements, based on optical-fiber-coupled dielectric probes and electro-optic modulation techniques patented at UM, will be marketed starting in 2005 to firms requiring novel near-field diagnostics of antennas, arrays, integrated circuits, and packages.



Soar Technology

www.soartech.com
Prof. John Laird (EECS)

Soar Technology is a world leader in developing computational models of human behavior for use in training and analysis simulations. It is a spin off from research at the University of Michigan in the late 1990s on human behavior modeling directed by John Laird. Soar Technology has recently licensed EPIC and GLEAN, technologies developed by EECS Professor David Kieras to support research on human-computer interaction. The company plans to diversify into intelligent agent applications in medical research, health care and logistics.

A list of companies that have official ties with the University of Michigan, and which grew out of research within the EECS Department, can be found on our web pages under: www.eecs.umich.edu/eecs/corporate



A Symposium on High Frequency Microelectronics to honor the contributions of George Haddad to The U of M and the Research Community

Friday, September 30, 2005

Inquiries: Jack East, jeast@umich.edu
RSVP: Deb Swartz, dswartz@umich.edu
or www.eecs.umich.edu/eecs/HaddadSymposium

NSF-Funded CSE Scholars Program

The EECS Department and the College of Engineering, have been awarded a \$400K, 4-year grant from the National Science Foundation to establish a CSE Scholars Program. Professor John Laird is the principle investigator for the project.

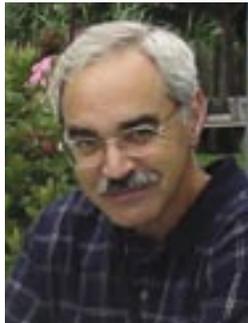
Laird is excited about the project, and said, “I see this as a pilot for possible expansion to other programs, not only in EECS, but throughout the College of Engineering.”

Working in teams, the CSE Scholars will participate in about 20 hours of service in areas that they will select. The first group of students has been selected. Jill Dimond, President of Girls in EECS (GEECS), said “I would like to show middle and high school students that this is a great career opportunity, and not just for men.” Matt Pizzimenti, another CSE Scholar, hopes to improve feedback between students and professors, and incorporate tutoring services into the lower-level EECS courses. He adds, “being a CSE Scholar is a great opportunity for me to give back to the college and help ensure that our EECS department is one of the best in the country.”

FACULTY AWARD HONORS AND AWARDS

Dave Neuhoff Appointed Joseph E. and Anne P. Rowe Professor of Electrical Engineering

David L. Neuhoff has been appointed as the initial Joseph E. and Anne P. Rowe Professor of Electrical Engineering. This endowed chair was established in 2004 by the Rowe family, who received numerous degrees from the College and University. Joseph joined the EECS faculty in 1953 and in 1968 assumed the chairmanship of the Electrical Engineering department.



Neuhoff joined U-M in 1974. Within the areas of communications and signal processing, his research has focused principally on data compression, quantization, source-channel coding, coding for magnetic recording, and digital image halftoning. He has received numerous honors and awards, including the College of Engineering Excellence in Service Award, the Stephen S. Atwood Award, IEEE Fellow, and the IEEE Information Theory Society Service Award. Neuhoff is currently the First Vice-President of the IEEE Information Theory Society.

DEPARTMENTAL AWARDS

2004 EECS Outstanding Achievement Award

Yogesh Gianchandani
Farnam Jahanian
Demosthenis Teneketzis

COLLEGE OF ENGINEERING AWARDS

Research Excellence Award

Jessy Grizzle

Education Excellence Award

Jeff Fessler
Brian Noble

Teaching Excellence Award: Non tenure-track

Mark Brehob

Ruth and Joel Spira Outstanding Teaching Award

David Blaauw

Student Society Award

Tau Beta Pi Engineering Professor of the Year

Jessy Grizzle

University of Michigan Awards

Excellence in Innovation Award: Tech Transfer Office

Elliot Soloway, for his work integrating technology into the K-12 classroom.

2005 Henry Russel Award

David Blaauw, in recognition of distinguished scholarship and conspicuous ability as a teacher.

National Honors and Awards

IEEE Fellow

Mohammed Islam,
“For contributions to optical fiber based non-linear devices and their applications in telecommunication networks.”



2005 IEEE Geoscience and Remote Sensing Society (GRS-S) Distinguished Achievement Award

Kamal Sarabandi

NSF CAREER Award

Sandeep Sadanandarao, for his proposal entitled “New architectures for distributed compression and communication of delay-sensitive information in sensor networks.”

2004 ACM SIGDA Outstanding New Faculty Award

Igor Markov

Programming Team Advances to World Finals

For the second consecutive year, the EECS Department sent two teams of programming students to the Association for Computing Machinery (ACM) International Collegiate Programming Contest. 131 teams competed in the regional competition, which took place November 6, 2004.

The EECS Department participated with two teams, the Victors, and Valiant. Team members for the Victors were Nuttapon Chentanez, Galen Elias, and Jim McCann. Team Valiant was represented by Will Cheng, Joe Frikker, and Brianna Satinoff. The teams were coached by Prof. Kevin Compton, with the help of assistant coaches Jarrod Roy and Charles Zhang, both EECS students and contest veterans.



Coach Kevin Compton (seated) is joined by part of the Victors team: Nuttapon Chentanez and James McCann; assistant coaches Jarrod Roy and Charles Zhang; and Valiant team member William Cheng. (Photo by Paul Jaronski, U-M Photo Services)

The Victors competed in the World Finals of the International Collegiate Programming Contest which was held in Shanghai, China, April 3-7, 2005. Google and IBM supported expenses related to the contest, which brought together 78 teams worldwide - the result of regional competitions featuring 4109 teams from more than 1500 colleges and universities in nearly 70 countries. The team of Chentanez, Elias, and McCann is the same team that qualified for Internationals last year in Prague. They earned an Honorable Mention at the World Finals.

UM Teams Place First and Third at the 2004 ACM SIGDA Programming Competition (CADathalon)



Gabriel Black, Jarrod Roy at ICCAD

EECS teams won first and third place in the 2004 ACM SIGDA programming competition (CADathalon) at the ICCAD (International Conference on Computer-Aided Design) Conference. The team of Jarrod Roy and Gabriel Black shared first place with a team from MIT. Paul Darga and Zaher Andraus were members of the third place team. The 8-hour competition was held November 7, 2004, and winners were announced at the opening ceremony of ICCAD.

Fall Bash



Students, faculty, staff and friends of the department performed at the first Annual Fall Bash, a cabaret/variety show. Performers included musicians, poets, and there was even a sword fight from "I Hate Hamlet." See movie clips at: <http://www.eecs.umich.edu/~cmsj/movies.html>. Pictured here is Michael Cho, who turned down a recording contract to come to U-M and study electrical engineering. Michael was awarded the 2005 CoE Mildred & Steele Bailey Prize.

DAC/ISSCC 2004 Student Design Contest

Matthew Hardy, undergraduate student in EECS, and Kamran Kashef, graduate student in Mathematics, took first place in the Conceptual Category of the 2004 DAC/ISSCC (Design Automation Conference/Int. Solid-State Circuits Conference) Design Contest, making this the fourth consecutive year UM took top honors at the competition. Graduate student Maysam Ghovanloo earned third place honors in the Operational Category, which requires fabricated chips.

Computer Games Showcase 2004



1st Place:
Puck Off
Kevin Cheng, Toby
Kevin Cheng, Toby
Kevin, Andrew Roskamp



2nd Place:
Road to Victory
Nuttapong Chentanez,
Galen Elias, Arthur
Tomlin



3rd Place:
Dodgem3D
James Allen, Nathaniel
Hramits, Nicholas
Piegdon

Computer Games have come a long way since Stephen Russell and team's "Spacewar," one of the earliest computer games invented back in 1962. U-M students learn to create their own computer games in the EECS course 494, Computer Game Design and Development. Taught by Professors John Laird and Sugih Jamin, students study the technology, science, and art involved in the creation of computer games.

Students displayed their final EECS 494 projects to the public December 18, 2004. Nearly 200 people attended, and had a great time trying out the games that the students had developed. Both single-player and multi-player games were presented. Along with the chance to play new and innovative games, the evening included a raffle of computer games donated by Electronic Arts and Microsoft.

Attendees voted on the best games, and the winning entry was "Puck Off: A frantic multiplayer party game where the winner is the first to clear their area of pucks." The team of students who designed and implemented the program were undergraduate students Kevin Cheng and Toby Long, and graduate student Andrew Roskamp. Toby greatly enjoyed the class experience, saying, "From our own 2D sprite-based games, to text-based adventure games, to finally 3D game projects, 494 teaches the principles that go into making a game both useable and a success. We had lectures from members of the Microsoft game team, EA, the visual effects supervisor for the Matrix movies, and many more. Professor Laird's class was a very fun and exciting experience. The class provides students with the opportunity to study the technology, science, and art involved in the process of making computer games. Who knows? One of us may have designed the next great video game you play."

All of the Projects are available for free download at: <http://www.eecs.umich.edu/~soar/Classes/494/showcase-2004/Games.htm>

"New" Student Society – UMEECS

EECS has a new student society, Underrepresented Minorities in Electrical Engineering and Computer Science (UMEECS). Its mission – To develop and maintain an academic, professional, and social network for minority students/alumni/faculty in the EECS Department. The new society is an expansion of what was BEECS (Black Electrical Engineering and Computer Science Society). The founding president, Stephon Eugene-Niles Owens, explains that its aim is to serve the needs of EECS majors from all racially underrepresented backgrounds (black, hispanic, native american). He hopes that UMEECS will provide a feeling of community and support for these students.

STUDENT AWARDS

CoE Distinguished Achievement Award

Undergraduate: CE: Ankur Garg
CS: James McCann
EE: Chenlu Hou
Graduate: CSE: Jeffrey Cox
EE: David Lemmerhirt
EE-Systems: Sangtae Ahn

EECS Department Senior Excellence Award

Undergraduate CE: Sean Hilty
CS: Haywai Hayward Chan
EE: Chung Yeung (Michael) Cho

William L. Everitt Student Award of Excellence

Undergraduate CE: Timothy Gerdes
CS: Dan Englander
EE: David Kurikesu

2004 IEEE Circuits and Systems Society

Donald O. Pederson Award

Vivek V. Shende, undergraduate student in computer science, co-authored the paper, "Synthesis of Reversible Logic Circuits," with graduate student Aditya K. Prasad, Prof. Igor Markov and Prof. John Hayes. The article was published in the *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*.

Society of Women Engineers (SWE)

Outstanding Senior Female Engineering Student Award

Joanna Borders

R.K. Brown Memorial Scholarship

Christopher Galbraith, for re-establishing the U-M Amateur Radio Club, W8UOM.

2004 College of Engineering Research Mentor Award

Saurabh Adya. Adya received his PhD and is now with Synplicity, Inc.

U-M Rackham Predoctoral Fellowship

Nader Behdad

U-M Rackham Barbour Scholarship

Shahrazad Naraghi

IBM PhD Fellowship

Hai Huang

Alumni Society President's Message



Steven R. Schwartz
EECS Alumni Society President

and spoke with new faculty and, most especially, with new students.

If, like me, you return to our Alma Mater each year then you've noticed that the students do, in fact appear to stay the same. The same age that is. Of course, this is only partly true. Each year, the student body has changed in that it comes to reflect the best that the world has to offer, rather than the best that Michigan, or even that the United States can offer. If you've visited north campus recently, perhaps you've seen the world map on the wall in the Pierpont Commons. It's not an official project, but students are encouraged to place a push pin on the map to show where they hail from. It's truly astounding to see the planet-wide draw of our university.

There's another change that we alumni have experienced and can share with EECS students of today. Just as we came to the University from afar, many of us have left to travel and work afar when our time at Michigan came to a close. The EECS students reading this today know that big changes await them, but they may not appreciate how close friends from college will grow apart as time and distance separates us.

Do you remember your friends from the dorm or apartment and the crazy nights out? Do you remember the computer lab assignment that took your team until midnight before graduation to complete? How about the funny guy or girl who could always keep the group entertained when you were too burned out to study any more? What happened to them? Where are they now? Is there any way to find out? Perhaps there is.

The University Alumni Society has long understood the power of college memories and the ties that we once formed. Only recently, however, have they given us an easy way to get back in touch, and stay in touch, with other alumni. This way to stay connected is through a U of M web service called

Last fall many of us attended some of the annual homecoming events hosted by the College of Engineering on Ann Arbor's North Campus. Once again I was happy to meet old friends and former professors. I was also privileged to make many new friends as I met

'InCircle', and it's available for free to all University of Michigan Alumni Society members. Visit http://alumni.umich.edu/online-services/in_circle.php to see.

InCircle is impressive. Do you want to contact an old friend, but don't know their phone number or e-mail address? Well, if they graduated from the U of M you can search for them. If their information is current in the Alumni database then you can also get in touch. If not, and you happen to know their contact information, you can add their e-mail address to the knowledge base and invite them to get linked in. There are more than 460,000 U of M alums walking the Earth, and InCircle knows of them all. With a little help from those 'connected' alums we can all find each other too!

Yet InCircle is more than a directory – it's a new type of social network. Do you want to share your interests with your fellow alums? Go ahead! You can list hobbies, professional affiliations, mentoring interests, or career interests...and even photos. Want to be discreet? You can also specify which information about yourself is made public to everyone, to friends of friends, to immediate friends, or to no one at all.

Try InCircle to give it a test. If you're not a UM Alumni Society member then InCircle alone can be worth the annual dues. Choose one person you remember from school to see if you can't get back in touch. After all, you're in college for a few years, but you're a Michigan alum forever. You may as well get the benefits.

On a personal note, I'd like to share that my wife Jill (EECS BSE '89) and I recently returned from China with our adopted baby girl, Kaitlyn, born in Hunan province. She's 17-months old, and as you can tell by her hat in the photo, she's already a Michigan fan. Will she be an EECS BSE '25? Well, that's up to her to decide.



Be true and Go Blue!

Steve Schwartz
President
EECS Dept. Alumni Society
stevschw@umich.edu

2004 College of Engineering Alumni Society Merit Awards

Electrical and Computer Engineering

Jack L. Walker (MSE, EE '67; PhD, EE '74)
Independent Consultant



Stephen W. Director (Dean, Engineering), Jack L. Walker, David C. Munson, Jr. (EECS Chair)
[Photographer: Dwight Cendrowski]

Dr. Walker is an acknowledged expert in synthetic aperture radar (SAR), which enables observations of Earth from space. He devised the mathematical formulation and optical processing for the highest resolution form of SAR, known as spotlight mode; his research has had profound implications for the security and defense of the United States. He accomplished this research during a distinguished career at Veridian and ERIM, where, as chief scientist, he directed many of that organization's R&D projects. He retired in 2000 after 36 years of service. He is a member of the National Academy of Engineering.

Jack was a student of Prof. Emmett Leith, who stated, "Jack Walker's contributions to synthetic aperture radar were brilliant and immensely successful. They permitted synthetic aperture radar development to surge ahead to new vistas and to the production of images of stunning quality. Such imagery could hardly have been imagined before Walker made his contributions."

According to Jack, "when I was 12 years old I was firmly convinced that I wanted to be an Electrical Engineer and go the University of Michigan. I have very fond memories of my years at Michigan." Jack still recalls his first conversation with his advisor, Prof. John Lyons, in 1962, who told him that he would be very busy working full time and going to school. Despite this being true, Jack said, "I enjoyed every class that I took at Michigan!"

Computer Science and Engineering

David J. DeWitt (MSE, CICE '71; PhD, CICE '76)
John P. Morgridge Professor of Computer Sciences, University of Wisconsin, Madison

Prof. DeWitt conducts research in the area of database system design. He has done seminal work in information mining, and was co-inventor of the "Wisconsin Benchmark," now used as a standard test for relational database systems. His current projects include the Niagara query engine, used for retrieving, querying, and monitoring XML data, and Paradise. Paradise is a database system that enables users to query, browse and manipulate massive geographic information data sets, and in particular is aimed at handling GIS (Geographic Information Systems) types of applications.

He was chair of his department 1999-2004, is a fellow of the Association for Computing Machinery, and is a member of the National Academy of Engineering. He received the ACM SIGMOD Innovations Award for his contributions to the database systems field in 1995.



Stephen W. Director (Dean, Engineering), David J. DeWitt, Martha Pollack (CSE Assoc. Chair)
[Photographer: Dwight Cendrowski]

KEYNOTE ADDRESS

Larry Page (BSE CE '95), Co-Founder and president, Products, Google, Inc., will give the keynote address at the College of Engineering graduation ceremony, April 30, in Crisler Arena. Page was elected to the National Academy of Engineering in 2004. Together with Google co-Founder Sergey Brin, Page was honored with the Marconi Prize in 2004. Earlier this year, he became a trustee on the board of the PRIZE Foundation.

2004 College of Engineering Alumni Society Recent Engineering Graduate Award

Anthony M. Fadell (BSE, CE '91)
VP Engineering, iPod Division, Apple Computer, Inc.

Anthony Fadell created all five generations of the company's new iPod digital music device, and the Apple iSight camera. He has had an active and varied career, beginning even before enrollment as an undergrad at U-M. His ties to Apple, and work with handheld devices, span his entire career, including the three years he worked for the Advanced Technology Laboratory (ATL). As an undergrad at ATL, working with Prof. Elliott Soloway, he was instrumental in the creation of U-M's Media Café Multimedia Lab. In addition, he designed and implemented a handheld device called HyperPlan, which interfaced with the Macintosh program HyperCard in a variety of ways. Soloway says of him, "Tony had hustle; it immediately set him apart. Tony always did more than was necessary. As an undergrad, it was clear he was headed for the stars."

Fadell went on to start four companies, between working for other companies, before finding his current home at Apple. He is gifted at creating teams to create and then market new technology and products. He has earned more than 10 patents.

Fadell's return visit to Ann Arbor to receive his award brought back memories of his undergraduate days: "Yum - Mr. Spots, spicy buffalo wings and cheese fries! As I passed by Blimpyburger's my mouth began watering." He is now recognized by UM students. As he finished a speech on North Campus, he couldn't find his way out of the building, and so asked a couple students for directions. They replied, 'Come on, you should know better, didn't you have classes here?!' Astonished, he informed them, "Most of these building, including this one didn't even exist!" Fadell says, "Congrats to the College of Engineering on all the new facilities, I'm envious of the modern day students."



Stephen W. Director (Dean, Engineering),
Anthony M. Fadell [Photographer: Dwight Cendrowski]

Alumni Notes

1950's

Jack E. Burchfield (BSE, EE '56; MSE, EE '58) is the co-founder and current president of Ten-Tec, Inc. (www.tentec.com). Ten-Tec presently employs approximately 75 people, including 28 licensed amateur radio operators. At Ten-



Jack shown here giving "Roofing Filter" presentation at the 2004 Old Timer's Picnic in Marcellus, MI

Tec, Jack encouraged and led the design and production of radio communications gear for amateur, commercial and government services. His groundbreaking work is found in popular rigs such as the Argonaut series, the Scout, the Omni series, and the Orion. He is an avid Morse Code (CW) fan and is quite active both from his home outside of Knoxville, TN and from his mobile station.

Jack told us that he and his wife (another UM alum) still come to every UM home game, driving up from Tennessee. Jack first became interested in amateur radio in high school. At Michigan, he was on the gymnastic team and cheerleading squad, and a member of Eta Kappa Nu, Tau Beta Pi, Vulcans, and Triangles. Jack (K4JU) is a friend of the UM Amateur Radio Club (W8UM); visit the "shack" on the 4th floor to see the new HF tranceiver that he donated in action.



Rodger W. Walser (BSE, EE '59; MSE, EE '61; PhD, EE '67) is the Annis and Jack Bowen Professor in Engineering at the University of Texas at Austin, and Director of the Center for Electromagnetic Materials & Devices. Rodger

has participated in the startup of three corporate ventures. He founded Ardex, Inc. a subsidiary of Alcoa, in Austin in 1984 and served as CEO and chief scientist until 1989. His recent research focuses on thin film and device structure synthesis, and characterization for a variety of applications including integrated thin film recording heads and optical films for “smart solar windows.”

1960's



Richard A. Bennett (BSE, EE '62) retired from FCI Systems Corp., a company he started back in 1991, in 2001. Prior to starting FCI, Bennett spent most of his career with Lockheed Martin, first as an architect for the CADAM system and later as Vice President

of Sales and Marketing of CADAM Inc., the Lockheed subsidiary responsible for marketing that product. For his work with that system he was elected to the CAD/CAM Hall of Fame of Machine Design magazine in 1999. He now attends a local community college and takes fine art subjects.

1970's



Richard L. Bollinger (MSE, CICE '76) and his wife, Beth, visited Europe last fall to see their daughter, Libbie, who was studying for the term in Grenoble, France. They also visited friends in Paris, Germany, and Switzerland. He helps organize and supervise first aid at UM sporting

events with American Red Cross F.A.S.T. teams and Huron Valley Ambulance. He belongs to the W. Edwards Deming Institute, whose ultimate aim is to “advance commerce, prosperity and peace,” and plans to start a talk radio show this year on WAAM.

Richard is currently under contract to General Motors in Detroit as a Project Manager over a global IT project. See his website: www.menloparkassociates.com.

Richard A. Davidson (BSE, EE '70) tells us, “I seem to be involved with startup companies late in my career. I started at Motorola and moved on

to smaller companies that used minicomputers and microprocessors in their electronic products. I consulted in radio frequency and computer engineering before consulting in software engineering for about 20 years. My attempt at entrepreneurship produced a success that licensed its patents to all of the cable TV and satellite TV digital decoder manufacturers. I am currently with mVerify Corporation in Chicago, another startup that has a government grant to develop model based software testing tools for the wireless industry. I am helping a former partner launch a business to deliver eBooks to the school systems and replace traditional textbooks. I think about retirement, but there are so many interesting technical challenges out there in new businesses that I cannot let myself stop working.”

1980's

Paul R. Berger (MSE, EE '87; PhD, EE '90) is a Professor at Ohio State University with an active program in SiGe nanoelectronics. He tells us, “my latest venture is the establishment of the new Nanoscale Patterning Center which will house our new 100 keV electron beam lithography system following a multi-million dollar award by the State of Ohio. I will be the Center’s Director for a consortium of Ohio based universities, government labs and industrialists. We are presently recruiting a staff position and gearing up for the construction required in our cleanroom to install this highly specialized piece of equipment. This instrument is highly complementary with the NNIN facility as part of your SSEL.”



Paul, Janine, and Maria, on summer vacation on Cape Cod last year. Paul's wife, Rita, is taking the picture.

On a personal note, our 2 daughters (8 and 11 years old) continue to develop and surprise us. My daughters are already brain washed to love Michigan. My oldest wears her Michigan shirt and hat to school before the Ohio State game. We all actively root for the Wolverines, flying our Michigan flag in the heart of Buckeye country on football Saturdays. We generally attend 1-2 football games in Ann Arbor. I also met my wife at the University and got married on State Street.”

Joseph G. Kanitra (BSE, EE '89) is currently Network Engineer at the Ohio Assembly Plant, located in Avon Lake, OH, where they produce the 2005 Mercury Mariner and the commercial vans (E-Series). He joined Ford Motor Co. at this site in 1990, starting as a Facilities and Automation Engineer. Joe then became Supervisor of Technical Construction & Maintenance for 6 years, and transitioned to the IT group at the site in 1999.

Lee, Shih-Wuu (BSE, EE '69; MSE, EE '75; PhD, EE '80) was recently appointed to the position of Intel Fellow, which is equivalent to that of an appointed vice president. This appointment was based on sustained individual technical contributions and technical leadership in the development of numerous proprietary CAD technologies for Intel's microprocessor and communication product design. He tells us, "since August 2000, I have been the director of the Technology CAD division at Intel. Lots of travel - weekly flying between the Santa Clara (California) site and the Hillsboro (Oregon) site.

Our son Jing-Yuan is a senior at UCLA majoring in mathematics and plans to pursue law after graduation and our daughter Jing-Lan is a freshman at the University of Washington majoring in English and international studies. With our two children grown up, Ying and I travel frequently to L.A., Seattle, and many places around the country and in Asia. The last time I was in Ann Arbor was in March 2003 to give a presentation for the WIMS ERC Seminar Series hosted by Professor Ken Wise. I look forward to visiting Ann Arbor again soon."

Suresh Subramanian (MSE, CSE '86; MSE, CSE '88) is Group Senior VP – International Markets Telcom Services for Telcordia Technologies, Inc. See an online interview with Suresh at: http://gradnet.iec.org/interviews/telcordia_suresh_2b.asp, where he answers a variety of questions, including why he pursued his advanced degrees in engineering, and advice to engineering students.

David L. Chang (BSE, EE '88; MSE, EE '89) is Director of Layer 1 Software Development for Texas Instruments in San Diego. He has a team of about 40 software engineers that develops the real-time modem control code that runs the chips (which are also developed at TI) for the next generation of cell phones.

David took this photo during a 5 day hike on the Inca trail to Machu Picchu late last year. He said it was a "stunning trip hiking through 15,000+ mountain ranges to the ruins of the ancient city."



1990's

Timothy Chang (BSE, EE '94; MSE EE and EE-Systems '96) is currently a Principal at Gabriel Venture Partners, a Silicon Valley venture capital firm investing in early-stage hi-tech startups. Tim leads Gabriel's wireless investment team, and recently invested in Iridigm Display Corporation, a highly-innovative MEMS-based microdisplay company that was acquired by Qualcomm in 2004 for \$200M. Prior to venture capital, Tim had worked throughout Japan, Korea, and China as a multi-lingual development engineer for General Motors, as well as a product manager for servers and enterprise computing products at Gateway.

Tim recently bought a home in San Francisco, and continues to perform around the Northern California Bay Area with his band and as an actor in his spare time.



Usama Fayyad (BSE, CE and EE '84; MSE, CSE '86; PhD, CSE '91) recently joined Yahoo! Inc. as the company's first chief data officer and senior vice president of the Strategic Data Solutions group. He came from DMX Group, a company that specialized in data mining and

data strategy, that he co-founded. Usama's professional experience includes co-founding a company in 2000, digiMine Inc. (now Revenue Science, Inc.), five years at Microsoft Research leading the data mining and exploration group, and 7 years at NASA's Jet Propulsion Laboratory (JPL). His work at JPL earned him several awards from Caltech, NASA, and a U.S. Government medal. Usama and his family moved to Portola Valley, CA (near Stanford) this past Fall.

Read more about his appointment at: http://biz.yahoo.com/bw/041213/135395_1.html.

The interview by Suresh Subramanian is offered by GradNet. "GradNet is a Web site that addresses student needs in the critical areas of course enhancement, professional enrichment, and career development, which have been identified by today's electrical engineering, computer engineering, and computer science majors as important to enhancing their opportunities for career success." (see http://gradnet.iec.org/about_us.asp).

James K. Huggins (PhD, CSE '95) is an associate professor of computer science at Kettering University. He was recently elected as Moderator (President) of the Faculty Senate for the calendar year 2006. During 2005, he will be serving as Moderator-Elect (Vice-President).



Clara (4) and Isaac (6 months) Huggins

Gardiner D. Leverett (BSE, CE '91) has taken a job at Mobius Microsystems in Detroit as the IT/System Administrator. He previously worked for Merit Network, and briefly with MEPO in the UM College of Engineering.

Laura Mikkola Norris (BSE, EE '92) received her law degree in 1997 from Santa Clara University, in the night program while working for Intel during the day. She worked as a patent agent, a patent lawyer, and patent litigator from 1994-1999. Since 1999, she has run the legal department at Cypress Semiconductor Corporation. Laura says, "I have found that the combination of my EE degree from UM and my law degree have been extremely useful, and there has never been a time I can remember when I wasn't being recruited."

2000's

Niels K.H.G. Provos (MS, CSE '00) joined Google in 2003 and is currently working as Software Engineer in the Infrastructure group.



He received a Ph.D. from the University of Michigan in 2003 where he studied experimental and theoretical aspects of computer and network security with Peter Honeyman at the Center of Information Technology Integration. He is a member of the Honeynet project and an active contributor to open source projects.

Greg Sharp (PhD, CSE '02) has recently completed postdoctoral training at Massachusetts General Hospital, and has been promoted to Instructor on the faculty of Harvard Medical School.

Alumni Society Gathering in Long Beach, CA

Last year's EECS alumni gathering at the 2004 IEEE MTT International Microwave Symposium (IMS) was a resounding success, bringing together EECS students and alumni from across the country. There will be a repeat event at IMS 2005 in Long Beach, California, June 12-17, 2005. The party is planned for Tuesday, June 14, 2005, at 6:30 pm. For additional information, see:

www.eecs.umich.edu/eecs/alumnisociety/ims05.html

Mentoring and Networking

The EECS Alumni Society invites you to add your name to the alumni database at: <https://www.eecs.umich.edu/eecs/alumnisociety/membership.html>. Students are invited to join – just select the "Student" option when selecting your degree.

There is a new networking/mentoring feature that we invite you to use to get some advice from someone in a field you would like to pursue, or to offer your advice and experience to someone who has questions about your area of expertise.

Contribute to the EECS Alumni Society Fund

Support your alumni society efforts in mentoring, networking, recruiting, scholarships, and alumni events.

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