

John Kubiawicz
receives White
House award and
teaching award

IEEE Van Duzer
Prize created

2

George Mueller
talks about the
space program

4

1st UC Berkeley
Stanford CS day
held here

10

NEWS

SPRING 2001

Shankar Sastry is new chair of EECS

Shankar Sastry, professor in EECS and Bioengineering, and, last year, director of the Information Technology Office of DARPA in Arlington, Virginia, is the new EECS chair.

His official start date was January 1, 2001. Rich Newton had been chair, followed by Christos Papadimitriou as acting chair. Newton left the department to become dean of the College of Engineering. Newton said, "Please join me in congratulating



Shankar Sastry

Shankar as the new chair of EECS. I am Please join me in wishing him continued

certainly looking forward to working with him in his new and important role."

DARPA's Deputy Director Frank Fernandez said, "I extend my congratulations to Shankar on his new position, as well as my personal thanks for a job very well done as the director, ITO at DARPA. Shankar's guidance made a major contribution to the mission of ITO and the agency as a whole. His consistently high level of performance exceeded all expectations.

continued on page 5

Al Pisano takes charge of ERL

Albert Pisano, FANUC Chair Professor in the Mechanical Engineering Department on campus and co-director of BSAC in EECS, became chair of the Electronics Research Laboratory as of July 2000. Appointments to the directorship are typically for five years.

Pisano earned four degrees at Columbia University in the City of New York (BS, MS, M. Phil., and PhD) and received his PhD in 1981. He has earned many honors, among them,



Albert Pisano

becoming a member of the National Academy of Engineering. He was program manager for the MEMS program at DARPA in

Arlington, Virginia from 1997-1999.

ERL is the largest organized research unit on the UC Berkeley campus. It has over 110 faculty researchers, 125 staff, over 500 graduate students, and an annual budget of about \$50 million. There are five main divisions: the Berkeley Sensor and Actuator Center, the Berkeley Wireless Research Center, the Giga Scale Research Center, the Berkeley Northside Research Group, and the Micro

Systems Group, as well as several support divisions for grant administration, payroll, and purchasing.

continued on page 5

John Kubiawicz receives White House award and teaching award

John Kubiawicz, assistant professor in CS, has won a prestigious award. The Presidential Early Career Award for Scientists and Engineers (PECASE) for 2000 was given to 20 NSF-supported researchers across the country. The awards were presented at the White House Old Executive Office Building by the president's science advisor, Neal Lane. The award honors top junior faculty in science and engineering.

John Kubiawicz won the award "For groundbreaking architectural research on extremely wide-area data storage and access as the basis required for pervasive and widely distributed network-based applications, and broad, well integrated educational contributions."

The PECASE award is the highest honor bestowed by the US government on outstanding scientists and engineers who are in the early stages of establishing their independent research careers. This is the fifth year of the awards.

"Through their talent, ability, and dedication, they will quicken the pace of discovery and put science and technology to work advancing the human condition as never before."

—Bill Clinton

Nine participating federal agencies shared 59 PECASE awards for 2000. The Clinton administration established the awards in February 1996 to recognize some of the nation's finest junior scientists and engineers and to maintain US leadership across the frontiers of scientific research.

NSF awardees have demonstrated a notable commitment to the integration of research and education. Since the White House established the award, 100 NSF-supported faculty members have received this presidential honor in such diverse

fields as biophysics, mathematical modeling, transportation engineering, and microeconomics.

"These extraordinarily gifted young scientists and engineers represent the best in our country," [former] President Clinton said. "Through their talent, ability, and dedication, they will quicken the pace of discovery and put science and technology to work advancing the human condition as never before."

"These awards acknowledge much more than past performance," said NSF director Rita Colwell, "They represent our expectation that these women and men will continue to provide leadership in science, engineering and higher education well

into the millennium."

NSF selects its PECASE nominees from among its most meritorious CAREER (Faculty Early Career Development) awardees. The CAREER award supports exceptionally promising college and university junior faculty who are committed to the integration of research and education. CAREER awards range from \$200,000 to \$500,000 for a period of four to five years.

Kubiawicz gets teaching award

In addition to the presidential award, Kubiawicz will receive the "IT award for excellence in undergraduate CS teaching, in honor of Professor Michael Harrison," funded by a generous and anonymous donation. He was selected for his outstanding performance in undergraduate teaching. Students rave about his dedication and availability. The monetary part of the award is \$15,000.

When Kubiawicz came to Berkeley to join the faculty, one of his goals was to get a baby grand piano. He got it and can now pay attention to his other passion, music.

He still loves his job. "I have a very excited bunch of graduate students. My latest project, called OceanStore, has been in the press a lot recently. There was an article in *Forbes* about it. My graduate students and I are having a lot of fun!" ♦



John Kubiawicz

Ted Van Duzer receives honors

The IEEE Council on Superconductivity set up a best-paper award for regular papers in the IEEE Transactions on Applied Superconductivity, to be named the Van Duzer Prize, after Professor Theodore Van Duzer of this department. The prize will be announced in the June edition of the *Transactions on Applied Superconductivity*.

Ted Van Duzer also received one of the introductory IEEE Council on Superconductivity career awards for 2000. The award is called "the IEEE/CSC Award for Significant and Continuing Contributions to Applied Superconductivity."

He was one of seven honored at the Applied Superconductivity Conference held recently. Van Duzer won the award "for significant and continuing contributions to superconductive electronics as a researcher, educator, and mentor, in particular for directing numerous innovative research projects in superconductive device and circuit concepts, for mentoring students who became the core of the US activity in superconductive electronics, for his co-authorship of the standard textbook on superconductive devices, for serving as the founding Editor-in-Chief of the IEEE Transactions on Applied Superconductivity, and for his enthusiastic support to establishing, and frequently chairing, various conferences, workshops, and study groups promoting the growth of the superconductive electronics technology."

Shankar Sastry, chair of EECS said, "This is fitting recognition for a sustained and productive set of contributions to superconductivity. Congratulations, Ted!!" ♦



Ted Van Duzer

Carlo Séquin's "Artistic Geometry"

Carlo Séquin has been a professor of computer science for 24 years; now, he is gradually turning into an artist. For most of his life, he has had an interest in abstract geometrical art, such as the sculptures by Naum Gabo, Max Bill, and Alexander Calder. Only recently has he started to design and fabricate geometrical sculptures of his own at a fairly steady rate. This is due to a close collaboration with a few contemporary artists, the emergence



Carlo Séquin

of ever more sophisticated design software developed by the students in his computer graphics research group, and the in-house availability of rapid prototyping with layered, solid, free-form fabrication technology. His work is now being shown in many places; within the last three months he has participated in four different art exhibitions.

In December, his work was included in a show at the Danville Fine Arts Gallery. The show, "Science, Technology, and the Artist," featured some of Séquin's geometrical art as well as work by other Bay Area artists. At the same time, other samples of his work were exhibited at the Cooper Union of the Albert Nerken School of Engineering in New York City. This show, now called "Art and Mathematics 2001," has recently traveled to the Koussevitzky Art Gallery, Berkshire Community College, in Pittsfield, Massachusetts (February 1 to March 30, 2001). This exhibition is organized through ISAMA (International Society for the Arts, Mathematics, and Architecture), an organization that was founded by Professor Nat Friedman of SUNY Albany, "to further interdisciplinary education relating the arts, mathematics, and architecture."

On February 8, a small art show opened at Gallery 650 in San Francisco. This show was organized by the "White Room Group," a group of art students of Berkeley's Art Practice Department, to

showcase emerging Bay Area artists. The show is cast as a benefit exhibit and auction for "America's Angel," an organization dedicated to ending child abuse.

Carlo Séquin created a sculpture specially for this event called "Bonds of Friendship," which is pictured below. Two central pillars, which can be seen as figurative forms, are held together by four looping bands.

To see this sculpture online, go to: [http://](http://www.cs.berkeley.edu/~sequin/SCULPTS/CHS_miniSculpts/Scherk-Collins/Frship.jpg)

www.cs.berkeley.edu/~sequin/SCULPTS/CHS_miniSculpts/Scherk-Collins/Frship.jpg.

This ten-inch sculpture was created in a Fused Deposition Modeling machine in Etcheverry Hall in the newly completed Ford Integrated Manufacturing Lab. In this process, the computer description of the sculpture is geometrically sliced into thin layers one hundredth of an inch thick. These layers are then painted individually, one on top of another, by a computer-controlled nozzle that dispenses the ruby-red, translucent ABS thermoplastic modeling material in a semi-liquid state at 270 degrees centigrade, until the precise three-dimensional shape has been re-created.

Carlo Séquin's recent occupation with geometrical sculpture resulted from a five-year collaboration with Brent Collins, a wood sculptor working in Gower, MO, of whose work he learned through an article in *Leonardo* (Pergamon Press).

Fascinated by some of Collins' intuitively conceived shapes that model knotted paths spanned by minimal surfaces (like soap films on a wire frame), Séquin engaged Collins in lengthy phone conversations, during which many new ideas for novel geometrical sculptures emerged. Since it takes a couple of weeks with Collins' traditional prototyping method based on wire-meshing and beeswax to fabricate a mock-up model for a potential new sculpture, Séquin offered to bring in computer graphics to help visualize the aesthetic merits of possible new geometrical constellations. This led to a program called "Sculpture Generator I" with which Séquin could re-create shapes closely resembling some of Collins' recent sculptures.

By extending the capabilities of the program, and enhancing the complexity of the forms produced by the procedurally captured paradigm, new sculptural shapes emerged that Collins would not have been able to conceive or build with his traditional approach. After both parties had agreed that a new form was worth being turned into a physical sculpture, Séquin's

program sliced that geometry at 7/8" intervals and created a set of full-size (2 to 3 feet) blueprints for the various cross sections at different levels of the sculpture. Collins then used these computer drawings as templates to pre-cut 7/8" wood boards into rather convoluted shapes, which, when properly stacked on top of one another, defined the overall geometry of the new sculpture. After a month of grinding and sanding, a beautiful smooth



Bonds of Friendship

shape was born.

See a picture of Collins holding the sculpture at: <http://www.cs.berkeley.edu/~sequin/SCULPTS/Brent.HexMonkey.jpg>.

Many of the recent sculptures by Carlo Séquin originate in a mathematical formulation that is captured in procedural form in a parameterized computer

continued on page 5

Space: past, present, and future according to Dr. George Mueller

Dr. George E. Mueller came to Berkeley recently to talk about his latest project, a new space transportation system. His project is the reusable aerospace vehicle designed to deliver satellites to low-earth orbit and provide a low-cost alternative to single-use launch vehicles. He was sponsored by EECS as a Regents' Lecturer in February.

"Three friends of mine designed this thing. Now it's really very interesting to see it come together, to build a vehicle that's completely reusable. We have also been able to reduce the cost substantially, by a factor of 10. The next generation ought to be designed to be half or a quarter less."

Dr. Mueller led the program that put Americans on the moon, is the originator of the Skylab space station, and is referred to as the "father of the space shuttle."

Now CEO and president of Kistler Aerospace, Dr. Mueller's lecture, which was open to the public, was called, "2001: The Dream and the Reality: A space odyssey from Sputnik to Pioneer, Gagarin to Armstrong, Shuttle to the Future."

Dr. Mueller was head of NASA's Manned Space Flight Program and was responsible for the Gemini, Apollo, and Saturn programs. The Kennedy, Johnson, and Marshall Space Flight centers reported to him. After NASA, he became senior vice president of General Dynamics Corporation in 1969, remaining until 1971. He moved on to become chair and president of System Development Corporation from 1971 to 1980; he became chair and CEO from 1981 to 1983. He went on to become president of Jojoba Propagation Laboratories, and chair of the Desert King Jojoba Corporation, until 1995, when he joined Kistler Aerospace Corporation.

Of course, Dr. Mueller always wanted to get on the space ship to the moon himself. "I was the final approval. Obviously, I couldn't approve myself. I tried to get my boss to let me go out on Apollo 8." But NASA told him he was needed on the ground in case something went wrong. What does he think of the moon now? "It's bright," he says, eyes twinkling.

Asked if his perception has changed since he'd "worked" with the moon, he said, "To some extent, there was more mystery before. Then, we landed on it. It's a challenge, because it's so near yet it's so far. It's tempting to envision a colony on the moon living up there coming back and forth and enjoying the 0.6 Gs they have up there."

Dr. Mueller travels all over the world, "everywhere there are pieces of equipment or investors," in his fundraising efforts for the space program. "Space is still one of these frontiers that the government has to subsidize in order to be able to explore it, and the thing that would make it most inter-

esting is for some government somewhere in the world, or some combo of governments, to decide to have a brand new, wonderful objective like Kennedy did, a global commitment to a Mars colony."

Dr. Mueller wants us to go to Mars and live. He believes we can, "in about 20 years. I hope we don't just make a trip there, but stay there." [I'm sure he didn't mean all of us.]

"I've been trying to get this done for 30 years. It would be something that would transform the whole earth if we got a coalition of governments to carry on this mission. It would transform the way people on the earth think of

each other. They'd have a common purpose, so they would not have to spend all their time figuring out why this guy is better than I am, and be more interested in how we can work together."

Asked about MIR's contribution to technology, Dr. Mueller said, "It keeps peoples' interest up, and it's been an interesting propaganda tool for the Russians over many years. It's hard to assess what scientific results might have changed the way the earth works, but you surely can say it's maintained the interest of the Soviet people, and by competitive interest, the interest of the Americans. So it's been good in keeping space before peoples' eyes. The International Space Station will have that effect."

Dr. Mueller said that earlier flights, like Gemini, were not more dangerous than space travel via the shuttle. "You know, going into space is really not that much more difficult than getting on an airplane and going to another city. Every time you get in your car and drive, it's more dangerous than not driving. I don't know that the Gemini program was more dangerous. Knowing as much as I do

continued on page 9



George Mueller



Moon on February 5, 2001

LYLE BEARDSLEY

Grad student morphs to assistant professor

David Wagner, a CS student here since 1995, has now graduated and joined the faculty to teach, among other things, cryptography, computer security being one of his areas of expertise. Other areas Wagner works in are applications of static and dynamic program analysis to computer security; design and analysis of symmetric-key cryptosystems; operating systems; and theory.

Wagner is co-teaching CS 70, Discrete Mathematics and Probability Theory, this spring with Manuel Blum. Last fall, he taught CS 261, Computer Security. He thoroughly enjoys the environment in EECS, and he is "thrilled to be here." He said, "the Berkeley EECS Department has been a tremendously enriching environment throughout my studies as a graduate student here, and it is a great pleasure to have the chance to join the department now as a member of the faculty."

Wagner has made the news frequently for his work on security and privacy. He started making news the first year he arrived as a graduate student. Some of the important coverage:



David Wagner

"I consider it important to do research in the public benefit"

- *NY Times*, front page, September 1995: He and his colleagues discovered serious security holes in the Netscape web browser, which could have affected e-commerce.
- March 1997: He and colleagues identified flaws in the privacy protection in US cellphone standards.
- *NY Times*, business section, front page, April 1998: He and colleagues reported about potential risks of fraud in the European GSM cellphone system.
- *Wall Street Journal*, February 2001: He and colleagues warned of security flaws in wireless network standards.

David Wagner is devoted to public research.

"As a member of a public university, a recipient of public funds, and a graduate whose studies have been supported by public fellowships, I consider it important to do research in the public benefit. Berkeley is a place where many people share that vision of working for the public good, and I find that very attractive." ♦

Sastry...

continued from page 1

success. We will all miss Shankar's enthusiasm, intelligence, and leadership."

Sastry thanked EECS for reposing their trust in him. "I look forward to serving the department. Richard and Christos steered the department very well in the last year and a half, and it is in very good shape. Of course, new challenges abound with the pressures of space, enrollment, and faculty/staff workload, new centers, and the quality of life for the faculty, staff, and students, to name a few issues of importance to EECS." ♦

Pisano...

continued from page 1

Though Pisano plans to continue his own MEMS work, he has big plans for ERL. Two of his goals are to become a paperless office and to develop special software for managing grants. So far, Pisano has found that ERL, although a large organization, is filled with a great group of staff, all willing and eager to embrace changes for the better. Far from being a heavy burden, ERL directorship offers much excitement and satisfaction in its day-to-day execution. Pisano feels lucky to have been offered the leadership of such a dynamic and energetic organization.

Pisano took over from acting director Jeffrey Bokor. EECS welcomes his ideas and leadership. ♦

Séquin...

continued from page 3

program. These parameters are adjusted by the artist based on aesthetic criteria, and will then define the topology and exact shape of a particular sculpture.

The computer-based description and fabrication process guarantee the overall symmetry and smoothness of the surfaces.

Some of the simpler versions of these artistic smooth surfaces also serve as tough test cases in the "CyberCut" project jointly run with Professor Paul Wright in the ME Department. This project is devoted to shortening the time from a conceptual vision of a mechanical part to its realization as a prototype. The key is a collection of programs that form a process planning pipeline for the machining operations on a 3-axis milling machine, with which prototypes or molds for plastic injection molding can be fabricated in aluminum. At first, Séquin's shapes tended to break almost every module in this pipeline, but now they have led to some new and rather sophisticated tool-path planning algorithms.

Professor Séquin teaches courses in computer graphics and in computer-aided geometric design, modeling, and rapid prototyping. For the last 15 years, his research has been concerned with computer-aided design (CAD), first for laying out integrated circuits, then for visualizing buildings, and more recently for creating 3D mechanical and artistic shapes. With some of his most recent ventures, Séquin tries to demonstrate that the computer cannot only support a human designer in menial tasks, but can actually become an amplifier for the more creative aspects of design. When asked why he is focusing on abstract "Artistic Geometry," he replies: "These shapes have a timeless beauty. They are not produced by a temporary emotion or by the critique of some social ill. They are defined by the eternal laws of topology and symmetry."

To learn more about the Collins/Séquin collaboration, go to: <http://www.cs.berkeley.edu/~sequin/SCULPTS/collins.html>.

To see more of Séquin's artwork, see: <http://www.cs.berkeley.edu/~sequin/SCULPTS/sequin.html> or <http://www.cs.berkeley.edu/~sequin/BIO/exhibits.html>. ♦

Theoretical computer scientist Luca Trevisan joins faculty

EECS was pleased to welcome Luca Trevisan to the faculty as an assistant professor in CS last fall. Trevisan, who was born in Rome, Italy, was most recently a faculty member at Columbia in New York. He is happy to be at Berkeley, one of “the two meccas of theoretical computer science (MIT being the other one).”

He did his undergraduate and graduate studies in computer science at the University La Sapienza, advised by Pierluigi Crescenzi. His first American experience was at MIT, where he was a post-doc with the Theory of Computing Group. After that year, he was at DIMACS before joining the faculty at Columbia for two years.

“The year I spent at MIT was a wonderful, transforming experience. Apart from proving what is still my best result to date (about randomness extractors), during that year I learned a lot, made several friends I still keep in contact with, and developed a deep appreciation for a way of working and thinking that was quite different from the one I was used to in Italy.”

Trevisan loves Rome and New York, and was hesitant at first about coming to

Berkeley is “a special place for theoretical computer science.”

Berkeley. But, he said, “the best graduate students come here, much of my field has been created here, and the faculty already has five of the most respected people in my field. I think that the American academic environment is extremely good at making people realize their potential and rewarding them for what they do.”

After his year at MIT he wanted to continue working in the US. “I was very happy to accept an offer from Columbia and to move to New York. Even though Columbia had nobody in computational complexity (my specific field of interest),

the New York area is rich with universities and research labs, with people I was happy to work with.”

CS here at Berkeley encouraged him to apply, if he was interested. And, since Berkeley is, with MIT, “a special place for theoretical computer science,” he was delighted in the end to receive an offer.

Trevisan is excited about recent CS research. “Some of the most fascinating recent research in computer science has to do with the interplay between randomness and computation. On the one hand, a computational approach to the definition of randomness (pioneered at Berkeley in the 1980s) led to a formalization of the notion of pseudo-randomness, with fundamental applications to cryptography and to the analysis of probabilistic algorithms;

on the other hand, probabilistic methods are used more and more often in the design of algorithms and data structures, leading to solutions that are faster, cleaner, and easier to implement.”

“Some of the problems I worked on in the last two years are at the intersection of the theory of pseudo-randomness, the study of average-case complexity of problems, and the study of the power of probabilistic algorithms. This line of investigation uses error-correcting codes and other information-theoretic tools, as well as a lot of combinatorics. I have always been fascinated at the way theoretical computer science brings together different questions, methods, and tools in an unexpected way, and shows deep, new connections between them.”

In comparing his new environment with Rome and New York, he says, “I think it is more appropriate to compare Rome and New York with San Francisco, or the Bay Area in general. Rome is unique for its history; the most fascinating part of the city to me is the part of the city where most of the buildings date from the Baroque period. They are ‘alive.’ There may be a bar on the ground floor, and

people actually living in the other floors, and it is a really large neighborhood, where almost every building is arrestingly beautiful, but also integrated into the fabric of the city. There are also museums with amazing collections, although there is not much modern art to see.” Of course, he said, “I am very attached to Rome, just for the fact that it is my home town.”

“New York is an extremely exciting

“When a breakthrough occurs [in my research], it is something so intense and rewarding; that makes up for everything.”

place to be. Whatever one wants to do, it is possible. I found a number of southern Italian restaurants that were better than any restaurant I had been in Italy (but, to be fair, in Italy I was a student, so I was on a totally different budget). I miss the variety in people, in places, and in things to do that New York had to offer.”

“To me, the main appeal of San Francisco is its beauty. The view of the bay that one can get from the top of a steep road is remarkable, and the city is full of scenic places. It also has a beautiful beach. Then there is the Castro, a gay neighborhood with a very distinctive character and history, which I find somewhat more interesting than Chelsea in New York.”

Trevisan still can’t fathom anything better than doing CS research. “Doing research has been very exciting from the start. It can take a long time to resolve the problem one is working on at any given time, and the possibility of failing and having to give up is always present. But when a breakthrough occurs, it is something so intense and rewarding; that makes up for everything.”

Long-term goals for Trevisan include continuing as a professor. “I don’t think I want to ever be anything else than a professor (well, I guess I will be a retired professor at some point).” He also hopes to contribute substantially to his field, and to computer science at large, with his own work and with the work of his students.

continued on page 8



Luca Trevisan

Kannan Ramchandran joins EECS faculty

Kannan Ramchandran, who received his PhD from Columbia University in 1993, joined EECS as an associate professor. His fields of interest are image and video processing, multimedia communications, multiresolution signal processing and wavelet theory, communication and information theory, and unified algorithms for signal processing, communication and networking.



Kannan Ramchandran

Between 1993 and 1999, Ramchandran was an assistant professor in the ECE Department and the Coordinated Science Lab at the University of Illinois at Urbana-Champaign. He was a full-time Beckman Institute faculty member in the Image Formation and Processing Group.

Ramchandran has won several awards, among them the Eliahu I. Jury Award at Columbia for best doctoral thesis in signal processing, communications, and systems in 1993; the NSF Research Initiation Award in 1994; two IEEE Signal Processing Society best paper awards for 1996 and 1998 (his 1996 award was for a paper co-authored with Martin Vetterli, EECS professor at Berkeley); the Army Research Office Young Investigator Award in 1996; the NSF CAREER Award in 1997; and the ONR Young Investigator Award in 1997. He was selected as one of the two inaugural Henry Magnusky Scholars in the ECE Department at UI in 1999, chosen to recognize "excellent junior faculty" in the department, and was an Okawa Foundation Prize recipient in 2000 at Berkeley. Ramchandran also has five patents, with various co-researchers. A modified version of one of his patents on digital broadcast was adopted for the Digital Audio Broadcast standard in Europe. ♦

Jennifer Hwang is Intel Foundation Scholar

Jennifer Hwang, an undergraduate student in EECS, won the Intel Foundation's Women in Science and Engineering (WiSE) Scholarship earlier this year. Jennifer will graduate in May 2002, and currently has a GPA of 3.78. She graduated from Mt. Carmel High School in San Diego in June 1998 with a GPA of higher than all A's: 4.45. In addition to EECS, Jennifer has minored in business, taking classes like organizational behavior and financial accounting. Jennifer plans to pursue a master's, then work in design engineering. Her area of interest is wireless communications.

Other honors Jennifer has won include membership in Tau Beta Pi, being a UC Berkeley Regents' Scholar, a National Merit Scholar, a Ford Scholar, and belonging to the Society of Women Engineers.

Jennifer enjoys spending time with family and friends. Her priorities, she said, "are my family, friends, and God." She is finding her first year living off campus interesting, and is learning how to cook.

Sheila Humphreys, of the Center for Undergraduate Matters in EECS, asked Jennifer to "Please accept my heartiest congratulations on this honor—the

competition was truly fierce this cycle, and you are to be congratulated." Jennifer joins three other EECS Intel WiSE Scholarship recipients: Anita Villanueva, Carol Lam, and Jesse Saveriano. Lam and Villanueva will graduate this May.

The scholarship will begin with the fall 2001 and will provide a cash award for 2001-02 tuition, fees, and book allowance, carrying through to graduation from Cal.

This scholarship is renewable annually through Jennifer's scheduled graduation date, as long as she continues to meet the eligibility requirements. Jennifer plans to graduate in

May 2002. The scholarship may be renewed through your fifth year of undergraduate study here at UC Berkeley.

As an Intel Scholar, Jennifer is guaranteed an offer of an internship with Intel Corporation each summer, provided her academic and intern work performance remain satisfactory.

In addition to financial support, the WiSE Award offers the support and advice of an Intel Mentor. The mentors are selected from among the corporation's scientists, technologists, and engineers. ♦



Jennifer Hwang

In Memory of William Hewlett

Ned Birdsall, professor in EECS, reminisced about William Hewlett when he died earlier this year.

"Some 30 years ago, the Departmental Colloquium was held in 277 Cory, with a wide range of speakers. The room would fill for talks by many outstanding science and engineering leaders.

"It was a real pleasure for me to invite and introduce the likes of Glenn Seaborg (with a talk on energy concerns; soon after he returned from Washington DC as head of the AEC under three presidents); Edward Teller (who gave a detailed account of a very serious East Coast electrical blackout—and answered many questions

on his views of energy policies); and Charles Townes (who was into black holes then, and still is, I think).

"Bill Hewlett came and presented his views on the future of the electronics industry, the expansion worldwide, and the social and economic implications for developed countries and developing countries. This was very insightful, and challenged us to look ahead as well. We probably should have had him back later, to go over the implications he foresaw in the early 1970s.

"Different times. Very interesting people." —Ned Birdsall ♦

Faculty Awards and Honors

Leon Chua was the year 2000 winner of IEEE's prestigious Neural Networks Pioneer Award. The award was presented for "the overall quality and significance of his outstanding technical contributions to the field."

This award is the most prestigious award given annually by the IEEE Neural Network Council. Some recent winners include Teuvo Kohonen, Stephen Grossberg, Bernard Widrow, Shun-Ichi Amari, Paul Werbos, Michael Arbib, John Hopfield, and Geofred Hinton. All of their people are widely recognized as superstars in the neural networks community. Chua received the award at the 2000 International Joint Conference on Neural Networks in Como, Italy, July 24-27, 2000.

Chenming Hu, Jeffrey Bokor, and Tsu-Jae King received special recognition from the director of DARPA at last year's DARPATech 2000. The Device Technology Group of UC Berkeley's EECS, Chenming Hu, Jeffrey Bokor, and Tsu-Jae King, received recognition from Dr.



Tsu-Jae King

Fernandez for the "Most Significant Technical Accomplishment." The award was for their research efforts to build deeply scaled transistors, specifically the 18nm FETs. Chenming Hu accepted the award. DARPA received many compliments, not only for Hu's research efforts, but also for his acceptance speech. DARPATech is a technical forum where DARPA program managers present programs to the entire DoD and DARPA research community.

Jitendra Malik was honored with becoming the Miller Professor, to be served for one semester this year.

The National Academy of Engineering elected 74 members and eight foreign associates to its membership this year. **Shankar Sastry**, chair of EECS, and **Albert P. Pisano**, FANUC Chair of Mechanical Systems in the ME Department, and director, Electronics

Research Laboratory in EECS, were elected to NAE earlier this year. Sastry was elected to the Academy "For pioneering contributions to the design of hybrid and embedded systems." Pisano was elected "For contributions to the design, fabrication, commercialization, and education aspects of microelectromechanical systems (MEMS)."

Alan Jay Smith was named ACM Fellow, "For his highly cited paper on cache memories, for his contributions to performance measurement, and for his leadership in professional society activities." The ACM Fellows Program recognizes outstanding ACM members for their achievements in computer science and information technology and for their significant contributions to ACM's mission. The ACM Fellows serve as distinguished colleagues to whom the ACM and its members look for guidance and leadership as the world of information technology evolves. ♦



Alan Jay Smith

Trevisan...

continued from page 6

"In ten or twenty years, I would like to be able to point at some important piece of knowledge in my field, and see that it would have not been there without my students and me."

Outside work, Trevisan has an "amateurish interest in the philosophy of science and the history of mathematics." He enjoys, "without being an expert," good wine and fine food, and he is very fond of movies, both European and American ("I am not very knowledgeable about Asian cinema.") He also has some interest in queer studies and feminist theory, especially from a historical perspective or when they are used as an angle to study movies and media in general. "I cannot see a direct connection between these interests and my work, except that perhaps reading and thinking about the philosophy of science leads me to think about the intuition and 'taste' that I use to decide where to direct my research, and possibly

to question my assumptions and to try more radical approaches."

Trevisan's parents and extended family still live in Italy, but he met his boyfriend in San Francisco after he came to Berkeley.

"Reading and thinking about the philosophy of science leads me to think about the intuition and 'taste' that I use to decide where to direct my research."

Trevisan has received many awards, among them the Oberwolfach Prize and a Sloan Research Fellowship. He received the STOC best student paper award in 1997. EECS is excited to have Luca Trevisan on its faculty. ♦

Congratulations to Monica Lin for being selected to receive a UC Berkeley Outstanding Staff Award.



Monica is being honored for her work in promoting and organizing undergraduate research and for creating and implementing mentoring programs for

women students in EECS. Thank you, Monica, for your excellent efforts on these important projects. ♦

Two EECS PhD graduates recruit at Howard

The UC Berkeley graduate division and the Black Graduate Engineering and Science Student Association (BGESS) supported a recruiting trip to Howard University for two EECS doctoral graduates, John Davis II and Adrian Isles.

Davis and Isles both completed their undergraduate work at Howard, Davis in 1991 and Isles in 1992. They both completed their doctorates here at Berkeley in EECS in 2000. Although Davis and Isles were both in the EE Department at Howard, their research at UC Berkeley was oriented toward computer science.



John Davis II

African American students last year; two of us were graduates of Howard University. We feel strongly that Howard has an important role to play in increasing the number of underrepresented students enrolled in EECS at UC Berkeley.

Davis and Isles met with students in the department at Howard who were interested in going to graduate school. "Our graduate school

experience at Berkeley has been both intellectually challenging and enriching. We hope that some of your students may find useful what we have to say about Berkeley and graduate school in general."

Davis and Isles also met with faculty and graduate students who had research interests similar to their own. They also spent time learning about research at Howard, both in their particular areas and in general.

Davis' research was on the formal semantics of concurrent systems at EECS. He currently works at the IBM T.J. Watson Research Center on distributed directory services. Isles focused on formal verification techniques for hardware systems. He is currently an R&D engineer at Averant, Inc., a small EDA start-up in Sunnyvale, California. ♦

"We feel strongly that Howard has an important role to play in increasing the number of underrepresented students enrolled in EECS at UC Berkeley."

The goal of the trip was to try to recruit students to Berkeley's EECS doctoral program. "To our knowledge," Isles said, "the university conferred only three electrical engineering doctoral degrees to

George Mueller...

continued from page 4

about the shuttle, I would say that like most things in life, humans make mistakes, machines hardly ever do. We didn't lose anybody in the Gemini; we did lose people in the shuttle. That doesn't mean, however, that the shuttle isn't safe."

Questions from his audience: Would it ever be possible to take all nuclear bombs and make them into nuclear power plants? Or send them to the sun?

"Anything is possible."

Doesn't it seem infeasible to live on Mars or the moon in glass bubbles?

"We could put an atmosphere around Mars or the moon that could last for 100 years."

Dr. Mueller is the author of "An Integrated Program of Space Utilization and Exploration," which has been the guiding document for NASA following the Apollo program. He is the recipient of many prestigious awards, including the National Medal of Science and three NASA Distinguished Service Medals. In 1997 he won the Space Humanitarian Award, which recognizes the outstanding contributions Mueller has made to the world space community and to advancing humanity's involvement in space. ♦

Microsoft awards

Microsoft announced a women's scholarship this year just for Berkeley students. It is a full tuition scholarship. See more about it at: http://www.microsoft.com/college/womens_scholarship.htm.

Stephanie Lonn and Caroline Rockey of Microsoft also notified EECS that they had approved a grant for the EECS program's students. Rockey said, "We would like to donate \$4,000 dollars to help for tutoring sessions between faculty and honors students and for faculty and honor students dinners."

The EECS Department had responded to Microsoft's suggestion to submit a request for developing and sustaining undergraduate student programming. The proposal included programs designed to support and develop underrepresented students, as well as the undergraduate population as a whole. The proposal, compiled by Susanne Kauer, was designed to allow Microsoft flexibility in choosing programs that appeal to their interests. ♦

Student Awards

Two of EECS' undergraduate students won honorable mentions from CRA. CRA's Outstanding Undergraduate Award for 2001 Honorable Mentions were **Billy Chen** and **Tal Garfinkel**. Chen and Garfinkel were among 26 students everywhere from Harvard to Stanford. Outstanding Undergraduate Award winners for 2001 were Lisa Anthony, Drexel University and Kevin Zatloukal, University of Washington. Runners up were Litza Stark, University of Delaware and Russell Cox, Harvard.

Two Berkeley undergraduates were chosen for summer research awards by the Computer Research Association's Distributed Mentor Program: **Emily Chung**, who will be matched with a female faculty member at University of Washington, and **Wenjie Stella Wang**, who will travel to Carnegie Mellon.

Three undergraduate students, **Allen Chen**, **Olakanmi Kayode Oluwole**, and **Wing Zin Low**, will be awarded the Connexant scholarship. ♦

CITRIS will be fourth California Institute for Science and Innovation

Gray Davis proposed \$33 million for the first of three payments in initial funding for CITRIS, the Center for Information Technology Research in the Interest of Society, in January. CITRIS will be largely

CITRIS will “Bring the power of information to bear on such societal needs as transportation, education, emergency preparedness and health care. The center will be a model partnership between state and industry to address these issues.”

at Berkeley, with UC Davis, UC Santa Cruz, and UC Merced as partners. The project will “bring the power of information to bear on such societal needs as transportation, education, emergency preparedness and health care. The center will

be a model partnership between state and industry to address these issues.”

Jim Demmel, CS professor, noted that, “to our great pleasure, Governor Davis singled out our CITRIS proposal to be a fourth California Institute for Science and Innovation. This is very good news indeed.”

Monica Lin and Sheila Humphreys, of the EECS Center for Undergraduate Matters, invited Dean Rich Newton and Jim Demmel to give a lunchtime talk to the EECS undergraduate community about CITRIS on April 9. “We think it would be a great opportunity for our undergraduates to learn about the goals of CITRIS and to gain a heightened awareness of the societal impact of EECS research,” Lin said.

Lin and Bren Ahearn, undergraduate research opportunities program coordinator, plan to organize an undergraduate research poster session on April 17 highlighting CITRIS by having the poster presenters focus on the ways in which their projects can be viewed in the interest of society. The session will be held from 12-3 pm on April 17 in the Wozniak Lounge of Soda Hall and is open to the entire engineering community. ♦

Lotfi Zadeh wins more honors

Lotfi Zadeh, the father of fuzzy logic, received two more honorary doctorates, one in June from the University of Hamburg, and one in May from the University of Central Florida. These two awards make 13 honorary doctorates that Professor Zadeh has received during his long career in fuzzy logic. Zadeh gave a lecture at UCF titled, “Toward the enlargement of the role of natural languages in computation, decision, and control.” He received the award at UCF during commencement ceremonies.

Fuzzy logic deals with uncertainty and the concept of partial truths that lie between the poles of “completely true” and “completely false.” Fuzzy logic has been widely applied in practically all fields of science and engineering, as well as in linguistics, psychology, economics, and in the social sciences and humanities.

Applications range from stock investing to an automatic gear-shift system. The US Army Research Office cites as one of its ten major achievements the fact that it supported Zadeh’s initial work on fuzzy logic.

Lotfi Zadeh has also received ACM’s Allen Newell Award, the highest achievement award for contributions to AI. The Allen Newell Award is presented to an individual selected for career contributions that have breadth within computer science, or that bridge computer science and other disciplines. This endowed award is supported by the American Association for Artificial Intelligence, and by individual contributions. Zadeh won this award “For his seminal contributions to the theory and applications of fuzzy sets and fuzzy logic in basic sciences, information processing, decision and control.” ♦

First UC Berkeley-Stanford CS Day held

Saturday, March 3 marked a new era of collaboration between Stanford’s CS Department and UC Berkeley’s CS Division, with the first Berkeley-Stanford CS Day. Berkeley’s Christos Papadimitriou called it a “A celebration of these two great CS groups, an important and fun event, and a tradition in the making.”

Stanford’s coordinators said it “celebrates the geographic proximity and intellectual affinity of two of the top computer science groups in the world, their glorious past and continuing collaboration, and cross-fertilization (and friendly rivalry).”

All talks and panels took place in Sibley Auditorium of the Bechtel Engineering Center, on the Berkeley campus. A cocktail party was held in the Wozniak Lounge, 430 Soda Hall (home of CS). Stanford-Berkeley CS Day was open to Stanford and Berkeley faculty and graduate students.

EECS’ associate chair, Christos Papadimitriou of CS, said of the day, “The Berkeley-Stanford Day was fantastic, both stimulating and fun, intense and relaxing. The talks and panels were great, and there was much interaction, and plenty of friendship and good will all around. In any event, I had a great time. Something well worth continuing, (in California we call it a tradition after the second year, right?)”

It was in the fall 2000 that the two departments agreed to offer joint graduate courses (the first successful example is a two-term sequence in graphics and vision taught by Patrick Hanrahan from Stanford and Jitendra Malik from Berkeley, and to encourage participation in the qualifying exam and dissertation committees, as well as the graduate student advising process, by faculty from the other group. The annual Berkeley-Stanford CS Day is the third prong of this alliance.

There were panel discussions between Stanford and Berkeley professors during the day, with a noon poster session by Stanford and Berkeley grad students. ♦

NSF announces first awards in new Information Technology Research Initiative

Last fall, NSF released the names of the winners of the generous grants for IT research. EECS was one of the winners. The new \$90 million Information Technology Research (ITR) initiative “will spur fundamental research and innovative applications of IT, and is a step toward

“Our strategy to support long-term, high-risk research responds to a challenge from the President’s Information Technology Advisory Committee (PITAC), which called for increased federal investment to maintain the US lead in this important sector of the global economy.”

—Rita Colwell

building on US leadership in this area of growing importance to the economy.”

“Selected from over 1400 proposals, the newly funded activities will promote IT-driven science and engineering. Included are 62 large projects that will average \$1 million per year for three to five years, involving 41 institutions in 22 states. Another 148 smaller projects will each total \$500,000 or less for up to three years, involving 81 institutions in 32 states.

“These projects represent major innovations in information technology, rather than routine applications of existing technology,” said NSF director Rita Colwell. “Our strategy to support long-term, high-risk research responds to a challenge from the President’s Information Technology Advisory Committee (PITAC), which

called for increased federal investment to maintain the US lead in this important sector of the global economy.” (CS professor Susan Graham was a member of PITAC.)

“ITR emphasizes the subject areas of software; scalable information infrastructure; information management; revolutionary computing; human-computer interfaces; advanced computational science; education and workforce; and social or economic implications of IT. The program’s main goals are to augment the nation’s IT knowledge base and strengthen the IT workforce.

“Bridging the ‘digital divide’ is a key goal of the ITR emphasis on societal implications. Projects include studies by Michigan State University and CUNY to identify factors that influence the effectiveness of IT in the classrooms and homes of disadvantaged children. UC Irvine will study the adoption of electronic commerce worldwide, comparing data from technologically advanced countries with newly industrialized and developing nations.”

“The response has been overwhelming,” said Ruzena Bajcsy, who heads the NSF Directorate for Computer and Information Science and Engineering (CISE). “Because fund requests by proposers exceeded \$3.2 billion, there were many more worthwhile projects proposed than we are able to support. The volume and quality of proposals are strong evidence justifying our desire to triple NSF’s ITR budget over the next five years.”

ITR’s Scalable Information Infrastructure emphasizes innovation in network-based access to distributed data. One example is a collaboration in which UC Berkeley, Mills College of Oakland, California, and private industry are partnering to construct a large-scale prototype of error-sensing software that would automatically repair data.

Other projects funded include:

A University of Pittsburgh human-

computer interface effort that will use advanced vision technology to develop personal robotic assistants that could help the elderly live more independently.

University of Colorado computer scientists and a plant geneticist who will design interfaces to speed the analysis of viruses, bacteria and other genomes.

The California Institute of Technology will establish an Institute for Quantum Information to experiment with algorithms that process data via quantum physical processes—a revolutionary method that could eventually make even the fastest silicon chips obsolete.

A five-year, \$7.2 million grant to Duke University for research into “bioinformatics,” which applies IT to solve such riddles as how protein structure determines the function of an enzyme.

The University of Florida, in a partnership that includes the University of Chicago, will receive a large award—\$11.8 million over five years—to let computer scientists and physicists collaborate in developing tools to analyze massive amounts of data from particle colliders and astronomical observatories.

Northeastern University and Boston University will collaborate in an education and workforce project to form a virtual community of African American scholars in IT. Students, professionals and educators will interact on-line via this “Human Capital Development” project, seeking to increase the representation of African Americans in IT.

The foundation’s ITR budget request for fiscal 2001 is \$190 million of additional funding, although the actual appropriation is yet to be determined by Congress.

For a complete list of ITR awards and project abstracts, see: <http://www.itr.nsf.gov>.

For the PITAC report, see <http://www.ccic.gov>. ♦

Carlo Séquin and his students, Sara McMains, Jordan Smith, and Jianlin Wang, won the Best Paper Award for their paper, “Layered Manufacturing of Thin-Walled Parts,” in this year’s ASME Technical Conference on Design Engineering. ♦

BFOIT continues grant to WiSE program

Jesse Reynolds, executive director of the Berkeley Foundation for Opportunities in Information Technology, announced continuing support for the women students residing in the WiSE Residence Program at UC Berkeley.

BFOIT is a project of the Tides Center in San Francisco, and “aims to make the student body composition of information technology departments of California post-secondary schools more reflective of the demographics of the state. The organization’s long-term goal is to identify, nurture, and support potential role models from underrepresented groups, seeding the community with successful computer scientists, so that eventually minority children feel that it is as normal and viable to be a computer scientist as it is to be a school teacher. The departments include computer science, computer engineering, electrical engineering, and information science. This goal is achieved by providing resources for historically

underrepresented minorities and women from middle school to college, and helping them choose from a spectrum of colleges and universities.” The Tides Center is a nonprofit organization dedicated to supporting people working for social change.

“By assisting the women who choose to live in a community of science and engineering scholars, BFOIT is supporting the Berkeley campus in an important way.”

Sheila Humphreys, director of EECS’ Center for Undergraduate Matters said, “We are very proud of the WiSE Residence Program, initiated and supported by a broad coalition of staff on campus work-

ing to achieve greater representation of women in science and engineering fields. BFOIT’s contribution of financial support to individual women, to make up the difference between the cost of this dorm and the ‘usual’ dorm fees, is a very important facilitator. By assisting the women who choose to live in a community of science and engineering scholars, BFOIT is supporting the Berkeley campus in an important way.”

Humphreys thanked Dr. Paula Hawthorn, and Jesse Reynolds of BFOIT, “most sincerely for [their] leadership and commitment. Please allow me to express personal appreciation, on behalf of EECS ‘Excellence and Diversity Student Programs.’ Support for women in the WiSE Residence Program is a very positive element. We thank you and Dr. Hawthorn very much for this critical aid to women aspiring to careers in science and engineering.” ♦

New IBM research award for undergraduate women

IBM came to EECS in February with the intent of drumming up interest in the “Summer Undergraduate Research Award for Women in Computer Science,” a first-

“The quality of the students in EECS, and UCB engineering in general, is outstanding, and it should make our task of choosing a winner quite difficult.”

time research award from a lab such as Almaden. The EECS Center for Undergraduate Affairs thanked Michael Sampogna and William Tetzlaff of IBM, saying “That you have taken this bold step

in joining the university to encourage women to prepare for and feel motivated for graduate school is absolutely commendable and gratifying.”

The new IBM research award for undergraduate women carries not only salary, but also a \$2500 stipend. The winner of the award this year was Jasmine Novak (L&S CS).

Michael Sampogna, of IBM, said, “IBM Research chose EECS to pilot this program because of the established infrastructure for administering programs such as these and our mutual goals. We clearly needed an experienced partner to work with. Secondly and most importantly, the quality of the students in EECS, and UCB engineering in general, is outstanding and it should make our task of choosing a winner quite difficult.” ♦

EECS editor wins UC essay award

Cassie Dunn, one of the editors for this newsletter, recently won a campus prize for a 500-word essay entitled “Dust Settles,” about antique books she received when her grandfather died. Cassie won second place and \$800. The annual Lili Fabilli and Eric Hoffer Essay Prize, which



is open to students, faculty, and staff at UC Berkeley, began more than 20 years ago after the philosopher-author Hoffer donated money to endow the prize. Hoffer stated,

“The sole criteria for the prizes shall

be originality of thought and excellence in writing.” In addition to being a full-time editor in EECS, Cassie is a full-time, second-year MFA student in creative writing at Mills College. ♦

Rapid prototyping lab opens in Etcheverry Hall

Last fall a ribbon-cutting ceremony for the new “CyberCut—CyberBuild” Rapid Prototyping Lab near 2115 Etcheverry Hall took place, with Paul Wright, professor in ME, and Carlo Séquin, professor in CS, presiding over it. Séquin and Wright were able to refurbish the lab with a donation from Ford Motor Company.

New space was created from dead hallway space and some space was resurrected from small storage rooms. The project cost

about \$100,000. The lab houses, among other facilities, a Fused Deposition Modeling Machine from Stratasy and a 3D printer from Z-corporation.

Samples of parts that Séquin made on these machines can be found at <http://www.cs.berkeley.edu/~sequin/BIO/sculptures.html>. ♦

New course offered: research seminar in computational biology

Richard Karp is currently teaching a new course in EECS. This is a seminar-style course on current research topics in computational biology, intended for students with an active interest in the subject. Possible subject areas for the class include the analysis of gene expression and regulatory pathways, comparative genomics, phylogeny, sequencing strategies, protein motif discovery, and protein classification. ♦

ERL memoranda

The following reports are recent publications of the UC Berkeley Electronics Research Laboratory. Copies may be ordered from Jeff Wilkinson, ERL Publications, 253 Cory Hall, UC Berkeley, Berkeley, CA 94720-1774. Prices are indicated. You may order up to six reports at one time. For each order, please include \$5.00 to cover postage and handling. Send a check or money order in US currency payable to the Regents of the University of California. Information can also be found at: <http://www.eecs.berkeley.edu/~erl/publication.html>.

M00/44: L. Schenato, W.-C. Wu, L. El Ghaoui, and K. S. J. Pister, *Process Variation Analysis for MEMS Design*, August 2000, \$1.60.

M00/45: J. P. Hespanha, M. Prandini, and S. S. Sastry, *Probabilistic Pursuit-Evasion Games: A One-Step Nash Approach*, September 2000, \$2.40.

M00/46: T. J. Koo, *Hybrid System Design and Embedded Controller Synthesis for Multi-Modal Control*, August 2000, \$11.80.

M00/47: J. S. Davis, *Order and Containment in Concurrent System Design*, September 2000, \$11.50.

M00/48: W. Liu, X. Jin, K. M. Kao, and C. Hu, *BSIM 4.1.0 MOSFET Model-User's Manual*, September 2000, \$17.20.

M00/49: J.-W. Lee, *Spatially Resolved Optical Emission Spectroscopy for Plasma Etching*, September 2000, \$7.40.

M00/50: J. Zhang, *Dynamical Systems Revisited: Hybrid Systems with Zend Executions*, December 1999, \$4.30.

M00/51: M. Haenggi and L. O. Chua, *Simulation of RTD-based CNN Cells*, October 2000, \$1.50.

M00/52: Y. Xia, H.-S. W. So, R. H.-J. La, V. Anantharam, S. McCanne, D. Tse, J. Walrand, and P. Varaiya, *The Framework of User-Centric Optimization in Web-based Applications*, January 2000, \$3.20.

M00/53: Y. Xia, H.-S. W. So, R. H.-J. La, V. Anantharam, S. McCanne, D. Tse, J. Walrand, and P. Varaiya, *The WebTP Architecture and Algorithms*, January 2000, \$4.50.

M00/54: Y. Xia and D. Tse, *Survey of Single Machine Scheduling with Application to Web Object Transmission*, July 2000, \$4.10.

M00/55: M. Graham, *A Ubiquitous Pollutant*, October 2000, \$1.00.

M00/56: R. Anand, K. Ramchandran, and S. Shakkottai, *Improvement of TCP Performance over Heterogenous Networks Using Continuous Error Detection-based Link-level Error Recovery*, August 2000, \$1.30.

M00/57: Y. Xia and D. Tse, *Inference of Link Delay through Measurement Redundancy in Communication Networks*, November 2000, \$3.60.

M00/58: K. Takechi and M. A. Lieberman, *Effect of Ion Energy on Photoresist Etching in an Inductively Coupled Large Area Plasma Source (LAPS)*, November 2000, \$1.40.

M00/59: L. El Ghaoui, F. Oustry, and M. Oks, *Worst-Case Value-at-Risk and Robust Asset Allocation: A Semidefinite Programming Approach*, December 2000, \$4.20.

M00/60: L. El Ghaoui, M. Oks, and A. Varma, *Estimation of Transition Probability Matrices in Credit Risk Analysis*, July 2000, \$2.80.

M00/61: L. Voros, *CMOS Baseline Process in the UC Berkeley Microfabrication Laboratory Report II*, December 2000, \$5.00.

M00/62: J. Lim, *Two-Component Plasma Conduction*, December 2000, \$1.60.

M00/63: S. H. Lee, *Extreme Ultraviolet (EUV) Holographic Metrology for Lithography Applications*, December 2000, \$15.80.

M00/64: D. Markovick, *Analysis and Design of Low-Energy Clocked Storage Elements*, December 2000, \$18.20.

M00/65: G. M. Desjardins, *Adaptive Digital Signal Processing Algorithms for Image-Rejection Mixer Self-Calibration*, August 2000, \$6.80.

M00/66: W. Gosti, S. P. Khatri, and A. L. Sangiovanni-Vincentelli, *Addressing the Timing Closure Problem by Integrating Logic Optimization and Placement*, December 2000, \$1.20.

M00/67: W. Gosti, *Layout Aware Synthesis*, December 2000, \$14.20.

M01/1: K. Takechi and M. A. Lieberman, *Effect of Ar Addition to an O₂ Plasma in a Large Area Plasma Source: O₂/Ar Mixture Plasma Modeling and Photoresist Etching*, January 2001, \$2.80.

M01/2: M. Gao, *Multi-Valued Multi-level Logic Synthesis*, December 2000, \$7.60.

M01/3: S. S. Pradhan, R. Puri, and K. Ramchandran, *(n,k) Source-Channel Erasure Codes: Can Parity Bits Also Refine Quality?* January 2001, \$1.60.

M01/4: T. Locsei, *Microwave Cavity Perturbation Techniques to Measure Electron Density in Unstable Plasmas*, January 2001, \$2.80.

M01/5: C. Yun, *Semiconductor Wafer Bonding and Ion-Cut Layer Transfer*, December 2000, \$2.80.

M01/6: S. Tripakis, *Report on the Software Architecture of PATH's Automated Vehicle Control*, January 2001, \$2.00.

M01/7: A. Puri and S. Tripakis, *Algorithms for Routing with Multiple Constraints*, January 2001, \$1.60.

M01/8: S. Tripakis, *Distributed Observability of Regular Languages is Undecidable*, February 2001, \$1.00.

M01/9: C. Fong, *Discrete-Time Dataflow Models for Visual Stimulation in Ptolemy II*, December 2000, \$5.00.

M01/10: C. S. Sharp, *A Vision System for Landing an Unmanned Aerial Vehicle*, December 2000, \$6.60.

CS publications

The Computer Science Division is pleased to announce this series of technical reports. The following are titles and abstracts of recent work in our division. Our reports are now published once a year, in July. If you would like your name to be included on our mailing list, please fill out the CS technical reports order form and return it to us. If you wish to order any of the reports listed here, they are available for downloading from <http://sunsite.berkeley.edu/NCSTR>. Please use that website whenever possible. If you cannot obtain the reports you want electronically, then circle the numbers of the publications you want and return the list to us with the order form and your check or money order payable to the Regents of the University of California. PREPAYMENT IS REQUIRED FOR ALL MATERIALS. CODs or purchase orders will NOT be accepted. Any order received without payment will be returned. Members of the EECS/ERL Industrial Liaison Program may order reports free of charge. Please check the box marked "ILP member" on the order form. We regret that we cannot process foreign orders unless paid by an international money order or made payable through a United States bank.

CSD-00-1109: J. Forbes and D. Andre, *Practical Reinforcement Learning in Continuous Domains*, October 2000, \$6.00.

CSD-00-1110: V. Raman and J. M. Hellerstein, *An Interactive Framework for Data Cleaning*, September 2000, \$8.00.

CSD-00-1111: I. Mavroidis, *The IRAM Network Interface*, September 2000, \$10.00.

CSD-00-1112: B. Y. Zhao and A. D. Joseph, *The XSet XML Search Engine and Xbench XML Query Benchmark*, September 2000, \$8.00.

CSD-00-1113: Z. Su and A. Aiken, *Entailment with Conditional Equality Constraints*, January 2001, \$8.00.

CSD-00-1114: Not available.

CSD-00-1115: D. E. Gay and A. Aiken, *Language Support and Compilation Techniques for Regions*, December 2000, \$8.00.

CSD-00-1116: Not available.

CSD-00-1117: Not available.

CSD-00-1118: N. Treuhaft, *Enhancing Graduated Declustering for Better Performance Availability on Clusters*, December 2000, \$8.00.

CSD-00-1119: S. A. McMains, *Geometric Algorithms and Data Representation for Solid Freeform Fabrication*, January 2001, \$31.00.

CSD-00-1120: Not available.

CSD-00-1121: T. A. Henzinger, B. Horowitz, and C. M. Kirsch, *Giotto: A Time-Triggered Language for Embedded Programming*, January 2001, \$7.00.

CSD-00-1122: N. T. Slingerland and A. J. Smith, *Design and Characterization of the Berkeley Multimedia Workload*, December 2000, \$11.00.

CSD-00-1123: N. T. Slingerland and A. J. Smith, *Cache Performance for Multimedia Applications*, December 2000, \$9.00.

CSD-00-1124: N. T. Slingerland and A. J. Smith, *Multimedia Instruction Sets for General Purpose Microprocessors: A Survey*, December 2000, \$9.00.

CSD-00-1125: N. T. Slingerland and A. J. Smith, *Measuring the Performance of Multimedia Instruction Sets*, December 2000, \$14.00.

CSD-00-1126: E. Caspi, *Empirical Study of Opportunities for Bit-level Specialization in Word-based Programs*, February 2001, \$21.00.

CSD-01-1127: S. Agarwal, R. H. Katz, and A. D. Joseph, *Reducing the Energy Consumption of Group-driven Ad-hoc Wireless Communication*, January 2001, \$12.00.

CSD-01-1128: Not available.

CSD-01-1129: Not available.

CSD-01-1130: D. Messerschmitt and C. Szyperski, *Industrial and Economic Properties of Software: Technology, Processes, and Value*, January 2001, \$12.00.

CSD-01-1131: Not available.

CSD-01-1132: A. B. Brown, *Towards Availability and Maintainability Benchmarks: A Case Study of Software RAID Systems*, January 2001, \$21.00.

CSD-01-1133: Not available.

CSD-01-1134: Not available.

CSD-01-1135: Not available.

CSD-01-1136: Not available.

CSD-01-1137: C. M. Kirsch, *The Embedded Machine*, March 2001, \$7.00.

CS technical reports order form

Name: _____

Address: _____

City/State/Zip: _____

Country: _____

Telephone/Fax: _____

Email/URL: _____

Amount enclosed: _____

Please check here if any change in address

Please check here if ILP member

Please check here to be added to our mailing list

RETURN THIS FORM TO:

**Victor Faessel
Industrial Relations
205 Cory Hall # 1770
University of California
Berkeley, CA 94720-1770
(510) 643-6687**



T001

University of California, Berkeley
EECS/ERL Industrial Relations Office
201 Cory Hall # 1770
Berkeley, California 94720-1770

Nonprofit organization
US postage PAID
University of California

EECS/ERL NEWS is published twice a year by the Industrial Relations Office of the Department of Electrical Engineering and Computer Sciences and Electronics Research Laboratory of the University of California, Berkeley.

S. SHANKAR SASTRY

Chair, Electrical Engineering and Computer Sciences Department

CHRISTOS PAPADIMITRIOU

Associate Chair, Computer Sciences

JAN M. RABAEY

Associate Chair, Electrical Engineering

ALBERT P. PISANO

Director, Electronics Research Laboratory

ALBERTO SANGIOVANNI-VINCENTELLI

Director, Industrial Relations

DANA DEE LITTLE

Coordinator, Industrial Relations

JANIE ELLISON

Senior Editor

CASSIE DUNN

Editor

Photo credits: Peg Skorpinski, Lyle Beardsley, and files

How to reach the Industrial Relations Office:

indrelations@eecs.berkeley.edu

http://www.eecs.berkeley.edu/IRO

phone: (510) 643-6691

fax: (510) 643-6694

Inquiries may be addressed to:

Senior Editor

EECS/ERL Industrial Relations

203 Cory Hall #1770

University of California

Berkeley, CA 94720-1770

janie@eecs.berkeley.edu

http://www.eecs.berkeley.edu/~janie

Statement of Nondiscrimination

In accordance with applicable federal laws and University policy, the University of California does not discriminate in any of its policies, procedures, or practices on the basis of race, color, national origin, religion, sex, sexual orientation, handicap, age, veteran status, medical condition (as defined in Section 12926 of the California Government Code), on the basis of citizenship, within the limits imposed by law or University policy. In conformance with applicable law and University policy, the University of California is an affirmative action/equal opportunity employer.

Student related inquiries may be directed towards the following people: sex discrimination and sexual harassment - Carmen McKines, Title IX Compliance Officer, (510) 643-7895; disability discrimination and access - Ward Newmeyer, A.D.A./504 Compliance Officer, (510) 643-5116 (voice or TTY/TTD); age discrimination - Alan T. Kolling, Age Discrimination Act Coordinator, (510) 642-8471. Other inquiries may be directed to the Academic Compliance Office, 200 California Hall #1500, (510) 642-1991.