UC BERKELEY
ELECTRICAL ENGINEERING AND COMPUTER SCIENCES
ELECTRONICS RESEARCH LABORATORY

NEWS

FALL 2000

Eric Brewer enables President Clinton's first Internet address to the nation

June 24, 2000 is a memorable date in history, and Eric Brewer, CS professor in EECS, helped Clinton by building the search engine for the new portal in his (Brewer's) new nonprofit organization, The Federal Search Foundation. Brewer set the foundation up explicitly for this purpose. "The goal," he said, "is to index all of the online government documents, to move new collections online, and to increase public access to government information. This is a historic event and I was stunned by how quickly the Administration and the GSA were able to move."

To read all about this, and to read the actual Internet address given by President Clinton, go to Washington: *http://www.whitehouse.gov/WH/New/html/internet2000-06-24.html*. Also, FirstGov, the US government website, can be seen at: *www.firstgov.gov*.

In 1996 Brewer, with former EECS grad student Paul Gauthier, co-founded Inktomi Corporation (*www.inktomi.com*), now one of the top Internet companies in the world. Inktomi builds search engines, commerce platforms, and products that speed up the Internet. Customers include Microsoft, AOL, and AT&T to name but a few. Developing scalable software designed for the world's largest Internet infrastructure and media companies, Inktomi reported its second profitable quarter in July—a 202 percent gain over revenues for the comparable quarter in

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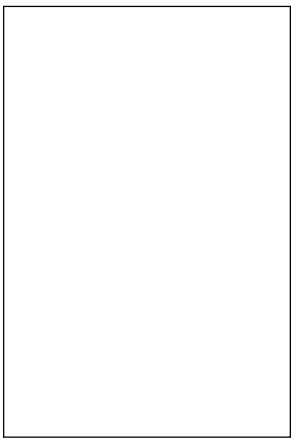
EECS professors rule

Well, if not rule, then let's say, modestly, lead. Our last newsletter announced the move of Paul Gray from dean of the College of Engineering to the Chancellor's Office as the new Executive Vice Chancellor and Provost. Now, Chancellor Berdahl has recommended the appointment of Richard Newton, EECS' current chair, as the new dean of the College of Engineering, effective July 1, 2000.

Newton said, "I have been given the great honor, and even greater responsibility, of taking on the position of dean following Paul's move to California Hall. I have mixed feelings about this—on the one hand, I have only had a year to get a number of important new programs established in the department, and after one year I felt we were just finding our 'rhythm.' On the other hand, I was presented with a situation in which I could not, in good conscience, decline.

"Until a new chair is formally appointed, I am pleased to tell you that Christos Papadimitriou [currently EECS' associate chair] has agreed to serve as acting chair of the department, and that Jan Rabaey has agreed to serve as acting associate chair. These appointments will continue until EVCP Gray formally approves the appointment of a new chair. Jan Rabaey served as the acting summer chair during the month of July."

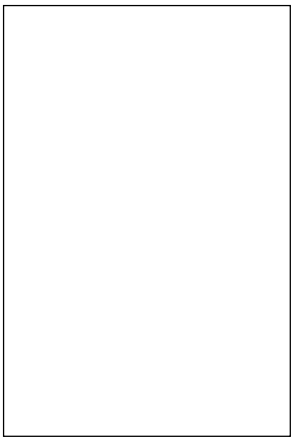


Richard Newton

Newton told the faculty, "Over the past year, Christos, Jan, and I, along with our staff, have developed a working relationship that is better than any I have experienced before. I will really miss that. I have also had the chance to develop broader and closer personal relationships with many of you—that has been another major highlight of my year as chair. The true team spirit, the willingness to go the extra yard when needed, and a desire to change the world for the better is a big part of what makes Berkeley EECS the absolute best in the world. As I follow the leadership of those who have preceded me, I will continue to represent these values in the College, and to the campus on behalf of our school.

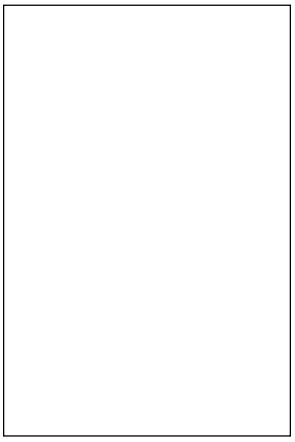
"With Paul as Executive Vice Chancellor and Provost, with the great depth of talent we have in the department and in the other units of the College, and with the emerging vision we have all been developing around the reintegration of the College (along with the development of closer ties with other units on the campus), I truly believe we have a unique opportunity to make a difference—to take the lead in defining what it means to be an engineer in this emerging age of information technology, bio and nano sciences, and new materials.

"Thank you all for the support you have given me as chair, and I look forward to working with you from this new vantage point, as we seize what is really a critical opportunity to move to the next level—in education, in research, and in long-term support for the students, faculty, and staff in our College."



Christos Papadimitriou

Papadimitriou has won support from everyone because of his abilities and his great sense of humor while serving as associate chair of the department. "I personally feel grateful that I had during this year the pleasure and privilege to watch Richard in action, to share in his vision, and to cherish his friendship. The goals Richard, Jan, and I set (IT-led interdisciplinary research agenda, life-long learning, new building(s), relations with industry, alumni relations, lateral diffusion of enrollment pressures, to name a few) are in fact best seen as college-wide projects, and it makes perfect sense for Richard to pursue them (together with the rest of his vision for even further greatness for the College) from the most appropriate platform. EECS is grateful for his year of brilliant departmental leadership."



Jan Rabaey

Papadimitriou continued, "At Richard's request, I shall be honored and delighted to act as chair these summer months, with Jan serving as associate chair for the EE division. As Richard mentioned, we now have before us the task of finding our next department chair."

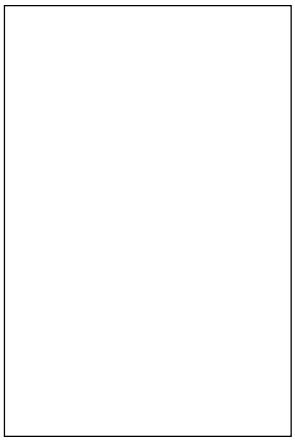
Jan Rabaey, who served until recently as the director of ILP here, said, "I am convinced that with Richard at the wheel, the college will raise to new heights, and that we will be in for some very exciting times. I am looking forward to this, and wish Richard all the luck in the world to succeed in his vision. We will miss him in the department. As announced, Christos and I will be manning the EECS ship till the new leadership for the department is appointed. I surely hope that we can keep the momentum of last year going. Our best wishes and warmest feelings are accompanying Richard as he assumes the leadership of the most distinguished college of engineering in the world. This is a pivotal and auspicious time for the College, and Richard is the perfect leader for seizing it." ◆

"From time to time an undergraduate senior will accept a dull job far below the student's level of competence instead of, perhaps, pursuing graduate work. Usually this undergraduate senior is female. There is a smaller ratio of women to men in our graduate program than in our undergraduate program. Why? Possibly because boys tend to boast, and girls to underrate themselves. In so far as this is so, we may be able to diminish the numerical disparity at the cost of a modest effort, and I think we ought to try."

—William Kahan, CS professor

Paul Gray holds first Andrew S. Grove Distinguished Professorship in the College of Engineering

Our new college dean, EECS' Richard Newton, has announced the appointment of Paul Gray, distinguished EECS professor and new Executive Vice Chancellor and Provost for UC Berkeley, as the first holder of the Andrew S. Grove Distinguished Professorship in the College of Engineering, effective July 1, 2000.



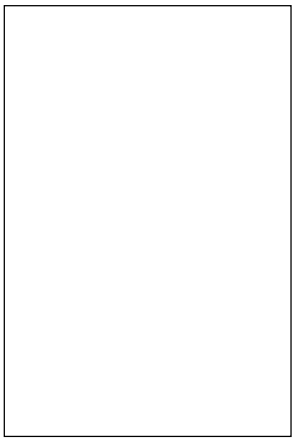
Paul Gray

Dean Newton said, "A gift from an anonymous donor endowed this new distinguished professorship, honoring Intel co-founder Andy Grove. Without question one of our most distinguished alumni, Andy has long and deep ties to the Berkeley campus: he earned his PhD here in chemistry in 1963, taught a Berkeley graduate course for six years in the 1960s and early 1970s in semiconductor device physics (which led to a very famous textbook many of us still know by heart), and is also the father of a College of Engineering graduate.

"It is most fitting that Paul Gray, one of our most distinguished integrated circuit design faculty and our new Executive Vice Chancellor and Provost, set an outstanding standard as the first Grove Professor in the College." ◆

EECS professor emeritus Arthur Hopkin dies

Arthur Hopkin, who joined the EECS faculty in 1954, died in Jenner, California on August 25 at 81 years old.



Arthur Hopkin

Professor Hopkin got his master's and doctorate in electrical engineering at Northwestern from 1947-1950. He earned his bachelor's from Georgia Tech in 1942. Hopkin's research area was nonlinear control systems and microprocessors.

Hopkin's career at EECS included being vice chair and acting chair, then associate dean for the College of Engineering, and acting dean in the late 1970s. In the 1980s, Hopkin was ombudsman for the university.

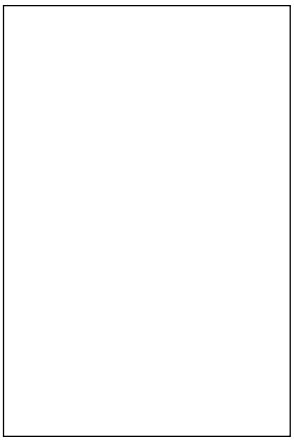
Hopkin leaves behind his wife of 35 years, seven children, a sister, and grandchildren, nieces, and nephews.

The Hopkin family has set up a scholarship in his name. Please send memorial donations to the EECS Department, Attn: Christos Papadimitriou, 231 Cory Hall, Berkeley, 94720-1770. Checks should be made payable to UC Regents, with a notation on the check designating the donation for the Hopkin Scholarship Fund. ◆

Faculty Awards

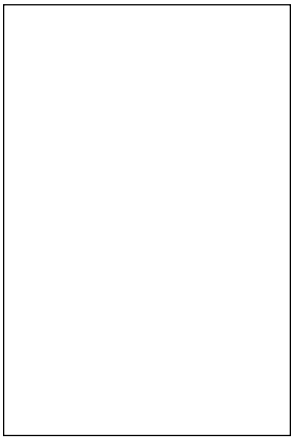
"Achieving 100% Throughput in an Input-Queued Switch" by Nick McKeown, Adisak Mekkittikul, **Venkat Anantharam**, and **Jean Walrand**, which appeared in the IEEE Transactions on Communications in August 1999, has won the Communications Society Stephen O. Rice Prize Paper Award.

Professor **Anthony Joseph** and Ms. Nibha Aggarwal, founders of Sky Flow, a company who uses "leading edge technology to bring information to the masses," took first prize of $50,000 for the Best Business Plan in the Haas School of Business' annual contest here at Berkeley. **Michael Harrison**, CS professor in EECS, said that the judges were "prominent VCs, and this bodes well for the future of their company" (check out the company at *http://www.skyflow.com*).



Anthony Joseph

Susan Graham is the 2000 recipient of SIGPLAN's Programming Language Achievement Award for her "lasting and significant contribution to programming languages." This is the major award given by SIGPLAN. Previous winners include Fran Allen, Ken Kennedy, and Guy Steele. It carries $5,000 in cash and a crystal statue.



Susan Graham

Professor Emeritus **Otto Smith's** invention, phase-able enabler, which makes three-phase motors run on single-phase outlet, was selected by the R&D Magazine as one of the "100 most technologically significant products of the year 1999." ◆

Michael Franklin joins faculty

Michael Franklin left the University of Maryland, College Park to join the CS faculty here and discovered that "changing universities is a high-overhead activity. I had to rebuild my research group and reestablish my teaching within the course structure here." But he says he has made a lot of progress during the past year, and "now the challenge is to do the kind of high-impact work that being at a place like Berkeley allows you to do."

Mike was at U of Maryland for six years, and is still an associate professor there, on leave.

Mike earned his doctorate in 1993 in CS at the University of Wisconsin, Madison, and his MSE at the Wang Institute of Graduate Studies in 1986. He received his BS in Computer and Information Science from the University of Massachusetts, Amherst.

Growing up in the Boston area, Mike always considered himself an east coast person. "Frankly, Berkeley was about the only job that could have gotten me to move out here. Now that we are here, we like it very much." One of the main reasons Mike chose to jump across the country is "the excellent research environment. This comes from the great students and faculty as well as a long tradition of doing important systems-oriented computer science," he said. "As a student and a professor elsewhere, I always admired the department at Berkeley and the style and quality of systems research done here. The fact that Joe Hellerstein (a fellow Wisconsin grad) was already here doing exciting database work made the decision that much easier."

Mike's research is in database systems and data management. Last semester (spring 2000) Mike taught CS 162, *Operating Systems.* He found the class size quite surprising. I taught an upper-division course last semester that had 160 students. The largest class I taught at Maryland was about 55 students. For me, the large class size takes a lot of the fun out of teaching, because it makes it very impersonal and makes it difficult to adapt the course to the students."

Mike said that the development of ubiquitous data access due to the growth of the Internet and wireless networks provides an endless set of new opportunities and problems to work on. "My current projects are focused on providing tools to allow users to access, make sense of, and benefit from the vast data resources that are available."

Michael Franklin

Mike is married and has two children, Tze-Heen, who is in high school, and Ilana, 2-1/2. His wife Janice worked with the Hong Kong government when they lived near Washington, DC and is now trying new things—one of them radio broadcasting.

Shortly after he became a professor in Maryland, he was invited to spend the summer at INRIA, the French national computer science research center outside of Paris. "INRIA has one of the top database research centers in Europe," Mike said. The chance to live in Paris for an extended time was not something Mike could pass up, since he has always been interested in traveling. One of the things that attracted him to academics was the ability to participate in an international community. Mike spent large parts of three summers working at INRIA, "although I managed to not learn much French in the process."

As to who might have influenced his love for computers, it was not his parents. "My parents are only now in the process of getting a computer. Needless to say, neither one of them has been very interested in computer science." But both of his siblings (older sister and younger brother) work in computers. All three studied computer science at the University of Massachusetts. "My sister started the trend and my brother and I followed," he said.

Mike's favorite class during his senior year in high school was a computer class. He also played guitar in his school's jazz band, which won several competitions. But in the end, when he was in college Mike got feedback "that I had a better chance of succeeding as a computer scientist than as a guitar player."

The worst aspect of becoming a Bay Area resident, Mike said, is that "I am still (after nearly a year) amazed at the cost of living out here. Washington, DC is not known as a cheap place to live, but we really weren't ready for the prices (particularly housing) we found here."

But from a professional point of view, Mike says "Berkeley has tremendous advantages. The environment here is fantastic. Everyone is committed to doing high-quality, important work and is truly committed to the success of the department and the school. It makes for a tremendously stimulating work environment." ◆

Four EECS faculty members win Okawa grant

The Okawa Foundation for Information and Telecommunications in Tokyo has given grants to Michael Franklin, James O'Brien, and David Wagner, CS professors, and Kannan Ramchandran, professor in EE.

President Isao Okawa himself gave checks of $10,000 to each recipient. A dozen or so faculty members with research interests in communication and information technology are selected from universities all over California. The grant is for one year.

The foundation was established in 1986, and was approved as a corporation with the special status of benefiting the public. In 1992, the Foundation began presenting the Okawa Prize and the Okawa Publications Prize. President Okawa hopes to "assist in helping form the advanced computer society of the 21st century and to contribute, however slightly, to the prosperity of humankind." ◆

New faculty member Bora Nikolic in digital integrated circuits

Bora Nikolic's first day in the United States was in Berkeley, where he discovered that after ten years of English education in Yugoslavia, he couldn't understand a word of English. "However, it seemed that people could understand me (I ordered a Big Mac and I got one). From the second day on, things gradually improved."

Bora comes from Belgrade, Yugoslavia. "Just coming to an excellent school and an inspiring environment is great," he said. "I love the Bay Area and, especially, Berkeley as a place to live." Bora felt lucky to be chosen among the candidates for the position, too. In his area of expertise, he said, "this is the best school in the world."

Bora started off in his field in grade school, when he began taking everything electrical apart to see how it worked. Both of his parents taught physics, which he believes directed him toward the sciences. When he got a Sinclair ZX Spectrum (a British-made computer) in high school, he learned about programming and became interested in hardware. His focus in this area was encouraged by his undergraduate adviser, Caja Marjanovic, in Belgrade, as well as his graduate adviser, Vojin Oklobdzija, at Davis. "Spending time in Silicon Valley strengthened that," he said. Bora was at Silicon Systems, Inc. in San Jose for a number of years, working on new channel and detector architectures for magnetic recording. He completed his doctorate at UC Davis in the summer of 1999.

Bora Nikolic

Excited about working with students on implementing iterative decoders here, Bora explained that though their implementation is very challenging, "they would allow us to put much more data on our hard disks."

Working with the Berkeley Wireless Research Center, Bora also wants to implement new communications algorithms. "Building smart RF circuits, where we use some digital signal processing to correct the imperfections or reduce power consumption in RF circuits, is an exciting areas of research. Developing high-speed links using new modulation schemes is also very challenging."

So far, the worst ordeal he has faced in Berkeley is, of course, the housing. There is not enough of it, and it is pricey. "But parking lost by a narrow margin," he quipped. Bora is also learning how to structure his time, with so much to do as a new assistant professor.

Dealing with time restraints and the workload, Bora is "developing a better vision of the future of my field every day. The environment in Berkeley helps that a lot." ◆

Cisco Systems showcases EECS students' research posters

David Jaffe, a programs manager from Cisco Systems, took the initiative to showcase UC Berkeley undergraduate research posters at the main Cisco campus in San Jose. This is the first time that such an event has been organized between one of our industrial contacts and the Center for Undergraduate Matters.

Jaffe says he wanted to display the posters in "a building where a lot of customers and senior executives are located, with the hope of getting more corporate executives interested in academic research, and generally, to raise the level of visibility of UC Berkeley." The posters were displayed in building 10, which "hosts our highest profile meeting rooms with executives from our largest customers."

Jaffe believes that the poster display represents "Cisco's global commitment and vision to share information that will increase the connection between people." Jaffe selected 12 posters to display at Cisco; they were displayed in April. Below are the names of the projects:

The Iceberg Preferences Manager, student Rahul Biswas and Professor Randy Katz

Collaborative Teleoperation on the Internet, student Billy Chen and Professor Ken Goldberg (IEOR and EECS)

Jacuzzi: Continuous Query Optimization in Java, student David Y. Chen and Professor Michael Franklin

Web-version of the Virtual Disk-Drive Design Studio (VDDS), students Lienn Chew and Jason Lao, and Professor Alice Agogino (ME)

Berkeley Internet Broadcasting System (BIBS), student Paul Huang and Professor Larry Rowe

An Alias Analysis for Java, student Glen Jeh and Professor Katherine Yelick

Gyroscopic Force Detection, student Yang Jiao and Professor Roger Howe

Celia Lin, Professor Chua, A Genetic Algorithm for Cellular Neural Networks

Wearable Computing Device—Acceleration Sensing Glove, student John K. Perng and Professor Kris Pister

Dynamic Load Balancing in Titanium, student Erik Reeber and Professor Kathy Yelick

Web-based Interface for MEMS Characterization System, student Tanya Roosta and Professor Kam Lau

Identification of Systems with Time-Varying Bounded Parameters: Application to Portfolio Optimization, student Teresa Tung and Professor Laurent El Ghaoui ◆

IBM's 1999 CS Best Paper award goes to: IBMer Peter Haas and EECS professor Joe Hellerstein

"Ripple Joins for Online Aggregation," by Peter Haas (IBM, Alamaden Research) and Joe Hellerstein (EECS at UC Berkeley), presented at the ACM SIGMOD Conference, has won, with another paper, the 1999 Computer Science Best Paper award from IBM.

The other best paper was "Focused Crawling: A New Approach to Topic-Specific Web Resource Discovery," by Soumen Chakrabarti (IIT Mumbai), Martin van den Berg (Fuji-Xerox Research), and Byron Dom, given at the Proceedings of the Eighth International World Wide Web Conference (WWW8). Soumen Chakrabarti earned his PhD here in 1996 under Professor Kathy Yelick.

Joe Hellerstein

IBMer Ambuj Goyal describes the gist of the Hellerstein-Haas paper:

"The Hellerstein-Haas paper says that current relational database management systems can't handle ad hoc decision-support queries efficiently; it usually takes a long time for the users to get the final query results. On the other hand, this type of query is typically used to get a 'big picture' of the underlying data sets and handling them in an online fashion (so that progressively refined running estimates of the final results are continuously displayed) becomes a very attractive approach. Traditional offline join algorithms are designed to minimize the time to completion of the query. In contrast, this paper presents a new family of join algorithms, called ripple joins, that are designed to minimize the time until an acceptably precise estimate of the query result is available, as measured by x the length of a confidence interval. The paper shows how ripple joins can be implemented in an existing relational database system. In experiments, ripple joins compute reasonably precise online estimates in 1/100th of the time required for the best offline algorithms to produce exact answers.

"This paper has opened up an interesting area of systems research and finds applications in areas ranging from data visualization to Internet query processing. It has already been cited in several recent database papers."

Goyal said that 121 papers published in conference proceedings and journals in 1999 were submitted by IBM Research authors worldwide for consideration as 1999 Computer Science Best Papers.

"The overall quality of the papers submitted was very high. From these submissions, the Professional Interest Communities (PICs) nominated 20 finalists based on technical significance and importance for Computer Science. A committee consisting of the PIC site coordinators (Brent Hailpern, Opher Etzion, Phil Janson, Steve Lavenberg, Allen Luniewski, and Baruch Schieber) read the 20 papers and selected the two as 1999 Computer Science Best Papers."

Hellerstein said the paper was part of the CONTROL project, a project in his group, joint with Peter Haas, which is supported in part by IBM (along with NSF and Informix). For information on the CONTROL project, see: *http://control.cs.berkeley.edu.* ◆

Warmest congratulations to our colleague Leon Chua for being selected as the year 2000 winner of IEEE's prestigious Neural Network Pioneer award. Previous winners include such great neuronists as Arbib, Hinton, Hopfield, and Grossberg.

The down side is, he had to go to downtown Como, Italy to receive it. %-) Congratulations, Leon!

—Christos Papadimitriou

Clinton names MIT EECS Professor as Director of Energy Research at DOE

Mildrid Dresselhaus is an Institute Professor at MIT, with electrical engineering and physics as her discipline areas. Dresselhaus previously held the Abby Rockefeller Mauze Chair at MIT in Electrical Engineering and in Physics. She is affiliated with the Center for Materials Science and Engineering, which she formerly directed.

Professor Dresselhaus was the guest speaker for WICSE, EECS' organization

Mildred Dresselhaus

for women graduate students for EECS' 10th anniversary; she spent several weeks in EECS as Regents' Professor in the late 1980s. She was a long-time member of the advisory board of the College of Engineering.

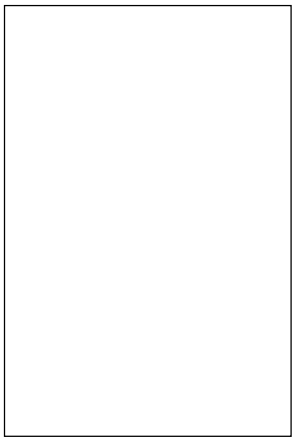
Among the goals Dresselhaus hopes to achieve in her new position is to "increase the quality of the science, and the management of scientific research, sponsored by the Department of Energy."

Dr. Dresselhaus received an AB from Hunter College, an AM from Radcliffe College, and a PhD from the University of Chicago. In addition, she was a Fulbright Fellow at Newnham College, Cambridge University. ◆

Nice guys finish first

Three of EECS' best workers, and the nicest of women, along with a host of other equally good people, won awards for their abilities recently during a staff appreciation lunch at EECS. Sue DeVries of CS, and Ruth Gjerde and Mary Byrnes, both of EE, won awards for their excellence—Sue and Ruth received Customer Service Awards, and Mary won the Wil Zeilinger Staff Appreciation Award.

Other awards to great people were the Back Office Awards to Peggye Brown and Mary Kelleher-Jones. Old Timers were Kim Chan and Dave Shackleford. The Rookies were Caitlin Dey-Ward and Damon Hinson. Those with Staff Initiative were Judy Fong and Khossrov Taherian. The Community Service Award went to Lea Barker.



Sue DeVries

Sue DeVries, who works for the CS chair, won the Customer Service Award by doing a good job and giving the impression that everything she deals with is easy. Humor is a major factor in her apparent ability to be friends with everyone in the department. In fact, she cares about all the people here, and that's why everyone likes her and voted for giving her the Customer Service Award. She is always pleasant and helpful and goes out of her way to be kind. She lightens any possible dreariness with humor and just plain old niceness.

Sue received bouquets—of balloons and of flowers. Both CS and EE chairs, Christos Papadimitriou and Rich Newton, acknowledged her good work. She has been with EECS for a total of eight years. She spent a couple of years elsewhere, one in COE and one in ME, but came quickly back to EECS, lucky for us.

Sue is married to Alan Fischer, who is co-owner of the Arlington Wine and Spirits in Kensington. She has a 27-year-old daughter and two cats. Sue has been working part-time for the last couple of years, and now has the opportunity to do more of the things she loves, like gardening and reading mysteries. She also likes to travel, and recently went to Australia with Alan.

Ruth Gjerde is a graduate matters assistant for EE who prefaced her comments for this article with, "I feel funny being spotlighted since there were many other winners of staff awards." She said that the award "is meaningful because my fellow staffers are the ones who nominate possible recipients. I feel honored just to have been nominated."

If Ruth were more altruistic than she already is, she would have to be crowned or sainted. She always goes out of her way to help graduate students, and manages to remain calm, competent, and soothing at all times.

Ruth was born and raised in Iowa where she met and married her husband Jon, a professor in the History Department here. "My husband's job forced us to move to Southern California in 1983 and then up north to the Bay Area in 1985."

Ruth has "two lovely daughters, ages 18 and 16," who attend Albany High School. The oldest graduated this year. In her 'spare' time, when she's not working and taking care of her family, Ruth likes to travel, camp, hike, and try new restaurants with her family. "When my daughters were younger, we spent many summers on the road, traveling from California to Iowa (and twice all the way to the East Coast), camping at fantastic places along the way. We have also traveled extensively in other countries, especially while we lived abroad (in Sweden) for a year."

In the moments she has time to herself, she enjoys "reading, quilting, and gardening (although the only thing that seems to grow in my garden these days is coreopsis and weeds)."

Mary Byrnes, seemingly made of iron (gentle iron), said about the award, "It was such an honor to have been presented with the Wil Zeilinger award. I can't think of any more meaningful distinction than to be nominated for an award by those with whom I work. I hope I'll always live up to the Zeilinger standard of service." The Wil Zeilinger Staff Excellence Award winner was established in memory of Wil Zeilinger, who worked in EECS, after his untimely death in 1992. The award is meant for a staff member who performs with excellence and exemplifies a spirit of "service cheerfully given for the general good."

Mary, who manages her job as a student affairs officer with the greatest of competence and a grand sense of humor, is a fifth-generation Californian who grew up in San Francisco. She went to Lowell High School and graduated from Cal (in art). Her art these days seems to be expertise in graduate affairs and a positive will of steel. (And the ever necessary sense of humor.) Her husband Bryant is an attorney (also a Cal grad), and they have two children. "Our son will be heading off to college in the fall. Our daughter has a couple more years in high school before she leaves the nest."

Mary is very involved with all layers of family. "Most of my free time is spent with my spouse, children, mother, siblings, cousins, nephews, and in-laws. I've finally realized just how fast the time goes. I can't get enough of them." She also is a "devoted pet owner." She has "the most wonderful old dog and fat cat anyone could ask for."

Sue, Ruth, and Mary were too modest to allow photos of them (but Sue just can't seem to say no). ◆

Brewer...

continued from page 1

the last year, and a 30 percent sequential increase over the prior quarter. Wow.

Brewer, who is creative in both science and art, has an expert eye for lines and color and beauty. See his photos (as well as what he works on as a computer scientist) on his website: *http://www.cs.berkeley.edu/~brewer.* ◆

Former UC professor John P. Holdren wins Tyler Prize for Environmental Achievement

The Tyler Prize was awarded on April 14 to John Holdren, who is a Teresa and John Heinz Professor of Environmental Policy at the John F. Kennedy School of Government at Harvard. Professor Holdren was once a member of the faculty in EECS (1973 -1975).

Ned Birdsall, EE professor emeritus, remembers him well. "He was recruited (from Cal Tech) by me to be the first professor in the then-being-formed Energy and Resources Group, ERG. I was chair of the campuswide Energy and Resources Committee that had decided to form a graduate group serving the campus, with courses (both grad and undergrad) and with faculty and budget."

Birdsall remembers, "John was a plasma research student at Stanford when I first met him about 1969 or so. He was also working closely with Professor Paul Ehrlich as his physical sciences resource person, and has remained a collaborator since. We learned of John's broad interests in energy and environment through our EECS plasma seminars, here, about 1970. "As ERG developed, so did John: as MacArthur Professor, then NAS and NAE,

John Holdren

then as Nobel Peace Prize acceptor for Pugwash, and presently a member of the President's PCAST. ERG now has over 300 graduates, spread all over the world, doing immense good, in no small part due to John's superb example.

"After 23 years in ERG here, he moved to the Kennedy School at Harvard in 1996. Still, let's count John Holdren as another feather in our EECS cap!"

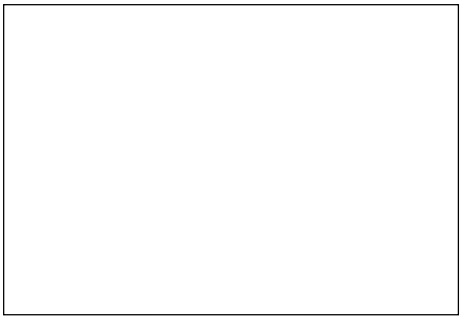
Dr. Holdren was honored for the significant role he has played in mobilizing the international community of scientists and policymakers to take action on a wide range of global energy, environmental, and security issues.

The Tyler Prize for Environmental Achievement is the premier award for environmental science, energy, and medicine conferring great benefit upon mankind. Through their work, Tyler Laureates have focused worldwide attention on environmental problems by their discoveries and the solutions that resulted.

Tyler Laureates receive a $200,000 prize and are presented a gold medallion at ceremonies in Los Angeles. The Tyler Prize, administered by the University of Southern California, was established by the late John and Alice Tyler in 1973. ◆

2000 student awards ceremony

Friday, May 5th was the day EECS students were honored by the department for various wonders, such as brilliance, perseverance, and just plain extreme helpfulness, not unusual qualities in these students.



Kathryn Ewell and Richard Newton

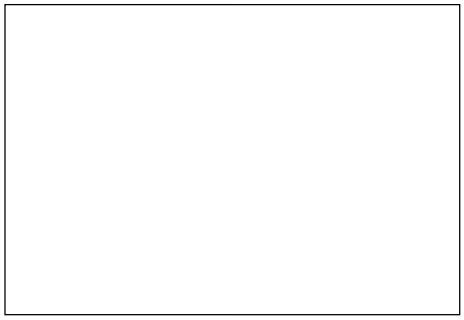
The winners were:

Demetri Angelakos Award: **Jakub Kedzierski** and **Maryann Simmons**

Departmental Citation: **Yozo Hida**

Warren Y. Dere Design Award: **Paul Huang**

Fong Family Award: **Kathryn Ewell** and **Yang Jiao**



Pramod Viswanath, Venkat Anantharam, and David Tse

Eli Jury Award: **Pramod Viswanath**

Eugene Lawler Award: **Justin Kwak**

Tong Leong Lim Pre-Doctoral Prize: **Payam Pakzad** and **Ziv Bar-Yossef**

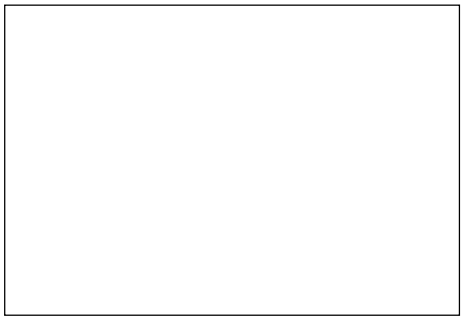
Outstanding GSI Award: **Nils Wemhoener**, **Sanjoy Dasgupta**, **Nemanja Isailovic**, **Boris Murmann**, **Tina Smilkstein**, **Karen Scott**

Marian Wojciech Para Memorial Prize: **Mary Hunt**

C. V. Ramamoorthy Award: **Andris Ambainis**

David J. Sakrison Memorial Prize: **Dennis Sylvester**

Sam Silver Memorial Prize: **Michael Brudno** ◆



Marijke Lawler with Justin Kwak and his family

Berkeley graduate Margo Seltzer gets tenure at Harvard as Gordon McKay Professor of Computer Science

Margo Seltzer, a PhD graduate of EECS in databases and operating systems, was recently granted tenure at Harvard. She joins the only other tenured woman in the department at Harvard, Barbara Grosz, who is also a Berkeley PhD.

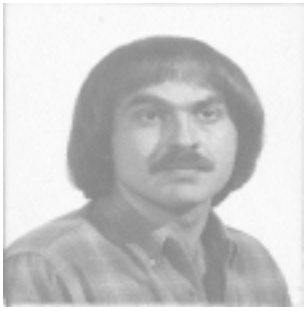
Seltzer earned her doctorate here in 1992, and immediately took a faculty position at Harvard, where she had earned her bachelor's degree (in applied math) before coming to Berkeley for graduate study. Her doctorate here was file system performance and transaction processing.

In the Division of Engineering and Applied Sciences at Harvard, Seltzer's research focuses on problems at the interface between applications and the operating system. She is designing, building, and evaluating software systems that efficiently support new and challenging applications, including operating systems, file systems, and transaction-processing systems, as well as application tools such as transaction toolkits and database access methods.

EECS can once again be proud. ◆

Berkeley Staff Assembly awards go to Bob Hamilton and Sheila Humphreys

Bob Hamilton and Sheila Humphreys have been selected as recipients for this year's Excellence in Management Award of the Berkeley Staff Assembly. The theme for the 1999-2000 Excellence in Management Award was Promoting a Diverse Workplace. Nominations for this award had to be supported by people directly reporting to the nominee.



Bob Hamilton, the 70s version, in his ERL days

Katalin Voros, operations manager of the Microfabrication Lab, said that Bob Hamilton's supervisory skills were cited in the areas of fostering awareness and promotion of diversity through team-spirit, in-house support systems, and through creating a sense of belonging among coworkers and colleagues. Hamilton is facilities manager at the Microlab.

Sheila Humphreys, who is academic coordinator for student matters at the Center for Undergraduate Matters here in EECS, received the Excellence in Management Award for promoting a diverse workplace through encouraging her staff to participate in several programs that embrace diversity. Her genuine warmth of character, inclusiveness, team spirit, support for new projects, interest in career and personal growth, and sensitivity to the struggles of the individuals of the campus community make Sheila a truly deserving person.

Sheila Humphreys

The campuswide awards ceremony by the Berkeley Staff Assembly took place in May. ◆

MIT program seeks to increase number of women in engineering

Danielle Hinton, the director of a program at MIT called "Encouraging the Exploration of Engineering: An MIT Women's Initiative," and a doctoral student in EECS there, is trying to increase the number of women who consider pursuing careers in EECS. "We try to achieve that goal by sending undergraduate and graduate women in the the EECS Department at MIT to speak to high school students across the country. We are currently sponsored by Microsoft and Eta Kappa Nu, and are going into our third year. For the past two years we have received an overwhelmingly positive response from teachers, students, and presenters—and we are currently working to make the program even better," she said in a note to Sheila Humphreys of EECS.

"I'm looking for studies/papers/information on what deters girls from engineering, and any research that has been done on ways to encourage girls into the sciences/engineering. If you can direct me to any articles/papers, especially if they are available online, that would be a terrific help! The information will also be used in proposals for funding to companies."

Hinton said they are also looking for high schools across the country to visit this coming January. "If you know any teachers who would be interested, or can suggest effective ways to contact high school teachers, I'd be most grateful if you could email me with that information."

For additional information about the program, email Hinton and/or visit the website at: *http://hkn.mit.edu/eee/index.html.* ◆

Grad students Melody Ivory and Raymond Gilstrap win Gates Millenium Scholarships

Melody Ivory and Raymond Gilstrap, both EECS grad students, won the new Gates Millennium Scholarships in the first competition.

The Gates Millennium Scholars Program, administered by the United Negro College Fund, and supported by the Bill and Melinda Gates Foundation, provides scholarships and fellowships for outstanding low-income African American, Native American, Hispanic American, and Asian American students to attend the undergraduate and graduate institutions of their choice. The issue of financial assistance extends to students already enrolled in postsecondary education.

Awards will supplement the winners' existing financial aid and eliminate the need for the students to borrow significantly or spend too much time at paid jobs, either of which can be a barrier to completion of a college degree. Since demographers predict that half of America's population by the year 2050 will consist of those who are called minorities today, it is imperative that academic achievement levels and skill sets, especially in underrepresented disciplines, be developed.

The Bill and Melinda Gates Foundation provides scholarships and fellowships for outstanding low-income African American, Native American, Hispanic American, and Asian American students to attend the undergraduate and graduate institutions of their choice.

The Gates Millennium Scholars Program contributes substantially to the access, persistence, and the preparation of America's future leaders for the 21st century—leaders who will help maintain and advance America as a globally competitive democracy.

Scholars who pursue advanced degrees in the fields of engineering, mathematics, science, education, or library science will receive up to four years of full financial support for post-graduate study, up to and including the doctorate. Awardees must take a full-time program of graduate study. ◆

CRA and Lucent sponsor Distinguished Lecture Series in EECS at Berkeley

CRA-W recently said that a labor shortage in science and technology is currently costing the United States as much as four billion dollars per year in lost production. "I see this as the greatest challenge we have as a nation," said Neal Lane, current president of the White House Office of Science and Technology Policy and former director of the NSF (*http://www.nsf.gov*). "If the current trend persists, we, as a country, will fall short." Members of Congress, scientists, educators, and industry specialists all agree that much of the problem stems from the nation's current lack of diversity in the science and technology fields.

To address such issues, the Committee on the Status of Women in Computing Research (CRA-W) (*http://www.cra.org/craw*) and Lucent Technologies (*http://www.lucent.com*) are sponsoring a Distinguished Lecture Series to encourage females and minorities to pursue graduate education in scientific and technological disciplines.

Berkeley was selected to kick off one series. Professor Mary Gray Baker, a Berkeley PhD graduate, delivered the EECS Colloquium talk on September 6 called "Supporting and Naming Mobile People," a discussion of her mobile and wireless computer research at Stanford. One of her points in the lecture was that "People are the end point of wireless communications." Dr. Gray completed her undergraduate degree at Cal in math. She was joined by Dr. Serap Savari of Lucent-Bell Labs, who also spent two days at Cal interacting with undergraduate and graduate students. Kathy Yelick, professor in CS here, moderated a panel discussion called, "The Importance of Graduate School," to a packed HP Auditorium on September 7. Drs. Savari and Gray spoke along with current CS grad student Kris Hildrum. Dr. Savari, an MIT alumna, presented her research to the EE Graduate Communications Seminar as part of her visit, and lunched with graduate women in WICSE informally.

"Technology is going to change our political, economic, social, and personal lives," says Anita Borg, CRA-W committee member. "Women need to be there saying, 'This is how we want things to change.'"

The Distinguished Lecture Series actively recruits members of underrepresented groups by sending faculty and industry researchers to college campuses to meet with students and incite interest in graduate education.

The fall 2000 events in early September gave students the opportunity to discuss the graduate school process and experience with female researchers, facilitating their ability to make an informed decision about pursuing graduate study.

CRA-W is partially supported by the NSF and EOT-PACI (*http://www.eot.org*), a national education, outreach, and training program funded by the NSF Partnerships for Advanced Computational Infrastructure.

The projects published a booklet called, "Applying to Grad School." ◆

Women in computing go to Cape Cod

Twelve Berkeley undergraduate and graduate students and one recent graduate attended the Grace Hopper Celebration of Women in Computing Conference 2000 on Cape Cod in Hyannis, Massachusetts in September. Professor Valerie Taylor, Berkeley alumna, was program chair. Eight Berkeley students got scholarships thanks to efforts by Susanne Kauer. Mike Sampogna, IBM Almaden, made a contribution to fund the other Berkeley women. The conference is dedicated to increasing the impact of women in all aspects of technology and enhance the positive effect of technology on the lives of women.

Students and staff from Berkeley who attended the Grace Hopper Women in Computing Conference are: Undergraduates: Ellen Tsai, and Katherine Tsai, sophomores; Sarah Boaz and Jaime Lin, juniors; and Carol Lam, Tanya Roosta, Shally Shen, and Mie Mie Tjung, seniors. Graduate students: Kirsten Hildrum, Megan Thomas, Jinwen Xiao, and Lixia Zhou. Recent graduate of the MS in CS program: Randi Thomas. Berkeley staff Susanne Kauer, Sheila Humphreys, and Barbara Hightower accompanied the students.

Dr. Sheila Humphreys of EECS reported on women in IT and organized a panel on undergraduate research; sponsors were NSF, IWT (Institute for Women in Technology), CRA, and ACM.

The conference is inspired by Admiral Grace Murray Hopper, a mathematician, computer scientist, teacher, and naval officer who had a profound effect on the development of the computer sciences from the 1930s through the 1980s. Conference attendees learned about advances in computing fields through technical sessions presented by women from academia, business, and government. Participants took part in workshops exploring the experiences of women in computing and presenting new ideas for promoting success for women in computing-related disciplines.

"This conference is committed to including the next generation of women in its programs." –Dr. Telle Whitney, general chair, Grace Hopper Celebration

"Thanks to the support of technology companies, the Grace Hopper Celebration is able to make a continuing effort to accelerate the advancement of women in computer science," said Dr. Telle Whitney, general chair, Grace Hopper Celebration. "The celebration is designed to acknowledge the accomplishments of women in computing while also serving as a training and networking opportunity. The conference is especially committed to including the next generation of women in its programs. With our strong corporate support we are able to offer 160 young women scholarships to attend the celebration to learn about opportunities, discuss new ideas, and meet role models within our field."

The Grace Hopper conference keynote speaker was Dr. Rita Colwell, director of NSF, who was introduced by Dr. Valerie Taylor.

Technical papers by representatives of such companies and organizations as AT&T Labs, Brandeis University, Columbia University, GTE, the IBM Thomas J. Watson Research Center, Lockheed Martin Advanced Technology Laboratories, Motorola Labs, Purdue University, and the University of Chicago were presented. Sessions on various topics, including mentoring, women in research, and IT for women in developing countries were led by women from organizations such as Argonne National Laboratory, Informix, the San Diego Supercomputer Center, Segue Software, Sun Microsystems, and the University of Illinois.

Lixia Zhou, the president of WICSE in EECS (Women in Computer and Electrical Engineering), thanked Sheila Humphreys for her help concerning the conference and said, "We're really excited to attend this conference. It was a wonderful place to meet many women engineers and professionals, with whom we shared the prospective computer field."

Hopper attendees reported the conference at a special lunch on September 29. Additional information about the IWT and the Grace Hopper Celebration of Women in Computing is available at *www.iwt.org and www.sdsc.edu/hopper.* ◆

Byron Yu wins Bechtel Engineering Scholarship

Byron Yu, entering his 4th year in EECS this fall, was awarded the Bechtel Engineering Scholarship in May. The Bechtel Scholarship is awarded to an undergraduate student in the College of Engineering based on scholastic achievement, student leadership, and potential for success in a professional engineering career, and carries a $1,000 stipend. Byron is among the top of his class and has maintained a 4.0 GPA. Susanne Kauer, student affairs officer in EECS' Office of Undergraduate Matters, said his record is "truly an outstanding achievement."

In addition to the Bechtel scholarship, Byron has received in the past the Edward F. Kraft Scholarship, the William Wong Memorial Scholarship, and the Berkeley's Chancellor's Scholarship. He is a member of the EECS honors degree program and is completing his Honors Program breadth requirement in Business Administration.

Byron is already doing independent research in communication theory under the supervision of Professor Kahn. Kahn says of Byron, "I cannot think of another student who exhibited more promise at this stage of his career."

Last year, Byron was selected for internship at HP Labs through the EECS Internship Program. At HP Byron fixed a malfunctioning prototype detector, which his supervisor cited as a "breakthrough," far exceeding the expectations of the HP lab. Dr. William McAllister of Hewlett-Packard Labs says, "Byron is a pleasure to work with and shows great enthusiasm for the job." Dr. McAllister (Willy) said that Byron was co-inventor on a patent with him.

Outside his academic work, Byron is active in many areas. As the treasurer for Eta Kappa Nu, he spearheaded a fundraising campaign to pay off past debts and was instrumental in creating the first annual HKN job fair.

Other interests for Byron include more than two years of volunteer work at the Santa Teresa Community Medical Center in San Jose, where he trained other volunteers and provided support to the patients and to the public. He also likes tennis and ice hockey, studies French, and likes to travel. ◆

CAWMSET Report highlights building a diverse domestic high-tech workforce for a strong economy

The Commission for the Advancement of Women and Minorities in Science, Engineering, and Technology Development (CAWMSET) released recommendations this past summer calling for a national imperative to recruit, train, and retain individuals for our domestic workforce among vastly underrepresented populations.

Specifically, women, minorities, and people with disabilities represent a potential pool of science, engineering, and technology (SET) workforce not being tapped. Commission members issued a call to action to business, government, and academia to meet the growing need for workers skilled in science, engineering, and technology.

Congresswoman Connie Morella, who authored the legislation establishing the commission commented: "We must ensure that we are utilizing the talent of our entire population—not just a narrow slice of it. As Americans, we have begun to recognize the problem, but until we give it priority on our national agenda, and until our scientific and technological workplace reflects our diversity, we are not working to our full potential as a nation."

The commission's report was presented on Capitol Hill at a press conference preceding a Hearing of the House Committee on Science. At the press conference, in addition to a nationwide call to action, the commission outlined specific recommendations on how to better promote diversity within SET jobs. Recommendations include:

- Creating a strong early education foundation through the promotion of ongoing education reform efforts, including adoption of statewide standards in math and science, increases in the number of qualified math and science teachers, and legislation to require school districts to disaggregate achievement data by race/ethnicity, sex, socioeconomic status, and disability status.
- Promoting greater access to higher education among diverse groups through targeted intervention efforts and increased financial support for students at the high school transition points into postsecondary education and at the community college transition into four year colleges.
- Promoting greater parity in job retention, pay, and promotion by developing and disseminating a national model of a diverse workplace environment that successfully recruits, retains, and advances the careers of women, minorities, and people with disabilities.
- Changing the sometimes negative public image of scientists, engineers, and high-tech workers through the establishment of public/private partnerships that coordinate media and image campaigns promoting positive and diverse images of SET workers.
- Establishing a public-private partnership to implement and benchmark these recommendations by developing programs and action items through partners in government, industry, and academia to monitor and work toward the goal of domestic workforce parity.

In addition to congresswoman Morella and CAWMSET chair Elaine Mendoza, participants in the press conference included: Dr. Rita Colwell, director of the National Science Foundation; Dr. Neal Lane, assistant to the president for Science and Technology Policy, White House Office of Science and Technology Policy; Dr. George Campbell Jr., formerly president and CEO of NACME, Inc., America's largest privately funded source of minority engineering scholarships, and the new president of the Cooper Union; and Dr. Kathryn O. Johnson, owner and project manager of MATRIX Consulting Group, a South Dakota firm that consults on issues related to environmental science. u

Costas Spanos leaves directorship, Tsu-Jae King becomes new director of Microlab

After seven years of "superb faculty leadership of the Microlab," Costas Spanos stepped down from the directorship, to be replaced by Tsu-Jae King, also an EECS professor. Jan Rabaey, acting associate chair of EECS, said, "During his tenure, the lab has without a doubt become one of the top laboratories on campus, and one of the best-operated and successful university semiconductor fab's in the country. A shining example of the importance and stature of our lab is that the CITRIS proposal reviewers marked it as one of our major assets. We are extremely thankful to Costas for his relentless dedication and efforts. Without him, the lab would not be what it is today. We will definitely miss him."

"With her vast experience in semiconductor manufacturing, Tsu-Jae is ideally positioned to guide the lab further along and address the challenges that will emerge in the coming years."
–Jan Rabaey

Tsu-Jae King has agreed to the microlab directorship as of August 1, 2000. Rabaey commented, "With her vast experience in semiconductor manufacturing, Tsu-Jae is ideally positioned to guide the lab further along and address the challenges that will emerge in the coming years. The largest one among them is the planning and construction of a new lab, which is a necessity if the department wants to stay in tune with the evolving technology scene. The department is fully committed to help her in any way possible. We wish Tsu-Jae all the best in her new responsibility." ◆

Cisco Systems awards minority students

Jeff Krause, VP and general manager of the Enterprise Management Business Unit at Cisco Systems, announced in May the second annual Internet Generation Awards sponsored at UC Berkeley by Cisco.

"This program," Krause said, "was created to help support UC Berkeley's Excellence in Diversity Programs. By developing and sponsoring the Internet Generation Award program through Berkeley's Department of Electrical Engineering and Computer Science, Cisco is helping to provide a solid platform for incoming minority freshmen to pursue their interest in technology. The program includes an ongoing scholarship award, participation in a mentorship program with Cisco employees, and the opportunity to work as a summer intern at Cisco after successful completion of their first year."

For the 1999-2000 academic year, three outstanding incoming freshmen were chosen to receive the awards: Omar Aldana, Jacqueline Huerta, and Manuel Zepeda. Omar Aldana and Manuel Zepeda worked at Cisco during the summer (both in Enterprise Management) as part of the overall Internet Generation Award program.

Krause also announced the recipients for 2000-2001 academic year. The three students, Hector Angulo, Nicholas Chatman, and Sebastian Garcia, accepted the awards and are starting as freshmen here this fall.

Krause said that as with previous winners, "these students were singled out for their exceptional academic records and demonstrated leadership qualities." ◆

Akira Hasegawa wins Maxwell Prize for Plazma Physics

There are only two professional society awards in plasmas, the James Clerk Maxwell Prize for Plasma Physics (given by the Division of Plasma Physics of the American Physical Society) and the Plasma Science and Applications Award (given by the Nuclear and Plasma Sciences Society of the IEEE).

Dr. Akira Hasegawa, who was Ned Birdsall's fifth PhD and his first plasma PhD, has won the Maxwell Prize. Birdsall recalls, "His thesis was 'Plasma Heating by Injection of Charged Particles,' and dated March 1964. He verified his theory with simulations done with current sheets, in 1d2v, on the campus IBM mainframe, about a million times slower than now possible on a fast PC. He completed his degree in a little over two years."

Hasegawa will receive the Maxwell Prize at the ASP/DPP meeting in Quebec in October, "For innovative discoveries and seminal contributions to the theories of nonlinear drift wave turbulence, Alfven wave propagation in laboratory and space plasmas, and optical solitons and their application to high-speed communication."

From Berkeley, he went to Bell Labs to do plasma research with Sol Buchsbaum, where they worked out and observed waves trapped in a magnetized plasma column, now known as the Buchsbaum-Hasegawa waves. Next, back to Osaka University for four years, then back to Bell Labs until 1991, then back to Osaka University, from where he retired in 1998. Over this period he also received many foreign awards. He was elected chair of the APS/DPP in 1990, another excellent recognition.

See the whole story on *http://www.aps.org/praw/maxwell.00winner.html.* ◆

The panda and the professor

Dick White, EECS professor and director of the Berkeley Sensor and Actuator Center, visited China recently. In Sichuan Province, in southwest China near the Tibetan border, he visited the Woolong Giant Panda Conservation Centre where scientists raise giant pandas to breed. This rare species faces the double threat of habitat fragmentation and illegal hunting, even though poaching carries the penalty of a life sentence in China. Today, an estimated 1,000 giant pandas survive in the remote bamboo forest areas of the Qionlai Mountains.

For a small contribution, Dick got the privilege of having this nine-month-old sit with him for a photo. Dick said this baby panda is as gentle as you might imagine it to be ("it's not stuffed, no; you may notice the claws in the picture").

The giant panda's name in Chinese, Daxiongmao, means "large bear cat." When the keeper came for this little guy, Dick said it made a sort of meowing sound. The parents of Hua Mei, the baby panda born in the San Diego Zoo, are giant pandas on loan from Woolong. ◆

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.*

M00/15: K. Takechi and M. A. Lieberman, *Operation of a Large Area Plasma Source (LAPS) with Oxygen Gas,* March 2000, $1.60.

M00/16: M. Haenggi and L. O. Chua, *A Deterministic Nonlinear Capacitor Model for Single-Electron Tunneling Junctions,* April 2000, $.80.

M00/17: E. Polak, *First-Order Algorithms for Optimization Problems with a Maximum Eigenvalue/Singular Value Cost and or Constraints,* April 2000, $1.50.

M00/18: M. R. Hart, R. A. Conant, K. Y. Lau, and R. S. Muller, *Stroboscopic Interferometer System for Dynamic MEMS Characterization,* April 2000, $3.10.

M00/19: N.-W. Pu, *Picosecond Ultrasonic Characterization of Mo/Si Multilayers for Extreme Ultraviolet Lithography,* May 2000, $14.80.

M00/20: S. S. Pradhan and K. Ramchandran, *Multiuser Successive Refinement,* May 2000, $1.00.

M00/21: B. Tabbara, *Function/Architecture Optimization and Co-Design of Embedded Systems,* May 2000, $28.60.

M00/22: E. Kawamura, J. P. Verboncoeur, and C. K. Birdsall, *Modeling Field Enhancement in an RF Gap,* May 2000, $1.60.

M00/23: M. Roberto, *Effect of Metastable Atoms in RF Argon Discharges,* May 2000, $1.80.

M00/24: M. Roberto, *A Monte Carlo Collision Model to Study RF Discharges with a Mixture of Argon and Oxygen,* May 2000, $1.40.

M00/25: J. Tsay, *A Code Generation Framework for Ptolemy II,* May 2000, $7.00.

M00/26: Y. Jiang, *Multi-Valued Logic Network Minimization and Its Applications,* May 2000, $6.40.

M00/27: T. T. Nguyen, *The Impact of Line Edge Roughness on 100nm MOSFET Devices,* May 2000, $4.80.

M00/28: J. Bao, *Deep Submicron Photoresist Modeling and Parameter Extraction,* May 2000, $7.20.

M00/29: B. Lee, *Specification and Design of Reactive Systems,* May 2000, $13.80.

M00/30: J. M. Gilbert, *Text/Graphics and Image Transmission over Bandlimited Lossy Links,* May 2000, $27.80.

M00/31: A. M. Niknejad, *Analysis, Simulation, and Applications of Passive Devices on Conductive Substrates,* May 2000, $25.40.

M00/32: D. A. Sobel, *A 25 Ms/s Nyquist-Rate Sigma-Delta Modulator for a Wideband CDMA Receiver,* May 2000, $10.80.

M00/33: K. Takechi and M. A. Lieberman, *An Oxygen Discharge Model for a Large Area Plasma Source (LAPS),* June 2000, $2.80.

M00/34: M. Broucke, M. D. Di Benedetto, S. Di Gennaro, and A. L. Sangiovanni-Vincentelli, *Optimal Control Using Bisimulations,* June 2000, $3.80.

M00/35: M. E. Broucke, *Qualitative Analysis, Model Checking, and Controller Synthesis of Hybrid Systems,* June 2000, $15.00.

M00/36: M. E. Broucke, *Model Checking for Hybrid Systems,* June 2000, $2.40.

M00/37: H. C. C. Hsieh, *Formal Methods for Embedded System Design,* May 2000, $16.40.

M00/38: K. Takechi and M. A. Lieberman, *Kinetics of Photoresist Etching in a Large Area Plasma Source (LAPS),* August 2000, $1.40.

M00/39: W. Liu, K. M. Cao, X. Jin, and C. Hu, *BSIM4.0.0 Technical Notes,* August 2000, $4.20.

M00/40: Not available.

M00/41: K. Goldberg, T. Roeder, D. Gupta, and C. Perkins, *Eigentaste: A Constant Time Collaborative Filtering Algorithm,* August 2000, $1.40.

M00/42: Y. Ma, *A Differential Geometric Approach to Computer Vision and Its Applications in Control,* August 2000, $32.20.

M00/43: M. C. Cavusoglu, *Telesurgery and Surgical Simulation: Design, Modeling, and Evaluation of Haptic Interfaces to Real and Virtual Surgical Environments,* August 2000, $15.00.

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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/NCSTRL*. 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-00-1094: H. J. Wang, B. Raman, C.-N. Chuah, R. Biswas, R. Gummadi, B. Hohlt, X. Hong, E. Kiciman, Z. Mao, J. S. Shih, L. Subramanian, B. Y. Zhao, A. D. Joseph, and R. H. Katz, *ICEBERG: An Internet-Core Network Architecture for Integrated Communications,* $6.00.

CSD-00-1095: M. Welsh, *Tigris: A Java-based Cluster I/O System,* $6.00.

CSD-00-1096: M. Welsh, N. Borisov, J. Hill, R. von Behren, and A. Woo, *Querying Large Collections of Music for Similarity*, $6.00.

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