

COMPUTING RESEARCH NEWS

Serving the Computing Research Community Since 1972

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U.S. Legislative Update

By Lisa Thompson

Sensenbrenner IT Bill Approved by House

On February 15, the House passed the Networking and Information Technology Research and Development Act (H.R. 2086) on a voice vote. The NITR&D Act would reauthorize the High Performance Computing and Next Generation Internet programs and establish a new NITR&D program emphasizing broad-based, long-term information technology research and development of terascale computing for the academic research community.

At a news conference immediately after the vote, the bill's sponsor, Rep. James Sensenbrenner (R-WI), Chair of the House Science Committee, said, "Today's House passage marks a great investment in the future and a strong commitment to strengthening the scientific enterprise. By focusing federal IT efforts on basic research, this legislation helps replenish the pipeline of fundamental research breakthroughs and scientific discoveries in the 21st century. In addition, NITR&D will help ensure we receive the maximum

bang for our research buck by implementing a competitive grant-making process open to the best research minds in America."

Rep. Ralph Hall (D-TX), the science committee's ranking Democrat, said, "The programs funded through H.R. 2086 should maintain the U.S. as the world leader in computing and communication technologies. It is impossible to imagine that the U.S. economy would have enjoyed the record-setting growth of the last nine years without past federal investments in communications and computer technologies. I believe this bill will fuel future growth and set the stage for revolutionary innovations in areas as diverse as elementary education and biomedical applications."

During floor consideration, Hall successfully offered an amendment to increase the National Science Foundation's funding allotment within the bill, which would provide a total of \$6.9 billion over five years to seven federal agencies. The original version of the legislation addressed only six agencies, all under the Science Committee's jurisdiction. But Rep. Constance A. Morella (R-MD), after obtaining the cooperation of the

House Commerce Committee, successfully offered an amendment adding \$1.2 billion for IT research at the National Institutes of Health, which falls under the jurisdiction of that committee. The seven agencies are: NSF, NIH, the Department of Energy, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Institute of Standards and Technology, and the Environmental Protection Agency.

CRA Board Chair Edward Lazowska also appeared at the news conference to hail the action by the House. "In authorizing programs focused on long-term, broad-based information technology research, the NITR&D Act will strengthen the appropriate federal role in R&D and enable vigorous efforts to make revolutionary advances in computing, networking, and other information technologies," Lazowska said. "The federal investment in fundamental IT research over the past decades provided the fuel that drives our thriving economy. The programs authorized by H.R. 2086 will ensure that the U.S. continues to be well supplied with new information technologies — and will help in building a capable IT workforce — to meet the challenges of the future," he continued.

In February 1999, the President's Information Technology Advisory Committee (PITAC), an independent, congressionally chartered panel of experts in information technology research and the IT industry, issued the

results of a study concluding that the federal investment in information technology R&D is inadequate and too focused on near-term problems. It recommended: expanding support for long-term, broad-based, precompetitive IT research; emphasizing four priority areas—software, scalable information systems, high-end computing, and the socioeconomic impacts of IT; and balancing support among a range of project modes. The NITR&D Act addresses the concerns raised by the PITAC by implementing its key recommendations.

After House passage, CRA issued a statement commending Mr. Sensenbrenner, the bill's cosponsors, and their colleagues in the U.S. House of Representatives for the alacrity with which they responded to the PITAC report and for taking a sound and responsible approach to the Nation's research policy. The NITR&D Act has been one of CRA's top legislative priorities since the bill was introduced in June 1999.

The NITR&D bill is unlikely to be considered in its entirety by the Senate. In early February, Senator Bill Frist (R-TN) introduced the Next Generation Internet 2000 Act (S. 2046), which would reauthorize just the NGI research program and devote some of its funding to research that could ease the costs of providing broadband access to rural areas. Moreover, since Mr. Frist, who chairs the Senate Commerce Committee's Subcommittee

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Telcordia's Research Lab

By Jon R. Kettenring

A student asked me recently if our lab was part of a start-up company. (She hadn't heard that Telcordia Technologies is the new name for what was formerly called Bellcore.) I told her "No." Indeed, we have nearly 7,000 employees in the company and \$1.5 billion in revenues—not the usual parameters of a fledgling .com operation! Upon reflection, however, I think I could have given a more thoughtful answer.

For researchers in Telcordia's 120-person Information and Computer Science Research Lab (ICSRL), there is definitely the atmosphere of excitement and opportunity that one expects to find in start-ups. Perhaps the main differences are the diversity of problems we are tackling, the variety of opportunities we have for research impact, the critical mass we have to form cross-disciplinary teams, and the momentum we have from 15 years of leading-edge research in the computer, mathematical, and information sciences.

The ICSRL is located primarily in Morristown, New Jersey, the corporate headquarters. It is one of three major labs in Telcordia's

research organization. Telcordia itself is one of the world's largest providers of operations support systems, network software, and consulting and engineering services to the telecommunication industry. Our primary research mission is to provide research support for existing products and services and to spawn new ones.

Most of the people in our lab have a background in computer or mathematical science. Areas of disciplinary focus include: software architecture, engineering, quality, testing and understanding; databases; distributed and fault tolerant computing systems; programming languages; cable systems; performance analysis; information management, modeling, security, and survivability; cryptography; data analysis, modeling, and mining; and network mathematics. Some of our research targets rapidly developing areas such as mobile communications, cable-related services, and electronic commerce. Others aim to assure that Telcordia's more than 100 million lines of software work properly in the field.

Virtually every staff member in our lab has either a Ph.D. or M. S.

degree. Many got their start at Telcordia by working here on a summer internship. (The ICSRL runs a vigorous summer program for about 25



Jon R. Kettenring

undergraduate and graduate students each year.) Several members have come to Telcordia after working in academia, including the lab's Vice President and General Manager, Rich DeMillo. A few, like Fan Chung Graham and Dick Lipton, even hold joint appointments with universities. There is also an "old-timers" list (which includes me!) of people who came from Bell Labs in 1984. We were part of the core group that formed Bellcore at the time of the Bell System's divestiture. At the other extreme, one of our scientists, Scott Stornetta, took the unusual path of university physics Ph.D. to

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Expanding the Pipeline Coalition to Diversify Computing Addresses Minority Issues in CSE

By Sandra Johnson Baylor and Ann Redelfs

Information technology (IT) is driving an unprecedented expansion of the U.S. economy, exemplifying the need to educate and retain an IT-educated workforce. As yet, minorities have not been adequately represented in this boon—a problem that the Coalition to Diversify Computing (CDC) aims to address.

The demographics of the United States are changing rapidly (California, a leader in IT, is the first state to have a minority Caucasian population), and yet less than one percent of the researchers in computer and computational science are African Americans, Latinos, Native Americans, Native Alaskans, and Native Pacific Islanders. The background on this problem is well known—the lack of resources, encouragement, and access—and the solution lies in a host of programs nationwide, funded by the government and the private sector.

One approach is to develop programs designed to increase the continuing low percentage of underrepresented minorities in computer science and engineering (CSE) at all stages of the educational pipeline. This is the objective of the CDC, a national committee organized by the ACM, ADMI (the Association of Computer Science and Engineering Departments at Minority Institutions), IEEE Computer Society, and CRA. Funding is provided by the Education, Outreach and Training Partnership for Advanced Computational Infrastructure (EOT-PACI), and by CRA beginning in July 2000.

CDC's projects are led by volunteers and focus on networking opportunities, mentoring, research into the choices minorities make about their futures, development of a database of minority graduate students and researchers, and information dissemination. The CDC co-chairs are Andrew Bernat, University of Texas, El Paso (abernat@cs.utep.edu), and Valerie Taylor, Northwestern University (taylor@ece.nwu.edu). (Valerie Taylor recently replaced Sandra Johnson Baylor of IBM, who stepped down after three years' service as co-chair.)

This year's CDC projects are outlined in this article; for additional information or to sign up for CDC announcements, visit <http://www.npaci.edu/Outreach/CDC/>.

Support for Students To Attend Technical Conferences

Participating in a national technical conference is an important component of an academic career, and often students do not have the funds to attend. CDC supports student participation in conferences, providing them with insights into

paper preparation, oral presentations, posters, and serving on conference committees. Students funded by CDC are accompanied to the conference by mentors who help them decide which sessions would be most valuable to them, and introduce them to key members of the academic community. Interested students will need to apply (see website), and those selected will be required to write a report on their experiences. Pat Teller, University of Texas at El Paso (pteller@cs.utep.edu), is responsible for this year's program; in past years, Ramon Vasquez Espinosa, University of Puerto Rico, Mayaguez (reve@ece.uprm.edu), directed this effort.

Traveling Graduate School Workshop

A major goal of CDC, as well as for the nation generally, is to increase the numbers of under-represented minorities who attend graduate school in the computing disciplines. A prime strategy for attaining this goal is to bring information concerning the benefits of graduate school attendance to minority students. Because a large percentage of minority students are undergraduates at Historically Black Colleges and Universities and other Minority Serving Institutions, it is important to take this information to these institutions.

The traveling graduate school workshop is designed to provide students with an honest picture of the value and the downsides of enrolling in Master's and Ph.D. programs. Presentations by visiting graduate students and faculty detail what graduate school is like, how to apply, how to get financial aid, and the benefits of attending. Further, the workshop plays a role in connecting students with possible institutions for further study. The next workshop will be held this spring in North Carolina. Forbes Lewis, University of Kentucky (lewis@cs.engr.uky.edu), currently on sabbatical at the University of Puerto Rico at Mayaguez, oversees this activity.

Pre-Conference Minority Networking Event

Attending a conference successfully is not simply a matter of registering and showing up. Attendees need to make pertinent decisions about selecting the appropriate sessions, budgeting their time, meeting people with similar interests, or connecting with others who might provide valuable career assistance.

The CDC will provide just such information to 20 minority CSE Ph.D. students who will be selected to attend a series of workshops in San Diego, California, in June 2000. Workshops 2000, June 19-20, the fourth in a series of annual workshops conducted by the Computing Research Association, offers an "Industrial Careers Workshop," "Effective

Teaching in CSE Workshop," and "Academic Careers Workshop." Participants will also attend the USENIX Annual Technical Conference, June 18-23, also in San Diego.

Five faculty mentors will meet with the students prior to the workshops, lead them through their participation in the week that follows, and accompany them to the meetings. An announcement is forthcoming (see website). Bryant York, Northeastern University (york@ccs.neu.edu), and Don Frederick, San Diego Supercomputer Center (frederik@sdsc.edu), are directing this activity.

Workshop on Best Practices

It is vitally important that a diverse group of students be recruited into, and supported in, graduate schools in the computing disciplines. Generally, attempts at both of these have not proven successful for a variety of reasons. There are, however, pilot or ongoing programs that do evidence success, and those successes need to be examined.

In March 2000, CDC brought together individuals who run successful programs for a straightforward discussion about their projects and the reasons for their successes. A report from the workshop will be disseminated at CRA's Snowbird Conference 2000 in July and will appear in the September edition of *Computing Research News*. It is hoped that other interested individuals and

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CRA Service Award Winners

CRA presents two awards, usually annually, to individuals for outstanding service to the computing research community. The first, the Distinguished Service Award, recognizes service in the areas of government affairs, professional societies, publications, or conferences, and leadership that has a major impact on computing research.

The second award honors the late A. Nico Habermann, former head of NSF's Computer and Information Science and Engineering Directorate. Dr. Habermann was deeply committed to increasing the participation of women and underrepresented minorities in computing research. This award is given to an individual who has played a leadership role in aiding members of underrepresented groups within the computing research community. It recognizes work in areas of government affairs, educational programs, professional societies, and public awareness.

CRA Distinguished Service Award

Juris Hartmanis, Walter R. Read Professor of Engineering at Cornell University, has been awarded CRA's Distinguished Service Award for 2000.

Dr. Hartmanis is an eminent computer scientist and a co-recipient of the 1993 ACM Turing Award. With his deep understanding of the computer science and engineering discipline and keen insight of the enormous impact of computing research to high technology, he has made outstanding contributions and played a leading role to help the public recognize the importance of computing research.

From 1990 to 1992, Dr. Hartmanis chaired the study of the scope and direction of computer science conducted by the Computer Science and Telecommunications Board of the National Research Council. This study resulted in the influential volume *Computing the Future: A Broader Agenda for Computer Science and Engineering*, which had a major impact on the computing research community's ability to look outward.

Juris Hartmanis recently completed a two-year term as the Assistant Director of the National Science Foundation (NSF) for Computer and Information Science and Engineering (CISE). During his tenure, he played a key role in positioning the NSF and CISE to assume a leadership role in response to the President's Information Technology Advisory Committee (PITAC) report. He was instrumental in shaping the discussion that led to NSF's playing the lead role in the Information Technology Research (ITR) program.

Dr. Hartmanis will receive his award on July 10 at CRA's Snowbird Conference 2000.

The Distinguished Service Award Committee included Stephen Yau, Arizona State (Chair), David Gries (University of Georgia), and Barbara Simons (ACM).



Juris Hartmanis

CRA A. Nico Habermann Award

Roscoe Giles has been selected to receive the 2000 A. Nico Habermann Award. Dr. Giles is a Professor in the Department of Electrical and Computer Engineering at Boston University.

For the past 25 years, Dr. Giles has worked at MIT and Boston University to increase the participation of underrepresented minorities in the computing disciplines. He has served as a faculty advisor and mentor for the Minority Engineers Society at Boston University, an affiliate of the National Society of Black Engineers. Dr. Giles has mentored high school, undergraduate, and graduate students in New England for the New England Board of Higher Education.



Roscoe Giles

Because of his strong commitment to education, combined with his energy and dedication to diversifying the population of CSE students and faculty nationwide, Dr. Giles was named one of three co-chairs of the Education, Outreach, and Training (EOT) program for the NSF Partnerships in Advanced Computational Infrastructure (PACI). This program focuses on improving the computational component of K-12 education, developing K-12 computing curricula that appeal to girls and underrepresented minorities, and increasing the involvement of institutions that serve minorities in PACI.

Roscoe Giles helped to organize an NSF workshop on "Increasing Participation of Minorities in the Computing Disciplines" that led to the formation of the Coalition to Diversify Computing. Dr. Giles works actively with the NSF EDUCAUSE/EOT-PACI project, Advanced Networking with Minority Serving Institutions (AN-MSI). This project assists colleges and universities that traditionally serve African-American, Hispanic, and Tribal communities in the development of the infrastructure and skills needed to take advantage of advanced computational tools and resources, such as the technology Grid being prototyped by the PACI program. The Grid will connect people, supercomputers, virtual environments, scientific instruments, educational tools, and large data sets through a seamless, integrated, persistent environment operating over high-speed networks.

Dr. Giles co-chaired the Education Program for the SC97 conference, benefiting a large group of diverse teachers and exposing thousands of SC97 conference attendees to the K-12 use of technology. He will serve as general chair for SC2002.

Roscoe Giles will receive his award on July 10 at CRA's Conference at Snowbird.

Members of CRA's A. Nico Habermann Award Committee included Corky Cartwright, Rice University (Chair), Richard Tapia (Rice University), and Valerie Taylor (Northwestern University).

CRA-W Publications Focus on Career Advancement for Women

By Ann Redelfs

Addressing the challenges facing women in computer science and engineering has long been an issue for the Computing Research Association (CRA). The mission of the CRA Committee on the Status of Women in Computer Science and Engineering (CRA-W), established in 1991, is "to take positive action to increase the number of women participating in Computer Science and Engineering (CSE) research and education at all levels."

Over the years, CRA-W has developed several projects to help women take a foothold down their chosen career paths. In an effort to reach greater numbers of people interested in seeing women succeed, CRA-W has produced three publications detailing these successful programs, and a fourth publication designed to encourage young women to pursue careers in CSE. All of these publications are, or soon will be, available on CRA-W's website, <http://cra.org/Activities/craw/>, and some are available as printed copies (see website).

Workshops on Academic Careers for Women in Computer Science

Few programs have been as enduring and successful as the CRA-W Workshops on Academic Careers for Women in Computer Science. Started in 1993, they have been offered in conjunction with major professional conferences, such as the Federated Computing Research Conference (FCRC), Supercomputing (SC), the Grace Hopper Celebration of Women in Computing, and the ACM Computer Science Conference.

Attendance increases with each workshop because the topics are relevant and the focus is on providing critical information and mentoring to students and professional women at all levels in CSE. Workshops include sessions on topics such as "Getting a Job," "Building a Research Career," "Obtaining Federal Funding," "Time Management," "Networking and Professional Social Interaction," "Perspectives from the Smaller Schools," and "Tenure."

Pulling together the wisdom and experiences from nearly a decade of

workshops, CRA-W is now offering a summary publication featuring timely and timeless information to help women advance in their careers. The publication was authored by several of the women who have conducted the workshops over the years: Mary Jane Irwin, Pennsylvania State University; Fran Berman, University of California, San Diego; Jan Cuny, University of Oregon; Caroline Wardle, National Science Foundation; and Sheila Castaneda, Clark College. Although written primarily for those pursuing academic careers, this publication provides goal-oriented advice for anyone seeking to climb the ladder in their organization.

Examples of advice from the publication include:

Obtaining Federal Funding:

Discussions include the importance of knowing your institutional environment, strategies for proposal submission, how to prepare and present your proposal, the ins and outs of proposal review at several federal agencies, evaluation criteria, and what to do when advised of your proposal's success or failure. The chapter also includes information on the importance (and "how to's") of communicating with federal program managers, getting reviews before you submit your proposal, and the percentage of successful proposals at each agency.

Tenure: Includes information about the tenure process, building a

CRA-W Continued on Page 8

Grace Hopper Celebration of Women in Computing 2000

September 14-16, 2000
Sheraton Hotels
Cape Cod, Massachusetts
<http://www.sdsc.edu/Hopper>

Who Was Maxwell Dworkin?

By Albert Gold

That's a trick question that I suspect will be asked of incoming Harvard freshmen for



Albert Gold

generations to come. Maxwell Dworkin is Harvard's new computer science and electrical engineering building, which opened in September 1999. It is named in honor of Mary Maxwell Gates and Beatrice Dworkin Ballmer, the mothers of the building's principal donors, alumni Bill Gates and Steve Ballmer. A photo of the exterior is shown in Figure 1.

Computer science and electrical engineering are fields marked for rapid expansion at Harvard. Overcrowded facilities for them were scattered through three buildings. Computer science is the fastest growing undergraduate concentration here. These factors combined to make a new, state-of-the-art facility our highest new construction priority. Fittingly, the university chose to place it on the site formerly occupied by the Aiken Computation Laboratory, which was demolished to make way for the new building. Faculty who had occupied Aiken were housed in temporary quarters for the approximately two-year period required to complete the project.

Working with a faculty planning

committee chaired by then Dean of the Division of Engineering and Applied Sciences, Paul C. Martin, the architects, Payette Associates, Inc. of Boston, produced a plan for a five-story building of 100,000 gross square feet containing offices and research laboratories for 30 faculty members, their graduate students, postdocs, and professional and supporting staffs on its upper three floors. The basement level is devoted to instructional laboratories, workspaces for teaching fellows, a server room for the central computer network, and the building's electrical and mechanical services. The ground floor contains a 120-seat amphitheater, a 48-seat executive seminar room with an associated breakout room, a 35-seat classroom, a public computer area outfitted with 17 work stations, student lounge and service areas, and offices for the division's computer support staff. The classrooms are all fitted with the latest available multimedia instructional aids and the executive seminar room is equipped to support two-way, interactive distance learning. Power and network connections are available at every seat in these classrooms. The ground floor plan is shown in Figure 2.

The upper three floors, each with a similar floor plan, house the faculty and their associated research groups. They are interconnected by an open central double staircase designed to facilitate ease of transit and interaction among the occupants. On each of these levels the staircase leads to a large open lounge area furnished with couches, comfortable chairs, small tables, large marker boards, power

and network connections, and public PCs. Again, interaction is the intent. A conference room is adjacent to each of these lounges. A second conference room and a smaller lounge area, similarly equipped, are available on each floor. Figure 3 illustrates the layout of one of these floors.

The massive 20,000 square foot footprint of the building, dictated by a combination of program requirements and local restrictions on building height, presents a major design challenge if the interior is to avoid having a dark, cavernous feeling. The use of natural light was the architect's response to this challenge. The central staircase is topped by clerestory windows, and the stair treads are made of frosted glass to allow the light to filter down to all of the office levels. The ends of the wide main corridor, some 240 feet long, are entirely of glass. Windows everywhere are huge, with the faculty offices' south walls being entirely glass from desk-top height up. Each of these floors is connected to Pierce Hall, another major building in the Engineering and Applied Sciences complex, via an enclosed bridge. This provides Maxwell Dworkin occupants with direct indoor access to the division's administrative offices and its library, as well as to the classrooms and their colleagues in other fields housed there.

The byword in planning Maxwell Dworkin's technology infrastructure

was "flexibility." The committee was convinced that change will remain the only constant in this area. Hence,

adaptability to change is the central design philosophy. The main vertical distribution for data and voice communications is via 18 four-inch conduits, most of them still empty, running up the height of the building at its center. Horizontal distribution on each floor is via open cable trays at a height of about eight feet running in the hallways. Each office and laboratory

has a dual, pop-out front electrical raceway, which carries power and data around the room at counter-top height; outlets and jacks can be located and relocated anywhere in a matter of minutes. In addition to gigabit to the desktop ethernet connectivity, the building has wireless network coverage via base stations on every floor.

As Maxwell Dworkin approaches the end of its first academic year of use, the faculty seem most pleased with their new quarters and the attempt to use open and interconnected spaces to encourage interaction among faculty and students appears to have worked much as planned.

Albert Gold is Associate Dean for Administration, Division of Engineering and Applied Sciences, at Harvard University (gold@deas.harvard.edu).



Figure 1

Figure 2. Ground Floor

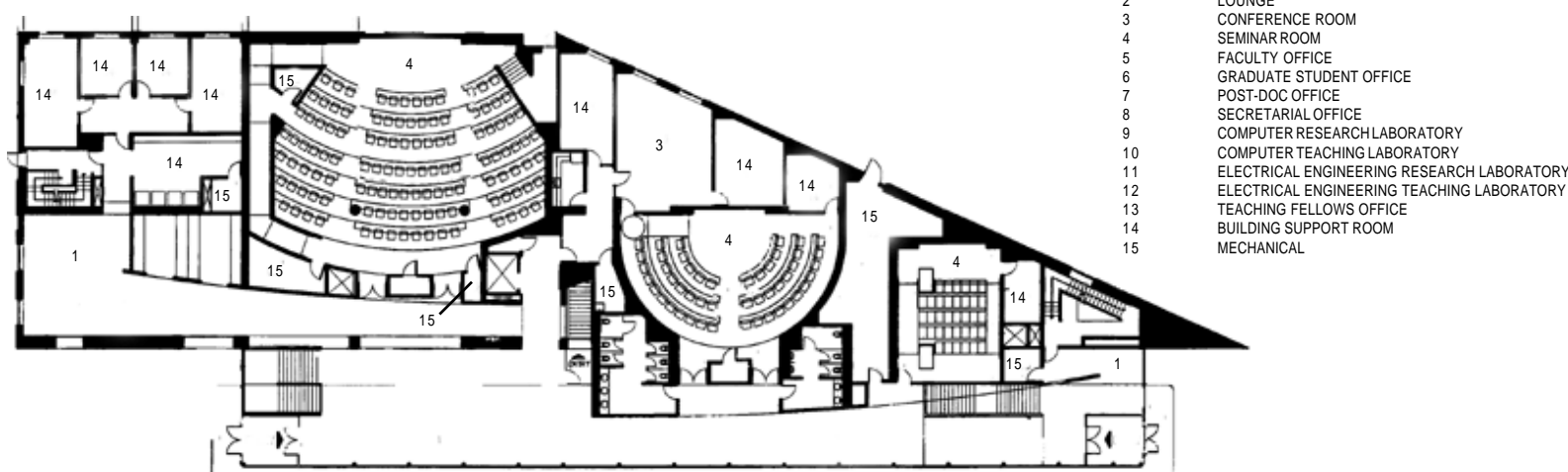
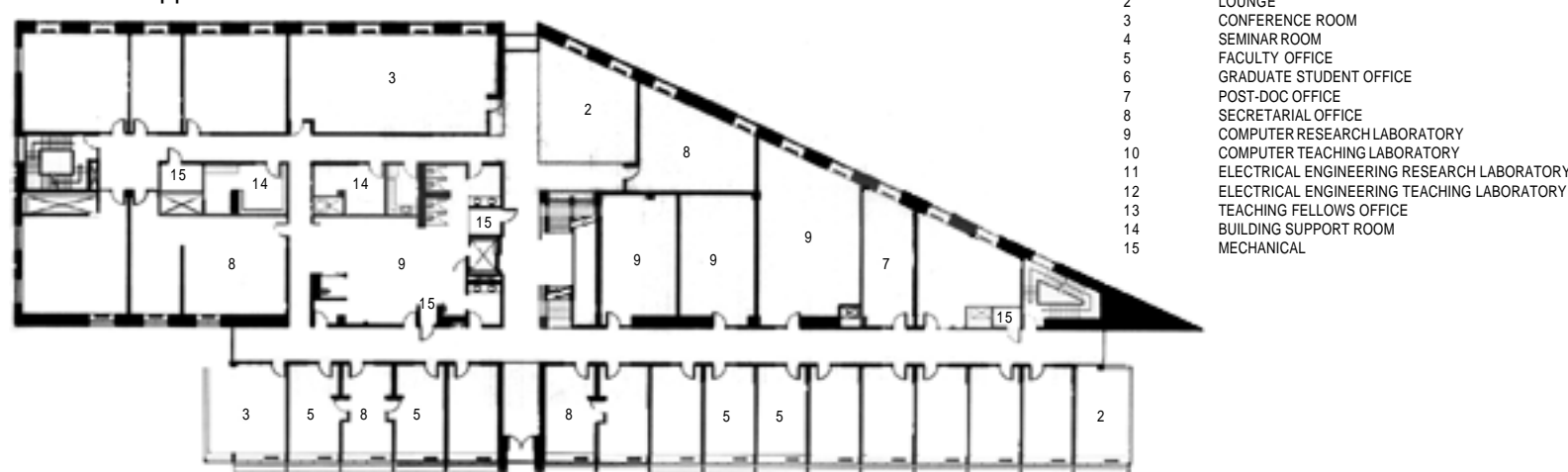


Figure 3. One of Three Upper Floors



NAE Elects New Members

The National Academy of Engineering (NAE) has again elected members of the computer science and engineering community to the Academy. NAE President William A. Wulf made the announcement on February 17.

This honor is reserved for those who have made "important contributions to engineering theory and practice, including significant contributions to the literature of engineering theory and practice," and those who have demonstrated "unusual accomplishment in the pioneering of new and developing fields of technology."

This year the Academy elected 78 engineers and eight foreign associates to membership in the Academy. This brings the total U.S. membership to 2,027 and the number of foreign associates to 157.

NAE new members in computer science and engineering fields include:

Tamer Basar, Fredric G. and Elizabeth H. Nearing Professor of Electrical and Computer Engineering, University of Illinois, Urbana-Champaign. For development of dynamic game theory and application to robust control of systems with uncertainty.

James F. Blinn, graphics fellow, Microsoft Research, Redmond, Wash. For contributions to the technology of educational use of computer graphics and for expository articles.

Delores M. Etter, deputy undersecretary of defense of science and technology, office of the secretary of defense, Washington, D.C. For the authorship of textbooks on computer applications in engineering, contributions to digital signal processing, and service to the profession.

Randy H. Katz, professor of electrical engineering and computer science, University of California, Berkeley. For contributions to high-performance input/output systems, engineering education, and government service.

Nancy G. Leveson, professor of aerospace information systems, Massachusetts Institute of Technology, Cambridge. For contributions to software safety.

Jacob T. Schwartz, mathematics and computer science professor, Courant Institute, New York University, New York City. For contributions to the theory and practice of programming language design, compiler technology, and parallel computation.

Daniel P. Siewiorek, Buhl Professor of Electrical and Computer Engineering and Computer Science, Carnegie Mellon University, Pittsburgh. For contributions to wearable computers, multiprocessor design, reliable systems, and automated design synthesis.

W. David Sincoskie, vice president, Internet architecture research laboratory, Telcordia Technologies (formerly Bellcore), Morristown, N.J. For contributions in packet switching for integrated networks.

Gerald J. Sussman, Matsushita Professor of Electrical Engineering, department of electrical engineering and computer science, Massachusetts Institute of Technology, Cambridge. For applications of artificial intelligence and for computer science education.

New Foreign Associate:

Andreas Von Bechtolsheim, vice president of engineering, Cisco Systems Inc., San Jose, Calif. For contributions to the design of computer workstations and high-performance network switching.

—NEW—

IEEE COMPUTER SOCIETY UNDERGRADUATE TEACHING AWARD

AWARD CRITERIA

The goal of this award is to recognize individuals who have made pedagogical contributions to the computer science, computer engineering, and information science and technology disciplines that have had a significant impact on undergraduate teaching. These contributions may be materials that introduce an innovative and effective way of approaching their subject matter (e.g., textbooks, software packages, websites), or teaching methodologies that improve the educational experience. We are

particularly interested in materials and methodologies that may not be very widely known or used, but that have the potential to positively influence undergraduate teaching in these disciplines.

NOMINATION AND AWARD PROCESS

Nominations should be sent by email to Stephen Seidman (seidman@cs.colostate.edu) by **August 1, 2000**. Awards will be made at the Frontiers in Education 2000 (FIE 2000) conference that will be held in Kansas City in late October.

Register Now!

Three CRA Workshops—June 2000

Industrial Careers **NEW**

Effective Teaching

Academic Careers

June 19-20, 2000, San Diego Marriott Hotel & Marina, San Diego, California, in conjunction with the USENIX Annual Technical Conference, June 18-23, 2000

Details: <http://www.cra.org>

Legislative from Page 1

on Science, Technology, and Space, has seen his efforts to double spending on all civilian R&D over ten years, the Federal Research Investment Act (S. 296), rebuffed by the House, he might choose to make support for NITR&D contingent on the House's support for his doubling bill.

Positive Signs for Science Budget

The Congressional budget process is getting underway, following submission by the President of a FY 2001 budget request with strong support for research programs, including a 35 percent increase for Information Technology R&D (see article in March 2000 CRN for details).

The first step is for Congress to enact a budget resolution that sets overall spending and revenue levels and makes spending recommendations for various categories of federal activities. The House passed its version in late March after science advocates, led by Reps. Rush Holt (D-NJ) and Vern Ehlers (R-MI), succeeded in winning a \$1 billion increase in the funding recommendation for the General Science, Space, and Technology category.

Budget Function 250, as the General Science, Space, and Technology category is known, covers the National Science Foundation, NASA, and other civilian research programs. The lower chamber's budget resolution (H.Con.Res. 290) recommends that the budget for Function 250 rise from \$19.3 billion in FY 2000 to \$20.3 billion in FY 2001. The latter would not be enough to cover the Administration's spending requests for these programs, but the significant increase sends an important signal that Congress is receptive to expanding support for research even under difficult fiscal circumstances.

The Senate was scheduled to vote on its version of the budget resolution (S.Con.Res 101) on April 7, as this issue of CRN was being readied for press, after considering an amendment by Senator Edward Kennedy (D-MA) that would express the "sense of the Senate" on the importance of maintaining strong civilian and defense R&D programs. Unless further amended, the Senate's budget resolution would recommend only \$19.7 billion for Function 250.

The next milestone in the budget process will occur when each chamber's Appropriations Committee meets to divvy up the discretionary budget among its 13 subcommittees, a process known as 302(b) allocations.

This is a critical step, as it largely determines whether key subcommittees will have enough funding to provide funding increases for the research agencies under their jurisdictions. In an effort to ensure that they do, Rep. Ehlers is circulating a "Dear Colleague" letter that urges appropriators to give special attention to subcommittees that fund basic science programs when making their 302(b) allocations.

Visa Caps Likely to Rise

Under increasing pressure from the private sector to ease difficulties in filling high-tech jobs, Congress is moving forward on legislation to raise the caps on H-1B temporary visas for skilled foreign workers.

Senator Orrin Hatch (R-UT), Chairman of the Senate Judiciary Committee, is leading the charge with the American Competitiveness in the 21st Century Act (S. 2045), approved by his committee in early March. The bill would raise the cap to 195,000 per year for each of the next three years, and would exempt from the cap visas granted to those working in universities or those who have recently received advanced degrees from U.S. educational institutions. The cap currently stands at 115,000 per year.

"Common sense tells us that we must allow American high-tech companies to fill their labor needs in the U.S., or they will be forced to take these opportunities of growth abroad," says Hatch.

Similar legislation has been introduced in the House by Rep. David Dreier (R-CA). The Helping to Improve Technology Education and Achievement (HI-TECH) Act (H.R. 3983) would increase the number of allowable H-1B visas to 200,000 per year for three years, with 10,000 visas set aside for university employees and 60,000 set aside for foreign workers with at least a Master's degree.

Although Rep. Lamar Smith (R-TX), Chairman of the House Judiciary Committee's Subcommittee on Immigration and Claims, favors a more limited approach to altering the H-1B cap, the Dreier bill has been endorsed by both the House Republican and Democratic leadership.

Those who support raising the temporary visa cap acknowledge it as only a short-term measure and recognize that longer-term solutions need to be developed as well. Each of the bills under consideration would increase the fees companies pay to acquire H-1B visas and devote the funds to scholarships and other educational programs.

Federal Funding Agencies

DOD/Air Force Office of Scientific Research	
801 North Randolph Street Room 732 Arlington, VA 22203-1977 http://www.afosr.af.mil	
Math and Space Sciences	
Director	Clifford E. Rhoades, Jr. 703-696-7797 clifford.rhoades@afosr.af.mil
AI Program Manager	Alexander Freeman Kilpatrick 703-696-6565 alex.kilpatrick@afosr.af.mil
Software and Systems Program Manager	Alexander Freeman Kilpatrick 703-696-6565 alex.kilpatrick@afosr.af.mil
DOD/Army Research Office	
ATTN: AMSRL-RO-EM PO Box 12211 Research Triangle Park, NC 27709-2211 http://www.aro.army.mil	
Mathematical & Computer Sciences Division	
Associate Director	Julian Wu 919-549-4254 jjwu@aro-emh1.army.mil
Applied Analysis	John Lavery 919-549-4253 lavery@aro-emh1.army.mil
Computational Mathematics	Stephen Davis 919-549-4284 sdavis@aro-emh1.army.mil
Statistics, Probability, and Stochastic Analysis	Robert Launer 919-549-4309 launer@aro-emh1.army.mil
Systems & Control	Linda Bushnell 919-549-4319 bushnell@aro-emh1.army.mil
Software & Knowledge-Based Systems	David W. Hislop 919-549-4255 hislop@aro-emh1.army.mil
DOD/Defense Advanced Research Projects Agency	
3701 N. Fairfax Drive Arlington, VA 22203-1714 http://www.darpa.mil	
Technology Offices	
Director, Information Systems Office	William Mularie 703-696-7438 wmularie@darpa.mil
Director, Information Technology Office	Shankar Sastry 703-696-2228 ssastry@darpa.mil
DOD/Office of Naval Research	
Ballston Center Tower, 800 N. Quincy St. ONR 311 Arlington, VA 22217-5660 http://www.onr.navy.mil	
Mathematical, Computer, & Information Sciences Division	
Director	Andre van Tilborg 703-696-4312 avantil@itd.nrl.navy.mil
Applied Analysis	Wen Masters 703-696-4314 masterw@itd.nrl.navy.mil
Artificial Intelligence	Andre van Tilborg 703-696-4312 avantil@itd.nrl.navy.mil
Command & Control	Paul Quinn 703-696-5753 quinnp@onr.navy.mil

Mathematical, Computer, & Information Sciences Division, cont.	
Discrete Mathematics & Operations Research	Donald Wagner 703-696-4313 wagnerd@onr.navy.mil
Numerical Analysis	Richard Lau 703-696-4316 laur@onr.navy.mil
Probabilities & Statistics	Wendy Martinez 703-696-3163 martinezw@onr.navy.mil
Robotics	Teresa McMullen 703-696-3163 mcmullt@onr.navy.mil
Software	Ralph Wachter 703-696-4304 wachter@itd.nrl.navy.mil
Scientific Visualization	Lawrence Rosenblum 202-767-5333 rosenblum@ait.nrl.navy.mil
Department of Energy	
Office of Science SC-30 19901 Germantown Road Germantown, MD 20874-1290 http://www.sc.doe.gov	
Director (Acting)	James S. Decker 202-586-5434 james.decker@science.doe.gov
Office of Advanced Scientific Computing Research	
Associate Director	Edward Oliver 301-903-7486 ed.oliver@science.doe.gov
Acting Director, Mathematical, Information, & Computational Sciences	Edward Oliver 301-903-7486 ed.oliver@science.doe.gov
National Institute of Standards & Technology	
Building 225, Room B264 Gaithersburg, MD 20899-8900 http://www.nist.gov	
Information Technology Laboratory	
Director	William L. Mehuron 301-975-2900 william.mehuron@nist.gov
Office of Science & Technology Policy	
17th Street & Pennsylvania Avenue NW, Room 424 Washington, DC 20502 http://www.whitehouse.gov/WH/EOP/OSTP/html/OSTP_Home.html	
Director; Assistant to the President for Science & Technology	Neal Lane 202-456-7116
Associate Director for Science	Arthur Bienenstock 202-456-6130
Associate Director for Technology	Duncan Moore 202-456-6032
National Science Foundation	
Directorate for Computer and Information Science and Engineering 4201 Wilson Blvd. Arlington, VA 22230 http://www.cise.nsf.gov	
Advanced Computational Infrastructure & Research (ACIR)	
Division Director	Robert R. Borchers 703-306-1970 borchers@nsf.gov
Deputy Division Director	Richard Hirsch 703-306-1970 rhirsch@nsf.gov

Federal Funding Agencies

Advanced Computational Infrastructure & Research (ACIR), cont.	
Partnership for Advanced Computational Infrastructure (PACI)	Stephen Elbert 703-306-1963 selbert@nsf.gov
Terascale Computing Systems	Stephen Elbert 703-306-1963 selbert@nsf.gov
Advanced Computational Research	Charles Koelbel 703-306-1962 ckoelbel@nsf.gov
Large Scientific and Software Data Set Visualization	Charles Koelbel 703-306-1962 ckoelbel@nsf.gov
Advanced Networking Infrastructure & Research (ANIR)	
Division Director (Acting)	Aubrey Bush 703-306-1950 abush@nsf.gov
Deputy Division Director	Aubrey Bush 703-306-1950 abush@nsf.gov
Advanced Networking Infrastructure	William Decker 703-306-1949 wdecker@nsf.gov
Networking Research	Karen Sollins 703-306-1949 ksollins@nsf.gov
Special Projects in Networking	Darlene Fisher 703-306-1949 dlfisher@nsf.gov
Internet Technologies	Anne Richeson 703-306-1949 aricheso@nsf.gov
Computer-Communications Research (CCR)	
Division Director	Michael Evangelist 703-306-1910 mevangel@nsf.gov
Deputy Division Director	Kamal Abdali 703-306-1912 kabdali@nsf.gov
Software Engineering & Languages	Frank Anger 703-306-1911 fanger@nsf.gov
Computer Systems Architecture	Laxmi Bhuyan 703-306-1936 lbhuyan@nsf.gov
Signal Processing Systems	John Cozzens 703-306-1914 jcozzens@nsf.gov
Design Automation	Robert Grafton 703-306-1936 rgrafton@nsf.gov
Operating Systems & Compilers	Mukesh Singhal 703-306-1918 msinghal@nsf.gov
Theory of Computing	Zechezkel Zalcstein 703-306-1914 zzalcste@nsf.gov
Communications	Rodger Ziemer 703-306-1912 rziemer@nsf.gov
Numeric, Symbolic, and Geometric Computation	William Franklin 703-306-1912 wfrankli@nsf.gov
Experimental and Integrative Activities (EIA)	
Acting Division Director	Rick Adrion 703-306-1980 wadrion@nsf.gov
Deputy Division Director	Carolyn Wardle 703-306-1980 cwardle@nsf.gov
Digital Government	Lawrence Brandt 703-306-1981 lbrandt@nsf.gov
Interactive Graduate Education & Research Training	Dragana Brzakovic 703-306-1981 dbrzakov@nsf.gov
Professional Opportunities for Women in Research & Education	Dragana Brzakovic 703-306-1981 dbrzakov@nsf.gov

Experimental and Integrative Activities (EIA), cont.	
Major Research Instrumentation	Dragana Brzakovic 703-306-1981 dbrzakov@nsf.gov
Next Generation Software	Frederica Darema 703-306-1981 darema@nsf.gov
Challenges in CISE	Frederica Darema 703-306-1981 darema@nsf.gov
CISE Educational Innovation	Harry Hedges 703-306-1981 hhedges@nsf.gov
Research Experiences for Undergrads	Harry Hedges 703-306-1981 hhedges@nsf.gov
Combined Research-Curriculum Development	Harry Hedges 703-306-1981 hhedges@nsf.gov
Special Projects EIA	Harry Hedges 703-306-1981 hhedges@nsf.gov
CISE Postdoctoral Research Associates	Anthony Maddox 703-306-1981 amaddox@nsf.gov
Experimental Partnerships	Anthony Maddox 703-306-1981 amaddox@nsf.gov
CISE Research Infrastructure	Dragana Brzakovic 703-306-1981 dbrzakov@nsf.gov
Collaborative Research on Learning Technologies	Anthony Maddox 703-306-1981 amaddox@nsf.gov
CISE Minority Institutions Infrastructure	Dragana Brzakovic 703-306-1981 dbrzakov@nsf.gov
NSF-CONSCyT Collaborative Research Opportunities	Lawrence Brandt 703-306-1981 lbrandt@nsf.gov
NSF-CNPq Collaborative Research Opportunities	Lawrence Brandt 703-306-1981 lbrandt@nsf.gov
CISE Advanced Distributed Resources for Experiments	Michael Foster 703-306-1980 mfoster@nsf.gov
Information & Intelligent Systems (IIS)	
Division Director (On Leave)	Y.T. Chien 703-306-1930 ytchien@nsf.gov
Division Director	Michael Lesk 703-306-1930 mlesk@nsf.gov
Deputy Division Director (Acting)	Gary W. Strong 703-306-1928 gstrong@nsf.gov
Knowledge & Cognitive Sciences	Ephraim Glinert 703-306-1926 eglinert@nsf.gov
Special Projects	Steven Griffin 703-306-1930 sgriffin@nsf.gov
Computational & Social Systems	Suzanne Iacono 703-306-1927 siacono@nsf.gov
Information & Data Management	Maria Zemankova 703-306-1926 mzemanko@nsf.gov
Human Computer Interaction	Gary W. Strong 703-306-1928 gstrong@nsf.gov
Robotics & Human Augmentation	Jing Xiao 703-306-1928 jxiao@nsf.gov
Information Technology Research	
ITR Program Director	Richard Hildebrandt 703-306-1930 rhilderb@nsf.gov
CISE Program Officer	Michael Lesk 703-306-1930 mlesk@nsf.gov

Transitions and Awards

C. William Gear has retired as President of NEC Research Institute. Dr. Gear had been a CRA board member since 1989. David L. Waltz is the new President of NECI, effective April 1.

John Hennessy has been named President of Stanford University, effective September 1, 2000. Professor Hennessy, who has been the university's Provost for the past two years, formerly served as both dean of the school of engineering and chair of the computer science department at Stanford.

Nancy Leveson, Professor of Aerospace Software Engineering, Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, is the recipient of the ACM's Allen Newell Award for her pioneering work in establishing the foundations of software safety. Dr. Leveson is a member of the CRA board of directors.

David Patterson, Professor of Computer Science, University of California, Berkeley, has been awarded the IEEE James H. Mulligan, Jr. Education Medal "for inspirational teaching through the development of creative curricula and teaching methodology, for important textbooks, and for effective integration of education and research missions." Dr. Patterson also was awarded the IEEE John von Neumann Medal (shared with John Hennessy) "for creating a revolution in computer architecture through their exploration, popularization, and commercialization of architectural innovations." Dr. Patterson is a member of CRA's board of directors.

CRA board member, Dan Reed, Professor and Chair of Computer Science at the University of Illinois, Urbana-Champaign, has been appointed Director of the National Computational Science Alliance. He replaces Larry Smarr, who becomes Alliance Strategic Advisor to the Alliance and the National Center for Supercomputing Applications, both of which he has headed since 1985. Jim Bottum, deputy director of NCSA and the Alliance, will become NCSA's executive director. John Toole, former Deputy Director of NCSA, has been appointed CEO of the Computer Museum History Center in Mountainview, CA.

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CRA-W from Page 3

dossier, teaching, advising graduate students, research, publications, funding, creative accomplishments, service, building a strong case for tenure, and asking for advice. Emphasis is placed on planning early for your tenure—in fact, as soon as you begin your academic career—and keeping track of information such as submitted proposals, funded proposals, presentations at conferences, service on committees, graduate student mentoring and, of course, publications. An interesting observation is the importance of finding excellent graduate students to work with who will benefit from your research, but who can also substantially contribute to your success while gaining important experience themselves.

Perspectives from the Smaller Schools: This chapter points out that "The main mission of most small institutions is teaching—not the 'publish or perish' emphasis you may find at larger institutions." At some smaller institutions, promotion or tenure is evaluated through experience/success in approximately 50 percent teaching, 30 percent professional development, and 20

percent service. The chapter also explains the likelihood that you will be more involved with students' courses, career goals, and other activities than you would be at a larger school. The summary advice is: "If you are going to choose a career at a smaller institution you have to love teaching and enjoy a smaller environment. You may think of yourself as a teacher who happens to be a computer scientist, rather than a computer scientist who is teaching."

CRA-W: Best Practices in Recruiting and Retaining Women in CS and CSE

A highly focused workshop in the summer of 2000 will bring together individuals with experience in retaining women students in CSE. The goal: to summarize the most effective programs in the nation, and offer a report to university department chairs outlining steps they can take to better ensure the success of their female students.

It is no secret that the enrollment of women in these fields has gone down: according to the National Science Foundation, the number of computer science degrees granted to women reached 37 percent in 1984.

That figure has dropped to approximately 27 percent, according to the Department of Education. And only 18.8 percent of Ph.D. candidates in CSE in 1997-98 were women.

The report will be available through CRA-W's website this fall. Not only will it serve as a tool to improve academic departments, but it contains useful information for retaining female employees as well.

CRA-W Graduate Student Information Guide

Originally published in 1993 and updated in 2000, the CRA-W Graduate Student Information Guide provides information of value to anyone considering graduate school. The earlier in one's academic career that this publication is read, the better, as it provides advice and groundwork information that can be useful right at the beginning of undergraduate studies.

The publication begins with candid and thought-provoking advice on whether or not someone should consider applying to graduate school. It goes on to offer viewpoints on choosing the right school, financial aid, finding an advisor, the application process, and matriculation.

Advice on choosing an institution includes such questions as:

- ◆ In what type of academic climate do I wish to study?
- ◆ What are my academic credentials, research abilities, writing skills, GPA, test scores?
- ◆ Does the faculty exhibit special strengths and research qualities through their graduate advisees, published works, and funded research?
- ◆ Do recruiters seek the graduates of the programs?
- ◆ How senior are professors in your area, what are their interests, and what will their availability be?
- ◆ Is office space available for graduate students?

An appendix includes information about fellowships and scholarships available nationwide.

The Guide is filled with questions, advice, and details to help plan an approach to graduate school. Regardless of gender, this publication is an excellent guide to anyone considering advanced study.

Women in Computer Science

Initially published in 1996, "Women in Computer Science" has been one of CRA-W's more popular publications. Written for high school and early undergraduate students, this publication profiles the life stories of 18 successful women in CSE. The women range from students to independent business owners to highly acclaimed researchers in academia and industry. The biographies include family and/or outside activities of the women, as well as employment responsibilities and interests.

Young women may wonder about competition in science, mathematics, and engineering classes, or about

being in classes where men might outnumber them. The women featured in the brochure discuss challenges and competition, but they also tell readers that the intellectual stimulation and fun of their chosen field, the variety of exciting jobs they discovered after graduating from college, and the continuing opportunities they see for career advancement made their choices worthwhile.

The introduction to the publication provides the motivation for students to consider careers in CSE and to read on:

"Using high-speed computers, computer scientists and engineers are solving challenging problems not only for today but for future generations. One may be designing a robot to perform dangerous or repetitive tasks so people don't have to. Another may be developing a computer model to study smog dispersion or to map chromosomes for the human genome project. A third may be developing a graphical interface to make computers easier for novices to use. Still another may be optimizing an airline's flight schedule to maximize the use of its airplanes and minimize costs or developing a virtual reality scene for a movie or art show."

Thanks to the generous support of the Association for Computing Machinery's Special Interest Groups, this publication has been reprinted to ensure its distribution to a greater number of students and guidance counselors. CRA-W recommends that this publication be distributed to students as part of a presentation or workshop on careers, and encourages presenters to provide feedback on its usefulness.

Conclusion

CRA-W offers a wide range of programs and publications designed to bring women into the world of CSE. Other programs include:

- ◆ **Distributed Mentor Project**, which matches female undergraduates with female professors for a summer of research and mentoring. If interested, write Sheila Castaneda, Clarke College (cast@keller.clarke.edu).

- ◆ **Collaborative Research Experience for Women**, which provides undergraduate research experiences for groups of two to three undergraduate women. If interested, write Mary Jean Harrold, Georgia Institute of Technology (harrold@cc.gatech.edu).

- ◆ **Women's Database Project**, which includes the resumes of more than 800 women with Ph.D.s in CSE. Write Susan Owicki, InterTrust (Owicki@intertrust.com), for information.

Additional information about CRA-W is available at <http://cra.org/Activities/craw/>; also on the website is a registration site for announcements about CRA-W activities.

Ann Redelfs is Director of External Relations and Education, San Diego Supercomputer Center/NPACI (redelfs@sdsc.edu).

Telcordia from Page 1

Telcordia computer science researcher to start-up company (formed around his co-invention of a digital time-stamping technique), and then back to Telcordia.

While Stornetta's case is unusual by traditional standards, it may prove to be a more common model in the future. We are often faced with an embarrassment of technology riches, not all of which can find a logical home in the current internal business plans. The value of some of these nuggets may be best realized by following non-traditional paths.

The ICSRL emphasizes rock-solid ties with the external scientific community. Our researchers are expected to be active in professional activities, including publishing and presenting conference papers. We strongly support a variety of research institutes that focus their energies on computer and mathematical science problems of importance to us. In 1988, we were one of four New Jersey institutions to join and found the Center for Discrete Mathematics and Theoretical Computer Science, DIMACS, which is located at nearby Rutgers University.

We also have long-standing relationships with the Software Engineering Research Center (SERC) housed at Purdue University, reflecting Telcordia's emphasis on software quality and productivity; and the Center for Advanced Computing and Communications (CACC), located at Duke and North Carolina State Universities, because of our interest in high-performance and highly

reliable distributed systems.

Telcordia has been a member of the Participating Corporations Program of the Institute for Mathematics and Its Applications (IMA) at the University of Minnesota since its inception in 1986. This year, when the National Institute of Statistical Sciences (NISS) in North Carolina established an Affiliates Program centered on cross-disciplinary research involving statistics, we became one of its charter members. We also work closely with many university colleagues and departments in virtually every section of the country. All of these connections help us to multiply the impact of our own research investment.

Internally, the ICSRL is organized into the Software Technology Research Department, headed by Mark Segal; the Information Analysis and Services Research Department, headed by Sid Dalal; the Cable Access Technologies and Services Research Center, recently created by Peter Bates; and the Mathematical Sciences Research Center, which I head. Within this structure we have about 15 focused research groups where all the serious research work gets done.

A scan of some of our current research projects will, I hope, give a sense of the research portfolio and the types of problems we work on.

- ◆ Mark Segal, in collaboration with researchers from our lab and SUNY Stony Brook, is developing techniques to detect and respond to computer system intrusions. Their approach matches patterns of system calls and network packets against

event-based behavioral specifications. It provides protection without requiring access to source code and allows mission-critical systems to keep running if attacked.

- ◆ Josephine Micallef leads a research team that develops and applies tools and technology for building and maintaining large, enterprise-critical, distributed applications. Major thrusts include Web architectural models, component-based software development techniques, workflow technology to manage and automate business processes, and language technology for finding industrial-scale solutions to hard optimization problems.

- ◆ A team of software engineering researchers, led by Bob Horgan, has developed a suite of methods and tools for analyzing and visualizing the reliability of software in different ways. While most approaches to this problem ignore the internal structure of the software under study, this one exploits it by capturing exact execution traces. (The technology is available for use by university researchers.)

- ◆ Ernie Cohen is working on an automatic verifier for crypto protocols and systems. The basic idea is to generate a special kind of invariant to reduce verification to first-order theorem proving, and then to blast it with a resolution theorem prover. Common authentication protocols can be checked in seconds.

- ◆ Raj Rajagopalan heads a team of researchers who are investigating "smart data" approaches to managing networks of firewalls. The goal is to develop tools that will determine if

global security properties are satisfied by firewall configurations and service specifications and, if not, to figure out how to reconfigure the firewall parameters so they are.

- ◆ Amjad Umar and Paolo Missier are developing an adaptive knowledge-based decision support system. It is designed to behave like an expert system for routine problems and an intelligent assistant for harder problems. As part of this research, they are exploring Web mining using "Knowbots" that will recognize knowledge patterns and periodically update a knowledge base.

- ◆ David Shallcross, Fan Chung Graham, and others are developing mathematical algorithms and theory for network tomography. The basic problem is to infer the interior topology of a network from a series of delay measurements taken across its edges.

- ◆ Cliff Behrens and his team are building a next generation information retrieval system that supports concept-based queries on massive multilingual collections of documents.

There are numerous other examples, ranging from analysis of sailboat performance data from an America's Cup syndicate to a software communications infrastructure for monitoring compliance with the comprehensive (nuclear) test ban treaty. We are not at a loss for things to do!

For more information about research at Telcordia, please visit our web sites: <http://www.telcordia.com/> and <http://www.argreenhouse.com/>.

Dr. Kettenring is Executive Director of the Mathematical Sciences Research Center at Telcordia Technologies (jon@research.telcordia.com).

Coalition from Page 2

institutions can benefit from the report by selecting successful activities they can emulate or modify. The report will also be available on the websites of both CRA and CDC. Professor Andy Bernat, University of Texas at El Paso (abernat@cs.utep.edu) and Bill Aspray at CRA (aspray@cra.org) organized this workshop.

Survey: Minorities and Academic Degrees

While it is clear that minorities do not pursue the Ph.D. at the level desired, it is also true that minorities with Ph.D.s do not enter academia in the same proportion as do non-minority Ph.D. recipients. For example, of the 41 African-American Ph.D.s to graduate in computer science between 1991 and 1996, only one accepted an academic position. It is of vital interest to discover the reasons for this in order to attempt to increase the flow of minority Ph.D.s into academia. The CDC has a project under way to survey recent graduates to discover their personal stories, ascertain the reasons behind their career choices, and develop summary information that will be useful to a number of institutions.

The survey is available now, and CDC invites all recent minority

Ph.D.s and current minority Ph.D. students in CSE to complete a copy, available on CDC's website (select the link for Minority Ph.D. Employment Questionnaire). The questionnaire may be completed anonymously and should require only a few minutes of time. Summary results will be reported on the CDC website and widely disseminated at the conclusion of the solicitation period. This project is led by Bryant York, Northeastern University (york@ccs.neu.edu).

iFaces of Computingi Publication

The committee will complete a new publication, the "Faces of Computing" careers brochure, this summer. The 23 individuals profiled include 11 African Americans, six Hispanics, and six Native Americans, all in CSE careers. They include undergraduate and graduate students, college professors, entrepreneurs, and other professionals describing their background and career goals, along with their personal interests. This brochure is targeted to junior high and high school students, and will be distributed to schools throughout the country.

Some of the individuals profiled include: Paul Kabotie, president of Colorado-based Kabotie Software

Technologies and board member and vice chair of the American Indian Science and Engineering Society; Shirpaul McLaughlin, IBM systems development engineer and the first minority female to graduate magna cum laude from the School of Electrical Engineering at Case Western Reserve University; Paula Nelson, an undergraduate in the Computer Science Department at George Mason University; and Ramón E. Vasquez-Espinosa, professor of electrical engineering at the University of Puerto Rico, Mayaguez. This project was led by Jesse Bemley, Joint Educational Facilities, Inc. (bemlejl@hqda.army.mil) and Barbara Richmond, San Diego Supercomputer Center (richmond@spsc.edu).

Minority Database

CDC has established a database of minority graduate students and faculty to be used as a resource for the dissemination of information about CDC activities and EOT-PACI programs and activities. Minority graduate students and faculty are strongly encouraged to complete the survey, available at <http://www.sdsc.edu/cdcdp>; contributions to this database will provide information critical to academic institutions and employers, and will provide a

gathering point for announcements about career opportunities. This project is directed by Valerie Taylor, Northwestern University (taylor@ece.nwu.edu).

Conclusion

CDC is an organization comprised of individuals committed to improving the environment for minority researchers in CSE nationwide, and increasing the number of minorities involved in academic research. CDC's website, <http://www.npaci.edu/Outreach/CDC>, provides information on CDC programs and an opportunity to sign up for announcements. The website was developed by Charles Isbell, AT&T (isbell@research.att.com) and Eric Brittain, Massachusetts Institute of Technology (ericb@graphics.lcs.mit.edu).

CDC also encourages minority leaders to volunteer to lead a project for CDC; CDC aggressively seeks funding for selected projects. Persons interested in volunteering should contact one of CDC's co-chairs, Andrew Bernat (abernat@cs.utep.edu) or Valerie Taylor (taylor@ece.nwu.edu).

Sandra Johnson Baylor is Manager of DB2 Websphere Integration at IBM's Santa Teresa Laboratory. Ann Redelfs is Director of External Relations and Education, San Diego Supercomputer Center/NPACI.

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The format of an ad must conform to the following: 1) the first line must contain the name of the university or organization, 2) the second line usually contains the name of the department or unit, and 3) the body of the ad should be in paragraph form. The words in the first two lines are included in the total word count for the ad. You may request in writing that some text be set in bold; a bold word in the body of the ad counts as two words.

The rate is \$2.25 (U.S.) per word. Purchase orders, money orders, and checks are acceptable (please do not send cash). All CRA members receive 200 free words per dues year. CRA's standard advertising package consists of running an ad in *CRN*, and distributing it electronically to CRA's jobs listserv and webpage (where it remains for no less than two months). As an alternative to this package, advertisers may request that their Professional Opportunities ads just be published in *CRN* or just distributed electronically. The cost of the ad is the same whether the standard or the alternative package is selected.

Professional Opportunities display ads cost \$60 (U.S.) per column inch, with a two-inch minimum. Ads must be submitted in camera-ready, offset (positives or negatives) or mechanical form. If your ad is larger than three inches, please request our Advertising Rate Card.

Computing Research News is published five times per year: in January, March, May, September, and November. If the closing date of a Professional Opportunities ad does not correspond with the publication of an issue of *CRN*, advertisers can choose the alternative advertising package and only have the ad distributed electronically. Advertising copy that is to appear in *CRN* must be received at least one month before publication. The deadline for the September issue is August 1. Ads for electronic distribution only may be submitted at any time.

University of Alberta Department of Computing Science

Do you have a commitment to the science of computing? Are you looking for an academic environment that focuses on the science of your discipline?

Join us in a dynamic Computing Science department, known for its collegial atmosphere and collaborative research environment. Our department is in the Faculty of Science at the University of Alberta, in Edmonton, the capital of Alberta. We have eight established research laboratories, including Algorithmics, Artificial Intelligence and Cognitive Science, Database Management, Graphics, Networks and Communications, Software Systems, Software Engineering, and Vision and Robotics. We have abundant computing facilities, and our department leads broadly-based multidisciplinary research within the Multimedia and Advanced Computational Infrastructure (MACI) project, and the Research Institute for Multimedia Systems (RIMS). In addition to the standard computational research facilities, we also have a large SGI Origin 2000, and a 3D immersive display powered by an SGI Onyx2. We are currently constructing a new research laboratory building adjacent to a renovated historical building, to provide us with office and research space consolidated in the middle of our campus of about 30,000 students (see WebCam at www.cs.ualberta.ca). Our current complement of 37 regular faculty work within a department of 28 support staff, 135 graduate students (50/50 MSc/PhD) and 325 undergraduate students. Our consistent performance in ACM World Programming Contests is evidence of our claim to be one of the best undergraduate programs in the country, and our graduate students are successful in industrial and academic research labs around the world. We are looking for young eager computing scientists to complement our strengths in all areas. We are especially keen on those who can demonstrate that they are driven by curiosity and interested in collaborative research with existing faculty across subdisciplines. Candidates should have a PhD in Computing Science, a proven research record, and a strong commitment to excellence in teaching. Responsibilities include research as well as teaching at the graduate and undergraduate levels. Most positions will be at the assistant professor level; however, we will consider associate and full professor appointments for outstanding candidates.

We offer an environment that is congenial and supportive of new PhDs, with the challenge to help you be your best, and the support to help you succeed within an academic environment. Our department is part of a full-service university in a province that has the fastest economic growth in the country, which includes more than

1,600 existing software development companies. Our current recruiting segment will end June 30, 2000. Find further details about us at www.cs.ualberta.ca and send your curriculum vitae and the names and addresses of three referees to Iris Everitt, Administrative Assistant, Department of Computing Science, University of Alberta, Edmonton, Alberta, Canada, T6G 2H1 or everitt@cs.ualberta.ca. The records arising from this competition will be managed in accordance with provisions of the Alberta Freedom of Information and Protection of Privacy Act (FOIPPA). The University of Alberta hires on the basis of merit. We are committed to the principle of equity in employment. We welcome diversity and encourage applications from all qualified women and men, including persons with disabilities, members of visible minorities, and Aboriginal persons.

Bucknell University Department of Computer Science

Applications are invited for one or more one year entry-level visiting assistant professor positions beginning mid-August, 2000. A Ph.D. in Computer Science or Computer Engineering is preferred, but individuals with substantial progress towards such a degree will be considered. A demonstrated interest in and promise of excellence in teaching is important. All research areas will be considered, but networks and operating systems are particularly desirable. Salary and fringe benefits are competitive.

The computing environment for instruction, research, and laboratories consists of nearly 70 SUN workstations. For more information on our program visit our web page at www.eg.bucknell.edu/cs/ci.

Applications will be considered as received and recruiting will continue until the position is filled. Candidates should send a resume, transcripts for all graduate work (Xerox copy acceptable), and the name of three references to: Jerry Mead, Acting Chair, Dept. of Computer Science, Bucknell University, Lewisburg, PA 17837.

Bucknell encourages applications from women and members of minority groups (EEO/AA).

Clarke College Computer Science Department

Department Chair: Duties include teaching a range of courses across the CS/CIS curricula, faculty recruitment/evaluation/supervision/development, assisting with curriculum development, student advising, budgeting, enrollment management, etc. Preferred candidates will have an appropriate doctorate, successful

teaching experience in CS or CIS and a record of accomplishment appropriate for senior rank. Candidates must have the ability to develop strong working relationships within the college and local community. Faculty: Duties include teaching a range of courses across the CS/CIS curricula. Desired areas of expertise include operating systems, networking, graphics, software engineering, digital logic and computer architecture, though all areas will be considered. A Ph.D. in Computer Science or a closely related area is preferred but not required.

Located within the scenic tri-state area of NE Iowa, SW Wisconsin, and NW Illinois, Dubuque offers a great quality of life and is within driving proximity to Chicago, Madison, and the Twin Cities. Visit Clarke's web site at: www.clarke.edu. Please contact Sheila Castaneda with questions at: Phone (319) 588-6401, Fax (319) 588-6789, e-mail: cast@keller.clarke.edu. Applicants should send a letter of application addressing teaching philosophy and experience and a current CV/resume to: Human Resources, Clarke College, 1550 Clarke Dr., Dubuque IA 52001.

Computists International CI-Freebies

Free weekly digests of AI-related news, grant calls, research jobs, etc.
Browse archives at <http://www.computists.com> or join CI-Freebies at <http://www.onelist.com/group/CI-Freebies>.

Florida State University Department of Computer Science

The Florida State University is in a period of significant growth in Computer Science and allied areas. The department invites applications for tenure-track positions at all ranks. Last year the Department of Computer Science hired six new faculty and the growth is continuing. New faculty will have the opportunity to help shape the department's future.

Applicants for tenure-track faculty positions are required to have completed a Ph.D. in Computer Science, Computer Engineering, or a closely related field by the date of the appointment. Well qualified individuals in any area of computer science are encouraged to apply. Areas of priority include the following: trustworthy systems (including such topics as safety, reliability, security, cryptography, and information assurance); databases and massive data storage, processing, and archiving; computational science (especially scientific visualization); networking and operating systems; and software engineering. We are also interested in individuals who could contribute to our undergraduate distance-learning degree program and our professional master's degree tracks in software engineering and computer and network system administration. Selection will be based on evidence of outstanding research accomplishments and teaching ability.

Please send a resume and arrange for at least three letters of reference to be sent to the following address: Faculty Search Committee, Computer Science Department, PO Box 4530, Florida State University, Tallahassee, FL 32306-4530

Questions about these career opportunities can be e-mailed to recruitment@cs.fsu.edu.

FSU is an Internet 2 university, whose primary mission is graduate teaching and research. It is 14th among public universities in NSF support, and awards over 300 Ph.D.'s per year. The university has about 30,000 students, representing every state and 136 foreign countries. FSU is located in the Florida capital—a city of approximately 250,000, surrounded by forests, lakes and farms, and about an hour's drive from the Gulf Coast. It has excellent public schools and affordable housing. The department offers degrees at the BS, MS, and Ph.D. levels. Further information about the university and the department can be found at the website: <http://www.fsu.edu> and <http://www.cs.fsu.edu>.

The Florida State University is an Equal Opportunity/Affirmative Action employer that encourages applications from minorities and women and complies with the Americans with Disabilities Act. It is a public records agency pursuant to Chapter 119, Florida Statutes.

University of New Hampshire Computer Science Department Assistant/Associate Professor

The Computer Science Department invites applicants for a tenure-track faculty position at the Assistant/Associate Professor level beginning either Fall 2000 or Spring 2001. The department is particularly interested in candidates with research and teaching interests in software areas related to computer networks and other areas that complement the department's current expertise; parallel and distributed systems, constraint computation, scientific databases, scientific visualization and graphics, operating systems, performance evaluation, and collaborative

computing. We seek candidates with a commitment to both quality research and quality teaching at the undergraduate levels.

We offer new faculty a reduced teaching load to assist them in establishing a research program. A Ph.D. in Computer Science or a closely related field is required. We offer BS, MS, and Ph.D. degrees and currently have approximately 175 undergraduate majors and sixty graduate students. The University of New Hampshire is a medium sized institution (12,000 students) located in the seacoast region of New Hampshire—sixty miles north of Boston and sixty miles south of the White Mountains.

Applicants should submit a curriculum vitae, a statement of research interests, a list of references, and up to three sample publications. Review of applications begins April 3, 2000 and continues until the position is filled: T.M.Sparr, Chair, Department of Computer Science, Kingsbury Hall, UNH, Durham, NH 03824; Tel. (603) 862-3378; e-mail facearch@cs.unh.edu, <http://www.cs.unh.edu>.

UNH is committed to excellence through diversity among its faculty and strongly encourages women and minorities to apply.

Rensselaer Polytechnic Institute Department of Computer Science Department Chair

The Rensselaer Polytechnic Institute invites nominations and applications for Chair of the Department of Computer Science. Computer Science is the fastest growing department in the university with a multi-million dollar research program emphasizing scientific and high performance computation, parallel and distributed computing, software methodology, data engineering, robotics, computer vision, and theory. The department has excellent computational facilities. Our web site at www.cs.rpi.edu contains additional information.

In addition to an outstanding research program, Rensselaer has a leading position for interactive learning, distributed distance education, and studio-format instruction. We are the fourth most wired campus in the country for electronic media delivery. Computer Science has 20 full-time faculty and approximately 600 undergraduate, 70 masters, and 70 Ph.D. students. Many more students minor in Computer Science or study the subject in conjunction with other majors. An interdisciplinary curriculum in information technology provides several exciting opportunities for students to attain dual majors.

This dynamic environment, with the support of Rensselaer's new president and senior administration, provides an unparalleled opportunity for growth. Plans are underway to double Rensselaer's research program with an emphasis on Information Technology and Biotechnology. Computer Science is playing a pivotal role in this endeavor. A long range vision is essential to actively lead departmental growth, to recruit outstanding junior and senior faculty, to enrich and expand the graduate and undergraduate programs, to stimulate interdisciplinary research and educational activity, and to promote the department to the technical community at large. In addition to a proven record of scholarly achievement, the candidate must also demonstrate strong technical leadership, management and interpersonal skills.

Candidates must have an earned doctorate in computer science or a related field and must be eligible for a tenured full professor appointment in the department. Send curriculum vitae and a list of suitable references to: Professor Joseph E. Flaherty, Chair, Computer Science Chair Search Committee, Amos Eaton 131, Rensselaer Polytechnic Institute, 110 Eighth Street, Troy, New York 12180-3590. Phone: (518) 276-6348, Fax: (518) 276-4033, flaherje@cs.rpi.edu

Ideally, the Department Chair position should be filled in time for the start of the Fall 2000 semester. However the selection process will continue until a suitable candidate is found. Rensselaer Polytechnic Institute is an equal opportunity, affirmative action employer. Women and minority candidates are especially encouraged to apply.

The University of Virginia Department of Computer Science

The Department of Computer Science invites applications for a tenure track faculty position at the assistant professor level. Outstanding candidates in all areas of Computer Science will be considered, but software engineering, computer architecture, computer networking, embedded systems, multi-media operating systems and security are of particular interest. Research track openings of all ranks are also available. The Department has a first rate experimental computer science research program and has in place an innovative undergraduate CS curriculum. We are looking for candidates who are or have the potential to become outstanding in both research and teaching. Ph.D. required. Positions open

Professional Opportunities



Teach Abroad

University of Maryland University College seeks experienced faculty to teach on 10-month renewable contracts beginning August 2000 in Asia for baccalaureate programs for personnel on U.S. military bases.

We have position openings for the following academic areas:

Computer Studies
Information Systems

Master's degree, recent college teaching experience and U.S. citizenship required. Ph.D. preferred. Benefits include transportation, military base privileges (PX, Commissary, etc.), health insurance and TIAA/CREF. Living conditions, frequent relocation and the cost of schooling make these positions difficult for faculty with children.

For further information visit our website at: <http://www.umuc.edu/internet/facinfo.html>

Send resume to:

Dr. Rosemary B. Hoffmann
University of Maryland University College
Overseas Programs
3501 University Boulevard East
Adelphi, MD 20783
Email: overseas-programs@umuc.edu (please include mailing address).
AA/EEO

until filled. Salary commensurate with experience.

Send a resume and the names of three references to Professor Jack Stankovic, Chair, Department of Computer Science, 151 Engineer's Way, P.O. Box 400740 University of Virginia, Charlottesville, VA 22904-4740 Virginia is an Equal Opportunity/Affirmative Action Employer. <http://www.cs.virginia.edu>

University of Manitoba

Department of Computer Science
Faculty Positions

Applications are invited for three full-time tenure-track positions in the Department of Computer Science, subject to final budgetary approval, at the Assistant Professor level, commencing July 1, 2000, or as soon as possible thereafter. Minimum qualifications are a PhD in Computer Science or allied discipline, complete or nearing completion, and evidence of a strong research potential in computer science. Prior teaching experience will be considered an asset. A Faculty of Science startup research grant will be awarded to all newly appointed faculty members.

For one of these positions, applicants are principally sought in the area of databases. For the remaining positions applicants are principally sought in the areas of artificial intelligence, software engineering, programming languages and compilers, operating systems, networks and parallel systems, and theoretical computer science, though truly outstanding candidates in other areas, including recently emerging areas such as multimedia, may be considered. Duties will include undergraduate and graduate teaching and supervision, research, and service-related activities.

The Department currently has 24 full-time tenure-track faculty members plus a number of teaching appointments, and offers a full range of both undergraduate and graduate programmes, including cooperative programmes. We currently have over 60 graduate students.

The Department is a well-established one which has recently been in an expansionary phase. Both the undergraduate and graduate curricula have been extensively revised and extended. The Department provides good technical support for both teaching and research. Current and planned departmental facilities include numerous UNIX-based workstations, a parallel computing laboratory, a software development and testing laboratory, and numerous other research laboratories and personal machines, all of which are networked. The Department has well-equipped UNIX and object-oriented teaching labs. The university Computer Centre provides virtually unlimited access to UNIX-based workstations and other personal and mainframe computing facilities, as well as Internet connections. This is an excellent opportunity for good researchers and teachers to get in on the ground floor of an exciting department.

Winnipeg has a great deal to offer, both culturally and recreationally, with a number of professional and other ethnic arts groups, professional sports teams and many opportunities nearby for all types of outdoor activities in all seasons. The Winnipeg housing market is one of the most favourable in Canada to the home buyer.

The University of Manitoba encourages applications from qualified women and men, including members of visible minorities, Aboriginal peoples, and persons with disabilities. In accordance with Canadian immigration requirements, priority consideration will be given to Canadian citizens and permanent residents.

Further information concerning the Department and the University may be obtained from the Department's web site and the University's web site.

Qualified women are particularly encouraged to apply. Applicants should send a curriculum vitae and the names of three referees to: CHAIR OF SEARCH COMMITTEE, DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF MANITOBA, WINNIPEG MANITOBA, CANADA, R3T 2N2. E-mail: search@cs.umanitoba.ca, Telephone: (204) 474-8313; Fax: (204) 474-7609. Department homepage: www.cs.umanitoba.ca Consideration for the positions will commence on March 15, 2000 and will continue until DECEMBER 31, 2000, or until the positions are filled.

University of Mississippi

Department of Computer and Information Science

The Department of Computer and Information Science invites applications for an Instructor position. Requirements include an M.S. in computer science or equivalent and the ability to teach undergraduate students. The Department offers B.S., B.A., M.S., and Ph.D. degrees and has the Adler Endowment for the enhancement of laboratories and innovative educational projects. The University is located in the historic town of Oxford in the wooded hills of north Mississippi, an hour drive from Memphis. Oxford has a wonderful small-town atmosphere with affordable housing and excellent schools. Review of applications will begin immediately and will continue until the position is filled. The applications must provide evidence of effective teaching and communication skills. Send a complete vita (including graduate courses and visa/citizenship status) and three letters of reference to: Search Committee, Department of Computer and Information Science, 302 Weir Hall, The University of Mississippi University, MS 38677. E-mail: search@cs.olemiss.edu, www: <http://www.cs.olemiss.edu>, Phone: (662) 915-7396, Fax: (662) 915-5623

The University of Mississippi is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA Employer.

University of Oregon

Computer and Information Science
Faculty Positions

The Department of Computer and Information Science invites applications for several positions beginning September 2000:

- 1) A tenure track faculty position at the Assistant Professor level whose research specialization is in programming languages. Candidates should have a Ph.D. in computer science or a related area, and evidence a strong commitment to both research and teaching.
- 2) Two Lecturer positions—one in programming languages and a second in systems and architecture. Positions are available for a full year or on a term-by-term basis. Candidates should have a Ph.D. in computer science or a related area, although ABD's will be considered, and evidence a strong commitment to teaching. Rank and salary will be commensurate with qualifications.

The University of Oregon is an AAU research university located in Eugene, a community rated among the most livable in the nation. The Department has 18 full-time faculty and offers B.S., M.S., and Ph.D. degrees. The Department is associated with the NSF-funded Software Engineering Research Center (SERC), the Computational Intelligence Research Laboratory (CIRL), the Cognitive and Decision Sciences Institute, and the Computational Science Institute (CSI). More information on the department, its programs and faculty can be found at <http://www.cs.uoregon.edu/>

Qualified candidates should send their curriculum vitae and the names of at least four references to: Faculty Search Committee, Computer and Information Science, University of Oregon, Eugene, OR, 97403-1202; email: faculty.search@cs.uoregon.edu. Please specify which position you are applying for. Applications will be accepted until April 24, 2000 or until the position is filled.

The University of Oregon is an Equal Opportunity/Affirmative Action institution committed to cultural diversity and compliance with the Americans with Disabilities Act.

Wright State University

Department of Computer Science and Engineering

Director of the Information Technology Research Institute WSU seeks applicants for the position of Director of the Information Technology Research Institute. The Director may hold a Distinguished Professor tenure-track position in the Department of Computer Science and Engineering but must have an earned Ph.D. and a prominent academic, industrial, or government record in computer science, computer engineering, or closely related field. The Director will stimulate, research and development initiatives involving faculty and graduate students at WSU with industrial and government organizations, and will provide leadership for the doctoral program in Computer Science and Engineering. The Director reports to the Dean of the College of Engineering and Computer Science and is advised by internal and external boards of industrial and academic leaders.

Applications should include a vitae, a statement of previous R&D and administrative background and goals, documentation of administrative ability, names of five references, and additional supporting information. Address applications to:

WSU-ITRI Director Search Committee
Department of Computer Science & Engineering

Wright State University,
3640 Colonel Glenn Highway
Dayton, OH 45435

Consideration begins immediately. Direct inquiries to Phone (937) 775-5134;

Fax (937) 775-5133;

Email cse-dept@cs.wright.edu

WSU is an EEO/AA employer.

Xerox-Palo Alto Research Center

Research Positions in Smart Matter

The Computation and Matter Area (CMA) of the Systems and Practices Laboratory of the Xerox Palo Alto Research Center (PARC) is recruiting.

We are looking for people to join us in a team effort to develop algorithms and software systems for Smart Matter diagnostics and distributed sensing. A candidate should have knowledge in analyzing complex data and software development skills, plus experience in at least one of the following: system-level modeling and diagnosis, statistical data analysis, signal processing and classification, distributed sensor fusion, image analysis, machine learning, and pattern recognition. Laboratory experience would also be a plus. Candidates at both Master's and Ph.D. levels will be considered.

CMA is part of PARC's research in Smart Matter, which is creating the ability to embed large quantities of sensors, actuators, and computation in the world around us. The Smart Matter diagnostics and distributed sensing project is developing highly scalable techniques to analyze large amounts of sensor data to support diagnosis and monitoring of a new generation of sensor-rich physical systems and processes.

To apply please submit: a cover letter explaining your interest in the Smart Matter diagnostics and distributed sensing positions, a resume, and reprints of publications if applicable. Also, you are responsible for having references sent to us from at least two people who are qualified to evaluate your work and potential.

Direct all material to:
SPL/CMA Administrator
Xerox Palo Alto Research Center
3333 Coyote Hill Road
Palo Alto, CA 94304
E-mail: cmajobs@parc.xerox.com
Fax: 650-812-4334

Applications by e-mail will be accepted.

Applications will be acknowledged by e-mail, if possible, and each applicant will be notified individually as soon as a decision has been reached on the application. Applications will be processed as received and positions will be filled as suitable candidates are identified, so please submit your information as soon as is possible.

Xerox is an Equal Employment Opportunity company committed to the principles of workforce diversity.

<http://www.parc.xerox.com/spl/groups/cma/>

DEAN, COLLEGE OF INFORMATION TECHNOLOGY UNITED ARAB EMIRATES UNIVERSITY (UAEU)

Revised 02/22/00

The University seeks a founding Dean for this new College. This individual will have the opportunity to establish the College in a new facility that will be built within the next year. In addition, the Dean will have significant input on the selection and procurement of state-of-the-art equipment for the new building and the staffing of faculty and department head positions from existing departments in the University as well as outside sources.

The College will offer BS degrees in computer science, computer engineering, software engineering, management information systems, information systems, telecommunications and computer networking, educational technology, and e-commerce. The College will have a strong interdisciplinary focus in computing-related disciplines.

The United Arab Emirates (UAE) is a federation of seven emirates located on the Southern coast of the Arabian Gulf. The UAEU, with 18,000 students in nine colleges, is the premiere government university in the UAE, and is located in Al-Ain. The official language of the UAE is Arabic, but English is widely spoken and is the language of instruction in the Colleges of Medicine, Engineering, and Information Technology.

Qualifications: Ph.D. in an appropriate field, minimum of ten years' teaching experience at the university level, and experience in academic administration. It is anticipated that the Dean will be on campus no later than September, 2000.

Compensation: Competitive salary (with no income tax in the UAE and a significant portion exempted from USA income tax) and allowances for annual family trip to home country, furniture, housing, private schooling of dependent children, long distance phone calls, and comprehensive medical care at minimal cost.

Applications will be received through July 1, 2000. Send *Curriculum Vitae* to:

Clemm C. Kessler III, Ph.D.
BA Business Services
11924 Arbor Street
Omaha, Nebraska 68144
Phone (402) 330-1040
FAX (402) 330-8827
ckessler@cbiz.com

Preliminary Program — CRA Conference at Snowbird 2000

The flagship conference for academic and research laboratory administrators interested in computing research issues.

Sunday, July 9

CRA Board of Directors Meeting 8:00AM-3:00PM
 Registration 2:00PM -7:30PM
 Workshop for New Department Chairs 3:00PM -6:00PM
Chairs:
 Kathleen McKeown, Columbia University
 Stuart Zweben, Ohio State University

Welcome Reception 6:00PM-7:30PM
 Dinner 7:30PM-9:30PM
Speaker:
 William A. Wulf, President, National Academy of Engineering;
 AT&T Professor, University of Virginia
 Some Challenges for Computer Science as it Enters the 21st Century

Monday, July 10

Breakfast Buffet 7:00AM-8:30AM
 Registration 7:30AM-6:00PM
 Welcome 8:30AM-8:40AM
Speakers:
 Frances Allen, Industrial Snowbird Chair, IBM TJ Watson Research Center
 John Stankovic, Academic Snowbird Chair, University of Virginia

JOINT ACADEMIC/INDUSTRIAL PLENARY SESSION I

8:40AM-10:10AM
 What Are the Important Research Areas for the New Millennium?
Chair:
 Frances Allen, IBM T.J. Watson Research Center
Speakers:
 Ambuj Goyal, IBM T.J. Watson Research Center
 Susan Graham, University of California, Berkeley

Break 10:10AM-10:30AM

Workshop I (parallel sessions) 10:30AM-NOON

Using Spin-offs and Venture Capital to Market New Ideas

Chair:
 Peter Hart, Ricoh Silicon Valley
Speakers:
 Steve Socolof, Lucent Technologies
 John Wheadon, Xerox Corp.

Reshaping Doctoral Education

Chair:
 Jeffrey Vitter, Duke University
Panelists:
 James Foley, Yamacraw Mission and Georgia Institute of Technology
 Clinton Kelly, Science Applications International Corp.
 Edward Lazowska, University of Washington
 Barbara Ryder, Rutgers University
 William Wulf, National Academy of Engineering and University of Virginia

CSTB: Research for the New Millennium

Chairs:
 David Clark, Massachusetts Institute of Technology and Chair,
 Computer Science & Telecommunications Board
 Marjory Blumenthal, CSTB, National Research Council

Department Management: Teaching, Research, and Management Issues at Undergraduate Institutions

Chair: Marion Harmon, Florida A&M University

Panelists:
 Arthur Jones, Morehouse College
 Sandra J. Reeves, Cumberland College

Software Engineering Licensing and Certification

Chair:
 David Notkin, University of Washington

Luncheon NOON-1:30PM

JOINT ACADEMIC/INDUSTRIAL PLENARY SESSION II

1:30PM-3:00PM
 Impact of the Economic Development Imperative on Universities
Chair:
 James Foley, Yamacraw Mission and Georgia Institute of Technology
Speakers:
 Rick Adrion, National Science Foundation
 Randy Katz, University of California, Berkeley
 Steven Lazarus, ARCH Venture Partners

Break 3:00PM-3:30PM

Workshop II (parallel sessions) 3:30PM-5:00PM

Joint Academic/Industrial Workshop—Models for University Venture Capital/Incubation Initiatives

Chair:
 Azer Bestavros, Boston University
Panelists:
 Alfred Weaver, University of Virginia

IT, Informatics, and Computer Science: Experience With New and Existing Programs

Chair:
 Dennis Gannon, Indiana University
Panelists:
 J. Michael Dunn, Indiana University

Policy Forum—Issues in Information Technology Policy

Discussion Leaders:
 Daniel Reed, University of Illinois, Urbana-Champaign; Chair,
 CRA Government Affairs Committee
 Eugene Spafford, Purdue University; Chair, ACM U.S. Public Policy Committee
 Lisa Thompson, Director of Government Affairs, CRA

CRA Academic Profiles Survey

Chair:
 Stephen Seidman, Colorado State University

Government-Sponsored Initiatives on Women and Minorities

Chair: Doris Carver, Louisiana State University
Speakers:
 James Cassatt, National Institutes of Health
 Oscar Garcia, Wright State University
 Caroline Wardle, National Science Foundation
 William Wulf, National Academy of Engineering and University of Virginia

Birds of a Feather/Open Networking 5:00PM-6:00PM

Dinner and State of the CRA Address 6:30PM-9:30PM

Speakers:
 Edward Lazowska, University of Washington
 William Aspray, Computing Research Association

The CRA Distinguished Service and A. Nico Habermann Awards will be presented after dinner.

Tuesday, July 11

Breakfast Buffet 7:00AM-8:30AM

PLENARY SESSION III 8:30AM-10:00AM

Educational Challenges for the New Millennium

Chair:
 James Kurose, University of Massachusetts, Amherst
Speakers:
 Gordon Davies, Open University, UK
 Peter Denning, George Mason University
 Dennis Gannon, Indiana University
 Ellis Horowitz, University of Southern California

Break 10:00AM-10:30AM

Workshop III (parallel sessions) 10:30AM-NOON

Industry Workshop—Managing Industrial Research Labs

Chair:
 Richard Waters, Mitsubishi Electric Research
 Perspectives on CSAB Accreditation Activities and Integration of CSAC into ABET
Chair:
 Kenneth E. Martin, Computing Sciences Accreditation Board

Panelists:
 Lawrence Jones, Carnegie Mellon University
 Stuart Zweben, Ohio State University

Where Is the Information Technology Profession Headed?

Chair:
 Peter Denning, George Mason University
Panelists:
 Frances Allen, IBM T.J. Watson Research Center
 David Arnold, University of East Anglia
 Peter Freeman, Georgia Institute of Technology

Best Practices and Future Research: Recruitment and Retention of Women and Minorities in CS&E

Chair:
 Mary Lou Soffa, University of Pittsburgh
Panelists:
 Baine Alexander, University of Wisconsin, Madison
 Allan Fisher, Carnegie Mellon University
 Caroline Wardle, National Science Foundation
 Margaret Wright, Lucent Technologies

New Government-Sponsored Research Initiatives

Chair:
 TBA
Speakers:
 Shankar Sastry, DARPA
 George Strawn, National Science Foundation
 Andre van Tilborg, Office of Naval Research

Luncheon NOON - 1:30PM
 [CRA Board Interaction with Conference Participants]

Workshop IV (parallel sessions) 1:30PM-3:30PM

Industry-University Collaboration

Chair:
 Larry Snyder, University of Washington
 The Relationship Between Computer and Computational Science
Chairs:
 Sidney Karin, University of California, San Diego
 Robert Schnabel, University of Colorado at Boulder
Panelists:
 Susan Graham, University of California, Berkeley

Best Practices: Recruiting and Retaining Faculty, Graduate Students, and Researchers

Chair:
 John Stankovic, University of Virginia
Panelists:
 Tomasz Imielinski, Rutgers University
 Tomas Lozano-Perez, Massachusetts Institute of Technology
 Eric Manning, University of Victoria

Systems Administration Courses and the CS Curriculum

Chair:
 David Parter, University of Wisconsin and SAGE
Speakers:
 Jerry Neece, Sun Microsystems
 Evi Nemeth, University of Colorado

Distance Education/Learning

Chair: Ellis Horowitz, University of Southern California
Panelists:
 Rick Adrion, University of Massachusetts and National Science Foundation
 Gordon Davies, The Open University, UK
 Anoop Gupta, Microsoft Corp.
 Daniel Reed, University of Illinois, Urbana-Champaign

Workshop for Deans 1:30PM-9:00PM

Chair:
 Peter Freeman, Georgia Institute of Technology

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