

# COMPUTING RESEARCH NEWS

Computing Research Association, Celebrating 30 Years of Service to the Computing Research Community

September 2002 Vol. 14/No. 4

## CRA Welcomes New Executive Director

CRA is pleased to extend a warm welcome to Andy Bernat, who became its new Executive Director on August 1. Bernat succeeds William Aspray, who has accepted an academic position at Indiana University.

CRA board chair, James Foley, describes Andy as "the perfect fit for CRA: he has experience with research, with CS departmental issues, with government research agencies, with fund-raising, with Congress and Congressional testimony, and in working with a board. The CRA board of directors looks forward to working with Andy and the entire computing research community to continue moving CRA forward."

Bernat brings to the job a wide range of experience and accomplishments. He was a founding member of the Computer Science Department at the University of Texas El Paso, and as chair built the department into one of the country's strongest computer science departments at a minority-serving institution. He headed the National Science Foundation-funded Model Institutions for Excellence program, which created dramatic

improvements in student retention and achievement across the UTEP campus. He has co-chaired the Coalition to Diversify Computing, an organization sponsored by ACM, CRA, and the IEEE Computer Society to increase the participation of underrepresented minorities in the computing profession. For his many contributions in advancing underrepresented groups in the computing field, CRA awarded Bernat the A. Nico Habermann Award in 1997.

Pursuing his strong interest in academic reform and development for the computing field, Bernat recently completed his second year as a program officer in the Division of Undergraduate Education at the National Science Foundation while on leave from UTEP. He was responsible for the computer science undergraduate education programs at NSF and also directed the Scholarship for Service Program in information assurance and security, which is a component of the federal CyberCorps program. He has been active for many years as an author, lecturer, reviewer, and panelist for government and professional organizations including the U.S. Army, NASA, NSF, and

the Computer Science Accreditation Board. He has organized a series of workshops between U.S. and Mexican computer science researchers. Bernat received a B.S. in physics from Harvey Mudd College in 1970 and a doctorate in astronomy from the University of Texas at Austin in 1976.

William Aspray, the outgoing executive director of CRA, said of Bernat: "I am delighted with Andy's selection as my successor. He has the energy, enthusiasm, contacts, drive, analytical skills, and experience to work with the CRA board to carry the organization to a new level of accomplishment and to make the good works of CRA much more widely known."

Reflecting on his new job, Bernat commented: "What a truly great opportunity—to join the people and organization working to enhance and promote the computing research field, the basis for our modern society and economy. And what a great time to join—Bill Aspray has taken the association to a new level of status and achievement, giving us a springboard to further success."

In comments made at CRA's Conference at Snowbird 2002, Bernat indicated his goals for CRA include providing better support for, and achieving better recognition from, its various communities. ■



Andy Bernat  
Executive Director

**Note to Department  
Chairs  
Taulbee Survey 2002  
Coming Soon**

### Inside CRN

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Included with this edition  
of *CRN* is a copy of  
CRA's 2001-2002  
Annual Report.

## Appropriations Kick Off with Good News for Researchers

By Peter Harsha

The first appropriations bills to emerge from Congressional appropriations committees this session indicate increasing support for federally sponsored fundamental research. House and Senate consideration of the President's proposal to create a new, cabinet-level Department of Homeland Security had delayed action on most of the 13 annual appropriations bills necessary to fund the federal government. However, by the August recess Senate appropriators had reported a bill (S. 2797) that would significantly increase the research budget of the National Science Foundation (NSF), and both the House and Senate appropriations committees had approved increases to science and technology funding at the Department of Defense (DOD).

In late July, the Senate Appropriations Subcommittee on Veterans Affairs, Housing and Urban Development, and Independent

Agencies (VA-HUD) approved an increase of \$564 million in NSF's overall FY 2003 budget, an increase of 11.8 percent over FY 2002. Included is a \$533 million increase in NSF's core research account, nearly 15 percent over FY 2002 and enough to put the agency on pace to double its research budget in five years.

Of particular interest to the computing research community is the panel's approval of an increase of nearly 20 percent in NSF's Computer and Information Science and Engineering directorate over the FY 2002 level. Under the Senate plan, CISE's budget would increase to \$617 million for FY 2003, \$90 million more than the amount requested in the President's FY 2003 budget. Of that \$90 million increase, \$80 million is slated for additional research funding. The remaining \$10 million would fund the Terascale Computing Program, which is being transferred to CISE from NSF's Major Research Equipment and Facilities account at a

reduced funding level from the \$20 million requested by the President.

In the Committee Report accompanying the VA-HUD Appropriations legislation, the Committee also directed NSF to spend \$25 million of the approved increase for cyber security research and an additional \$15 million of the increase for advanced broadband research. The report also noted that while the Nation remains vulnerable to cyber-attacks on critical components of the national infrastructure, the private sector has had little incentive to invest in cyber security, and "the Federal Government has not filled the gap, but instead has chronically underinvested in cyber security." As a result, the report continued, "What little research has been done on cyber security has been incremental, leaving the basic approaches to cyber security unchanged for decades."

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## Expanding the Pipeline

# CREW Announces 2002 Awards

The Collaborative Research Experiences for Women in Computer Science and Engineering (CREW) program awards have been made for 2002.

A total of 46 women will be sponsored as research participants at 19 colleges and universities for the upcoming 2002-03 academic year. The projects range in scope from an exploration of weather prediction through clustered computing, to the development of an intelligent

controller for an autonomous walking machine, to steganographic image processing.

All of the funded projects include a research component in the area of computer science or computer engineering. In addition, the proposals describe how the students will be able to take a collaborative approach to working on their project and also get experience in all aspects of research, from initial background research to writing up final results.

This will be the fifth year of the CREW program, which is sponsored by the CRA-W committee. Funding for this year's group is provided by USENIX and the NPACI Education, Outreach and Training program. Further information about the program, including the projects that have been funded, can be found at <http://www.cra.org/Activities/craw/crew>. Proposals for next year's projects will be due in early June 2003. ■

### Computing Research Association

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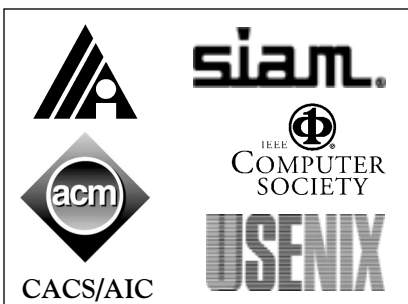
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#### Affiliate Societies



## Students Receive CRA Awards at International Conference



Photo courtesy of The 2002 International MultiConference in Computer Science.

Pictured above are the students who attended CRA's Outstanding Undergraduate awards presentation on June 24 at the 2002 International Multiconference in Computer Science in Las Vegas. (l to r) Frank Apap, Columbia University, Honorary Mention; Allegra Angus, Cornell University, Outstanding Female Undergraduate award; Sara Su, University of Washington, Female Runner-Up award; William Aspray, CRA Executive Director, who presented the awards; Adam Stubblefield, Rice University, Outstanding Male Undergraduate award; and Shirley Gaw, University of Washington, Honorary Mention.

In addition to those attending the awards ceremony, Alexander Fabrikant, UC Berkeley, received the Male Runner-Up award, and 38 students received Honorary Mention (see <http://www.cra.org/Activities/awards/undergrad/02.html>).

CRA is grateful to Hamid Arabnia (Professor, University of Georgia Department of Computer Science and Editor-in-Chief, *The Journal of Supercomputing*), chair of the 2002 International Multiconference in Computer Science, for his assistance in arranging the presentations and for providing photos of the event. ■

### CRA Outstanding Undergraduate Awards 2003

**Deadline: October 21, 2002**

Nomination Details available at:

<http://www.cra.org>

### UBIQUITY

Grace Hopper Celebration of Women in Computing 2002 Conference

Hyatt Regency Vancouver,  
British Columbia, Canada

**October 9-12, 2002**

Details: <http://gracehopper.org>



## CRA Holds Grand Research Challenges Conference

Many in the computer science and engineering research community believe that it is appropriate, if not urgent, to re-think what are the grand research challenges of the field. So when a conference to discuss grand research challenges was proposed, CRA agreed to organize it. Seventy participants met at the first CRA Grand Research Challenges in Computer Science and Engineering Conference from June 23 to 26 at the Airlie Resort in Warrenton, VA.

The conference was the brainchild of University of Virginia CS professor Anita Jones, who chaired the organizing committee, and Dr. William Wulf, current President of the National Academy of Engineering. Their experience attending a Gordon Conference led them to believe that a similar kind of meeting conducted in a retreat environment might also be productive for the computing research community. The conference was supported by a grant from the National Science Foundation.

The response from the community for such a meeting was enthusiastic, and the organizing committee decided to make the conference a "by invitation only" retreat. Modeled

after the Gordon Conferences, its goal was to hold two and a half days of intensive research discussions that would lead to the identification of several "grand challenges." The committee felt that the focus had to be narrowed somewhat, and they chose "computing systems" as the theme for the conference.

Attendees were selected based on one or more grand challenge position papers that they submitted for consideration. "Out-of-the-box" thinking was encouraged in these submissions, and those selected to attend were strongly encouraged to participate for the entire time in order to provide the focused effort required for the conference to succeed.

Members of the organizing committee included William Aspray, Computing Research Association; Ambuj Goyal, IBM Watson Research Center; Mary Jane Irwin, Penn State University; Ed Lazowska, University of Washington; Dave Patterson, University of California, Berkeley; Jordan Pollack, Brandeis University; Bob Sproull, Sun Microsystems Cambridge Research Laboratory; and Bill Wulf, National Academy of Engineering.

There were only two prepared talks at the conference. The rest of the time involved focused discussions, sometimes in plenary sessions and sometimes in small self-selected focus groups that discussed and framed specific topics. Participants held working sessions after dinner, leaving some time free in the afternoon for recreation, but the organizing committee observed that most attendees just kept working in small focus groups in the afternoons. Science fiction writer Bruce Sterling gave a lively talk on the first evening ("Without Vision, the People Perish").

Only the first day's program was scheduled in advance; groups were asked to discuss strawman "grand challenge" areas that were offered by the committee. Some of these survived participant scrutiny and others were discarded or reshaped. Whole new challenges arose in discussion.

Each evening attendees were given the opportunity to vote on the challenges that were discussed that day to determine what sessions should go forward the next day. The organizing committee met late each evening to plan a schedule for the

next day based on voting results. The organizing committee initially found this scheduling approach daunting, but the flexibility was helpful.

In the end, participants selected a total of five challenges with reasonably strong consensus. Several are cast as societal challenges that computer science and engineering can help meet. Others are technical challenges in the forefront of research.

The organizing committee is preparing a conference report that will be published by CRA in the fall. The report will be widely disseminated to the technical community, industry, future computer science graduates, funding agencies, and the public.

Based on the enthusiasm of attendees for such discussions, CRA will appoint a steering committee to consider holding similar conferences in the future to discuss "grand challenge" research topics selected from other areas of computer science and engineering.

Slides and other documentation from the meeting are available on CRA's website at: <http://www.cra.org>. ■

## Examples of Leadership – Are You Included?

By Peter A. Freeman

At CRA's biennial Snowbird conference in July, I had the opportunity to address the attendees on the subject of "Leadership in Computing." My basic theme (one that Bob Kahn also addressed in his remarks at Snowbird) was that there is a great opportunity and a strong responsibility for computing people to provide all kinds of leadership—in research, in shaping national policy, in education, and in helping advance our society through diversity of all kinds. I encourage you to read my full talk at: <http://cra.org/Activities/snowbird/2002/slides/freeman.html>.

In this short column, for which CRA has graciously provided space, I want to continue that theme and help to bring it home to everyone in our field through some examples. I trust that the hundreds of people not mentioned here who provide fine examples of leadership will not be

offended, but will continue to lead and to encourage others to lead.

Let me begin by noting the outstanding service given to our community by Valerie Taylor, winner of this year's CRA A. Nico Habermann Award (<http://www.cra.org/Activities/awards/habermann/winner.02.html>) and Andy van Dam, winner of this year's CRA Distinguished Service Award (<http://www.cra.org/Activities/awards/service/winner.02.html>). In addition to substantial scholarly contributions, Valerie and Andy have each, in their own way, provided great leadership to our community—and continue to do so.

Two people who may not be quite as visible in the community are the outgoing CRA Executive Director, Bill Aspray, and his successor at CRA, Andy Bernat. Both are

Leadership  
Continued on Page 7

## Aspray Honored at Snowbird



Bill Aspray

Departing CRA Executive Director, Bill Aspray, was honored by board members and attendees at the recent CRA Conference at Snowbird 2002. Aspray, who came to CRA in 1996, has joined the faculty of the School of Informatics at the University of Indiana in Bloomington.

Mary Lou Soffa, former vice chair, current board member, and co-chair of CRA-W, thanked him for his unqualified support and promotion of CRA-W's activities, and presented him with a pen in an engraved silver box.

In addition, Bill received several gifts, both humorous and handsome, suitable for a historian of computing. These included the early L.E.A.D. 2.5 Word Processor (a series of pencils) presented by board member and former board chair, Dave Patterson, and a historical computing artifact (an abacus mounted on an engraved plaque) presented by board member and former board chair, Ed Lazowska. In addition, Jim Foley, current board chair, presented a plaque with a mounted core memory board and the CRA logo to Bill "for a job well done."

CRA made great strides during the time Aspray served as Executive Director. Its academic members grew from 147 to 212 and lab/center members from 17 to 25. CRA programs increased from 8 to 25, and staff increased from 5 to 8 people. The association's financial situation has greatly improved with careful monitoring during his tenure.

Bill Aspray leaves CRA with an impressive record of achievement, as well as the gratitude and best wishes of the board, members, staff, and the larger computing community. ■



(l to r) Bryant York (Portland State), Caroline Wardle (NSF), Habermann Award Winner Valerie Taylor (Northwestern), Richard Tapia (Rice), and Andy Bernat (CRA) at Snowbird.

## CRA Welcomes New Members

### Academic Members

Colgate University (CS)  
Indiana University (LIS)  
Juniata College (IT)  
Roosevelt University (CS&T)  
Trinity College (CS)  
University of Hawaii (CIS)  
Virginia Commonwealth University (CS)

### Labs and Centers

IDA Center for Computing Sciences

# Computer Science Research in Mexico

By Valerie Bernat

The current status of computer science research in Mexico is of interest to researchers in the United States not only for the intrinsic value of the science, but also because the methods Mexico is using to attempt a quantum leap forward in scientific capability can be seen as a model for other countries in the developing world.

Because the research structure in Mexico is unfamiliar to many in the United States, we will first look at the players, the sources of funding, and the constraints on research before considering the efforts to improve the quality and quantity of computer science research in Mexico.

## The Players

CONACyT (National Council of Science and Technology) is the counterpart of NSF in Mexico, providing funding for all areas of science and technology.

The top public universities, IPN (National Polytechnic Institute) and UNAM (National Autonomous University of Mexico), receive operational funding from the federal government. Salaries are low, about U.S. \$28,000 annually, and faculty teach one to two courses per semester. Tuition for students is quite low. When UNAM recently proposed an increase from \$0.02 to \$145 per year, students protested with a loud and lengthy strike.

IPN recently founded a new research center that has grown rapidly with special institutional support for better salaries via research grants from CONACyT. Some scientists from Russia and Cuba are participating in this effort.

The top private universities for research are ITESM (Institute of Technology and Higher Studies of Monterrey: Monterrey, Morelos, and State of Mexico campuses) and UDLA (University of the Americas: Puebla campus). Private universities are funded through foundations, usually supplemented with resources from industry and tuition. Until recently, due to Mexico's egalitarian attitudes with regard to public monies, private institutions were unable to receive government research support. Salaries are about U.S. \$36,000 annually, and faculty teach 3 courses per semester.

Separate from universities, the Mexican federal government invests in a number of public scientific research institutes, several with international reputations. A board and a director oversee each center and choose areas of research to pursue within funding allocations. In the area of computing, CIMAT (Center for Investigation in Mathematics) specializes in image processing, CICSE (Center for Scientific Investigation and Higher Education of Ensenada) focuses on software engineering and cluster programming, and INAOE (National Institute of

Astrophysics, Optics and Electronics) works in computer control.

There is one independent computing research institute in Mexico. In 1991 a group of UNAM faculty established LANIA (National Laboratory of Advanced Computer Science) so that they could pursue research in theoretical artificial intelligence, including multi-agent systems and logic. With additional funding opportunities and government requests, LANIA has grown and now includes research in the areas of image processing and computer vision, programming languages and methodologies, distributed and cooperative computing, general IT consulting, human resources training, and direct government support such as computer network installation.

Almost all research in computing is done in these academic institutions and research centers. Industry has made some efforts to establish research facilities, but the lack of qualified researchers has hampered their efforts.

Through 2000, approximately 160 Ph.D. computer scientists were working in Mexico; most received their degrees from universities in the United States, France, England, Japan, and Spain. In recent years, ITESM, UNAM, UDLA-P, and IPN have established Ph.D. programs.

## Constraints, Funding, and the Current Scene

Although the first supercomputer in Latin America was installed at UNAM, in the past Mexico did not see computing as a strategic investment. Funds were available for computing only as it became useful in pursuing other scientific research. CS as a discrete discipline was not viewed as worthy of consideration or support by the scientists running CONACyT, whose motivation may have also been partly a reluctance to share limited resources with an upstart discipline that could be construed as more technical than truly scientific.

In addition, the limitations of salaries and the value of the peso have constrained the productivity of researchers in Mexico, making it more difficult for faculty and students to travel, join international associations, subscribe to journals, or purchase texts or state-of-the-art equipment. Unlike their U.S. counterparts, faculty in Mexico do not receive sample copies of textbooks.

Prior to 1994, CONACyT had two programs affecting computer science research: funding for graduate students and the National Investigators Program. Students seeking a Ph.D. at a qualified institution in Mexico, the United States, or overseas would receive a loan that would be entirely forgivable if the student returned to an academic career within Mexico. The loan would be half forgiven if the student returned to take a job in industry. Approximately 90 percent have completed their degrees, and

virtually all have returned to work in Mexico.

The National Investigators Program was established to compensate for low academic salaries in the scientific and technical disciplines by providing additional support. This program awards bonuses of up to 100 percent of salary, tax-free. The sole criterion for receiving an award is by number of pure research papers in international journals. Panels of distinguished researchers control the process. As a relative newcomer to the pantheon of disciplines within Mexico, computer science faculty have had difficulty gaining a voice and, thereby, a share of this funding. The panels have tended to favor their own research areas, disciplines such as astronomy and anthropology, with long, distinguished traditions in Mexico. In addition, no accommodation is made for the varying definitions of research or for the varying difficulties of producing and publishing pure research among the different disciplines. Unable to make progress without support, computer scientists did not meet the qualifications for support, a classic catch-22.

CONACyT first supported computer science in an effort with NSF conceived of by A. Nico Habermann, then AD for CISE. Following high-level meetings, Habermann pursued research collaboration and cooperation with CONACyT in CISE fields. Oscar Garcia, then a Program Director in CISE, continued the effort after Habermann's death, and funded the first of a series of three joint U.S./Mexico workshops focusing on collaboration between researchers in the United States and Mexico.

As a result of the first of these workshops, SMCC (Mexican Society for Computer Science) was formed. In addition, by joining NSF in funding this workshop and the joint research program that resulted, CONACyT was for the first time providing funds directly to computer science. NSF and CONACyT continue to support joint research projects, and their success, along with the example of NSF interest in computer science, has created a revolution in attitudes within CONACyT. Since 1998, programs initiated by CONACyT have begun to put computer science research on a strong footing within the country and the international community.

## Working at Solutions

REDII (Network for Development and Investigation in Informatics) was established by CONACyT in 1998 with the goal of transforming computer science research and education within Mexico. Recognizing that Mexico cannot build a research capacity in computer science without also developing the people who are going to do the research—and knowing that in a developing country pure research must be balanced with an emphasis on practical development—REDII had a dual intent:

to simultaneously fund interesting, useful research, while also supporting the future generation of researchers.

REDII funded both public and private institutions, not individuals. The institutions then supported projects or general development, but the monies could not be used for salary or release time. REDII was unique in that it was set up to directly fund research in computer science, not the panoply of scientific disciplines within Mexico. And, proposals were reviewed by CS research scientists. Of the nine institutions and more than 40 projects currently funded, two examples are Enciclomedia and Phronesis.

Enciclomedia uses research in HCI to couple textbooks with a multimedia database, creating a user-centered, customized learning tool with limitless possibilities. Researchers are currently engaged in producing a prototype to be used in the 5th grade. Through Enciclomedia, Mexico is actively developing the reason to link schools to the Internet in the future, anticipating the time when the effort will be cost effective ([cetee.itam.mx/redii/informe2/ProyectosPrototipos/Proyectos2.htm](http://cetee.itam.mx/redii/informe2/ProyectosPrototipos/Proyectos2.htm)).

Phronesis is a web-based system for building and using distributed digital library collections. Phronesis provides space- and time-efficient procedures for indexing, searching and retrieving information in either English or Spanish ([copernico.mty.itesm.mx/~tempo/Projects/](http://copernico.mty.itesm.mx/~tempo/Projects/)).

The current administration is devising a follow-on program to REDII.

## Summary

Mexico has made tremendous improvement in the last 10 years in increasing the quality and quantity of computer science research. Particularly worthy of note is the philosophy of looking ahead by investing in computer science research, though the vicissitudes of governmental focus and funding can still leave the field in a precarious position. In Mexico, as throughout the world, the need for computer capability outpaces the supply of qualified computer science professionals. Computer science is not a field that can be ignored.

*Valerie Bernat is a freelance writer who lives in the Washington, DC, area.*

*This is one of an occasional series of articles describing computing research in other countries. ■*

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# Fostering Community Within a CS&E Department: A Berkeley Perspective

By David A. Patterson

When I joined Berkeley 25 years ago, there were few mechanisms to build esprit de corps among the faculty in the department. Despite doubling in size and moving into a larger building, we are probably a more closely knit community today than we were in 1977. Faculty who have been in other departments remark about how well we all get along, and marvel that we shuffle the faculty between research projects as they come and go.

Our community spirit is the result of explicit efforts to help us work together. The table shows the chronology of community-building efforts at Berkeley. Although several of these schemes take money, most just take some initiative. Most were suggested by faculty who were junior at the time. Few ideas came directly from the chairs, although they had to recognize the merits of the ideas and had to implement them.

The first step in community building was adding a yearly faculty retreat. Instead of faculty meetings where we never had enough time to discuss important issues, we began to meet for two days in the spring at a nice place away from campus. Two faculty members are charged with making sure we have an interesting program. Although we spend some time on routine issues, we complain if too much of it resembles a long faculty meeting. We have tried predicting the future of technology, started major research initiatives, and even watched an occasional movie about Berkeley. We preserve long breaks and long meals, with time for a long walk, since we recognize that informal discussions are an important part of the process. To avoid sacrificing our real families to enhance our campus community, the retreat takes place during the week, typically on a Thursday and Friday.

When	Community Activity	Who
1980	Faculty retreat	David Patterson lobbied chair Manuel Blum, who made it happen
1982	Weekly faculty lunch	Patterson lobbied, chair Carlo Séquin made it happen
1982	Ad hoc joint lunch	Robert Wilensky and many others
1983	Grad student review	John Ousterhout lobbied chair Domenico Ferrari, who made it happen
1987	Semiannual, off-campus, Project Research Retreat	Patterson
1990	Faculty on same floors in new building	Séquin presented options: faculty voted
1995	Book club	Randy Katz
1998	Sherry Hour	Patterson
2002	Monthly Big Topic Lunch	Chair Jitendra Malik

Faculty are expected to have TAs cover their classes, and since we make important decisions about our future, almost all faculty come to the retreat.

## Food is Love

The next step was a weekly departmental lunch. For the first 30 minutes the faculty talk about whatever they want. The chair then introduces the visitors, perhaps mentioning their talks, and introduces whatever topic is hot for that day. Weekly 30-minute discussions can make many ad hoc faculty meetings unnecessary.

I once remarked to an anthropologist that I was amazed what people would do for a free meal. She said I didn't understand a simple truth: "Food is love." In addition to the convenience of a meal inside your building, apparently at some level the lunch shows that someone cares about you.

The weekly lunch was soon supplemented by collecting faculty at noon to go to a nearby restaurant to share a meal. Bright and interesting people exchange views on all issues

of the day. A former colleague who left for a startup said what he misses most are those lunches.

Shortly thereafter we added a review of the progress of all graduate students. We list every student in reverse chronological order by years in the graduate program, and faculty try to avoid having their student at the top of the list. We share stories about the superstars and give suggestions on what has worked with those needing a helping hand. Since we started the review I believe we have improved both the fraction of students getting Ph.D.s and time to degree. We meet twice a year, with the faculty going out to a free dinner afterwards. (See "food is love" above.)

The next major activity was off-site research retreats for each large research project. Since these projects typically involve three to six faculty, bonding among faculty can't help but happen when you are together for three days, twice a year, for four years. These research retreats, where we invite a dozen interesting people from industry, are also invaluable to the success of our research projects.

## A New Building Endangers the Community

The next challenge to our community was moving into a new building. This led to a major decision: to intersperse faculty with their graduate students, which increases chances of interaction between grad students and faculty, or keep the faculty together? We decided that faculty certainly meet with their grad students no matter where they are located, but to preserve our community we wanted to keep the faculty together to increase the chances for interaction. As we moved from a single-floor building to two floors, we were so concerned about that split that we added a third open staircase between the two floors, hoping that faculty would be more likely to wander on the two floors and intermingle and making it easier to find faculty for the ad hoc lunches. The President of Caltech visited several years later, and said we absolutely made the right decision.

The next milestone was a faculty book club. One colleague who enjoys reading books got this started, making suggestions of books that those of us who read less might enjoy. Four to six times a year we meet for dinner and talk about a book. We quickly decided that we wouldn't read books directly in our field. Topics have included economics, anthropology, biology, neurology, and history of science. (If you want to see the list, see [www.cs.berkeley.edu/~pattsrn/FacultyBookClub.html](http://www.cs.berkeley.edu/~pattsrn/FacultyBookClub.html).) We soon evolved to inviting an expert in the field from the university to join us for each dinner, which makes the discussions that much more interesting. Several times the author has joined us, which is a lot of fun. (A recent book was "History of the University of California," and we greatly

Fostering Community  
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# Record Numbers Attend Snowbird Conference

Once again, following a long tradition that began in 1974, senior researchers from academia, labs/centers, and government with an interest in computing research wended their way to Snowbird, Utah July 14 to 16 for CRA's biennial conference. Attendance this year was the highest ever with 260 registrants. Attendees managed to keep their cool in spite of unseasonably hot temperatures in the mountains.

The program, organized by committee co-chairs Leah Jamieson, Purdue University, and Phil Bernstein, Microsoft, offered two keynote speeches, three plenary sessions, and four simultaneous workshop sessions.

Dr. Robert Kahn, Internet pioneer and President of the Corporation for

National Research Initiatives in Reston, VA, opened the conference with a keynote address on "Key Issues in Information Technology." On the second day, Peter Freeman, Assistant Director for CISE at the National Science Foundation, discussed "Strategic Directions at NSF" in a keynote address.

The always popular workshop for new department chairs, led by Kathleen McKeown, Columbia University, and Randy Bryant, Carnegie Mellon, had a very large turnout.

On the second evening, CRA Service Awards were made. Bryant York presented the Habermann Award to Valerie Taylor, Northwestern University; Guylaine Pollock

presented the Distinguished Service Award to Andries van Dam, Brown University. Jim Foley, CRA chair, and Bill Aspray, CRA Executive Director, presented the "State of CRA" after dinner. Gifts were presented to Bill Aspray, who stepped down as CRA's Executive Director on July 31, and the new Executive Director, Andrew Bernat, made some brief remarks.

For the second time at Snowbird, IT Deans met on the final day of the conference. This session, chaired by Bobby Schnabel, University of Colorado at Boulder, attracted more than 40 attendees this year.

In addition to co-chairs Leah Jamieson and Phil Bernstein, members of the program committee for

Snowbird 2002 included Ron Brachman (DARPA, formerly AT&T Research); Oscar Garcia (Wright State University); Tom Henderson (University of Utah); Jim Horning (NAI Labs); Jack Stankovic (University of Virginia); Frank Tompa (University of Waterloo); Dick Waters (Mitsubishi Labs); and Roger Webb (Georgia Tech, ECEDHA). The evaluation forms submitted by attendees suggest kudos all around for this hard-working committee. Presentation slides are posted at <http://www.cra.org>.

The next CRA Conference at Snowbird is scheduled for July 11-13, 2004. ■

# Computing > Computer Science

By Jim Foley

Why are we called the *Computing Research Association* instead of the *Computer Science Research Association*?

Our Mission Statement records that:

“In 1986 CSB, in recognition of its increasing concern for R&D in the computing fields, including computer engineering and computational science, incorporated as the Computing Research Board (CRB). In 1990, CRB was given its present name ...”

The more general question is, “What is computing and how does it differ, if at all, from computer science?” This of course depends on what we mean by computer science.

Abelson and Sussmann [1] write: “Computation provides a framework for dealing precisely with notions of ‘how to.’” In a recent presentation, Sussmann [2] contrasts the “how to” of computer science with the “what is” of mathematics. I would go further. Science discovers the laws of nature—the “what is” of nature. Engineering uses the laws of nature to create physical artifacts. In contrast, computer science discovers *and* uses the laws of “how to” compute and “how to” organize information to create computational and information artifacts. Computer science is also concerned with the organization—that is, the architecture—of the physical artifacts that perform computations and that store and transmit information. (Computer science is both science and engineering—a good thing, in my opinion, but that’s another story.)

What then of computing? It is simply computer science with an additional emphasis on understanding the ways and domains in which computers are used, and the ways in which computational engines are engineered. Also, because people are the users of much of our computer technology, understanding people is important to computing. The more engaged one becomes with application domains and human issues in doing computer science research, the more one is doing computing research in addition to computer science research. So it is a continuum. There is no hard dividing line.

I’ve been at Georgia Tech’s College of Computing for much of the time since I first moved south in 1991. Our strategic plan says: “The College was founded to focus on **computing** — *the integration of computer science and other disciplines to address problems of wide interest*. Our interest in end-results leads immediately to our concentration on the human element of computing in much of our research and to our aggressive interdisciplinary orientation.”

Computing is concerned both with deep theoretical questions about the nature of computing and information, as well as with new and creative ways to use computers to solve problems. That is, computing simultaneously looks inward to solve fundamental problems, and looks outward to solve real-world problems and to work collaboratively with other disciplines to solve problems that neither computer science nor the other discipline alone could solve.

Indeed, in some cases they are problems that neither discipline could even recognize without collaborating, and in some cases the collaboration leads to fundamentally new ways of thinking about problems.

I used figure 1 at our Snowbird meeting to suggest that:

- Computing contains computer science.
- Computing foundations are partially within computer science and computing and partially outside computer science and computing, drawing on disciplines such as math, probability, statistics, philosophy, linguistics, semantics, cognitive science, library science, and cryptography.
- Working on research challenges coming from application domains is an important aspect of computing. Again, there is a continuum.

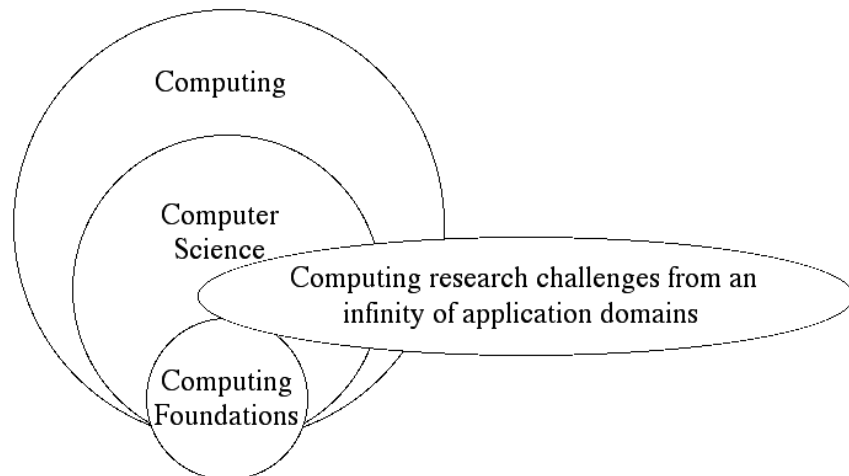


Figure 1. A Structure for the Discipline of Computing.

“Interdisciplinary research” means different things to different people. Figure 2 captures some possible interpretations—or misinterpretations. It is only in the upper-right quadrant that I consider true interdisciplinary research to be occurring. Yes, sometimes a research team will start in one of the other quadrants as a “get acquainted with the problem domain” strategy, but the target must always be the upper-right quadrant!

Contribution of Discipline X	Develop & apply new knowledge	Computing in the service of discipline X research	Interdisciplinary research
	Apply known knowledge	Routine application of current knowledge	Discipline X in the service of computing research
		Apply known knowledge	Develop & apply new knowledge

Contribution of Computing

Figure 2. Interdisciplinary research occurs when new knowledge is being discovered in both disciplines.

What about the relationship between computing and information technology? Figure 3 shows two types of application domains—those that are computation-intensive and those that are data-intensive (the two overlap because there is a continuum here as well). The intersection between computation-intensive applications and computing is computational science and the intersection between data-intensive applications and computing is information technology. Again, each of computational science and information technology can involve research in computing foundations, computer science, and computing.

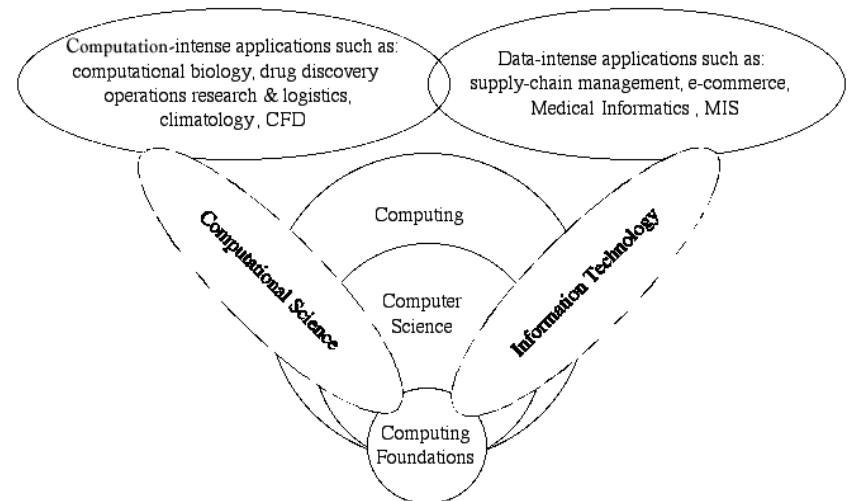


Figure 3. How computational science and information technology relate to computing.

CRA’s goal is to have as members and provide service to all groups that are doing computing research, whether it be in traditional computer science, computer engineering, computational science, information technology, information science, computational biology, medical informatics, or any domain in which new computing knowledge is being created

My understanding and articulation of the structure of the discipline of computing is still evolving. I welcome your feedback (foley@cc.gatech.edu).

Jim Foley is chair of the CRA board.

**References:**

<sup>1</sup>Abelson and Sussmann, *Structure and Interpretation of Computer Programs*, MIT Press, Cambridge, MA, 1985.  
<sup>2</sup>Sussmann, G, *The Legacy of Computer Science*, presentation at NRC/CSTB Symposium, “Fundamentals of Computer Science,” [http://www7.nationalacademies.org/cstb/project\\_fcs\\_agenda3.html](http://www7.nationalacademies.org/cstb/project_fcs_agenda3.html)

**2003 Federated Computing Research Conference**

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<http://www.acm.org/sigs/conferences/fcrc/>



Appropriations from Page 1

The report indicates the Committee expects NSF to use this new funding to support individual researchers and interdisciplinary centers in computer and network security research.

The Committee Report also contained comments about the recent report by the NSF's Blue-Ribbon Advisory Committee on Cyber-infrastructure, noting that the report's call for significant expansion in "high-performance computing, optical networking, software applications for 'e-science,' and large-scale digital libraries" could "accelerate the pace of discovery in all science and engineering disciplines, and serve as a 'multiplier' for the Government's substantial investment in R&D." The Committee urged NSF to give the report careful consideration in preparing its FY 2004 budget proposal.

The VA-HUD Appropriations bill will likely be considered by the full Senate in September. Work on the House version of the bill in committee was not completed before the House adjourned for Congress' traditional August recess. Though the Republican-controlled House is not expected to be quite as generous in its version of the VA-HUD Appropriation, there is clearly support for significant increases in NSF's research budget. In June, House members passed overwhelmingly a bill (H.R. 4664) introduced by House Science Subcommittee on Research Chair Nick Smith (R-MI) that would authorize funding increases of 15 percent at NSF for three years, setting a target of doubling the agency's current budget in five years. The Senate will take up its version of that bill in September.

House and Senate Appropriators also made progress on FY 2003 Defense Appropriations (H.R. 5010), with both committees reporting out versions that approve significant increases to DOD science and technology budgets. The House bill includes \$11.3 billion for Defense Research, Development, Test, and Evaluation (RDT&E) in FY 2003, including \$1.41 billion for basic research, \$54 million more than the President's request. DARPA's Computing Systems and Communications Technology account would grow to \$425 million in FY 2003, \$500,000 over the President's request. The House plan would also provide \$60 million for DARPA's Embedded Software and Pervasive Computing program. The bill passed the House by a 413 to 18 margin.

The Senate version of the bill includes \$10.7 billion in RDT&E funding in FY 2003, slightly less than the House version, but includes \$1.49 billion in basic research funding. The Senate plan would increase DARPA's Computing Systems and Communications Technology account by \$59 million over the FY 2002 level, but still fall \$7 million short of the President's requested level. The full Senate will take up the bill in September.

For the latest information developments in the appropriations process, check the CRA Government Affairs web site at <http://www.cra.org/govaffairs>. ■

Senate-Approved FY 2003 NSF Funding Levels

(in millions of US dollars)

NSF Account	FY 02 Plan	FY 03 Request	FY 03 Senate	Change Over FY 02 Plan	% Change
Biological Sciences	508.41	525.62	525.62	17.21	3.4
CISE	514.88	526.94	616.94	102.06	19.8
Engineering	472.32	487.98	567.98	95.66	20.3
Geosciences	609.47	691.07	684.49	75.02	12.3
Math & Physical Sciences	920.45	941.57	1,056.57	136.12	14.8
Social, Behavioral & Economic Sciences	168.79	195.61	195.61	26.82	15.9
U.S. Polar Research Programs	229.74	235.74	245.74	16.00	7.0
U.S. Antarctic Logistical Support Activities	68.07	68.07	68.07	0.00	0.0
Integrative Activities	106.51	110.61	170.61	64.10	60.2
<b>Total, Research and Related Activities</b>	<b>3,598.64</b>	<b>3783.21</b>	<b>4131.63</b>	<b>532.99</b>	<b>14.8</b>
Education and Human Resources	875.00	908.08	947.78	72.73	8.31
Major Research Equipment & Facilities	138.80	126.28	79.28	-59.52	-42.90
Salaries and Expenses	170.04	210.16	182.16	12.12	7.1
Inspector General	6.76	7.70	9.06	2.30	34.02
<b>TOTAL NSF</b>	<b>4789.24</b>	<b>5035.79</b>	<b>5353.36</b>	<b>564.12</b>	<b>11.8</b>

Leadership from Page 3

excellent scholars and have also performed admirably as administrative leaders. But both share another quality that is worth emulating in many situations—the ability to move from one sphere to another, using what they have learned in one phase of their careers to lead more effectively in the next. Each has already done this at least a couple of times, and I know that their current transitions will again display this leadership characteristic.

My next example is the CISE Advisory Committee. This group of approximately 30 people from all corners of our field ([http://www.cise.nsf.gov/vgn\\_apps/staf/output/cise\\_staf\\_ac](http://www.cise.nsf.gov/vgn_apps/staf/output/cise_staf_ac)) serve one or more two-year terms, donating at least five days a year to advising CISE and NSF, serving on special review panels, and generally providing a very important link between CISE and you, the researchers in the field. We depend on them to give us a balanced, comprehensive, and coherent view of what is going on, so I strongly encourage you to make sure they are fully informed. The service they selflessly provide to the Nation is an extremely important form of leadership, over and above the leadership each provides in their own spheres.

My last example is one of innovative research leadership. This year's

ITR Large awards will be announced before September 30, and I encourage you to learn more about them. (The CISE website, [www.cise.nsf.gov](http://www.cise.nsf.gov), will have links to them.) Each in its own way provides a good example of something that we need more of—strong, innovative, and forward-looking research efforts that have the potential of changing things for many years to come. (By the way, the announcement of the '03 ITR Program should have been released by the time this is published.)

Let me end by restating something that I said in my Snowbird talk. Every one of you can lead in some way. As researchers, educators, and administrators you are, by definition, in a role that in some way should be influencing others. So, at least nominally, the answer to my question "Are you included?" is "yes." The challenge for each of us, every day, is to make the answer a resounding "YES!"

In future columns, I will address general directions and issues at NSF and CISE, discuss some specifics, and comment on general issues in the field. Your feedback will be most appreciated.

Peter Freeman ([pfreeman@nsf.gov](mailto:pfreeman@nsf.gov)) is the Assistant Director of CISE at the National Science Foundation. ■

Fostering Community from Page 5

enjoyed sharing a meal with its author, Clark Kerr.) About half the faculty participated at one time or another in the book club, and we have from 6 to 12 at a dinner.

We refer to a newer community activity as the "Sherry Hour." It seemed a waste of talent that we could find time to discuss sophomore curriculum problems but not to talk about intellectual issues. Sherry Hour was inspired by Richard Hamming's talk, "You and Your Research" (found on your local search engine). He argued that it is important for successful researchers to not only work hard, but to pop their heads up occasionally to look for new, big opportunities. Hence, on Friday afternoons he would discuss only Great Thoughts and he would invite people to share a table, provided they were willing to think big. We follow in his footsteps. We meet from 3:30 to 5:00 or so each Friday, drinking free sherry and eating free snacks. (See "food is love" above.) The argument to make with busy colleagues is: Just how much more work are you going to get done after 3:30 on Friday, and wasn't having discussions on big ideas one of the reasons you went to academia? We just have to keep a muzzle on the chair to prevent a faculty meeting from breaking out.

I believe an interesting project between vision and computer architecture got started at Sherry Hour, although my colleague thinks it was over an ad hoc lunch. The project wouldn't have happened without a conscious attempt to cross boundaries within the department.

Still Innovating

This fall our new chair is going to try to dedicate one lunch a month to go over the important intellectual events in our field, possibly cutting into informal discussion time to provide an opportunity to interact on these issues. For example, I will probably present the results of CRA's recent Grand Research Challenges Conference. I bet this one is a winner too.

For more than 20 years, we've been innovating to try to bring the faculty together, and I believe it has been especially important as we grew from 25 to 40 faculty. Berkeley certainly would not be the same place without them. Perhaps it's like a good marriage, in that you need to keep working at it.

I know that faculty who come to Berkeley from other places remark on what a friendly community we have for such a high-powered place. They also marvel at how we mix and match different faculty on different research projects over the years; I probably have worked on multi-year research projects with a dozen faculty.

Perhaps others can share their ideas about what works in their departments? We're interested in doing even more.

David Patterson, Professor of Computer Science at UC Berkeley ([patterson@cs.berkeley.edu](mailto:patterson@cs.berkeley.edu)), is a current CRA board member who served two terms as board chair from 1993 to 1997. ■

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Minimal requirements include a Ph.D. in computer science, electrical engineering, physics or a related field with a strong background in computer science. Interested candidates should send a CV, statement of research interests, and the names of three references to:

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Cal Poly's Computer Science Department offers BS and MS degrees in Computer Science. Cal Poly emphasizes "learn by doing", which involves extensive lab work and projects in support of theoretical knowledge. The available computing facilities for instructional and faculty support are modern and extensive. For further information about the department and its programs, see [www.csc.calpoly.edu](http://www.csc.calpoly.edu).

Inquiries should be directed to the Recruitment Committee, Computer Science Department, Cal Poly, San Luis Obispo, CA 93407 (refer to Recruitment Code 4327); Tel. (805) 756-2824; e-mail: [cscrcruit@csc.calpoly.edu](mailto:cscrcruit@csc.calpoly.edu). Review of applications will begin on November 1, 2002; applications received after that date may be considered. For full consideration, candidates are required to submit: (1) completed application form, (2) statement of goals and plans for teaching and research, (3) three letters of reference, and (4) transcripts.

A BS degree in Computer Engineering is jointly offered by the Computer Science and

Electrical Engineering departments. For information about positions in Computer Engineering, please contact Professor Art MacCarley, Director, Computer Engineering Program, Cal Poly, San Luis Obispo, CA 93407 (refer to Recruitment Code 4528); Tel. (805) 756-1229; e-mail [amaccarl@calpoly.edu](mailto:amaccarl@calpoly.edu).

Cal Poly faculty position ads are posted at <http://www.academic-personnel.calpoly.edu/facpositions.html>. Cal Poly is strongly committed to achieving excellence through cultural diversity.

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Applications are invited for faculty positions in the Computer Engineering area of the Department of Electrical and Computer Engineering. The Department has strong research programs in wireless communications and signal processing, mechatronics, computational electromagnetics, solid-state device reliability, power systems, cluster-based computing, reconfigurable computing, and machine vision.

Exceptional candidates at all levels and in all research areas related to computer engineering will be considered. However, we intend to fill at least one position in the area of computer communication networks. For the other positions, we are interested in individuals who can contribute to the Department's active research programs or who can serve as conduits for building interdisciplinary research teams in emerging areas at Clemson (e.g., robotics/control, intelligent systems, and computer simulation).

Candidates should hold a Ph.D. degree in Computer Engineering, Electrical Engineering, Computer Science, or a closely related field and should have high potential for establishing a sustained research program and quality teaching. The individual selected will be expected to contribute to both new and ongoing research programs at Clemson and to teach both undergraduate and graduate courses. A detailed description of the department is available at: <http://www.ece.clemson.edu>.

Send resume and names and addresses of five references to:

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105 Riggs Hall, Box 340915  
Clemson University  
Clemson, SC 29634-0915

Evaluation will begin October 1, 2002, and will continue until the positions are filled. Clemson University is an Equal Opportunity/Affirmative Action Employer.

#### Georgia State University Department of Computer Science Assistant/Associate Professor

The Department of Computer Science of Georgia State University invites applications for an anticipated tenure-track position for assistant/associate professor beginning the Fall semester, 2003. Earned Ph.D. in Computer Science, or a closely related discipline, and an excellent record in publications in computer science are required with preference for extramural funding. Preference is for individual with specialty in software engineering, graphics, content processing, internet multimedia communications, operating systems, or algorithms.

The department offers programs leading to the B.S., M.S., and Ph.D. degrees in computer science. Departmental computing facilities for research and instruction include a departmental network of PCs, Unix/Linux workstations, and a 24-processor Origin 2000 high-performance computer and five laboratories, and a hypermedia and visualization research laboratory. A full-time systems programmer supports the departmental computing facilities.

Applicants should send a letter of application, vita without birth date, but with citizenship status, and three letters of reference and transcripts of all graduate and undergraduate work to:

#### Computing Research Association Program Associate

Computing Research Association, an educational nonprofit has a full-time, permanent opening for a Program Associate. As is typical in a small organization, the Program Associate will be required to work on multiple assignments, which may change over time. Much of the work will involve staff support to the computer professionals who volunteer to serve on our board and committees. These activities include career development workshops for young faculty, mentoring and research experience programs for undergraduate women, distinguished lecture series, and programs for industrial research managers. Another part of the job involves assignments that require use of data analysis and social science tools and methodologies. These assignments include formal evaluation of programs to determine their effectiveness, two annual data surveys, occasional field work (surveying, focus groups, formal interviewing) in connection with work-force and other research studies, and occasional report writing.

A bachelor's degree is required, and an advanced degree or experience is preferred. Formal training or work experience with data analysis and the empirical methods and tools of the social sciences (surveying, interviewing, etc.) is desirable. Experience with program evaluation is highly desirable. Excellent writing and speaking skills, and desire and ability to work closely with staff, board members, and other CRA volunteers, are essential. No special knowledge of computer science is needed, but strong computer usage skills and particular experience with databases are valued.

CRA seeks someone who has a passionate interest in promoting higher education, especially science education, and the advancement of computing research for social benefit. Half of the staff holds advanced degrees, and all members of the staff work routinely with distinguished professors, department chairs, deans, industrial research laboratory managers, senior Washington policy-makers, and others in leadership positions.

To apply, send a resume, writing sample, and cover letter including salary requirements, together with the names of three references, to: Donnajean Ward, Director of Programs, Computing Research Association. Email (Word and .pdf attachments accepted) is preferred <[ward@cra.org](mailto:ward@cra.org)>, or fax to 1-202-667-1066. Applications will be considered as they arrive, until the position is filled. No phone calls please.

Chair, Department of Computer Science  
Georgia State University  
University Plaza  
Atlanta, Ga. 30303-3083  
(or e-mail to: [mfraser@cs.gsu.edu](mailto:mfraser@cs.gsu.edu)).

Applications will be accepted until position is filled. Georgia State University is an EEO/AA institution.

#### GILLIS Technology Consultants LLC Lead Sr Software Design Engineer, Content Server Management

Our client is a global software company that provides a variety of software and services. The companies markets include product development, gaming and software applications for Web-based services.

Interested in working on an exciting product offering that enables businesses to quickly and cost-effectively develop, deploy and maintain highly dynamic, personalized and scalable e-business websites? Our client recognizes the need to effectively manage the content that drives this communication as a strategic business tool. Ideal candidates possess a strong technical background, solid grasp of software engineering principles and exceptional problem solving skills. Prefer candidates with broad technical experience in enterprise application development and knowledge in the following areas: C++, COM, ATL, IIS, ASP, VBScript, XML, Win2k, SQL Server, Web Services, etc. BS degree in Computer Science, Engineering or a related technical field is required. Client provides competitive compensation, benefits and relocation.

Please forward your resume to [vrees@git-consultants.com](mailto:vrees@git-consultants.com) referencing CRA or visit our website at [www.gt-consultants.com](http://www.gt-consultants.com). GILLIS Technology Consultants LLC advocates work-force diversity. We strongly encourage women and minorities to apply.

#### Massachusetts Institute of Technology Division of Health Sciences and Technology, and Department of Electrical Engineering and Computer Science Faculty Position

The Massachusetts Institute of Technology seeks candidates for a tenure-track faculty position offered jointly in the Harvard University-Massachusetts Institute of Technology Division of Health Sciences and Technology (HST) and the MIT Department of Electrical Engineering and Computer Science (EECS).

We seek candidates with backgrounds in interdisciplinary fields of biomedical engineering

and/or the bio-medical sciences. Faculty duties will include teaching at the undergraduate and graduate levels, research, and supervision of these. Collaborative opportunities with investigators at MIT, Harvard University, Harvard Medical School, and its teaching hospitals are abundant. In addition, with access to an exceptional student body, there are rich opportunities to build an interdisciplinary, bio-medically oriented research group. There are currently 380 students enrolled in the HST's degree programs as MS, Ph.D., and/or MD candidates, and 750 students enrolled in EECS's MS and Ph.D. programs. We seek candidates who will interact productively with students and faculty in both HST and EECS, thereby fostering interdisciplinary research and teaching.

HST and EECS are strongly committed to diversity in their faculties and student populations. We encourage applications from men and women of all demographic backgrounds. All candidates should reply to the address below. The application should include curriculum vitae, statements of professional interests in both research and teaching, and the names and addresses of three or more individuals who will provide letters of recommendation. Please arrange to have such letters sent directly to the address below. The deadline for receipt of applications is November 15, 2002.

Please send applications to:  
Martha L. Gray, PhD  
Co-Director, Harvard-MIT Division of  
Health Sciences and Technology  
Massachusetts Institute of Technology,  
E25-510  
77 Massachusetts Avenue  
Cambridge, MA 02139-4307

For more information on HST, please visit <http://hst.mit.edu>

For more information on EECS, please visit <http://www-eeecs.mit.edu>

#### Mississippi State University Department of Computer Science Faculty Positions

The Department of Computer Science (<http://www.cs.msstate.edu>) is seeking to fill several open positions for tenure-track faculty at the Assistant/Associate Professor levels. A Ph.D. in computer science or a related field is required. Areas of particular interest are computer security, graphics and visualization, scientific computing, networking and high performance computing, software engineering, and artificial intelligence. Applicants in other areas are also encouraged.

The Department of Computer Science has 21 faculty positions and offers academic



## Professional Opportunities

programs leading to the bachelor's, master's and doctoral degrees in computer science and a bachelor's degree in software engineering. Approximately 270 majors are enrolled in the undergraduate computer science and software engineering programs. There are 27 Ph.D. students in the doctoral program. Seven new faculty have been recognized by NSF CAREER awards. Department research expenditures total around two million dollars per year.

Review of applications will begin July 2002 and continue until position is filled. Interested individuals should forward their vitae and names of at least three references to:

Julia Hodges, Head  
Department of Computer Science  
Box 9637  
Mississippi State, MS 39762  
Telephone: (662) 325-2756  
Fax: (662) 325-8997  
Email: office@cs.msstate.edu  
MSU is an Affirmative Action/Equal Opportunity Employer.

### North Carolina State University Department of Computer Science Database Systems and Data Mining

The North Carolina State University Department of Computer Science seeks one or more tenure-track assistant professors in the area of database systems and/or data mining to begin August 16, 2003. Successful candidates will have a PhD in Computer Science or a closely related field, and demonstrated potential to establish a strong research and teaching program at NCSU. Candidates are expected to have both strong experimental and theoretical interests in the areas of database systems research and education. We are seeking candidates who have carried out research in database design and organization, database security, networked databases, information access and retrieval, data mining and warehousing, distributed databases, object-oriented databases, Web applications or integration, processing or transactional aspects of information, XML and semantic Web technologies, or other related topics.

The new faculty members will find a lively and collegial work environment with many opportunities for collaboration on campus and with local industry. The department is in a period of rapid growth and advancement, and is aggressively positioning itself to be at the forefront of selected areas in computer science. These new positions have been created to further strengthen our ongoing activities in such areas as decision support, online data monitoring, electronic commerce, virtual enterprises, heterogeneous and object-oriented databases, machine learning, intelligent data analysis, multiagent systems, intelligent multimedia, distributed computing, scientific visualization, networking, and human interfaces.

We attract research sponsorship from a variety of sources, including NSF DARPA, AFOSR, ONR, NIH, USEPA, NSA, and State of North Carolina. Industrial sources include IBM, SAS, GlaxoSmithKline, Procter & Gamble, Fujitsu, and Cisco. The candidate will have access to our state-of-art high performance ATM-based network, and the North Carolina Giga-POP and Internet-2 facilities.

NCSU, a Doctoral/Research land-grant university, is located in Raleigh, a vertex of the world-renowned Research Triangle, which boasts a high concentration of high technology companies and research institutions. The state of North Carolina is a world center of banking and finance. The Research Triangle area was recently recognized as one of the best places to live in the U.S. In addition to the historical campus, the department occupies substantial space on NCSU's new Centennial Campus, an innovative colocation of university and industrial labs designed to foster close collaboration. The State of North Carolina recently passed a major bond initiative that includes \$83 million for a new engineering campus on Centennial Campus. A new 90,000 sq. ft. \$36 million Computer Science/Electrical and Computer Engineering building is currently in the design stage.

Interested candidates should send their curriculum vitae and the names of four references to:

Database Systems Recruitment Committee  
Department of Computer Science  
North Carolina State University  
Raleigh, NC 27695-8206

Prospective candidates are encouraged to access the Department's homepage (<http://www.csc.ncsu.edu/>) and to write to [database\\_search@csc.ncsu.edu](mailto:database_search@csc.ncsu.edu) if they wish. NC State is an Equal Opportunity, Affirmative Action employer. Individuals with disabilities desiring accommodations in the application process should contact the Computer Science Department at NCSU at (919) 515-2858 or send email to the above address.

### North Carolina State University Department of Computer Science Operating Systems

The North Carolina State University Department of Computer Science seeks one or more tenure-track assistant professors in the area of systems to begin August 16, 2003. We are seeking candidates who have research experience in the areas of parallel and distributed systems, operating systems and middleware, real-time and embedded systems, multimedia computing, mobile wireless computing and other systems areas.

Candidates are expected to have both strong experimental and theoretical interests in these areas of systems research complemented by an educational interest in operating systems teaching. Successful candidates will have a PhD in Computer Science or a related field, and demonstrated potential to establish a strong research and teaching program at NCSU. These positions have been created to complement our established research strength in computer networking and distributed systems. A number of faculty have an interest in parallel and distributed systems, embedded and real-time systems, multimedia networking, optical networks, security, real-time communication, quality-of-service, concurrent system testing, distributed database systems, compilers, and object-oriented programming. Their work is supported by NSF, DARPA, DOE, AFOSR, Cisco, Ericsson, Fujitsu, IBM, MCNC, Nortel, NSA, and the State of North Carolina.

The Department is in a period of rapid growth and advancement, and is positioning itself to be at the forefront of selected areas in computer science. The candidate(s) will have access to our Operating Systems cluster, state-of-art high performance ATM-based network, and the North Carolina Giga-POP and Internet-2 facilities as well as the North Carolina Supercomputing Center.

In addition to regular tenure-track positions, candidates in parallel and distributed systems have the option of a joint appointment with Oak Ridge National Laboratory, a leading DOE center with opportunities for research in large-scale scientific computing. Joint appointments on a tenure-track position include a reduced teaching load and additional opportunities for collaboration as well as access to DOE computing facilities. Interest in a joint appointment should be explicitly stated in the application.

The University is located in Raleigh, which forms one vertex of the world-renowned Research Triangle Park. The Research Triangle area was recently recognized as one of the best places to live in the U.S. It also boasts a high concentration of high technology companies. In addition to the historical campus, the department occupies substantial space on NCSU's new Centennial Campus, an innovative co-location of university and industrial labs designed to foster close collaboration. The State of North Carolina recently passed a major bond initiative that includes \$83 million for a new engineering campus on Centennial Campus. A new 90,000 sq. ft. \$36 million Computer Science/Electrical and Computer Engineering building is currently in the design stage.

Interested candidates should send their CV and the names of four references, preferably prior to January 15, 2003, to:

Operating Systems Recruitment Committee  
Department of Computer Science  
North Carolina State University  
Raleigh, NC 27695-8206

Prospective candidates are encouraged to access the Department's homepage (<http://www.csc.ncsu.edu/>) and to write via email if necessary ([os\\_search@csc.ncsu.edu](mailto:os_search@csc.ncsu.edu)).

NC State is an Equal Opportunity, Affirmative Action employer. Individuals with disabilities desiring accommodations in the application process should contact the Computer Science Department at NCSU at (919) 515-2858.

### North Carolina State University Bioinformatics Graduate Program Faculty Positions

North Carolina State University wishes to add faculty at all levels to its Bioinformatics Graduate Program and its Bioinformatics Research Center ([bioinformatics.ncsu.edu](http://bioinformatics.ncsu.edu)). The program, which now has about 50 students pursuing Masters and Ph.D. degrees in bioinformatics, enjoys strong support from the State, NIH, NSF and industry. The research center is housed in a new facility on NC State University's unique multidisciplinary Centennial Campus ([centennial.ncsu.edu](http://centennial.ncsu.edu)), and has long-standing strength in statistics and statistical genetics.

Faculty are currently sought to enhance computational aspects of bioinformatics and other complementary areas broadly construed. Each appointee will be associated with the

Bioinformatics Research Center and will be appointed to an academic department or departments that best suit his or her area of expertise. Applicants must have a Ph.D. in a relevant discipline.

Send letter of application, CV, and the names of three references to Dr. Raymond E. Fornes, Chair; Bioinformatics Search Committee; Campus Box 8209; North Carolina State University; Raleigh NC 27695-8209. Review of applications will begin immediately and continue until the positions are filled.

In its commitment to diversity and equity, North Carolina State University seeks applications from women, minorities, and persons with disabilities. AA/EOE. Individuals with disabilities desiring accommodations in the application process should contact Ms. Joye Stephenson at either [joye\\_stephenson@ncsu.edu](mailto:joye_stephenson@ncsu.edu), telephone 919-515-7865, or fax 919-515-7668.

### Old Dominion University Department of Computer Science Assistant/Associate Professor

The Department is seeking applications for a tenure track position at the level of assistant/associate professor. The successful applicant will start in January or August 2003.

Faculty duties include developing a funded research program, teaching graduate and undergraduate courses, and supervision of these. We will consider candidates with backgrounds and interests in any area of computer science. The minimum requirement is a PhD in CS or in a closely related field augmented by experience as well as the communication skills needed to be a successful teacher. Candidates should have strong research record or have clearly laid the basis for such a record.

We have the capability of enhancing this position from our endowment for an exceptional candidate with a strong externally funded ongoing research program. We provide an environment that encourages and supports research. Opportunities for collaboration exist across departments and colleges as well as with other institutions in the area. NASA Langley, Thomas Jefferson National Laboratory, Virginia Modeling and Simulation Center, Eastern Virginia Medical School, and the United States Joint Forces Command are less than an hour from campus.

Applications should include curriculum vitae and the names of three references. All candidates should indicate citizenship and, in the case of non-US citizens, describe their visa status. Send a letter of application, curriculum vita and contact information for 3 references to:

Larry Wilson  
Chair of Recruiting  
Computer Science Department  
Old Dominion University  
Norfolk, VA 23529.

Review of applicants will begin October 1, 2002 and continue until the position is filled.

Old Dominion University is an equal opportunity/affirmative action employer and requires compliance with the Immigration Reform and Control Act of 1986.

### Stanford University Department of Computer Science Faculty Openings

The Computer Science Department of Stanford University invites applications for tenure-track faculty positions at both the junior level (Assistant or untenured Associate Professor) and senior (tenured Associate or Full Professor) level. We are seeking applicants from all areas of Computer Science, including Foundations, Artificial Intelligence, Graphics, Databases, Systems, Human Computer Interaction, and Networking. The department also has interest in applicants doing research at the frontiers of computer science, for instance biological computing, bio-informatics, computation and arts, or computational economics. Higher priority will be given to the overall innovation and promise of the candidate's work than to any specific area.

An earned Ph.D., evidence of the ability to pursue a research program, and a strong commitment to graduate and undergraduate teaching are required. For senior appointments, we are searching for strong, energetic and visionary leaders. Successful candidates will be expected to teach computer science courses at the graduate and undergraduate levels and to build and lead a team of graduate students in Ph.D. research. Further information about the Computer Science Department can be found at <http://cs.stanford.edu>.

Applications should include a curriculum vita, statements of research and teaching interests and the names of at least four references. Candidates are requested to ask references to send their letters directly to our search

committee. The letters should be sent in as soon as possible, but no later than the application deadline. All materials should be sent to:

Search Committee Chair  
c/o Laura Kenny-Carlson  
Computer Science Department  
Stanford University  
Gates 278  
Stanford, CA 94305-9025  
or via electronic mail to  
[search@cs.stanford.edu](mailto:search@cs.stanford.edu).

The review of applications will begin on January 6, 2003, and applicants are strongly encouraged to submit applications by that date; however, applications will continue to be accepted until February 3, 2003. The positions are available beginning Autumn 2003.

Stanford University is an equal opportunity employer and welcomes nominations of women and minority group members and applications from them.

### Toyota Technological Institute at Chicago

#### Computer Science at TTI-Chicago Tenure-Track and Tenured Faculty Positions

Toyota Technological Institute (TTI-Japan) is founding a new Department of Computer Science (TTI-Chicago) adjacent to the University of Chicago campus.

Applications are invited for tenure-track and tenured faculty positions at all ranks.

TTI-Chicago will have exclusive use of the interest on a fund of \$100 million being set aside by TTI-Japan for this purpose. TTI-Chicago will be dedicated to basic research, education of doctoral students, and a small masters program. Faculty members will receive continuing research grants and will have a teaching load of at most one course per year. TTI-Chicago will have close ties with the Computer Science Department of the University of Chicago.

Initial faculty appointments will commence in autumn 2003, though some appointments may begin earlier by mutual agreement. The Department is projected to grow to a steady-state of thirty faculty by 2007.

Faculty are particularly sought with research programs in:

- Computational geometry
- Databases and data mining
- Human-computer interaction
- Large-scale scientific simulation
- Machine learning
- Networking and distributed computing
- Software and programming systems
- Theoretical computer science

An advisory committee from the University of Chicago and Argonne National Laboratory will recruit the founding faculty, who will then assume leadership to determine the character of the department.

For more information, contact:  
Mr. Frank Inagaki  
Treasurer and Secretary to the Board  
Toyota Technological Institute at Chicago  
e-mail: [finagaki@uchicago.edu](mailto:finagaki@uchicago.edu)

### United Arab Emirates University College of Information Technology Dean of the College of Information Technology

The premier national university in the United Arab Emirates, United Arab Emirates University was established in 1976 with a mission to contribute significantly to the development of the country and the realization of the full potential of its human, economic, and social resources. Located in Al-Ain, an oasis city of ancient heritage, the University enrolls more than 18,000 undergraduates in nine colleges and employs more than 600 Ph.D.-holding faculty and more than 400 master's-level instructional staff to teach in undergraduate and several master's degree programs.

The new College of Information Technology was established in September 2001 with the goal of becoming a world-class college with a forward-looking and innovative curriculum that is integrated with research and professional practice. Its curriculum, planned by a leading group of U.S. experts in the field of information technology, is designed to be consistent with the principles of the ACM/IEEE Curriculum 2001. The College offers the Bachelor of Science in Information Technology in seven programs—computer science, computer systems engineering, software engineering, information systems, network engineering, e-commerce, and information security—as well as a certificate program in Educational Technology. Classes are taught in English. The College expects to double its current enrollment of nearly 300 students over the next two years. As of September 2002, the College will have twenty-three faculty.

The College seeks an individual of exceptional vision and ability to serve as Dean. The successful candidate will be a leader who will



## Professional Opportunities

foster excellence in teaching and research, innovative interdisciplinary programs, and strategic partnerships with industry. S/he should have the requisite organizational and administrative experience and communications skills to lead the college in a period of dramatic growth, together with a broad understanding of the information professions and a strong track record of academic distinction. The Dean should warrant appointment as a full professor through some combination of: an earned doctorate; eminence in research and publication; acknowledged excellence in teaching; skills in curriculum development; notable service in relevant professional organizations; successful track record in recruitment of talented faculty. Experience with American higher education is preferred.

Inquiries, nominations, and applications (including a cover letter, curriculum vitae, and names of five references) should be directed in confidence to:

Kim M. Morrisson, Ph.D., Managing Director of Esther Collet, Vice President, The Diversified Search Companies, 2005 Market Street, Suite 3300, Philadelphia, PA 19103. Tel: 215-656-3579 or 215-656-3546. Email: ecollet@divsearch.com

For additional information, please consult the United Arab Emirates University website: <http://www.uaeu.ac.ae>

### University of Alabama at Birmingham (UAB)

<http://www.cis.uab.edu/>

Department of Computer and Information Sciences

#### Department Chair Position

Applications and nominations are being accepted for the position of Department Chair. Candidates should possess proven leadership and administrative skills and have an established reputation as a scholar. The Chair will be expected to provide vigorous leadership in the development of interdisciplinary collaboration initiatives in bioinformatics with the highly ranked UAB biomedical research community.

The Department of Computer and Information Sciences is one of five departments in the School of Natural Sciences and Mathematics and administers B.S., M.S. and Ph.D. degree programs. The department currently employs nine full-time faculty members and a number of adjunct faculty. The student population includes 476 undergraduate, 63 M.S., and 15 Ph.D. students as of fall 2001. Departmental research strengths include object-oriented distributed computing, computer graphics, artificial intelligence, geometric modeling, and bioinformatics. Average research grant funding in the department is \$242,000 per faculty member.

UAB is an urban university of 16,000 students located on a 270-acre campus in downtown Birmingham, a southeastern center of medicine, telecommunications and finance, with a population of more than 900,000. The university attracts more than \$325 million per year in federal funding, which ranks it among the top 20 public institutions in the U.S. in NIH funding and 29th in total federal R & D funding. UAB is classified as a Carnegie Doctoral Research Extensive University. The UAB Office for the Advancement of Developing Industries (OADI), a business incubator, provides entrepreneurship opportunities and is host to a company founded by one of the department's recent Ph.D. graduates who was selected by MIT Technology Review Magazine as one of the top 100 young innovators for 2002.

The successful candidate will be appointed to a tenured position as Professor within the Department, with salary at a level commensurate with qualifications and experience. Letters of application should include a full curriculum vitae and names and addresses of five references. Applications will be accepted until the position is filled; screening will begin immediately. Applicants from minority and women applicants are especially encouraged.

Nominations or applications should be sent to:

Chair\_search@cis.uab.edu, or  
Department Chair Search Committee  
Department of Computer and Information Sciences  
University of Alabama at Birmingham  
Birmingham, AL 35294-1170

The University of Alabama at Birmingham is an equal opportunity/affirmative action employer.

### University of Arkansas

Computer Science and Computer Engineering Department

#### Full Professor, Axiom Chair

The University of Arkansas invites applications and nominations for an Axiom Chair position at the Full Professorial level in Databases, Information Retrieval Systems, and

Software Methodology and Engineering in the Computer Science & Computer Engineering (CSCE) Department beginning Fall Semester 2003. Candidates should possess a record of demonstrated scholarship, administrative ability, and academic leadership, evident from their experiences in the areas of research, teaching, and professional achievement. Industry experience is highly desired, with the candidate able to qualify for the rank of full professor.

Applicants should hold an earned doctorate in Computer Engineering, Computer Science, or Electrical Engineering and should have demonstrated potential to excel in teaching and research. Each applicant should prepare a two-page statement describing research plans as well as the significance and context of prior research.

Application packages consisting of resume, research statement, and three references with complete information are requested. Submit applications to Professor & Interim Head A. Elshabini, CSCE Department, 311 Engineering Hall, University of Arkansas, Fayetteville, Arkansas, 72701.

A total of 15 tenure-track faculty positions and 5 full-time instructor positions exist within the department. The Computer Engineering (CENG) and the Computer Science (CSCE) programs at the University of Arkansas offer Bachelor of Science in Computer Engineering, Bachelor of Science in Computer Science, Master of Science in Computer Systems Engineering, Master of Science in Engineering, Master of Science in Computer Science, Doctor of Philosophy in Engineering, and Doctor of Philosophy in Computer Science. The Computer Engineering B.S. degree meets the ABET 2000 accreditation criteria. Enrollment in the department is 548 students (239 CSCE, 309 CENG). More information can be found at [www.csce.uark.edu](http://www.csce.uark.edu).

The University of Arkansas is an Equal Opportunity/Affirmative Action Employer.

### University of Illinois at Urbana-Champaign

Department of Computer Science

#### Tenure-Track/Tenured Professors

<http://www.cs.uiuc.edu>

The Department of Computer Science, UIUC, invites applications for full-time, tenure-track and tenured professors. All areas of computer science research will be considered, including bioinformatics, computational science, HCI, NLP, and security.

Tenure-track applicants must have demonstrated excellence in research; tenured applicants must have recognized national and international stature.

Computer Science at Illinois is internationally recognized for its breadth and depth of research and has strong collaborative relations with the Beckman Institute for Advanced Science and the National Center for Supercomputing Applications (NCSA). The department is targeted to grow aggressively to over 60 faculties and will occupy the new Thomas M. Siebel Center for Computer Science in 2003, becoming the anchor of a new IT quadrangle on the UI campus.

Successful candidates must initiate and conduct independent research and perform academic duties associated with our BS, MS, and PhD programs. Qualifications: PhD in Computer Science or a closely related field (or imminent completion of degree), outstanding academic credentials, and the ability to teach effectively at both the graduate and undergraduate levels. Starting date: August 21, 2003. The salary is open, based on qualifications.

To ensure full consideration, applications must be received by January 10, 2003. Early applications are strongly encouraged. Interviews may take place during the application period, but a final decision will not be made until ad closing.

Applicants should submit an application letter, curriculum vita and statement of career objectives (PDF preferred) to: <http://www.cs.uiuc.edu/apply.html>. Request at least three letters of recommendation to be sent separately to [barb@cs.uiuc.edu](mailto:barb@cs.uiuc.edu). If you or your recommenders do not have Internet access, please contact Barbara Armstrong at [barb@cs.uiuc.edu](mailto:barb@cs.uiuc.edu).

The University of Illinois is an Affirmative Action, Equal Opportunity Employer.

### University of Maryland, College Park

Center for Bioinformatics and Computational Biology

#### Director and Seven Faculty Positions

The University of Maryland invites faculty applications at the assistant, associate, and full professor level for the newly established Center for Bioinformatics and Computational Biology. The campus has committed resources to recruit up to eight new faculty in the Center, including

a Director. It is anticipated that the primary specialization areas of the faculty will collectively span fields of computer science, mathematics and statistics, biology, and biochemistry. Their primary responsibility will be to lead a nationally visible research program in selected areas of computational genomics, proteomics, molecular evolution and phylogenetics, complementing existing strengths at the University of Maryland.

Candidates for the Director position are expected to be senior researchers with prominent recognition in these areas. All other applicants are expected to have publications and research experience beyond the Ph.D. degree with strong components of biological science and computing. Experience in interdisciplinary collaboration is an asset.

The faculty will be housed in contiguous space set aside for the Center and will have access to significant high-end computing infrastructure through the University of Maryland Institute for Advanced Computer Studies. Each faculty member will also be affiliated with at least one other campus academic unit appropriate to her/his interests. There is ample potential for collaboration with other outstanding bioinformatics research groups nearby, in organizations such as NIH, Celera, TIGR, the Maryland Biotechnology Institute, and the Smithsonian Institution.

To apply, send a letter of application, curriculum vitae, letters of recommendation, and URL for additional information to the search committee, in care of the appropriate departmental representative. See <http://www.umi.acs.umd.edu/centers/bio.htm> for more information about the Center and the application procedure.

The University of Maryland is an affirmative action, equal opportunity employer. Women and minorities are encouraged to apply. Applications completed by November 30, 2002 will receive full consideration.

### University of Minnesota – Twin Cities

Department of Computer Science and Engineering

#### Faculty Positions

The Department of Computer Science and Engineering at the University of Minnesota invites applications for several open faculty positions. These positions are primarily at the assistant professor level, but highly qualified applicants at higher ranks will also be considered. Specialists from all areas of computer science and engineering are encouraged to apply. Requirements include a Ph.D. in computer science, computer engineering, or a closely related discipline, a commitment to quality teaching, and the potential for carrying out outstanding research. Senior candidates must possess a distinguished record of teaching, research, and service.

The research and teaching missions of the Department encompass a wide range of areas, including networking and distributed multimedia, internet technologies, cryptography and security, databases, data mining, software engineering, computer architecture, compilers, programming languages, artificial intelligence, robotics and computer vision, computer graphics and visualization, algorithms and complexity theory, geometric computing and applications, human-computer interaction, parallel computing, and scientific computing. Its faculty members, numbering thirty-four, have access to outstanding computing facilities both within the Department and at the various research center on campus, including the Army High Performance Computing Research Center, the Minnesota Supercomputing Institute, and the Institute for Mathematics and its Applications. The Department is also a key player in the recently established Digital Technology Center at the University. External research funding in the department has grown steadily over the past several years and recently topped \$4.4 Million.

Additional information about the Department is available at its World Wide Web home page: <http://www.cs.umn.edu>. The Minneapolis-St. Paul area is a major center for the computer industry and for advanced technology, and the Department enjoys strong interactions with local industries.

Applicants should submit a curriculum vitae, a research summary, and the names of at least three references to:

Chair, Faculty Recruiting Committee  
Department of Computer Science and Engineering  
University of Minnesota 4-192 EE/CS Building  
200 Union Street S.E.  
Minneapolis, MN 55455

Electronic submissions of applications are welcome and may be sent via e-mail to [applications@cs.umn.edu](mailto:applications@cs.umn.edu). (Electronic submissions must be in postscript, PDF or Word formats.) Review of completed applications will begin

December 1, 2002, but the search will remain open until all positions are filled.

The University of Minnesota is an equal opportunity educator and employer.

### University of Rhode Island Networking & Telecommunications Services

#### Director

The Director reports to the Vice Provost for Information Services/CIO, and is responsible for the business and technical leadership for the management of the overall voice, data, and video communications network and systems for the University of Rhode Island. For additional information about the Office of Information Services, please see <http://www.uri.edu/ois/>.

This position oversees the operations and management of staff in Networking and Telecommunications Services (NETS). Bachelor's degree required, preferably in technical/engineering or business management field. Master's degree preferred. Must demonstrate an understanding of the role of telecommunications and networking in an academic environment, and have a demonstrated strong commitment to customer service. Broad and extensive technical knowledge of voice, data, and video networking services with at least 6 years of proven technical and managerial experience required. Leadership skills and a record of planning, developing, and implementing significant IT projects in a senior position, preferably in higher education, are also required. Also required are the following: budgeting experience; excellent communications skills; evidence of successful contract negotiations with multiple technology/telecommunications vendors; demonstrated ability to develop and articulate strategic plan and to enlist staff in implementation of that plan.

Visit our website at [http://www.uri.edu/human\\_resources](http://www.uri.edu/human_resources) for a complete job description including qualifications. Review of applications will begin on September 6, 2002 and continue until the position is filled. Submit a resume and cover letter to:

Christopher W. Wessells  
Search Chair, (Req #010044)  
UNIVERSITY OF RHODE ISLAND  
P.O. Box G  
Kingston, RI 02881.

The University of Rhode Island is an AA/EEO employer and values diversity.

### University of Victoria

Department of Computer Science

#### Faculty Positions

Applications are invited for regular tenure track positions at the Assistant or Associate Professor levels or at the rank of Professor in exceptional circumstances.

Applicants in all areas of computer science will be considered, but special areas of interest are, in descending order of importance, Distributed Systems/Networks, Software Engineering, Databases and Computational Biology.

Full details may be found at: <http://www.csc.uvic.ca/news/career/index.html>

### University of Washington, Tacoma

Institute of Technology

#### Faculty Positions in Computing & Software Systems

The Computing and Software Systems Program (CSS) of the University of Washington, Tacoma is seeking to fill tenure-track positions at the levels of Assistant Professor, Associate Professor, and Professor. The Institute of Technology, recently established by the State of Washington and supported by public and private funds, is the driving force behind the current expansion in the CSS Program.

While our priority is for tenured and tenure-track appointments, we may consider candidates for appointment at the non-tenure-track levels of Lecturer or Senior Lecturer. Requirements for the tenure-track positions include a Ph.D. in Computer Science or a closely related discipline. Requirements for non-tenure-track positions include at least an M.S. in Computer Science or a closely related discipline. All appointments require a strong commitment to quality teaching. Tenure track positions also require continuing research. Associate Professor and Professor candidates must have a record of published research in computing. Non-tenure-track appointments are renewable.

Our recruiting emphasis is on software engineering, computer engineering, security, informatics, networks, database systems, and enterprise applications, but we will consider strong candidates in all areas of computing.

(cont'd)



## Professional Opportunities

The Tacoma campus of the University of Washington, in its twelfth year of operation, is located thirty-five miles south of Seattle in Tacoma's historic warehouse district. Faculty and students at the University of Washington, Tacoma, while working within a smaller distinctive institution experiencing rapid growth, benefit as well from the many resources of the Seattle and Bothell campuses of the University of Washington. The CSS program has close ties to the UW-Seattle Department of Computer Science & Engineering.

Candidates are invited to submit their applications electronically to Trish Fiacchi, Finance and Administration, at: [tfiacchi@u.washington.edu](mailto:tfiacchi@u.washington.edu)

Applications should include a *curriculum vitae*, evidence/discussion of teaching experience/effectiveness, research interests and agenda, and three letters of reference. Applications may also be submitted by mail to:

University of Washington, Tacoma  
 Finance and Administration  
 Computing and Software Systems Faculty  
 Search  
 Box 358431  
 1900 Commerce Street  
 Tacoma, WA 98402-3100  
 Screening of credentials will begin October 15 and all positions will remain open until filled. Salary is competitive and will be commensurate with experience and qualifications.

Inquiries can be sent to: [lcrum@u.washington.edu](mailto:lcrum@u.washington.edu)  
 The University of Washington, an affirmative action/equal opportunity employer, is

building a culturally diverse and pluralistic faculty and strongly encourages application from women and minority candidates. Further information on the University of Washington, Tacoma may be found at:

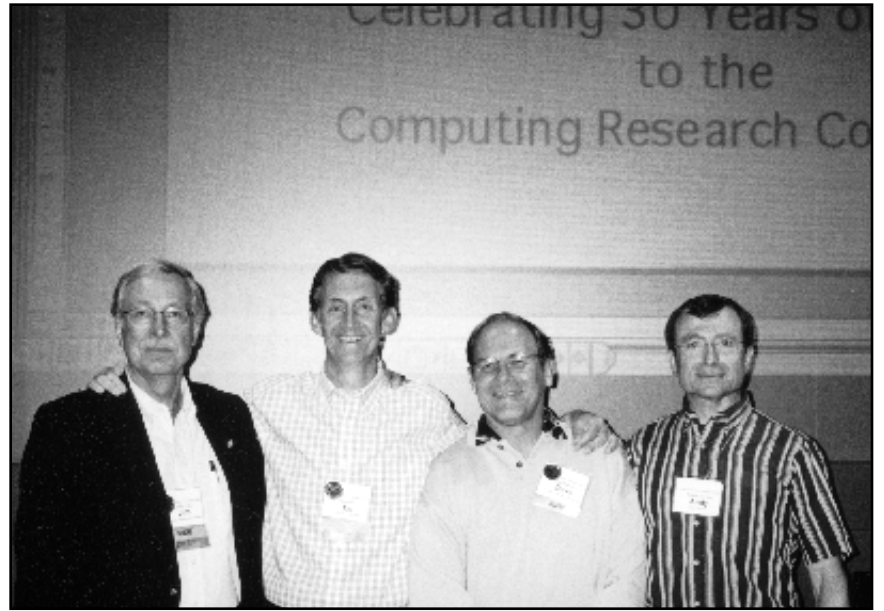
[www.tacoma.washington.edu](http://www.tacoma.washington.edu)  
 Tel: (253) 692-5860  
 Fax: (253) 692-4424

### U.S. Army Medical Research and Materiel Command Telemedicine and Advanced Technology Research Center Postdoctoral Research Awards (Bioinformatics)

Postdoctoral positions are available in our Bioinformatics Group for applicants with a Ph.D. in computer science, mathematics, statistics or related discipline interested in pursuing research in machine learning, data mining, data analysis and database systems.

The Group's focus is on the development of computational tools to provide insight and analysis of genomics and proteomics data and to support biomedical research. The positions are offered through the National Academy of Sciences/National Research Council for research to be performed at the Army's Telemedicine and Advanced Technology Research Center, Frederick, MD, U.S.A.

To apply send resume (describing expertise and research interests) to:  
 Jaques Reifman, Ph.D.  
 MCMR-AT  
 540 Scott Street  
 Fort Detrick, MD 21702  
[reifman@tatrc.org](mailto:reifman@tatrc.org)  
 301-619-7915



(l to r) Jim Foley (CRA board chair), Ed Lazowska (University of Washington), Dave Patterson (UC Berkeley), and Andy van Dam (Brown University and CRA Distinguished Service Award winner) at Snowbird.

## Transitions/Appointments

**Frances E. Allen** has recently retired as a research fellow at IBM's Thomas J. Watson Laboratory after an impressive career spanning 45 years. Dr. Allen first joined IBM in 1957, and in 1989 was the first woman chosen as an IBM Fellow. She served as a CRA board member from 1994 to 2000.

**Ronald J. Brachman** has been appointed the Director of the Information Processing Technology Office at DARPA. Dr. Brachman was formerly the Communications Services Research Vice President at AT&T Laboratories.

CRA board member, **Doris Carver**, Louisiana State University, has been appointed Associate Vice Chancellor of the Office of Research and Graduate Studies.

We congratulate CRA board member, **Lori Clarke**, Professor of Computer Science at the University of Massachusetts, Amherst, who has been awarded the 2002 ACM SIGSOFT Distinguished Service Award.

USENIX has appointed **Michael B. Jones** as its representative on the CRA board of directors. Michael is a researcher in the Systems and Networking Research Group at Microsoft Research, and currently serves as Vice President of the USENIX board.

The computing research community mourns the recent deaths of three prominent computer scientists.

**John Cocke**, who was with the IBM Research Division from 1956 to 1992, is remembered for his influence in a number of areas of computer science.

**Samuel D. Conte** has been credited with heading one of the country's first departments of computer science in 1962 at Purdue University, where he taught until 1993.

**Edsger Dijkstra**, who retired from the University of Texas in 1999 after a long career, died on August 7. He was a native of the Netherlands, and received his doctorate in computer science from the University of Amsterdam. ■



Photo: William Wulff

Anita Jones, University of Virginia, chair of CRA's Grand Challenges Conference, and Tony Hoare, member of the UKCRC Grand Challenges Working Party, pictured at the Airlie conference in June.

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## New Reports

*Making the Nation Safer: The Role of Science and Technology in Countering Terrorism*, Committee on Science and Technology for Countering Terrorism, National Research Council (National Academy Press forthcoming; prepublication available). See: <http://www.nap.edu/catalog/10415.html>

*Information Technology Research, Innovation, and E-Government*, Computer Science and Telecommunications Board, Committee on Computing and Communications Research to Enable Better Use of Information Technology in Government, National Research Council (National Academy Press, 2002). See: <http://www.nap.edu/catalog/10355.html> ■



(l to r) Steve White (IBM), Seth Goldstein (Carnegie Mellon), and Len Kleinrock (UCLA) huddle at the Grand Challenges Conference at Airlie House in June.