Computing: Our Role in 21st Century Universities and the Knowledge Economy

By Dan Reed, CRA Board Chair

As computing researchers, we can rightly take pride in having been key enablers of today’s knowledge economy: networks, sensors, data management systems, email, web technologies and collaboration tools have helped create the global village. As Marshall McLuhan described so perspicaciously in the 1960s, “Today, after more than a century of electric technology, we have extended our central nervous system in a global embrace, abolishing both space and time as far as our planet is concerned.”

Musings from the Chair
Computing: Our Role in 21st Century Universities and the Knowledge Economy

By Peter Harsha

The concerns of computing researchers about the overall underinvestment in the federal IT research portfolio—and specific concerns about DARPA’s steady withdrawal from long-term IT research, especially in universities—have gained new prominence in Congress thanks to a series of recent news reports, studies and congressional actions. That attention has so far culminated in a hearing by the full House Science Committee on the future of computer science research in the United States and questions about the implications of the shift in the overall landscape for federal support of computing research. As Congress works to set the funding levels for federal science agencies in fiscal year 2006, it remains to be seen whether the increased focus will result in increases in funding for IT research, but the increased attention has put some federal agencies and the Administration on the defensive.

While the computing research community has been working over the past several years to focus attention on what it sees as a significant shift in the federal IT research portfolio away from fundamental, long-term research toward shorter-term, development-related research, getting traction for those concerns on the Hill and in the Administration has been slow going until recently. In March, the Senate Armed Services Committee (SASC)—a committee sympathetic to the computing community, especially as they related to DARPA, an agency under the committee’s jurisdiction—posed a question to DARPA Director Anthony Tether: “Are you getting data on DARPA’s current and historical support for IT research at universities. The committee was responding to a request from the community to get actual data—the anecdotal evidence for DARPA’s withdrawal from support for university IT research was strong, but without actual numbers it was difficult to advance the issue further in Congress or in the press.

DARPA responded by noting that its support for IT research, overall, for both universities and in industry, had been fairly consistent, averaging about $580 million in constant dollars over the past five years. DARPA support for university-led IT research, however, had fallen considerably over the same period—from $214 million in FY 2001 to $123 million in FY 2004. DARPA cited five “factors for the decline”:

1. A change in emphasis in the high-performance computing program from pure research to supercomputer construction;
2. A significant drop in unclassified information security research;
3. The end of TIA-related programs in FY 2004 due to congressional decree, a move that cost universities “a consistent $11 million to $12 million per year” in research funding;
4. Research into intelligent software had matured beyond the research stage into integration; and
5. Classified funding for computer science-related programs increased markedly between FY 2001 and FY 2004, but universities received none of this funding.

To the computing community, DARPA’s response was a concession that the agency’s focus in IT research is increasingly short term (at least in the unclassified realm) and that universities are no longer significant performers of DARPA IT research (classified or unclassified). In essence, DARPA’s response validated the arguments the community had been making since 2001, but had only anecdotal evidence to prove.

DARPA’s answers to the question posed by SASC found their way to New York Times reporter John Markoff, who had been interested in writing a story on the issue. Markoff’s resulting article, “Pentagon Redirects Research Dollars” (originally titled “A Blow to Computer Science Research”), led IT research, however, had been fairly consistent, decreased from $214 million in FY 2001 to $123 million in FY 2004. DARPA cited five “factors for the decline”:

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Expanding the Pipeline
Anywhere, Anytime—
or Just Where Is Your Office Anyhow?

By Susan Landau, Sun Microsystems Laboratories

My morning routine is to stop in the office early and see what has come in during the night. Then, over my morning cranberry juice, and The New York Times, I let issues sift and settle. Afterwards I reverse my commute—all thirty-four steps of it—and return to my study. I am a Distinguished Engineer at Sun Microsystems and I work from home. I work ninety miles from the closest Sun office and across the continent from the one to which I report. Later afternoon, I might be walking my dog in conservation land at the end of my country street; minutes later, I might be developing the company’s stance on digital-rights management with the Chief Technology Officer. I do almost all my collaboration from home. I travel to Sun less than a dozen times a year; the rest of the time I use email, phone, and the Web. I call in for talks—indeed, I run a lecture series—and for meetings. I’ve even run a security review for a Sun product, spending a single day at the company and doing the rest of the work remotely.

The coming business trend is dispersed workforces. That’s a natural fit for Sun (which “makes the net work”). Many companies are developing technologies for remote workers. Because I have first-hand experience with Sun’s program, that’s the one on which I’ll focus.

When I was hired six-and-a-half years ago, the program didn’t exist, and my manager and I worked everything out from scratch. It was not an easy sell—a single line at the company and doing the rest of the work remotely.

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Margolis Honored with CRA Habermann Award

By Peter A. Freeman

I trust that you had a refreshing and productive summer and are beginning the new academic year with renewed vigor to help advance our field. The NSF staff continued to work long hours with great dedication over the summer to make sure that we are serving you well. As usual at this time of year, we have a number of personnel transitions underway; these will appear on our website as they occur.

As we begin a new academic year, I want to give a brief status report on CISE and then outline some of the major issues we will be discussing this year.

Our budget for FY05 was essentially flat, and although we hope that some of the steps we are taking may have eased the proposal pressure just a bit, we do not anticipate that the final acceptance rates for this year will show any great improvement. We will communicate the past year’s results once the fiscal year closes. The expectation is that Congress finishes work on our FY06 budget the coming year will show, at best, a tiny improvement. Indeed, the outlook for the next several years for all funding for S&E in all agencies is that it will be flat at best.

Earlier this summer, the CISE Division of Shared Cyber-infrastructure (SCI) became the Office of Cyber-Infrastructure (OCI), and the responsibility for guiding it passed from me to the Office of the NSF Director, as guided by a CI Council of which I am one of ten members. Although this means that the revised CISE budget is now approximately $500M instead of over $600M, the impact on the computing research community should be minimal, if any. When CISE was reorganized two years ago, essentially all basic research support was moved into the three other divisions, and SCI was focused on cyberinfrastructure (CI) for other areas of S&E. (Some excellent CI researchers are currently supported by programs in SCI and we expect that this will continue.) This activity has grown to be so important that it will time for us to have higher visibility and attention in the NSF organization. In turn, my staff and I can now focus full attention on the other 90 percent of our former budget—fundamental research and education in CS&E. In short, this is a positive development for all concerned.

Let me now share with you some of the major issues that CISE will be concerned with in the coming year—issues that affect you and that I hope we will hear your views on. Budget, of course, is an issue that we wrestle with daily. There is not enough funding available for most areas of S&E in all agencies due to the exigencies of our current national situation. For CS&E, the situation is clearly worse than some but, in the absence of an expanding “pie,” it is very difficult to grow resources. (Consider the situation on many campuses when students suddenly shifted to computing disciplines, but the resources did not shift so quickly). Finding ways to make our case more effectively is a challenging issue for us all.

Insufficient funding overall, of course, is one of the major causes of falling “success rates” for proposals. We continue to explore mitigation measures, especially with respect to young faculty, those that have not previously participated in funding competitions, senior investigators who may have stepped back in favor of younger colleagues, and so on. The issues are multifaceted, interrelated, and often must be dealt with in the absence of accurate or up-to-date data. These are issues that will face CISE and the field for the foreseeable future. Your ideas and feedback are essential to help us deal with the issues.

An issue that is highlighted by the transition of SCI to OCI is how to insure that the new developments needed for advanced S&E applications supported by CI make their way rapidly from your research into use—and to make certain that you are fully aware of the very important research opportunities presented by the worldwide efforts to provision advanced CI for S&E research. These efforts often lead to exciting breakthroughs in many research areas and provide great opportunities to explore new CS&E ideas in challenging applications. We are already taking steps to insure that the bi-directional flow of ideas and opportunities continues, but this will be one of the issues facing us this year.

Another change that poses a continuing challenge for many of you, for CISE, and for all of NSF is the transition from the formal ITR program to a situation in which the interest in and need for collaborative work between CS&E researchers and those in other disciplines continues to grow. The ITR program in general was a great success in broadening our field and showing others the value of substantive work with both pure and applied research. NSF must find ways to continue to encourage and fund that type of work in the absence of a formal program. Will you choose to take the initiative to work individually and collectively—about how to help your students will make the next breakthrough? Will you continue to teach many of the same things that our students and your students will make the next breakthrough? Will you continue to help your students be better prepared for the future? Will we as a field continue to let others erode our impact on major campus and societal decisions or will we provide the leadership that is so sorely needed? Will CISE focus its limited resources most effectively for the future, or will we continue outdated activities past their time?

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CRA Welcomes New Academic Members

University of Maryland, Baltimore County (IS)
University of Montreal (CS)
University of North Carolina at Chapel Hill (SILS)

CRA Hosts Tisdale Fellows

On June 30, CRA hosted a luncheon for the 2005 Tisdale Fellows at the Sumner School in Washington, DC. Participants included, l to r: Brooke Ricalde, Stanford University Graduate School of Education; Sherry Ambrose, Woodrow Wilson School of Public Policy, Princeton University; Min Li Chan, Stanford University; CRA’s summer Fellow, Daniel Rothschild, Gerald R. Ford School of Public Policy, University of Michigan; Clare Rojstaczer, Pomona College; Sarala Nagala, Stanford University; and Luana Espana, Goldman School of Public Policy. CRA Executive Director Andy Bernat provided a brief overview of CRA’s government affairs activities.

Since 1998 the Tisdale Fellowship Program has been bringing college students to Washington, D.C. for internships that explore current public policy issues of critical importance to the high technology sector of the economy. Other participants in the 2005 program include HP, Agilent, Dell, Computer Systems Policy Project (CSPP), Business Software Alliance (BSA), and Infotech.

The selection of CRA-W was based on the following:

CRA-W has been committed to public service through programs and projects aimed at increasing the participation of women in computer science and engineering research and education. Among some of the activities promoted by CRA-W are:

- Increasing the number of women entering graduate school in computer science and computer engineering by matching outstanding female undergraduates with female mentors for a summer of research at the mentor’s institution.
- Encouraging the next generation of scientists and fostering awareness of women in science and technology through a Distinguished Lecture Series.
- Publishing reports and articles that focus on career advancements for women, such as Recruitment and Retention of Women Graduate Students in CSE, and “Expanding the Pipeline” column for Computing Research News, to name a few.

CRA Welcomes New Board Member

The IEEE-Computer Society has appointed George V. Cybenko as one of its two representatives on the CRA Board of Directors, effective July 20, 2005. Professor Cybenko replaced Dr. Guylaine Pollock, Sandia National Labs, who first served as an IEEE-CS representative from 1997-99 and later rejoined the board in 2000.

Professor Cybenko is the Dorothy and Walter Gramm Professor of Engineering in the Thayer School of Engineering at Dartmouth College. His current editorships include IEEE Privacy and Security (Editor-in-Chief), IEEE Computing in Science and Engineering, Neural Networks, Mathematics of Control, Signals and Systems; Journal of Computational Analysis and Applications; and Applied Numerical Mathematics. Professor Cybenko also serves on a number of advisory boards and committees, including the Minnesota Supercomputer Institute; the Lorentz Institute, Leiden University, Netherlands; Mathematics and Computer Sciences Division (Argonne National Laboratory); and the Institute for Mathematics and Applications (University of Minnesota).
Zhou Wins Anita Borg Award

Pictured above receiving her award from CRA-W Co-Chair, Carla Ellis, is this year’s recipient, Yuanyuan Zhou, Assistant Professor at the University of Illinois at Urbana-Champaign. CRA-W’s Anita Borg Early Career Award was presented at the 2005 HotOS Conference in Santa Fe, New Mexico in June 2005.

The award honors the late Anita Borg, who was an early member of CRA-W and an inspiration for her commitment to increasing the participation of women in computing research. This award is given annually by CRA-W to a woman in computer science and/or engineering who has made significant research contributions and who has contributed to her profession, especially in the outreach to women. This award recognizes work in areas of academic and industrial research labs that has had a positive and significant impact on advancing women in the computing research community and is targeted at women who are relatively early in their careers (no more than 10 years past the Ph.D.).

Dr. Zhou has made significant contributions in the interdisciplinary area of architecture and operating systems. She is one of the first to create an architecture and operating system support for software debugging and to apply data mining to program analysis for bug detection. Her work has received wide attention inside and outside the architecture and operating system research community. Her recent projects include the ARTS project, which is one of the first investigating architecture and operating system support to improve software quality including robustness, reliability and availability. Her PSALM project is one of the pioneering projects in the direction of power management for data centers. She has received an NSF Career award, an IBM Faculty Award, and an IBM SUR award. Dr. Zhou also had two papers selected by IEEE Micro’s Top Picks from architecture conferences in 2004. Dr. Zhou fondly remembers when she had the opportunity to meet Anita Borg briefly during a summer internship in California in 1996.

In addition to her research contributions, Dr. Zhou actively reaches out to women in computer science at all levels. At UIUC, she helped organize the first annual Undergraduate Women in Engineering camp in 2003 for first year students. In 2004, she participated in the CRA-W’s DMP project and hosted two women undergraduate students in summer projects. Additionally, she joined with several other women faculty members at UIUC to push the department to set up child-care grants for women with small children to travel to conferences. In April 2005, she was invited as the only remote panelist in North Carolina State University’s Women in CS event. Currently, she is supervising 10 Ph.D. students, three of whom are women students.

February 4 Deadline for CRA Service Award Nominations

The Computing Research Association invites nominations for the CRA Distinguished Service Award and the A. Nico Habermann Award for 2006.

Distinguished Service Award

CRA makes an award, usually annually, to a person who has made outstanding service contributions to the computing research community. This award recognizes service in the areas of government affairs, educational programs, professional societies, public awareness, and leadership that has a major impact on computing research.

A. Nico Habermann Award

CRA makes an award, usually annually, to a person who has made outstanding contributions aimed at increasing the numbers and/or successes of underrepresented groups in the computing research community. This award recognizes work in areas of government affairs, educational programs, professional societies, public awareness, and leadership that has a major impact on advancing these groups in the computing research community. Recognized contributions can be focused directly at the research level or at its immediate precursors, namely students at the undergraduate or graduate levels. For a list of previous recipients of these two awards, see: http://www.cra.org/main/cra.projects.html.

Nomination Procedure

The deadline for receipt of nominations is February 4, 2006. Nominations should not exceed two pages in length and should describe the contributions on which the nomination is based. Letters in support of the nomination are welcome but not required. Questions or comments may be addressed to awards@cra.org.

Send nominations electronically to: awards@cra.org (in plain text or as a Word attachment). Alternatively, mail or fax to:

CRA Service Awards
Computing Research Association
1100 17th Street, NW, Suite 507
Washington, DC 20036-4632
Tel. 202-234-2111
Fax: 202-667-1066
E-mail: awards@cra.org
http://www.cra.org/main/cra.awards.html

***SNOWBIRD 2006 ALERT***

Department Chairs and Directors of Labs/Centers

Mark your calendars now for CRA’s Conference at Snowbird 2006!

This biennial event is a “must” for department chairs and directors of labs and centers. The organizing committee is putting together a stimulating program, including the always-popular Workshop for New Chairs. The conference dates are June 25-27, 2006 in Snowbird, Utah. See future issues of CRN and the CRA website (http://www.cra.org) for updates, including program details and registration/accommodation instructions as they become available.

Snowbird 2006 Organizing Committee

Academic Co-Chair: David Notkin, University of Washington
Labs/Centers Co-Chairs: Wim Sweldens, Lucent Technologies, Bell Labs)

- William Aspray (Indiana University)
- Anne Condon (University of British Columbia)
- William Coughran (Google)
- Ann Gates (University of Texas, El Paso)
- Ran Libeskind-Hadas (Harvard, Mudd College)
- J Strother Moore (University of Texas at Austin)
- Jennifer Rexford (Princeton University)
- Horst Simon (Lawrence Berkeley National Laboratory)
- Diane Souvaine (Tufts University)
- Craig Wills (Worcester Polytechnic Institute)
- Jeannette Wing (Carnegie Mellon University)
- Margaret Wright (New York University)

E-mail: awards@cra.org
Fax: 202-667-1066
E-mail: awards@cra.org
http://www.cra.org/main/cra.awards.html

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The computing research community thanks the following non-board members who served on CRA committees from July 2004 to June 2005.

Fran Allen (IBM)
Nancy Amato (Texas A&M University)
Annie Anton (North Carolina State)
Sandra Johnson Belay (IBM)
Wayne Bennett (Clemson University and ECE361A)
Eric Brittan (MIT)
Carla Brodley (Purdue University)
Duncan Buell (University of South Carolina)
Sheila Castaneda (Clarke College)
Theresa Chatman (Rice University)
Allison Clark (NCASA)
Joanne McGroth-Cohon (University of Virginia)
Anne Cordon (University of British Columbia)
Kenneth Conner (Rensselaer Polytechnic)
Gerald Engel (University of Connecticut)
Faith Fich (University of Toronto)
Margaret Martonosi (Princeton University)
Monica Martinez-Canales (Sandia National Laboratory)
Nancy Leveson (Massachusetts Institute of Technology)
Bryant York (Portland State University)

Lazowska Receives Distinguished Service Award

Pictured at the ACM Awards Banquet in San Francisco on June 11 are (l to r): CRA Executive Director Andy Bernat; award winner and former board chair Ed Lazowska; board chair Jim Foley, who presented the award; and Dave Patterson; ACM President and former CRA board chair.

Transitions and Awards

Lenore Blum, Distinguished Career Professor of Computer Science, Carnegie Mellon University, and Richard E. Ladner, Professor of Computer Science and Engineering at the University of Washington, were awarded 2004 Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM). The PAESMEM Program, administered on behalf of the White House by the National Science Foundation (NSF), seeks to identify outstanding mentoring efforts that enhance the participation of groups, including women, minorities and persons with disabilities that are underrepresented in science, technology, engineering and mathematics.

Among those recently elected members of the National Academy of Sciences in recognition of their distinguished and continuing achievements in original research were Butler W. Lampson, distinguished engineer, Microsoft Corp., Cambridge, Mass.; and Margaret H. Wright, professor and chair, department of computer science, Courant Institute of Mathematical Sciences, New York University. Adi Shamir, Borman Professorial Chair of Computer Science and Applied Mathematics, department of computer science, Weizmann Institute of Science, Rehovot (Israel) was elected a foreign associate.

Congratulations to Susan Landau who has been appointed a Distinguished Engineer at Sun Microsystems Laboratories.

Gabby Silberman, has recently been appointed Senior Vice President & Head, CA Labs, Islandia, NY.

CRA Bulletin Relaunched as a Blog

The Bulletin provides pointers to reports and other information that might be of interest to computing researchers, students and administrators. Topics covered include CS/CE student and faculty demographics, salaries, R&D, and the IT workforce. Other items of interest, such as events, will also be added occasionally.

The intention is to create a source for reliable information, rather than ‘breaking news’ or editorials. Instead of dealing with large reports in a single entry, individual graphs or issues will be given their own entries.

Check it out at: http://www.cra.org/bulletin
The science committee staff has already followed through on a part of that engagement pledge, meeting separately with the House Armed Services Committee—the committee with jurisdiction over DARPA and one that has proven unsympathetic to the community’s concerns in the recent past—and securing a commitment from them to meet with representatives of the computing community to discuss these concerns. In the Senate, the attention has led to the introduction in late July of two amendments to the pending FY 2006 Defense Authorization bill—one that would increase the authorization for fundamental computer science research at DARPA, and another that would task DSB with looking at what DARPA must do to attract better talent, build a strong base with the best university minds, and build an R&D portfolio of “the first technical importance.” The amendments should be before the Senate after Labor Day.

As all of these efforts move forward, and IT research continues to receive consideration at the highest levels, check the Computing Research Policy Blog (http://www.cra.org/gov Affairs/blog) for the latest news.

Musings from Page 1

benefits. Arguably, we are today renegotiating that compact yet again, albeit implicitly. State funding is a declining fraction of most U.S. public universities, necessitating new approaches to mission definition and budgeting. Moreover, the episodic model of higher education, where young adults matriculate and acquire the knowledge needed for productive careers, is being challenged by globalization and the rapid pace of technical change.

In computing, we have long known that an enduring commitment to continuously updating our technical skills is a prerequisite to first-class research and education. This requirement now touches a much broader spectrum of society, as jobs, professions and companies now appear, migrate or disappear in a few years. In turn, this raises a plethora of questions about how we, as computing researchers and educators, help revise the university compact in a 21st century knowledge economy. We are, after all, in the knowledge business.

In this milieu, the policy, social and technical issues abound:

• What tools and technologies can best sustain lifelong education?
• As the volume of “born digital” data continues to explode, how do we manage these data to put the right information in the right hands at the right time? In other words, how can we make Vannevar Bush’s Memex real?
• How do we continue to broaden the base of participation, in computing in particular and in technical disciplines in general?
• How can we help build virtual organizations rapidly that combine the skills of the best people, regardless of location?
• How can we foster interdisciplinary and multidisciplinary education that trains individuals to work in collaborative groups?

As Jim Foley noted in a previous CRN column, “Computing: We Have a Problem…” (May 2005, p. 4), issues related to computing research funding and enrollments, within this global context, affect our innovation, economic growth, international competitiveness, national security, and quality of life. In addition to the two task forces CRA has recently formed, which Jim also described in his column, I invite your comments and ideas on additional roles CRA can and should play in these areas.

Dan Reed (Dan Reed@Burtle.com) began a two-year term as CRA’s Board Chair on July 1. He is the Chancellor’s Eminent Professor at the University of North Carolina at Chapel Hill and Director of the Interdisciplinary Renacement Computing Institute (RENCI).

SEPTEMBER 2005

Computing Research News

Congressional Focus from Page 1

Research” in early versions of the Times) raised the profile of the community’s concerns dramatically and spawned coverage by a number of other newspapers and columnists, including on High-performance, the New York Times, columnist Thomas Friedman, San Jose Mercury News, Seattle Post-Intelligencer, columnist Norman Ornstein, Morton Kondracke in Roll Call, the Los Angeles Times, and Business Week. The coverage in the national press also led Science Magazine to solicit an editorial from Edward Lazowska, Chair of the President’s Information Technology Advisory Committee (PITAC) and University of Washington professor, and Dave Patterson, member of PITAC, President of ACM, and UC Berkeley professor, on the issue, which ran in the May 6, 2005, edition of the magazine.

At the same time, PITAC was making the rounds on Capitol Hill, briefing key members of Congress on the findings of its recently released report Cyber Security R&D: A Crisis of Prioritization. That report noted that the federal government was dangerously underinvested in civilian computer security R&D—particularly at the National Science Foundation—and that policies at agencies like DARPA and the Department of Homeland Security were significantly limiting the participation of the academic community (DARPA) or not placing sufficient emphasis on cyber security R&D, given the threat it poses to the nation’s critical infrastructures and citizens (DHS).

Buttressing their case was a February 2005 report of the Defense Science Board (DSB) on Microprocessor Supplication, which noted in an appendix that the changes at DARPA and DOD had impacted the agency’s long-term mission. Citing the increasing disengagement of DARPA from support of long-term research at universities, the board concluded DOD was suffering the effects:

“Historically, the rapid rate of growth in U.S. microchip capability resulted from a robust national portfolio of long-term research that incorporated both incremental and revolutionary components,” the report noted. “Industry excelled in evolutionary technology developments that resulted in reduced costs, higher quality and reliability and vastly improved performance. DOD now is no longer perceived as being seriously involved in—or even taking steps to ensure that others are conducting—research to enable the embedded processing efficiency on which strategic advantage depends. This withdrawal has created a vacuum where no part of the U.S. government is able to exert leadership, especially with respect to the revolutionary component of the research portfolio.”

The conclusion was that PITAC’s efforts, federal studies, and media coverage helped to convince Congress to examine the issue. On May 12, 2005, the full membership of the House Science Committee convened a hearing on “The Future of Computer Science Research in the U.S.” The committee called as witnesses John Marburger, the Director of OSTP, Tony Tether, William Wulf, President of the National Academy of Engineering, and Tom Leighton, co-founder and Chief Scientist of Akamai Industries and a member of PITAC.

The computing community also provided written testimony for the hearing on the changes. The report noted. “Industry excelled in a portfolio of long-term research that enabled the embedded processing that others are conducting—research in—or even taking steps to ensure reliability and vastly improved growth in U.S. microchip capability. The focus of the hearing was less broad a look at the overall federal IT R&D portfolio and more a review of DARPA’s declining support for university IT R&D. After hearing Science Committee Chairman Sherrod Bohlelert (R-NY) and ranking Democrat Lincoln Davis (D-TN) open the hearing with strong words of support for the computing research community’s position and expressing serious concerns about DARPA’s direction, Tether defended his agency, noting that if DARPA was withdrawing from support of university IT research, it was because they were favoring a “multidisciplinary approach” to funding now—a slightly different answer than he provided to the same question posed by SASC.

In the end, he said, he saw a lot of “hand-wringing from the computing community,” but not much input about what his agency should be doing. Coming at the very end of the hearing, this comment inspired Bohlelert to turn to Wulf and Leighton and ask whether they were up to the challenge of identifying areas of research currently undersupported at DARPA, and could they respond to both the committee and Tether in writing? Both Wulf and Leighton said they would be happy to provide answers.

The hearing raised enough concerns in the minds of the Science Committee membership that Chairman Bohlelert pledged to “remain engaged” in the issue, hoping to use his committee—which lacks jurisdiction over DARPA—as “an honest broker” between the agency and the computing community.

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2004-05 Computing Research Association Members

Arizona State University - CSE
Auburn University - CSSE
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Boston College - CS
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Brown University - CS
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California State University, Chico - CS
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Drexel University - CS
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Georgia Institute of Technology - CS
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Georgia Tech - CS
Grinnell College - MCS
Harvard University - CS
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Illinois Institute of Technology - CS
Illinois State University - ACS
Indiana University - CS
Indiana University - I
Iowa State University - CS
Iowa State University - ECE
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Johns Hopkins University - SI
Juniata College - IT & CS
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Michigan State University - CSE
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New Jersey Institute of Technology - CCS
New Mexico State University - CS
New York University - CS
North Carolina State University - CS
Northwestern University - CS
Northwestern University - ECE
Oakland University - CSE
Ohio State University - CSE
Ohio University - EECs
Oklahoma State University - CS
Old Dominion University - CS
Oregon Health & Science University - CS
Oregon State University - ECEs
Pace University - CS
Pennsylvania State University - CSE
Pennsylvania State University - IST
Pomona College - MCS
Portland State University - CS
Princeton University - CS
Purdue University - CS
Purdue University - ECE
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Rice University - CS
Rochester Institute of Technology - CS
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State University of New York, Stony Brook - CS
Stevens Institute of Technology - CS
Swarthmore College - CS
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Texas A & M University - CS
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Tufts University - CS
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University of Kentucky - CS
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University of Louisville - ECEs
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University of New Mexico - ECE
University of North Carolina at Chapel Hill - CS
University of North Carolina, Charlotte - IT
University of North Dakota - CS
University of North Texas - CS
University of Notre Dame - CSE
University of Oklahoma - CS
University of Oregon - CS
University of Pennsylvania - CSE
University of Pittsburgh - CS
University of Pittsburgh - IS
University of Pittsburgh - CS
University of Puerto Rico, Mayaguez - CS
University of Rhode Island - CS
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University of Utah - CS
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University of Washington, Bothell - CS
University of Washington, Tacoma - CS
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University of Wisconsin, Madison - CS
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Affiliate Professional Society Members

American Association for Artificial Intelligence - Association for Computing Machinery - Canadian Association of Computer Science (CACS/AIC)
IEEE Computer Society - Society for Industrial and Applied Mathematics - USENIX Association Labs and Centers Members

*Indicates new members in 2004-05
2006 CRA Outstanding Undergraduate Awards
Deadline October 17

The Computing Research Association is pleased to announce the 12th annual CRA Outstanding Undergraduate Awards Program, recognizing undergraduate students who show outstanding research potential in an area of computing research.

To be eligible, nominees must attend a university or college located in the United States or Canada, and must be nominated by the department chair or a faculty member. Each department may nominate a total of two male and two female candidates. Preference is given to students in their senior year (or the equivalent). In addition to evidence of significant research contributions, the committee also considers the student’s academic record and service to the community.

A cash prize of $1,000 will be awarded to each of two undergraduate student winners, one female and one male, who are majoring in computer science, computer engineering, or an equivalent program. A number of other outstanding candidates will be recognized with Honorable Mention. The awards will be presented at one of the major computing research conferences sponsored by CRA, ACM, the IEEE Computer Society, SIAM, AAAI, or USENIX. The two first-prize winners will receive financial assistance toward their travel to the conference. CRA encourages home departments to provide similar assistance to other students who are recognized.

CRA gratefully acknowledges the support of Microsoft Research and Mitsubishi Electric Research Labs (MERL) who sponsor the Outstanding Undergraduate Awards Program in alternate years. MERL is this year’s sponsor.

Additional information about the nomination procedure and criteria for selection are available on the CRA website: http://www.cra.org. All nominations must reach CRA by October 17, 2005.

CRA to Release Cyberinfrastructure Report

The CRA report Cyberinfrastructure for Education and Learning for the Future (CELF): A Vision and Research Agenda is expected to be available in early September. This report is the result of a series of four workshops organized by CRA and the International Society of the Learning Sciences between September 2004 and March 2005, with support from the National Science Foundation. The purpose of the workshop series was to explore where we are in the application of pervasive computing power to education, and where we need to be. In particular, the intent was to develop a map of where NSF can strategically place its resources in creating the learning environments of the future.

The four workshops were: 1) Modeling, Simulation and Gaming Technologies Applied to Education; 2) Cognitive Implications of Virtual or Web-enabled Environments; 3) How Emerging Technology and Cyberinfrastructure Might Revolutionize the Role of Assessment in Learning; and 4) the Interplay Between Communities of Learning or Practice and Cyberinfrastructure.

Details of the release will be posted on CRA’s website (http://www.cra.org).

Students Receive Awards

Pictured above are students who received CRA Outstanding Undergraduate awards 2005 at ACM’s STOC Symposium in Baltimore on May 22, presented by Executive Director Andy Bernat. Left to right: Mihai Patrascu (MIT), Dmitriy Bespalov (Drexel), Dr. Bernat, Suporn Pongrumkul (Carnegie Mellon), Bogdan Caprita (Columbia), Amy Silva (Georgetown), Li Yan (York University), and Jane Lin (Maryland, College Park).
Clemson University
Department of Mathematical Sciences and Computer Science
Tenure-Track Positions
Clemson University invites applications for two tenure-track bioinformatics faculty positions starting with the Spring 2006 semester. These positions (one in the Department of Mathematical Sciences and one in the Department of Computer Science) are part of the University’s commitment to build a high-quality research and education program in genomics where three new faculty members (bioinformatics, population genetics, and functional genomics) will be added to 10 which have been hired in the past three years.

The Department of Mathematical Sciences is a comprehensive department which includes the areas of statistics, probability, computational mathematics, mathematics education, operations research, analysis, algebra and discrete mathematics. Ph.D., M.S., B.S., and B.A. degrees are awarded in Mathematical Sciences with a possible concentration in Statistics, and there presently are 50 graduate and 100 undergraduate students in these programs.

The Department of Computer Science includes the areas of graphics and visualization, networking, programming languages, computer engineering, and algorithms; the department, housed in a new building, has 20 faculty members, 42 Ph.D. candidates, and 10 postdocs, and over 100 graduate students. B.A., B.S., M.S., and Ph.D. degrees in Computer Science, B.S. degrees in Computer and Information Sciences, interdisciplinary programs in E-Commerce and Digital Production Arts are offered.

The Departments are strongly committed to interdisciplinary research within the University with several active research teams, and the successful candidates should have strong interests and commitments to interdisciplinary research (with the genomics group), teaching both graduate and undergraduate courses, and supervising M.S. and Ph.D. students in their respective departments.

Tentative recruiting is for the Same time as the president’s position but applications for all ranks will be considered. An earned doctorate or equivalent is required for the tenure-track positions. Applicants should indicate their research specialties and interests in bioinformatics in their cover letter. Application should be sent (preferably electronically) to either: mathsci@clemson.edu or by postal mail to: Faculty Search Committee Department of Mathematical Sciences Clemson University Clemson, SC 29634 OR
Faculty Search Committee Department of Computer Science Clemson University Clemson, SC 29634 Applications will be received until both positions are filled. All applications received prior to September 15, 2005 will receive full consideration.

Clemson University is an AAO employer and accepts applications from women and minorities.

Grinnell College
Department of Mathematics and Computer Science
Tenure-Track Faculty Position
Tenure-Track Position as Assistant or Associate Professor of Computer Science in the Department of Mathematics and Computer Science starting August, 2006, Ph.D. in computer science expected, with academic track depending on experience (ABD considered as Instructor). Department seeks outstanding teacher-scholar, with no preference regarding specialty. Grinnell College, a selectively liberal arts college, is committed to student-faculty research and is generous in its support of scholarship.

Grinnell College has a curriculum vitae, transcripts (copies acceptable), three letters of recommendation, and a statement describing your interest in developing as a teacher and scholar in a undergraduate liberal arts environment that emphasizes close faculty-student interaction and value diversity. The successful candidate will demonstrate an interest in participating in the College’s general education offerings. Address applications to:

Henry Walker
Computer Science Search Committee
Department of Mathematics and Computer Science
Grinnell College
Grinnell, Iowa 50112-1989
Fax 641-269-4984; Phone: 641-269-4202
For more information, see http://www.exploratorium.edu/2006-tenure-track cs.html, or send a mail to cs-search@grinnell.edu.

Review of applications will begin November 15, 2005 and continue until the position is filled.

Grinnell College is an equal opportunity/affirmative action employer committed to attracting and retaining highly qualified individuals who individually reflect the diversity of the nation. No applicant shall be discriminated against on the basis of race, national or ethnic origin, age, gender, sexual orientation, marital status, religion, creed or disability.

Harvard University
Radcliffe Institute for Advanced Study Fellows
The Radcliffe Institute for Advanced Study at Harvard University awards fellowships each year. Radcliffe Institute fellowships are designed to support scientists of exceptional promise and demonstrated accomplishment. Scientists in any field, with a doctorate in the area of the proposed project by December 2004 are eligible to apply. Only scientists whose leaves of at least one published article or monographs are eligible to apply.

The stipend amount of $55,000 is meant to supplement salaries of salaries of faculty members. Fellows receive office space, computer and high-speed links, and access to libraries and other resources of Harvard University during the fellowship year, which extends from early September 2006 through June 30, 2007. Residence in the Boston area is required as is participation in the Institute community. Fellows are expected to present their work in progress and to attend other fellows’ events.

For more information, including lists of present and past fellows, visit our Web site at www.radcliffe.edu. Apply on line or write, call, or e-mail for an application.

North Carolina State University
Department of Computer Science
Department Head
The College of Engineering at North Carolina State University (NCSU) invites nominations and applications for the position of Department Head of Computer Science. The successful candidate will lead the Undergraduate and graduate degree programs in information technology, computer science, software engineering, computer networking, operating systems, database management, analysis, design, and teaching at the undergraduate level. The successful candidate will: lead the Undergraduate computer science program; pursue excellence in research and scholarship; develop and maintain high standards in the Ph.D. program; and direct the department. The College of Engineering supports a rich mix of research and educational activities, including the NCSU NanoLab, Abilene, Scientific Data Management, and the Institute for Advanced Computing and CyberInfrastructure (which will include the NCNI GigaPoP, Abilene, and National LambdaRail). North Carolina State University is located in Raleigh within the Research Triangle, which has a high concentration of corporate and public organizations that employ computer science graduates and provide partnering opportunities for the faculty. The area has seen the growth of opportunities for professional growth and an exceptional quality of life. Qualifications for the position include an earned doctorate degree in Computer Science or a relevant discipline; an excellent record of scholarship and educational accomplishments; a demonstrated ability to attract and manage external research funding; and strong leadership skills.

The successful candidate is expected to be appointed to the rank of Professor, and to assume the Department Head position on July 1, 2006. Nominations and applications should include a professional resume and at least four appropriate references. To ensure full consideration, applications must be received by August 1, 2005; however, applications will continue to be accepted until the position is filled. Please send nominations or applications to:

Chair, Computer Science Head Search Committee
Box 7045
NC State University
Raleigh, NC 27695-7045
Electronic applications with necessary attachments are also welcome. Applications, nominations, or additional inquiries may be sent to julie@ncsu.edu. Summary information about the department can be found at www.csci.ncsu.edu.

North Carolina State University is an equal opportunity/affirmative action employer (EOE, AA) and welcomes all applicants without regard to sexual orientation, individuals with disabilities/differing accommodations in the application process should contact the committee [919-515-9952, jhsharpe@ncsu.edu].

Rochester Institute of Technology
Computer Science Department Chair
The B. Thomas Golisano College of Computing and Information Sciences (GCCIS) at RIT is pleased to announce the position of Chair of its Computer Science Department. The successful candidate will demonstrate:

• Academic and administrative leadership potential.
• Broad knowledge of teaching and the central role of computer science.
• Comprehensive record of scholarly achievement.
• Strong commitment to both undergraduate and graduate education.
• Ability to contribute in meaningful ways to the Institute’s commitment to cultural diversity and pluralism.

Candidates must have the credentials, experience, and achievements appropriate for appointment as Full Professor, including an earned Ph.D. in computer science or closely related area. The start date for this position will not be prior to July 1, 2006. Interviews will be scheduled beginning in September, 2005. GCCIS is RIT’s largest college at 1,300 undergraduate, 1,000 graduate and 40 locations. Rochester, NY and just north of the beautiful Finger Lakes region. In addition to GCCIS, RIT is home to the Institute for Advanced Computing and CyberInfrastructure, the research arm of the college. All departments are housed today, consisting of University-wide research and production networks, a campus-wide wireless infrastructure, and connections to the NCSG GigaPoP, Athene, and National LambdaRail.
Professional Opportunities

Computing Research News

September 2005

in a new 126,500-square foot state-of-the-art faculty center. The college has proposed a new PhD program with close collaboration from the departments and the other colleges within BIT. The CS Department has 29 full-time faculty, 80 undergraduates, 170 students, and 150 Master’s level graduate students. The faculty is engaged in scholarly activities in data mining and discovery informatics, intelligent systems, complex theory and systems, graphs and distributed systems, among others. Detailed information can be found at http://cs.tamu.edu.

Candidates are strongly encouraged to submit their applications electronically. Applications must include a summary of education and professional background, a list of publications, a summary of administrative, teaching, and research experience, the names of three references, and a brief statement on the future strategic vision of computer science within computing alongside the disciplines of software engineering, computer engineering, and information technology.

Guy E. Blelloch
CS Chair Search Committee
B. Thomas Golisano College of Computing and Information Sciences
Rochester Institute of Technology
122 Lomb Memorial Drive
Rochester, NY 14623
http://cs.golisano.rit.edu/
Email: cssearch2006@gccis.rit.edu
Telephone: 585-475-2161
BIT is an Affirmative Action/Equal Employment Opportunity Employer.

Southern Illinois University, Carbondale

Computer Science Department Faculty Position

Applications are invited for one tenure-track faculty position at the Assistant Professor level. The position will begin on January 1, 2006. Basic requirements include a Ph.D. in computer science or related field by date of hire, evidence of ongoing and future research, and teaching competency in a reasonable number of computer science subjects. Candidates must have a Ph.D. degree and be expected to teach, perform research, and supervise graduate students. The Department of Computer Science has 36 tenure-track faculty and 7 senior lecturers. Texas A&M University CS faculty members are well equipped to contribute to their fields. The department currently has one National Academy of Engineering member, five IEEE Fellows, one ACM Fellow, and 10 prestigious NSF/ NYSCAREER awards. In 2000, faculty members received the IEEE Millennium Medal. Additional information about the department can be found at www.cs.tamu.edu. Texas A&M University CS faculty applicants should apply online at: apply.cs.tamu.edu/academestack.

For questions about the position, contact: cssearch@cs.tamu.edu; info@cs.tamu.edu; or search@cs.tamu.edu.

* Applications are welcome from dual career couples.

Texas A&M University is an equal opportunity/affirmative action employer and actively seeks candidates of women and minorities.

University of California, San Diego

California Institute of Telecommunications & Information Technology Assistant/Full Research and/or Project Scientist

The California Institute for Telecommunications & Information Technology [Calit2] (www.calit2.net), an Organized Research Unit at the University of California, San Diego, invites applications for an Academic position at the Assistant, Associate, Full Research scientist, and Project Scientist level. Fields of interest include, but are not limited to: Electrical Engineering and computer science. Applicants engaged in research and having a specialization in Wireless Communications, Network Applications, and interdisciplinary studies will be given strongest consideration. Exceptional candidates in all other areas will be given serious consideration.

Applications must be submitted by December 1, 2005. Applicants must hold a Ph.D. degree and be expected to conduct on-campus funded research programs and participate in administrative functions of the unit and the University. Assistant-level candidates will be expected to show evidence of their potential through letters of recommendation and a publication record appropriate for their experience. For serious consideration, Assistant- and Associate-level candidates must show evidence of a strong research record in the specialization.

The level of appointment will be commensurate with qualifications and experience. Salary will be based on published U.S. pay scales. Review of applications will begin September 10, 2005 and will continue until filled. To apply, send a detailed resume, a personal statement summarizing research experience and interests, copies of selected research publications and names and addresses of at least three references to:

Megan Avery
Academic Research Coordinator
Calit2, UCSD Division
9520 Gilman Drive, #036
La Jolla, CA 92037-0416

email is preferred but hard copies may also be sent to the address above.

UCSD is an affirmative action/equal opportunity employer with a strong institutional commitment to excellence through diversity.

University of California, Santa Barbara

Computer Engineering Program / ECE Department Tenure-Track Faculty Position

The Electrical & Computer Engineering Department at the University of California, Santa Barbara invites applications for a tenure-track Faculty position in the field of Computer Engineering. The CE Program places a strong emphasis on teaching, applied and basic research, and interdisciplinary research programs. Applicants with a wide range of interests in Computer Engineering are encouraged to apply. The University is especially interested in candidates who can contribute to the diversity and excellence of the academic community through research, teaching, and service. For more information regarding the position and areas of interest go to: www.ece.ucsb.edu/positions

Please submit your application materials including CV and four professional references to:

UCSB is an equal opportunity, affirmative action employer.

University of the District of Columbia

School of Engineering and Applied Sciences

Multiple Positions

The University of the District of Columbia is the only urban land-grant university in the country and is classified as a Historically Black College and University. The University is located in the NW area of the Nation’s Capital and is surrounded by embassies and a prime residential and business district. The School of Engineering and Applied Sciences offers A.BET-accredited BS programs in Civil, Electrical, and Mechanical Engineering, as well as AAS programs in Architectural and Environmental Engineering Technology. These are in addition to programs in Aerospace Technology, Architecture, Computer Science, Information Technology, and Fire Science Administration. The School offers nominations and applications for two positions:

Chair, Department of Computer Science and Information Technology, Tenure-Track Faculty Position

Candidates must have earned doctoral degrees in Computer Science or closely related field and a strong record of teaching, research, and scholarly activity. Candidates must have appointment at the rank of assistant professor or above. The successful candidate will have demonstrated excellence in teaching and management skills necessary to promote programs and to sustain strong student enrollment as well as to implement a graduate program.

(cont'd)

Page 11
Professional Opportunities

**Assistant/Associate Professor of Information Technology**

The School of Informatics is one of the top five centers in the world for research and teaching in computing, information, and cognition. As a result, we attract top-level staff, working professionals who bring current experience and knowledge to the academic life, competitive pay that rewards excellence in teaching and lifelong learning. The position will be at the rank of Assistant Professor, Associate Professor, or Professor, with a starting date in August 2006. Candidates are encouraged to apply at: www.cse.unr.edu

**University of Nevada, Reno**

**Department of Computer Science and Engineering**

**Tenure-Track Position**

Applications are invited for a tenure-track Assistant Professor position beginning in August 2006. A Ph.D. in Computer Science or Computer Engineering is required by the date of appointment. Applicants should possess a demonstrated potential and strong commitment to quality research and teaching at the undergraduate and graduate levels. Candidates will be nurtured (including the names of at least four recommendations) may alternatively be sent to: Chair, Faculty Search Committee (CSC004) Chair, Faculty Search Committee. Applications will be accepted until positions are filled. Questions can be addressed to: faculty-search@central.cis.upenn.edu.

**The University of Pennsylvania**

**School of Engineering and Applied Science**

**Department of Computer and Information Science**

**Faculty Positions**

The University of Pennsylvania invites applications for tenure-track appointments in both experimental and theoretical computer science to start July 1, 2006. Tenured appointments will also be considered. Faculty duties include teaching undergraduate and graduate students and conducting high-quality research. Successful applicants will find Penn to be a stimulating environment conducive to professional growth. The Department of Computer and Information Science is on the forefront of education for the 21st-century workforce. The University is an Ivy League University located near the center of Philadelphia, the 5th largest city in the US. Within walking distance of each other are its Schools of Arts and Sciences, Engineering, Medicine, the Wharton School, the Annenberg School of Communication, Nursing, Law, and Fine Arts. The University and the Philadelphia area support a rich diversity of scientific, educational, and cultural opportunities, major technology-driven industries such as pharmaceuticals, finance, and aerospace, as well as attractive schools and cultural institutions. Princeton and New York City are within commuting distance.

To apply, send a letter and vita, and have 3 letters of reference sent to: Search Committee Chair, Computer Science and Engineering/ITI, University of Nevada, Reno, NV 89557. Review of applications will begin February 15, 2006. EEO/AA

**University of Pennsylvania**

**School of Engineering and Applied Science**

**Computer Science Department**

**Faculty - Multiple Positions**

The Department of Computer Science invites applications for tenure-track or tenured positions at the rank of Assistant Professor, Associate Professor, or Professor. The Department is dynamic and growing and offers the BS, MS, and PhD. degrees. For complete position announcement and requirements, see http://jobs.upenn.edu, visit www.csc.upenn.edu or email sharon@cse.upenn.edu for further information.

**University of Maryland University College**

**Computer Science Department**

**Faculty - Multiple Positions**

University of Maryland University College (UMUC) is a visionary community founded on the foremost of education for the 21st-century workforce. We are an entrepreneurial and creative institution, committed to the exploration of knowledge, the construction of partnerships, and innovative academic delivery. We are a learning and residential institution, serving over 100,000 students around the world. Due to the rapid growth in student enrollments, we have opportunities for innovative adjunct faculty who value excellence in teaching and lifelong learning. Why UMUC?

UMUC is one of 11 degree-granting institutions in the University System of Maryland. The institution is well established with more than 50 years of experience fostering the highest academic standards. UMUC is a global leader in online education. We are student focused and academically driven. UMUC’s faculty is unique in that most are working professionals who bring current expertise in their field, as well as an impressive academic background, to the classroom. Our faculty receive an extraordinary amount of support in training and resources to help them address the specific needs of both the online classroom and the adult learner. This means on-site support and collegial sharing. Additionally, UMUC faculty enjoy the benefits of a teaching schedule that fits into their professional life. Competitive pay that rewards excellence in teaching and lifelong learning. The University of Pennsylvania invites applications for tenure-track appointments in both experimental and theoretical computer science to start July 1, 2006. Tenured appointments will also be considered. Faculty duties include teaching undergraduate and graduate students and conducting high-quality research. Successful applicants will find Penn to be a stimulating environment conducive to professional growth. The Department of Computer and Information Science is on the forefront of education for the 21st-century workforce. The University is an Ivy League University located near the center of Philadelphia, the 5th largest city in the US. Within walking distance of each other are its Schools of Arts and Sciences, Engineering, Medicine, the Wharton School, the Annenberg School of Communication, Nursing, Law, and Fine Arts. The University and the Philadelphia area support a rich diversity of scientific, educational, and cultural opportunities, major technology-driven industries such as pharmaceuticals, finance, and aerospace, as well as attractive schools and cultural institutions. Princeton and New York City are within commuting distance.

To apply, send a letter and vita, and have 3 letters of reference sent to: Search Committee Chair, Computer Science and Engineering/ITI, University of Nevada, Reno, NV 89557. Review of applications will begin February 15, 2006. EEO/AA

**University of Pennsylvania**

**School of Engineering and Applied Science**

**Computer Science Department**

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