Congress Debates Support for Science in Stimulus, Appropriations

By Peter Harsha

Note: The final stimulus numbers were not available at press time. For the latest, see: http://www.cra.org/blog

The first significant spending bill to cross newly elected President Barack Obama's desk for approval in mid-February likely will be a mammoth $900 billion economic stimulus package that could include nearly $10 billion in federal research funds and research infrastructure support. That bill could be followed shortly by another big spending bill—an omnibus appropriations bill that includes funding for nearly every federal agency for FY2009, including hoped-for increases to the National Science Foundation, National Institute of Standards and Technology, and Department of Energy's Office of Science.

In both cases, members of the science advocacy community are hopeful that increases called for in early versions of the bills will survive the legislative process. But as this goes to press in early February, a few significant

hurdles threaten science funding in both bills, and the community is working feverishly to bolster support for science among Members of Congress.

The *American Economic Recovery and Reinvestment Act of 2009* would provide nearly $900 billion in new spending and tax breaks for a range of job-creating and economy stimulating programs, according to the Democratic congressional leadership who wrote the bill and the Administration that supports it. In addition to large-scale physical infrastructure programs like road building and bridge construction that the bill would direct the government to undertake to generate new jobs, both the House and Senate versions of the bill include substantial investments in scientific infrastructure programs, and even investments in long-term fundamental research at federal science agencies.

While many in the science community are thrilled at the possible increases, the differences in approach between the House and Senate are bringing some uncertainty to the

process, making the final total very difficult to predict. The House version is decidedly more generous in its science investments than is the Senate bill, largely due to increased pressure felt by the Senate leadership to court Republican support for the spending measure because of their lack of a filibuster-proof majority.

Most notably, the Senate bill would contain significantly less additional funding for NSF and DOE's Office of Science than would the House bill. In the Senate bill, the Office of Science is slated for a $430 million increase, including $100 million for DOE's Advanced Scientific Computing Research (ASCR) program. In contrast, the House has approved a $2.0 billion increase for DOE's science budget, including $1.6 billion for the Office of Science (including $100 million for ASCR), and $400 million for a new Advanced Research Projects Agency–Energy (ARPA-E), called for in the 2007 *America COMPETES Act*.

The Senate bill would also include less than half of the House-approved increase for NSF. Under the Senate plan, NSF would receive $1.4 billion, including $1.2 billion for core research accounts, $50 million for

the Education and Human Resources Directorate, and $150 million for Major Research Equipment and Facilities Construction. The House passed a far more generous plan, approving $3 billion in new funding for the agency, including $2.0 billion for fundamental research support, $300 million in Major Research Instrumentation, $200 million in Academic Research Facilities Modernization, $100 million for the Education and Human Resources directorate, and $400 million for Major Research Equipment and Facilities Construction.

Because of the discrepancy in funding amounts, the differences will have to be worked out "in conference" between members from both chambers. That process is expected to conclude in mid-February (after this article has gone to press). CRA will have all the details of the final outcome of the stimulus debate on the Computing Research Policy Blog (http://cra.org/blog).

Though there is generally strong bi-partisan support for science in both chambers, the inclusion of science

CCC UPDATE

The Computing Community Consortium (http://www.cra.org/ccc/) was launched by the National Science Foundation two years ago to assist the computing research community in envisioning, articulating, and establishing the means to pursue more visionary research agendas. The CCC has been busy and productive; here we'd like to highlight the most recent activities.

CCC has organized a symposium, "**Computing Research that Changed the World: Reflections and Perspectives,**" to be held at the Library of Congress on March 25. This invitation-only event is being sponsored by Congressman Bart Gordon, who is spearheading the renewal of the NITRD program. The overall message is that computing research has made game-changing advances in the last two decades, from which we can extract lessons for structuring future programs to sustain that track record. The symposium will have four sessions: "The Internet and the World Wide Web," "The Transformation of the Sciences via Computation," "Evolving

Foundations," and "Computing Everywhere." Each session will include three short talks and a panel discussion. There will be a final panel discussion among the 12 speakers that frames the ideas supporting a call-to-action, and a wrap-up during which the speakers will mingle with our congressional guests and the highlights of our day will be summarized, while viewing related demonstrations. In addition to the event itself, we will videotape the talks and discussions, prepare a brochure, and develop a web presence to reuse the material. The full program will be posted on the CCC website as soon as all speakers are confirmed.

The recent **Presidential election** provides significant opportunities for the computing research community. CCC has led the development of a set of essays (http://www.cra.org/ccc/initiatives) provided to (and actually read by!) the members of the Presidential Transition Team designed to increase the likelihood that computing research and the infrastructure to support computing research will receive appropriate prioritization by the new

administration, both in the stimulus package and in the FY10 and subsequent budgets. A number of these essays were forwarded for action (e.g., to OMB and to science agencies such as NIH). While this is encouraging, only time will tell the extent to which this effort will bear fruit.

One of the largest and most visible CCC activities has been the funding of **visioning workshops** in various areas of computing to help build and reinforce research communities. In the past year, CCC has supported workshops on a range of topics, including network science and engineering, cyber-physical systems, robotics, "big data" computing, and theoretical computer science. Workshops planned for the coming year include topics on global resources for online education, achieving predictable systems from unpredictable components, how free/open source software fits with CISE research, and information technologies for the developing world. The CCC is constantly reviewing and

Expanding the Pipeline

Persons With Disabilities: Broadening Participation and Accessibility Research

By Richard Ladner

It is startling to learn that approximately 16% of the US population of working age have disabilities. Some of these individuals are so cognitively or emotionally disabled that they cannot work, but most are capable of working and contributing to society. Within information technology (IT) fields the numbers compiled by the National Science Foundation (NSF) from various sources are interesting:

- 11% of the population in school, ages 14-21, have disabilities.
- 13% of undergraduate IT majors have disabilities.
- 5% of graduate IT majors have disabilities.
- 0.8% of IT doctorates have disabilities (e.g., there were 53 in 1999-2004).
- 5% of employed IT scientists and engineers have disabilities.

These percentages are fairly similar for all of science, technology, engineering, and mathematics fields combined. Please note that the 5% of employed IT people is not a subset of the 11% of school age because people can become disabled all through life. There are two things to note about these numbers. First, the interest in IT majors among students with disabilities is high, but their persistence to graduate education is low. Second, the number of self-reported IT doctorates with disabilities is very low. It is not known why these numbers are so low, but I suspect that part of reason is pervasive low expectations throughout elementary and high school that have led to lack of preparation.

One blind graduate student I know wanted to take calculus in high school to prepare to become a scientist. A group that included his guidance counselor and math teacher met with him to explain that no blind person in the school had ever taken calculus before, and that they would not support him if he decided to take it. Through the National Federation of the Blind he finally met blind scientists and mathematicians for the first time and attended a summer "boot camp" to prepare him for college. He felt he was very fortunate to find people who really understood his potential and raised his expectations. He will receive his Ph.D. in chemistry in the near future. Unfortunately, in our society most of us feel that if someone has a disability then we should give them a break, rather than giving them an opportunity to excel.

The argument for including people with disabilities in IT fields is not just an argument that we need more IT professionals or to promote social justice. There is a strong case that including people with disabilities improves the quality of our engineering outcomes as described by William A. Wulf:[1]

"I believe that engineering is a highly creative profession. Research tells us that creativity does not spring from nothing; it is grounded in our life experiences, and hence limited by those experiences. Lacking diversity on an engineering team, we limit the set of solutions that will be considered and we may not find the best, the *elegant* solution."

Recognition of Persons with Disabilities

On the day after the inauguration of Barack Obama, the White House posted a new web page http://www.whitehouse.gov/accessibility/ stating the new administration's commitment to persons with disabilities and urging the Senate to ratify the United Nations Convention on the Rights of Persons with Disabilities, which has already been signed by 137 countries. There are a number of laws and policies at all levels of government and policies within organizations that recognize people with disabilities and require actions to include and accommodate them. Best known are the Americans with Disabilities Act (ADA) and the US Rehabilitation Act, Section 508.

The NSF has a number of policies and programs that focus on broadening participation, including increasing the participation of persons with disabilities. The NSF has a policy in the Grant Proposal Guide: "Conferences or meetings, including the facilities in which they are held, funded in whole or in part with NSF funds, must be accessible to participants with disabilities." Accessibility can include accommodations such as real-time captioning or sign language interpreters for deaf participants, as well as wheel chair ramps and accessible rooms in the conference hotel. As a member of the NSF Committee on Equal Opportunities in Science and Engineering (CEOSE) I have seen that NSF considers persons with disabilities in a way similar to other underrepresented groups such as women and minorities. Currently, the committee's 13 members include African American, Native American, and Hispanic members, and two with disabilities. In 2007, the committee focused on people with disabilities and made a number of recommendations to NSF to help increase the participation of people with disabilities in science and engineering. The CISE Broadening Participation in Computing (BPC) Program funds a number of projects, including my own AccessComputing Alliance, that focus on persons with disabilities.

Generally, the computing community represented by ACM, IEEE Computer Society, and CRA have done a good job in recognizing the need to include more women and minorities in the computing fields and taking action to increase their participation, but there has been no similar recognition and actions for persons with disabilities. There are some bright spots. The ACM has a relatively new policy on the accessibility of the Internet, including its own web pages (http://www.acm.org/public-policy/accessibility). ACM SIGACCESS has as part of its mandate not only the promotion of accessibility research, but "also strives to educate the public to support careers for people with disabilities." Some ACM conferences, such as those sponsored by SIGARCH, offer travel support for an assistant who may have to travel with an attendee with a severe disability.

I believe that a major step in recognizing the underrepresentation of persons with disabilities in computing is to expand the annual CRA Taulbee Survey to include demographics about people with disabilities as it already does for women and minorities. Only in this way can we learn where we are and where we need to go. The data reported at the beginning of this article are from a variety of sources, some publicly available and others available to universities and societies by license agreement. The Taulbee Survey polls its member departments annually for the number of students and faculty who are women or minorities, but does not ask about disabilities. All major universities provide services for students with disabilities and typically keep track of which students receive such services in their student database. Summary data can be obtained from student databases by institutional request.

Accessibility Research

One of the exciting things about computer science research is that it can actually make a difference by creating new technologies that enable persons with disabilities to participate more fully in our field, every other field, and life generally. This research is called accessibility research because the results can enable access to activities in life that otherwise would be difficult to impossible. Advances in robotics, computer vision, natural language processing, and other fields can have a direct impact on persons with disabilities. Examples include smart vehicles that can climb and descend stairs safely used in some modern wheel chairs; speech synthesis and optical character recognition used by blind people to obtain access to both electronic and printed text; and speech-to-text used to produce real-time captions for deaf people. Moreover, research in accessibility topics can lead to solutions to problems that benefit people who are not disabled. Optical character recognition was pioneered by Kurzweil so

Message from the CISE AD
Educating Future Generations in Computing

By Jeannette M. Wing, Assistant Director of NSF for CISE

Computing innovations drive our economy, underlie scientific advances, change societal behavior, and support national security. Tomorrow's innovations rely on today's students. To sustain progress, we need a continuous supply of creative and highly trained computer science researchers, a diverse well-trained computing workforce, and an educated, IT-literate citizenry. So, how are we doing?

Some Facts

At the K-12 level, computing is rarely taught in the elementary grades, and even in high schools it is often limited to basic literacy and relegated to the vocational track, not the track for college credit. Many computer science high school teachers are out-of-field and uncertified; few states have curriculum standards in computing. In 2008, only 15,999 Advanced Placement (AP) CS tests were taken, compared to 222,835 Calculus AB, 154,504 Biology, and 108,284 Statistics tests.

In contrast to what is happening in the United States, a growing number of countries are requiring high school students to take computing. Israel, for example, requires a minimum of three units of CS study, subject to national standards, with teachers who are required to have both an undergraduate CS degree and a teaching license in CS.

At the undergraduate level, of all college freshmen surveyed by the Higher Education Research Institute, the number who reported an intention to major in computer science was 1.1% in fall 2007 and 1.0% in fall 2008, an astonishing drop of 70% since 2000. Taulbee data show the number of new computer science and engineering majors in fall 2007 was roughly half of what it had been in fall 2000 (23,416 versus 12,195). The total enrollment in CS&E programs was 79,311 in fall 2000, but only 46,227 in fall 2007. Fortunately, some top-ranking departments have begun to see an uptick in 2008 enrollments, and so there is reason to be optimistic.

At the graduate level, we have seen increases in degrees, with M.S. degrees up 25% and Ph.D.s nearly doubling since 2000. More than 50% of these advanced degrees went to nonresident aliens, many of whom will be returning home to increased opportunities in their own countries.

Computing's failure to attract students is particularly striking with women, minorities, and persons with disabilities. Women have made gains generally in science, accounting for 51% of the undergraduate degrees, 44% of the Master's degrees, and 38% of the Ph.D.s in the most recent data available from NSF. However, last year's Taulbee data show the comparable numbers for women in CS&E at 12%, 23%, and 19%, respectively. The situation is also bleak for underrepresented minorities, who were awarded 9.3% of our undergraduate degrees in computing—3.8% for Master's and 2.6% for Ph.D.s.

A Charge to the Computing Community

These facts clearly add up to a charge to us: To engage today's students in computing for tomorrow's innovations in all fields.

We certainly have the wonders of our technology to offer students. Getting a machine—be it a cell phone, a robot, or a server cluster—to do what you want is thrilling. Writing software to build a virtual world that defies the laws of nature is magical. Instantaneously reaching your friends through global social networks is cool. Teaching students to use our technology effectively and creatively and to develop the skills to produce future computing technology is our responsibility. But we offer more than our technology. More profoundly, we offer a way of thinking (aka "computational thinking") that can empower students, no matter what field they decide to enter, no matter what profession they decide to pursue.

CISE's educational vision is based on this premise: Everyone can benefit from learning some principles of computing and the computing field can benefit from a diverse workforce trained in such principles. "Everyone" means everyone: students and teachers at every stage of the educational pipeline; from future researchers in computing to future leaders of our nation; and people of all cultures, ethnicities, backgrounds, interests, and disciplines. Moreover, CISE recognizes that our field is demanding people who not only have solid technical skills, but also good collaborative skills. Communicating and working with others in multi-disciplinary and multi-cultural teams is the norm in industry. Such collaborations are also growing in computing research, as theoreticians work with experimentalists and as computing touches all other disciplines.

What Are We As a Community Doing?

CISE is implementing its educational agenda through two complementary programs: CISE Pathways to Revitalized Undergraduate Computing Education (CPATH) and Broadening Participation in Computing (BPC). CPATH aims to revitalize undergraduate computing education and BPC aims to increase the number of postsecondary degrees in computing that are awarded to students from underrepresented groups.

CISE is not alone in its interest in computing education. Companies such as Google, Intel, and Microsoft sponsor computer science education and outreach programs. Many other computing organizations and societies have taken up the charge too; here are some examples:

K-12

With CISE funding, the National Academies' Computer Science and Telecommunications Board (CSTB) is running a workshop series on computational thinking for everyone. The intent of the first workshop, held

Musings from the Chair
Publishing Quarks: Considering Our Culture

By Dan Reed, CRA Board Chair

Over the past thirty years, I have accumulated the common artifact of an academic research career—bookshelves overflowing with research journals and conference proceedings. Each time I pull an old and yellowing volume from my shelves, it is simultaneously nostalgic and thought-provoking to read a few randomly selected articles. Not only does this stroll down memory lane illuminate how far we have come, both technologically and theoretically; it also shows how profoundly the publication culture of our field has changed.

Conference Hegemony

Not that many years ago, CRA published a "best practices" memorandum entitled, "Evaluating Computer Scientists and Engineers for Promotion and Tenure" (available at www.cra.org/reports/tenure_review.html). At a time when many departments were struggling to make the case to their science and engineering colleagues that conference publications mattered, this memorandum demonstrated that computing conference publications were of a quality comparable to those in archival journals.

The perception battle won, is all right with our publication world? Perhaps, but I suspect not. Our prestigious conferences have become the moral equivalent of highly selective journals in other fields. The computing conference review process is rigorous and highly selective, and polished results are required for publication. In many of our sub-disciplines, the conference paper is the final result. There is no expectation that the preliminary results will be expanded, augmented and published in a journal. Consequently, many—arguably most—of our journals have receded in significance. I believe this is a regrettable and worrisome development.

First, it has truncated the continuum of publication options. In most disciplines, conferences are the venue where late-breaking results, thought-providing theories and controversial ideas are aired and debated. Many of these later are proven incorrect or validated and expanded with additional data, but the free exchange of ideas stimulates research and innovation. At the risk of sounding like an "old geezer," I encourage you to read some old conference proceedings. It is illuminating to see how many of our conferences have evolved from idea exchanges to publication venues.

Our emphasis on the conference cycle has also encouraged and rewarded production of publishing "quarks"—units of intellectual endeavor that can be generated, summarized and reviewed in a calendar year. We now see new faculty and research staff candidates with more publications than were once common in promotion and tenure dossiers.

Do not misunderstand. I am not suggesting that our current conference-

US CS New Majors, Enrollment Both Rise in 2007-2008

By Betsy Bizot

CRA's Taulbee Survey of Ph.D.-granting Computer Science (CS) and Computer Engineering departments in North America has been conducted annually since 1974. Results from the most recent survey were provided to participants and CRA members in February. They will be published on CRA's website (www.cra.org/statistics/) and in *Computing Research News* in May. Due to widespread interest, CRA releases data on undergraduate degrees early.

This article reports on CS bachelor's degree enrollments and production among Ph.D.-granting departments in the United States since the late 1990s. Data are reported in both total numbers and medians per department as the latter helps limit the effect of variation in response rates. Results from the Taulbee Survey should be compared with data produced by the National Science Foundation (NSF), which surveys all institutions that grant CS degrees (whereas Taulbee is a survey of the doctorate-granting departments only). NSF's most recent data are from academic year 2004/2005.[1]

According to HERI/UCLA, the percentage of incoming undergraduates among all degree-granting institutions who indicated they would major in CS declined by 70 percent between fall 2000 and 2005.[2] Unsurprisingly, the number of students who declared their major in CS among the Ph.D.-granting departments surveyed by CRA also fell. After five years of declines, the number of new CS majors in fall 2005 was half of what it was in fall 2000 (15,958 versus 7,952). From 2005 to 2007, the number of new majors was nearly flat, and in 2008 the number has increased to 8,734.

The stabilization in the number of new majors over the past several years has, in turn, halted the decline in the total enrollment in CS. Enrollments declined steadily from their peak in 2001-02 through 2006-07, but 2007-08 saw an uptick. If the number of new majors continues to rise, enrollment will follow.

New majors take roughly three to five years to complete their degrees. We can expect, therefore, that the stabilization followed by an increase in new majors will take about that long to be seen in degree production. Unsurprisingly, the number of degrees granted fell again in 2007-08 to 7,406, a decline of about 8% from 2006-07. This does, however, represent a slowdown after several years of double-digit declines.

It is important to note that fluctuations in degree production among CS departments have happened before. According to NSF, between 1980 and 1986, undergraduate CS production nearly quadrupled to more than 42,000 degrees. This period was followed by a swift decline and leveling off during the 1990s, with several years in which the number of degrees granted hovered around 25,000. During the late 1990s, CS degree production again surged to more than 57,000 in 2004.[3] This more recent peak has also been followed by a decline and now a leveling off, and the current increase in new majors seems likely to be a leading indicator of future increases in degrees granted.

Notes:

[1] See Appendix Table 2-1 at http://www.nsf.gov/statistics/seind08/.

[2] HERI/UCLA's "CIRP Freshman Survey" is an annual survey of the characteristics of students attending colleges and universities as first-time, full-time freshmen: www.gseis.ucla.edu/heri/cirpoverview.php.

[3] See www.cra.org/info/education/us/bs.html.

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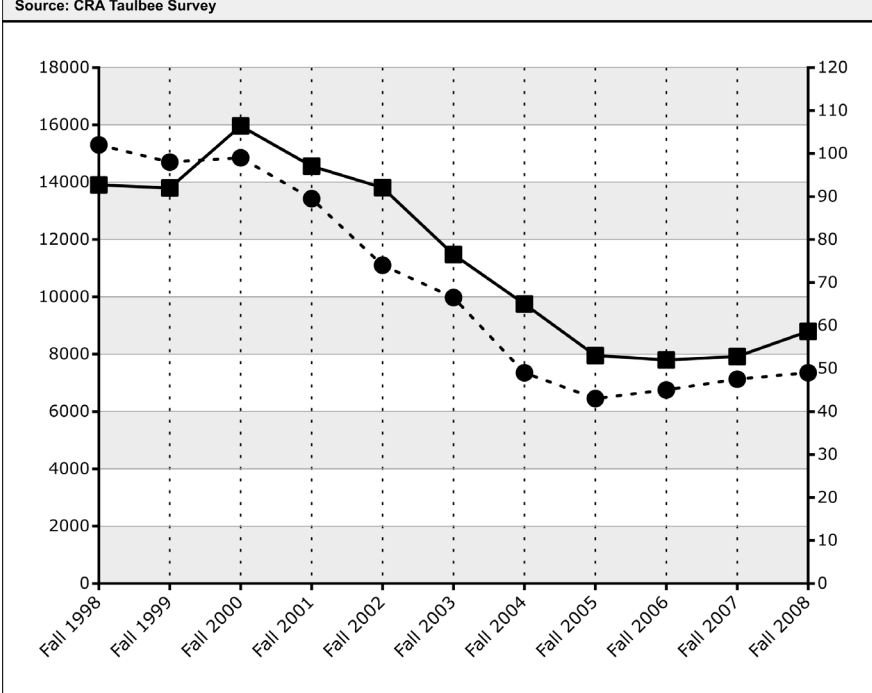

Figure 1. Newly Declared CS Majors
Source: CRA Taulbee Survey

Figure 2. Undergraduate CS Degree Enrollments
Source: CRA Taulbee Survey
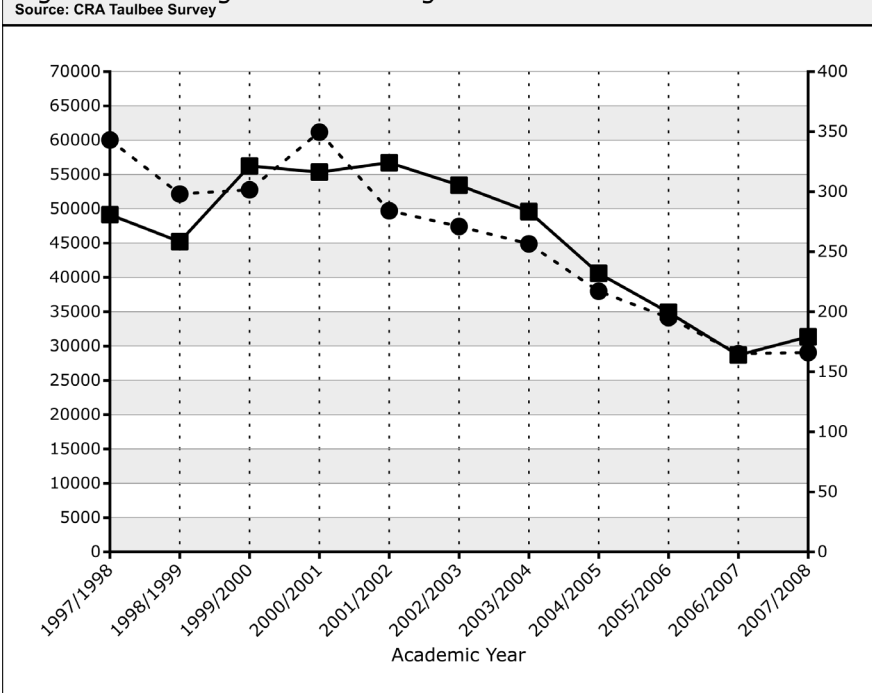
Figure 3. CS Bachelor's Degrees Granted
Source: CRA Taulbee Survey
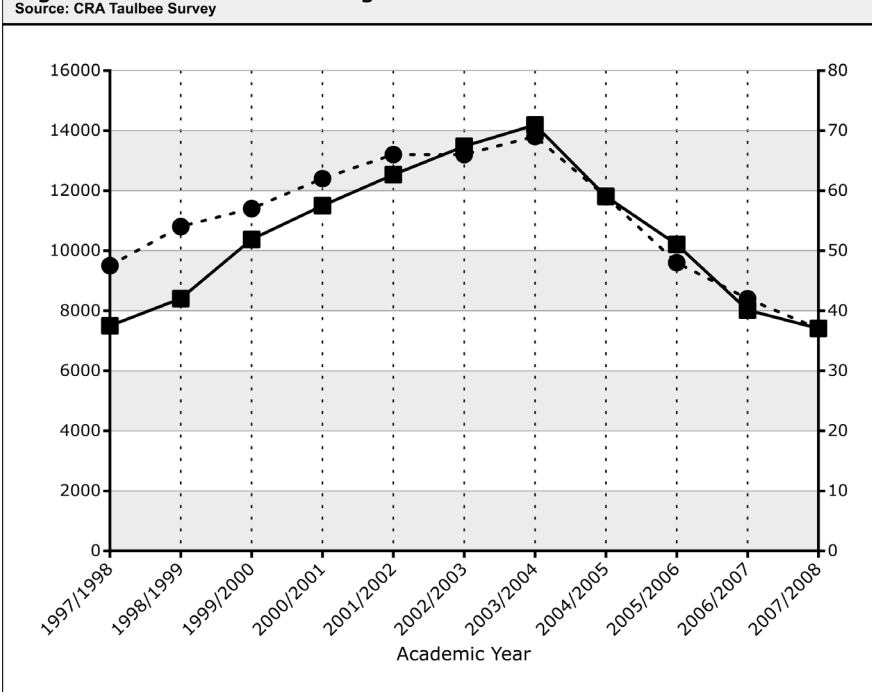
within the stimulus bill does not garner universal support. Opposition comes in particular from fiscally conservative members of Congress who believe that the stimulus should only be for programs that can have an immediate impact on the economy—either by creating jobs within the first 120 days of passage or by cutting taxes sufficiently to get dollars in the hands of taxpayers quickly to encourage them to buy more goods and services. While some of the infrastructure-related research spending could fit that description, the investments in longer-term research will clearly take longer to pay off (though their benefits may far exceed the other investments in the bill, science advocates argue).

With a narrower majority in the Senate, the Democratic leadership is more likely to accede to Republican demands for sharper limits on spending, and this could reduce science spending levels even further below the current Senate bill. As a result, science community advocates, including CRA, have rallied their member institutions to put pressure on the House and Senate leadership to hold strong to the science funding levels contained in the House bill.

In early February, CRA joined with its coalition allies on the Task Force on the Future of American Innovation to send letters to the House and Senate leadership urging support for science because "[i]nvestments in science and engineering research, and

math and science education, will provide immediate relief for America's struggling workers and families by creating new jobs and stimulating new economic activity while laying a strong foundation for future American prosperity" (See http://futureofinnovation.org). The letters cite a recent report by the Information Technology and Innovation Foundation that estimates that a $20 billion investment in America's research infrastructure will create or retain as many as 402,000 U.S. jobs for one year.

Additionally, CRA launched its own effort to rally the members of the computing community through CRAN, its Computing Research Advocacy Network (to become a member of CRAN, see: http://www.cra.org/govaffairs/advocacy/cran/). Members of CRAN were asked to write their representatives in Congress and urge them to support science and research infrastructure funding in the stimulus, noting in particular how important computing research has been to innovation throughout the U.S. economy and the sciences. CRA also joined with ACM's U.S. Public Policy Committee (USACM) to send letters to the congressional leadership expressing the importance of science funding to the computing fields and how those fields have, in turn, enabled most of our modern economy.

From the letter: "Advances in information technology enable productivity growth, enable the economy to run at

full capacity, enable goods and services to be allocated more efficiently, and enable the production of higher quality goods and services. As the National Academies of Science have repeatedly pointed out, those advances—indeed, every multibillion-dollar subsector of the IT industry—all bear the stamp of federal support for fundamental research in computing such as that which would be supported by this Act."

Immediately following the final disposition of the stimulus bill, Congress plans to take up its unfinished business with the FY2009 appropriations bills. Only the Defense Appropriation for FY2009 was completed before Congress adjourned last December. Since October 1, 2008, the remaining federal agencies have been operating under so-called "continuing resolution"—meaning they can spend at FY2008 levels, but may not start new programs. As they did last year, the leadership intends to consider the unfinished bills as a single omnibus bill.

Like the stimulus legislation, the House and Senate have somewhat different approaches to spending levels that may impact final funding for science agencies in FY2009. While both House and Senate have approved versions of their bills that would grant healthy increases to science agencies, discrepancies in the versions for some of the other agencies within the bill may cause the appropriators to look to

reduce some of the science increases to make up the differences. Though both the House and Senate bills call for a 14 percent, or $789 million, increase for NSF in FY2009, and an $844 million and $622 million increase to DOE's Office of Science, respectively, a difference of opinion about funding for the U.S. Department of the Census could put both those increases at risk of reduction. Senate appropriators believe that the House appropriators shorted the U.S. Census by $500 million in their version of the bill. They seek to add that amount back to the Census by taking from other accounts within the same bill. The large increases planned for science would appear to make a tempting target.

As with the stimulus bill, the science advocacy community is mounting a concerted effort to make the case against such a shift in funding to the leadership and the appropriators involved in the conference. At press time, it is not clear whether that argument will prevail.

The current continuing resolution expires March 6, 2009. Congress will need to take some action—passing the omnibus or extending the CR—before that day. CRA will have the final outcome on the Computing Research Policy Blog as soon as it is known, so be sure to check it regularly. ∎

CRA Welcomes New Staff Member

CRA is pleased to welcome Patrick Krason who joined the staff as Executive Assistant on February 9. Patrick will perform a wide variety of administrative support duties, working principally with the Executive Director and the Director of Programs.

Patrick received a BA with a major in French and minor in History from Youngstown State University. Prior to joining CRA, he was on the staff of the National Republican Congressional Committee. ∎

funding new visioning activities. If you have a community research vision that you would like CCC's help to realize, a Request for Proposals is always available on the CCC website at http://www.cra.org/ccc/vision.php.

To increase the reach of the community and ensure that CCC and its activities are truly community-oriented, the consortium has implemented a number of communications efforts over the past two years. The CCC Blog (http://www.cccblog.org/) has gained wide readership within the computing research community and provides information on CCC activities, news items of interest to the research community, and articles and updates on various research sub-areas within the larger computing community. Readers are invited to comment on all the posts—and, in fact, reader

comments were specifically solicited and played a major role in shaping the "Computing Research that Changed the World: Reflections and Perspectives" symposium discussed above.

The Computing Research Highlight of the Week (http://www.cra.org/ccc/rharchive)—another CCC outreach activity—is featured prominently on the CCC and CRA websites to elicit more attention from our community, the press, and policymakers about the exciting research happening in the field. Be sure to take advantage of this new outlet and submit your research highlights via http://www.cra.org/ccc/submitrh.php.

Of course www.cra.org/ccc/ always has the latest and greatest news about CCC activities. ∎

Collaborative Research Experiences for Undergraduates (CREU)

Application Deadline: **May 1, 2009**

Sponsored by CRA's Committee on the Status of Women in Computing Research (CRA-W) and the Coalition to Diversify Computing (CDC), the CREU program is aimed toward increasing the number of women and underrepresented minorities who go on to CS&E graduate programs. Students have the opportunity to conduct undergraduate research with a small team (2 to 4 students) at their home institution during the academic year and optionally the following summer. Formerly administered as two separate programs—CREU and MRO-W—the program includes not only computer science and computer engineering research, but may also include multi-disciplinary research. Students receive a $3,000 stipend for their work in the academic year and $4,000 for the optional summer extension. Each team can also request an extra $1,500 to be used for supporting materials and activities.

See: http://www.cra.org/craw/creu

that blind people could read printed books. Now it is being used to convert all books in print into electronic form. Captioned television was originally developed for the benefit of deaf people, but now it is used by most of us as we watch TV in noisy airport waiting areas.

The excitement about working on problems related to disability is growing rapidly as evidenced by the number of papers in the major human-computer interaction conference, CHI, that have contain the word "disability."

CHI Years	Number with "Disability"
1986-90	10 (4%)
1991-95	15 (5%)
1996-00	20 (6%)
2001-05	90 (23%)
2006-08 (3 years)	71 (17%)

Before 1986 there were no papers in CHI that used the word "disability." The rapid growth since 2001 seems to indicate that the CHI community recognizes that accessibility problems are important and interesting. The activity in accessibility research has grown to the point that the highest quality work will appear in the new ACM Transactions on Accessible Computing (TACCESS) that complements the annual ACM Conference on Computers and Accessibility (ASSETS), now in its 11th year. There are several older conferences that focus on "assistive" technologies that attract engineers and inventors. CHI, TACCESS, and ASSETS papers typically contain empirical studies, with human subjects or otherwise, that help verify the efficacy of some new technology.

In this short article there is no way I can cover the breadth and depth of the research done in accessibility. Instead, I would like to tell you about an upcoming paper in CHI '09 by two young researchers, Jeff Bigham and Anna Cavender, from the University of Washington.[2] What is interesting about their new technology is its simplicity and immediate applicability. Most of us are familiar with CAPTCHAs which provide a visual test that can be passed only by humans before entering some web site. For example, to create a Google mail account you have to prove you are a human first by solving a visual CAPTCHA. People who are blind, have low vision, or have some kinds of color blindness may not be able to solve a visual CAPTCHA, so audio CAPTCHAs have been invented and are in common use. Through a remote study of 162 people, 89 of whom were blind, they discovered that sighted people can solve 80% of visual CAPTCHAs on the first try, while blind people could only solve 43% of audio CAPTCHAs on the first try. Audio CAPTCHAs took five times longer to solve than visual CAPTCHAs.

There are a multitude of reasons for the inaccurate and time-consuming solving of audio CAPTCHAs, but an important reason is the design of the user interface for audio CAPTCHAs. There can be interference between the screen reader used by the blind user and the playing of the audio CAPTCHA. Because the audio CAPTCHA contains ten letters that are hard to remember in one pass, the audio CAPTCHA has to be replayed multiple times. Each replay requires navigating to the play button, then navigating back to a text entry box which takes several steps in a screen reader. Although current audio CAPTCHA interfaces allow accessibility, they are not very usable by blind people. Bigham and Cavender's ingenious solution is to get rid of the play button altogether. Instead, the user remains in the text entry box at the same time as listening to the CAPTCHA using non-letter characters like the comma, period, and forward slash keys to control the player to rewind, pause/play, and fast-forward. Letters that are typed go toward solving the CAPTCHA. With the new interface, blind users solved 68.5% of the audio CAPTCHAs on the first try.

Although their final solution is simple and elegant, it emerged by creative insight from a lot of hard work building the infrastructure to reach and record the actions of many users in the field. Moreover, their solution is immediately applicable. There is no compelling reason why audio CAPTCHA interfaces cannot be changed to be more usable in a very short time on all the websites that use them.

This example of accessibility research gives a quick taste of a much wider field that covers many kinds of disabilities with a variety of approaches and solutions. There is essentially an infinite variety of loss of functional abilities within the broad categories of hearing, vision, motor, cognitive, and age-related disabilities. Web accessibility is a critical area because just about anyone can be a web author, so there is no practical way to enforce web accessibility standards on everyone. As an example, only a tiny percent of video on the web is captioned. Popular devices like the iPhone, which only have a touch screen, present a research challenge to make them accessible to blind people and people with tremors or other motor disabilities. Very little new technology is built to be accessible in the first place, so there will always be new and interesting problems to solve. Trying to find ways to economically and esthetically design new technology that is accessible to the vast majority of people from the outset is the hope of universal design.

So far I have stressed accessibility research problems that have a short time horizon. Their solutions can have an immediate impact on the lives of people. Other researchers are taking a longer view, approaching science and technology problems that may eventually lead to remarkable results. For example, researchers in neuro-computing and neuro-robotics are trying to find ways for the brain to directly control a screen cursor and the brain and nervous system to control a robotic hand. Whether you enjoy doing research as pure science with the potential of application, or more applied science and engineering with more immediate impact, there are plenty of exciting things to do in accessibility research.

Conclusion

I hope I have helped convince the readers of this article that including persons with disabilities is important to computing fields, that more can be done to facilitate that inclusion, and that research in accessibility is an exciting and rewarding activity. For more information about AccessComputing, please visit the web site (http://www.washington.edu/accesscomputing/).

Richard Ladner is Boeing Professor in Computer Science and Engineering at the University of Washington, where he has been on the faculty since 1971. In addition, he is an Adjunct Professor in the Department of Electrical Engineering and in the Department of Linguistics. He was the winner of the 2008 A. Nico Habermann Award.

Acknowledgment

Notes:

[1] Wulf, W.A. (2000). "How Shall We Satisfy the Long-Term Educational Needs of Engineers?" *Proceedings of the IEEE, 88*(4), 593-596.

[2] Jeffrey P. Bigham and Anna C. Cavender (2009). "Evaluating Existing Audio CAPTCHAs and an Interface Optimized for Non-Visual Use." In *Proceedings of the ACM Conference on Human Factors in Computing Systems* (CHI 2009) Boston, Massachusetts, 2009. To Appear. Preview copy at http://webinsight.cs.washington.edu/papers/captchachi.pdf. ∎

last month, was to provide definitions and dimensions of computational thinking as a basis for teaching computing to everyone, especially K-12 students. In mathematics, we teach numbers in kindergarten, algebra in seventh grade, and calculus in twelfth grade. What would an analogous progression of concepts be for computing? To answer this properly, we need to understand how children best learn what when. Thus, the second workshop will bring together computer scientists, education scientists, and learning scientists.

The Computer Science Teachers Association (CSTA), partially funded by CPATH and BPC, supports and promotes K-12 computer science education. It strives to establish a national computer science curriculum based on ACM's Model Curriculum for K-12.

CISE is working with the College Board to create a new Advanced Placement course. Given the decentralization of education in the United States, AP offers the best hope of effecting change nationally, providing a single point of leverage. The new AP course, envisioned to be part of a three-course sequence, will retain the rigor of a college course but will expose students to the fundamental concepts of computing (including abstraction, algorithms, complexity, and computability), as well as its important applications. The final phase of the project will be a nationwide effort to create 10,000 Teachers in 10,000 Schools to teach the new sequence. The success of this endeavor will require the collaboration, well beyond NSF, of government, industry, and private foundations.

Undergraduate

The "Rebooting Computing" project, run at the Naval Postgraduate School and partially sponsored by CPATH, held a summit this past January with 240 international participants. The summit formed fourteen action groups, many related to education, spanning all levels.

The ACM Education Board leads a CISE-funded collaborative activity for organizing a high-level summit to convene the main US computing societies to address the future of undergraduate computing education on a national scale.

The newly formed CRA-E will be exploring different models of engaging undergraduates in computing.

Working Synergistically

In just this past year, I witnessed a flurry of activity by many individuals and organizations focused on computer science education. The energy and enthusiasm is exciting. It even seems a bit chaotic! One reason I wrote this column is to make sure as many of us in the community as possible are aware of each other's activities. Let's build on each other's results rather than separately reinvent the wheel. The synergy of all of our efforts should give us a vibrant and inclusive educational system that is critically needed to develop a computing-savvy 21st Century workforce. ∎

centric culture is all bad, merely that we should be more thoughtful regarding the time scales and range of our publication options. I would also humbly suggest that we consider how this approach shapes the types and kinds of research conducted. We all know that quality trumps quantity, and that research results have a wide range of natural sizes and time scales.

Journal Revival

What then becomes of our often languishing journals? Are they a hidebound and archaic notion, doomed to irrelevance by ubiquitous electronic access? To be sure, the nature of publication is in flux in both popular and professional culture, with the physical artifacts likely to disappear. However, the notions of scholarly review and archival recording of research are independent of these artifacts.

I believe we need to restore journals to their rightful place as the lasting archives of scientific knowledge. This will require a cultural shift, making our conferences the harbingers of extended, rigorous publication in journals. Equally importantly, it will require us to review those journal submissions thoughtfully and with alacrity.

As anyone who has ever been the editor of a computing journal knows, obtaining timely reviews is challenging. Even with gentle (and sometimes not so gentle) nagging, the weeks can stretch to months; the months sometimes turn to years. Contrast this with other technical disciplines where submissions can be reviewed and published in weeks or months. Is it any wonder that paper authors in our field eschew journals for conferences with known publication dates?

As a discipline, we benefit from the entire continuum of venues for communicating research ideas and results, from informal workshops and conferences to research surveys and expanded publication in archival journals. Let's recognize and embrace the distinct and important roles that each plays in the free and fruitful exchange of research ideas.

Dan Reed, CRA's Board Chair, is Microsoft's Scalable and Multicore Computing Strategist. Contact him at Daniel.Reed@microsoft.com or his blog at www.hpcdan.org. ∎

What is a "Better Internet?"
By Ellen Zegura

[The following item was posted on the CCC Blog (http://www.cccblog.org/2009/02/15/what-is-a-better-internet/) on February 15, 2009. Online comments are welcome.]

What is a "better Internet?" The current Internet has been a remarkable success, providing a platform for innovation that far exceeds its original vision as a research instrument. It is well documented that the Internet has transformed the lives of billions of people in areas as diverse as education, healthcare, entertainment and commerce. Yet many of these successes are threatened by the increasing sophistication of security attacks and the organizations that propagate them. A materially more secure Internet would be "better." Further, billions of people remain untouched by the advantages of the Internet; Internet World Statistics puts worldwide average Internet penetration at about 22 percent in mid 2008. An Internet that affordably reaches the other 80 percent of the world population would be "better."

Beyond security and accessibility, there are other areas where limitations of the current Internet are significant. The Internet usually works pretty well, but every user has experienced inexplicable periods of degraded performance or outright non-function. The current Internet provides no visibility to end-users and shockingly little visibility to network managers and operators to support understanding, adapting to and fixing reliability problems. Such limitations require lay people spend their leisure time as network systems administrators and companies to spend heavily in network operations. Further, the lack of performance reliability prevents the Internet from advancing to become a truly dependable, critical infrastructure. Indeed, current societal reliance on the Internet for critical functions is disproportionate to our ability to deliver a high degree of dependability. A more predictable Internet would be "better."

The Internet embeds societal values in ways that are often implicit and not well understood. For example, the Internet is "open," usually intended to mean that anyone can join the network by implementing the public protocol IP. In principle, users can run any application on the Internet, without limitation imposed by the network protocols. Open networks promote organic growth, but suffer from a lack of mechanisms to vet or bar participation. Issues of trust and individual accountability are confusing. As the well-known cartoon says, "On the Internet, no one knows you're a dog." An Internet that contains support for identity would be "better."

The research community is poised to dramatically advance the agenda of building better networks through advances in both empirical design methodology and systematic design methodology. We have an approach to support large-scale and flexible experimentation based on programmability of devices and federation of multiple test-beds. We have a nascent mathematical framework for understanding architectural features and underlying principles. The time is right to advance and link both methodologies to realize better networks.

Ellen Zegura is Professor and Chair of Computer Science at the Georgia Institute of Technology. She wrote this in her role as chair of the NetSE Council. ∎

Transitions and Awards

Jennifer Rexford, Professor of Computer Science, Princeton University, has recently completed a four-year term as an ACM representative on the CRA Board of Directors. CRA extends its thanks to Jennifer for her contributions to CRA's activities during her time as a member.

CRA is pleased to welcome **Mary Fernández**, Principal Technical Staff Member, AT&T Labs Research, as one of ACM's two representatives on the Board of Directors. Dr. Fernández will serve a two-year term, effective January 1, 2009.

Congratulations to all those recently elected NAE Fellows. Among those named are: **Sergey Brin** (Co-Founder and President of Technology, Google Inc.); **William J. Dally** (Chief Scientist and Senior Vice President of Research, NVIDIA Corp., and Willard R. and Inez Kerr Bell Professor of Engineering, Stanford University); **Deborah L. Estrin** (Director, Center for Embedded Networked Sensing, UCLA); and **Gurindar S. Sohi** (John P. Morgridge Professor and E. David Cronon Professor of Computer Sciences, departments of computer sciences and electrical and computer engineering, University of Wisconsin, Madison). For a complete list, see: http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=02062009

Congratulations to CRA board member **Richard C. Waters**, Mitsubishi Electric Research Labs, who was among those recently recognized by ACM as 2008 Distinguished Scientists. For a complete list of those honored, see: http://distinguished.acm.org.

Among newly named 2009 IEEE Fellows are **Richard E. Ladner** (University of Washington); CRA board member **Fred B. Schneider** (Cornell University); and former CRA board member **Moshe Y. Vardi** (Rice University). Congratulations to all those honored (see: http://www.ieee.org/web/membership/fellows/Fellows_Class_of_2009.html).

Congratulations to **Susan Graham**, Pehong Chen Distinguished Professor of Computer Science, UC Berkeley, who was named the recipient of the IEEE John von Neumann Medal, for outstanding achievements in computer-related science and technology (sponsored by *IBM Corporation*). For others recognized by IEEE, see: http://www.ieee.org/portal/pages/about/awards/pr/2009mdlrecips.html. ∎

Professional Opportunities

Broad Institute of MIT and Harvard

Genome Sequencing Department-
Computational Research & Development
Computational Biologist/Computer Scientist: The Broad Institute

Apply your computing skills to DNA at MIT!

Have stellar computational skills, PhD or equivalent experience? Enjoy solving nearly impossible problems? We'll retrain you to work with cutting-edge DNA technology!

We find biomedical applications for new DNA sequencing instruments yielding billions of short DNA sequences like:
AATGTAATTTCAAATGTTAGCT
CATTTTTGTTAATG

We need you on our team to solve the hard mathematical and computational challenges using terabytes of these data. We invent algorithms, delve deeply in the data, code like crazy, help design laboratory experiments: we do whatever is needed to make the new technologies fulfill their promise to unlock the mysteries of genomics and biomedical research in critical areas like cancer, human genetics, infectious disease, antibiotic discovery, genome evolution, man's inhumanity to man, and the number 42.

We seek candidates from highly diverse backgrounds, industrial and academic. Mathematical and computational experience and excellence required, including superb C++ skills in a Linux or Unix environment. Biology training helpful but not required as you can learn on the job. Outstanding oral and written communication skills, joy in teamwork. The Broad Institute of MIT and Harvard has an intense, exciting environment, world-class laboratory and computing facilities and hundreds of scientists tackling a wide range of critical problems in biology and medicine. Come join us!

Apply now at http://web.mit.edu/jobs/, search for mit-00004693 and it-00003916, Computer Scientist and Computational Biologist positions.

MIT is an equal opportunity/affirmative action employer. Applications from women, minorities, veterans, older workers, and individuals with disabilities are strongly encouraged.

The Broad Institute was founded to empower scientists of all kinds to work together on difficult, diverse, critical genomic and biomedical challenges. The Institute is a unique collaboration between the MIT and Harvard academic and medical communities, and it offers the resources and benefits provided to all MIT employees, including:
- Competitive pay
- Medical, dental, life insurance plans
- 401(k) plan with matching contributions
- Tuition assistance plan
- Four weeks of vacation after one year
- T-Pass subsidy program
- Athletic and fitness centers
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Join a team that works the way you've always wanted to work.

D. E. Shaw Research

Scientific Software Development in Computational Biochemistry

Extraordinarily gifted scientific research programmers and computational scientists are sought to join a New York-based interdisciplinary research group pursuing an ambitious, long-term project aimed at achieving major scientific advances in the fields of biochemistry and molecular biology.

Among the group's current research activities is the development of new algorithms and software for large-scale data analysis and simulation both on commodity clusters and on a massively parallel special-purpose supercomputer being built by the group. Successful candidates will have the opportunity to work closely with a number of the world's leading computational chemists and biologists, and to make fundamental contributions within the fields of biology, chemistry, and medicine.

Serious candidates will have an exceptionally distinguished history of academic and/or industrial accomplishment. Particularly relevant areas of expertise might include parallel computation, scientific computing, molecular dynamics, and large-scale data management and analysis, but specific knowledge of any of these areas is less critical than exceptional intellectual ability and a demonstrated track record of achievement. We are prepared to reward exceptionally well-qualified individuals with above-market compensation.

Please send your resume to: CRA-sp@career.DEShawResearch.com.

D. E. Shaw Research does not discriminate in employment matters on the basis of race, color, religion, gender, pregnancy, national origin, age, military service eligibility, veteran status, sexual orientation, marital status, disability, or any other protected class.

D. E. Shaw Research

Early Career Scientists and Engineers: Computational Biochemistry

Extraordinarily gifted early career scientists and engineers sought to join a rapidly growing New York-based research group pursuing an ambitious, long-term project aimed at achieving major scientific advances in the fields of biochemistry and fundamentally transforming the process of drug discovery. Successful candidates will work closely with a number of the world's leading biologists, chemists, and computer scientists, and will have the opportunity not only to participate in an exciting entrepreneurial venture with considerable economic potential, but to make ground-breaking contributions within the fields of biology, chemistry, and medicine.

D. E. Shaw Research is seeking scientists and engineers with zero to five years of experience who have degrees in chemistry, biology, physics, computer science, engineering, and mathematics from top-tier universities. Serious consideration will be given to candidates with extraordinary records of achievement in the natural sciences and/or scientific programming, exceptional quantitative abilities, and superb communication skills.

The group's current research activities are aimed at the discovery and development of innovative scientific techniques to direct unprecedented computational power toward the solution of key problems in the fields of biomolecular simulation and design. This research effort is being financed by the D. E. Shaw group, a global investment and technology development firm with more than US $30 billion in aggregate investment capital. The project was initiated by the firm's founder, Dr. David E. Shaw, and operates under his direct scientific leadership.

We are prepared to offer above-market compensation to candidates of truly exceptional ability. Interested applicants should send a resume to:
CRA-sa@career.DEShawResearch.com
EOE

Fraunhofer Center - Maryland

Measurement & Knowledge Management Division
Researcher Position

The Fraunhofer Center – Maryland, a non-profit research institute affiliated with the University of Maryland, is looking for a motivated researcher / analyst to join our team. This position offers a unique chance to conduct software engineering research and publish on projects that apply intellectual rigor to real-life problems and have an impact on organizations' practices.

The qualified candidate will work in a collaborative, team-oriented environment. Work activities may include: Collection of quantitative and qualitative data through interviews, surveys, analyses of work products, etc.; designing solutions for storing and analyzing such data; designing and evaluating tools that relate such analyses to customer needs.

Candidates should have: A PhD, Master's, or equivalent degree in a field related to software engineering; good scientific and technical writing skills; familiarity with measuring the effectiveness of software- or system-development processes, practices, or tools; good communication skills and an ability to work effectively with experts from other teams and present research results to customers; good problem-solving skills.

For more information see http://fc-md.umd.edu/jobs

To apply please forward your CV to Forrest Shull (fshull@fc-md.umd.edu)

FX Palo Alto Laboratory, Inc.

Research Scientist Position

FX Palo Alto Laboratory, Inc. (FXPAL) provides multimedia and collaboration technology research for Fuji Xerox Co., Ltd., a joint venture between Xerox Corporation of America and FujiFilm of Japan. We have an immediate opening for a Research Scientist with expertise in distributed systems and applications. We are developing distributed virtual collaboration and multimedia applications that run on everything from cell phones to laptop and desktop computers to very large clusters of multicore computers. Preferred applicants will have extensive experience with network protocols, scalable systems, distributed programming tools or multimedia technologies.

Candidates should be interested in working on practical applications in a collaborative setting and able to perform leading edge original research. A Research Scientist position requires a Ph.D. in Computer Science or related field, strong programming skills and an excellent publication record.

For more information about FXPAL, please visit our website at www.fxpal.com. To apply send resume to fxpalresumes@fxpal.com. Please reference job code CRN/5.

UNIVERSITY OF WYOMING

COLLEGE OF ENGINEERING AND APPLIED SCIENCE CAREER OPPORTUNITY

TENURE-TRACK FACULTY POSITION IN COMPUTER SCIENCE

The Computer Science Department at the University of Wyoming seeks applicants for a tenure-track faculty position at the assistant professor level to start fall 2009. The Computer Science Department is one of six departments in the College of Engineering and Applied Science. The department offers B.S., M.S., and Ph.D. degrees in Computer Science. The University has a strong and growing Computational Science Program supported by several departments and colleges. The successful candidate is expected to collaborate with one or more of these departments and has an opportunity for collaboration with the National Center for Atmospheric Research (NCAR), located in Boulder, Colorado, approximately two hours distance from campus. UW and NCAR are formulating an agreement to host NCAR's new supercomputer center in Wyoming, which will provide exceptional opportunities for this position.

UW is a thriving research University located in Laramie, Wyoming (pop. 28,000), 130 miles northwest of Denver. Laramie is a picturesque and friendly town offering a reasonable cost of living and easy access to outdoor activities in the Rocky Mountain region. Additional information on the Department, College, University, and Laramie is available at: http://www.cs.uwyo.edu/, http://www.eng.uwyo.edu/, http://www.uwyo.edu/, and http://www.laramie.org.

Required qualifications: Candidates must have a Ph.D. in Computer Science or a closely related field. Responsibilities of the position include establishment of a vigorous research program, teaching at the undergraduate and graduate levels, advising, and service to the University. Preference will be given to candidates with research and teaching interest in computer systems, especially high performance computing, parallel computation and architectures, and/or data mining.

Applications must include: (a) a curriculum vitae, (b) a statement of teaching interests, (c) a statement of research interests, and (d) at least three references. All applications on file by February 16, 2009, will receive full consideration, and the search will continue until the position is filled. Submission of application materials can be either electronic or by mail.

Applications may be mailed to:	Instructions for electronic submission:
University of Wyoming	http://www.cs.uwyo.edu
Computer Science Department	
Jerry Hamann, Dept. Head	
Dept. 3315, 1000 E. University Avenue	
Laramie, WY 82071, USA	

The University of Wyoming is a Carnegie Foundation Research/Doctoral Extensive Institution, and adheres to the principles of equal employment opportunity and diversity and welcomes applications from qualified individuals, independent of race, color, religion, sex, national origin, disability, age, veteran status, sexual orientation or political belief. We welcome applications from diverse groups, including women and people of color, and international candidates.

Professional Opportunities

George Washington University
Department of Computer Science
Tenure-Track Faculty Positions

The Department of Computer Science is seeking applicants for two tenure-track positions in the broad areas of (1) systems and (2) systems security, one at the Assistant Professor level and one at the Associate or Assistant Professor level.

Basic Qualifications: All applicants must have a doctoral degree in Computer Science or a closely related field. ABD's may apply, but Ph.D. must be in hand by August 1, 2009. Associate Professor level applicants must demonstrate a strong record of externally funded research; Assistant Professor level applicants must demonstrate a potential for developing externally funded research programs. All applicants must have excellent communication skills and a strong commitment to quality teaching at both undergraduate and graduate levels as evidenced by teaching assessments, etc.

The George Washington University is a private institution that prides itself on excellent research programs, a quality undergraduate and graduate experience, and low student-teacher ratio. Located in the heart of the Nation's capital, GW affords its faculty and students unique cultural and intellectual opportunities. In the high-tech sector in particular, the Washington, DC Metropolitan area is one of the largest information technology areas in the nation, putting us in the center of activities such as security and biotechnology.

The Department of Computer Science offers an accredited Bachelor of Science program, a Bachelor of Arts program in Computer Science, and graduate degree programs at the Master's and Doctoral level. The Department has 17 full-time faculty members, numerous affiliated and adjunct faculty members, and over 425 students at all levels. The Department has active educational and research programs in security, networks, graphics, search and data mining, human computer interaction, and machine intelligence, with funding from various agencies; a center of academic excellence in security, with funding from NSF, DOD, and various other agencies and companies; and NIH-funded collaborations with the medical school in the biomedical areas. For further information please refer to:

http://www.cs.gwu.edu

Review of applications will begin February 9, 2009, and will continue through the Spring 2009 semester, until the position is filled.

Application Procedure: To be considered, applicants should send curriculum vitae and a statement of teaching and research that identifies the position of interest, and should arrange for three reference letters to be sent to us. These and other relevant supporting materials should be sent to:

Chair, Faculty Search Committee
Department of Computer Science /
PHIL 703
The George Washington University
Washington D.C. 20052

Only complete applications will be considered. Electronic submissions are preferred, and can be sent to cssearch@gwu.edu. For more updated instructions on the application process, please visit the Department website www.cs.gwu.edu.

The George Washington University is an equal opportunity/affirmative action employer.

Henry M. Jackson Foundation
U.S. Army Medical Command's Bioinformatics Cell (BIC)
Scientist Position

The Henry M. Jackson Foundation is looking for junior and senior scientists to join the U.S. Army Medical Command's Bioinformatics Cell (BIC) [www.BHSAI.org]. This opening is for a dynamic scientist with interest in working in an inter-disciplinary environment with focus on the development and application of computational solutions to biomedical problems, involving signal processing of time-series physiologic data, data mining, data-driven and physiologic-based models, and artificial intelligence. The candidate should have a Ph.D. in a related discipline and a strong publication record. The candidate is expected to simultaneously work in multiple projects, involving a diverse and inter-disciplinary team of scientists across multiple laboratories. This position is located in Frederick, Maryland.

Please submit resume to:
Meri-lyn Ball
Executive Assistant
Biotechnology High Performance Computing Software Applications Institute (BHSAI)
Ft. Detrick, MD
Email: mball@bioanalysis.org
Phone: 301-619-8130
www.bioanalysis.org

Institute for Defense Analyses Center for Computing Sciences (IDA/CCS)
Research Staff Member

The Institute for Defense Analyses Center for Computing Sciences (IDA/CCS) is looking for outstanding researchers to address difficult computing problems vital to the nation's security. IDA/CCS is an independent, applied research center sponsored by the National Security Agency (NSA). Emphasis areas for IDA/CCS technical staff include high-performance computing, cryptography, and network security. Members of the technical staff come from a diverse variety of backgrounds, including computer science, computer architecture, computer/electrical engineering, information processing, and the mathematical sciences; most have Ph.D.s. Special attention is paid to the design, prototyping, evaluation, and effective use of new computational algorithms, tools, paradigms, and hardware directly relevant to the NSA mission. Stable funding provides for a vibrant research environment, and an atmosphere of intellectual inquiry free of administrative burdens.

The center is equipped with a very large variety of hardware and software. The latest developments in high-end computing are heavily used and projects routinely challenge the capability of the most advanced algorithms and architectures. IDA/CCS research staff members have always been at the forefront of computing, as evidenced by lasting, visible contributions to areas as varied as multi-threaded architectures (e.g., Horizon), novel computing systems (e.g., FPGA-based Splash and Splash-2, Processing-In-Memory chips), design and implementation of operating systems (e.g., the Linux kernel), and programming language design and implementation for high-performance computing systems (e.g., Universal Parallel C and Cinquecento).

IDA/CCS research staff work on complex topics often engaging multidisciplinary teams; candidates should demonstrate depth in a particular field as well as a broad understanding of computational issues and technology. Because the problems of interest are continually evolving, IDA/CCS recruitment focuses on self-motivation, strength of background, and talent, rather than specific expertise.

Located in a modern research park in the Maryland suburbs of Washington, DC, IDA/CCS offers a competitive salary, an excellent benefits package, and a superior professional working environment.

U.S. citizenship and a Department of Defense TSSI clearance (with polygraph) are required. IDA/CCS will sponsor this clearance for those selected. The Institute for Defense Analyses is proud to be an equal opportunity employer.

Please send responses or inquiries to:
Dawn Porter
Administrative Manager
IDA Center for Computing Sciences
17100 Science Drive
Bowie, MD 20715-4300
dawn@super.org

NCSR "Demokritos"
Institute of Informatics & Telecommunications (IIT)
Researchers

IIT of NCSR "Demokritos" expresses its interest in hiring researchers of excellent standing in "Information and Telecommunication Technologies towards Future Networks and Intelligent Web Applications".

Interested researchers should hold a PhD and demonstrate sufficient prior experience in conducting research in relevant subjects.

All candidates should send a recent CV and Research Plan by May 29th, 2009 to:
Search Committee/Human Resources Department
National Center for Scientific Research "Demokritos"
Aghia Paraskevi, 153 10, Athens, Greece
e-mail: martaki@admin.demokritos.gr
Fax: +30 210 6510594

NEC Laboratories America
Research Staff Member – Distributed Systems

NEC Laboratories America (http://www.nec-labs.com) conducts research in support of NEC US and global businesses. Our research program covers many areas - reflecting the breadth of NEC business - and maintains a balanced mix of fundamental and applied research.

The Robust & Secure Systems group is seeking a member to work in the area of distributed systems and networks. The focus of the team is to create innovative technologies to build next generation large-scale computing platforms, simplify and automate the management of complex IT systems and services. Candidates must have a PhD in CS/CE with solid systems research background and strong publication records in related areas. Candidates must be proactive in developing innovative technologies and have a "can-do" attitude.

The candidate is expected to have systems research experience in one or more of the following topics:
• Distributed systems and networks
• Next generation data center
• Cloud computing platform
• Virtualization and resource provisioning
• Green IT infrastructure
• Performance, reliability, dependability and security
• Autonomic computing
Knowledge of information theory, statistical inference, optimization, system and control theory is a plus.

For consideration, please forward resume and research statement to recruit@nec-labs.com and reference "ASDS-RSM" in the subject line.
EOE/AA/MFDV

Professional Opportunities

Nova Southeastern University
Graduate School of Computer and
Information Sciences
Multiple Faculty Positions

The Graduate School of Computer and Information Sciences at Nova

Southeastern University (NSU) has multiple faculty openings in information systems at all ranks. Candidates must have a doctorate in information systems or a closely related discipline. The successful candidate will teach graduate courses, conduct research, and supervise student research.

The school is particularly interested in expanding on its strength in information security, and applicants with appropriate background are preferred. NSU has been designated a National Center of Academic Excellence in Information Assurance Education by the U.S. National Security Agency and the Department of Homeland Security. Its curriculum in information security has been certified by NSA for compliance with CNSS standards.

The school offers M.S. and Ph.D. degree programs in computer science, computer information systems, information systems, information technology, and computing technology in education. NSU is located on a beautiful 330-acre campus in Fort Lauderdale, Florida. It has more than 25,000 students and is the largest independent institute of higher education in the Southeast. The sixth largest private university in the United States, NSU awards associate's, bachelor's, master's, educational specialist, doctoral, and first-professional degrees in more than 90 disciplines. In addition to the Graduate School of computer and Information Sciences, it has a college of arts and sciences and schools of medicine, dentistry, pharmacy, allied health and nursing, optometry, law, psychology, education, business, oceanography, and humanities and social sciences. Fort Lauderdale, situated between Palm Beach and Miami and close to the Florida Keys, offers residents an abundance of cultural activities and year-round outdoor recreational opportunities.

Applications will be considered as they are received. Formal applications must include a letter of interest, curriculum vita, official transcripts and three letters of reference; please visit the following URL for application information, or contact Prof. Sumitra Mukerjee (sumitra@nova.edu).

http://scis.nova.edu/faculty_openings.html

Oberlin College
Department of Computer Science
Visiting Assistant/Associate/Full Professor of Computer Science

The Computer Science Department at Oberlin College invites applications for a full-time non-continuing faculty position in the College of Arts and Sciences. Appointment will be for a term of 1 year, with a possible renewal for a second year, beginning first semester 2009-2010.

To be assured of consideration, a letter of application, a Curriculum vitae, graduate academic transcripts, and at least three recent letters of reference, should be sent to: Richard Salter, Chair
Computer Science Department
Oberlin College
Oberlin, Ohio, 44074
(email: recruiting@cs.oberlin.edu) by February 20, 2009

Late application materials may be considered until the position is filled. Salary will depend on qualifications and experience.

Palo Alto Research Center
Intelligent Systems Laboratory
Member of Research Staff: Software Engineer - Embedded Reasoning Area

The Embedded Reasoning Area (ERA) at PARC has an immediate opening for a software engineer with experience in scientific programming and algorithm development. The successful candidate will support research activities in embedded reasoning, including but not limited to the development of algorithms and software applications in planning, scheduling, control, and diagnostics. The ideal candidate will be a team player with strong communication skills. The candidate will be expected to set and manage his/her own development and delivery schedules with minimal supervision. Previous experience working with Ph.D.-level research scientists in an applied R&D setting is a must. High-level knowledge of artificial intelligence concepts and methods is highly desirable. Ability to understand, communicate, and refine complex algorithm designs is an important success criterion in this role.

Requirements:
Qualifications: at least an M.S. in Computer Science, Math, or equivalent; experience in scientific programming, algorithm design and development; 5+ years of experience with software engineering; 3+ years of experience working in an R&D environment.

Desired software skills include C++, Java, SQL, and web application development. Experience with LAMP or Ruby on Rails environments is highly desirable. Knowledge of rapid application development methods and design principles (e.g., design patterns, UML) is desirable. Experience with functional programming languages (such as Lisp and OCaml) as well as development/modeling tools such as Matlab and Simulink is a plus.

About ERA:
ERA is a growing group of researchers with world-class strengths in planning, scheduling, control, optimization, diagnosis, prognostics, and robotics. ERA specializes in the design and prototype implementation of solutions to practical real-world problems using cutting edge technologies. The work at ERA covers a broad range of technology maturity, ranging from abstract algorithm formulation all the way down to embedded software implementation on physical hardware platforms. We emphasize general and scalable model-based approaches. A central theme in ERA is to tackle projects that require very tight integration of the technologies mentioned above. For more information, please see:

www.parc.com/era

ERA is the largest Area in the Intelligent Systems Lab (ISL) at PARC. ISL imagines and delivers core technologies for helping people to perceive, reason, and interact in a complex world. We provide opportunities and support for bringing visionary ideas to commercial realization.

Pomona College
Department of Computer Science
Visiting Assistant Professor

Opening for one-year full-time visiting assistant professor position, starting 7/09. Candidates should be excellent teachers, have a Ph.D. in computer science (ABD considered), and be able to teach an ethnically diverse student body. Successful candidates will have the ability to teach both upper- and lower-division undergraduate courses in CS.

Pomona, the founding member of the Claremont Colleges consortium, is a highly selective liberal arts college with an enrollment of approximately 1525 undergraduates, and a student/faculty ratio of eight to one. Pomona's computer Science Department cooperates closely with its counterparts at Harvey Mudd College and Claremont McKenna College, other members of the Claremont Colleges.

Send CV, 3 letters of recommendation (at least one on teaching), and statement of teaching philosophy to:
Search Committee
Department of Computer Science
Pomona College
185 E. Sixth Street
Claremont, CA 91711
or (preferably) by email to search@cs.pomona.edu (plain text or pdf preferred).

NATIONWIDE CHILDREN'S HOSPITAL

Multiple Faculty Positions
Quantitative & Computational Biology

OHIO STATE Medical Center

Established in August, 2006, the mission of the Battelle Center for Mathematical Medicine (BCMM) is to assemble and support a broad range of mathematical, statistical, and computational experts for the purposes of conducting cutting-edge quantitative research, with the ultimate goal of informing and improving clinical care in pediatrics. Building upon existing expertise in statistical modeling in genetics, parallel computing, computational algorithms, and databases, the BCMM will be undergoing a rapid expansion over the next few years, increasing in both scope and size. Located at The Research Institute at Nationwide Children's Hospital, an affiliate of Nationwide Children's Hospital and the Department of Pediatrics of The Ohio State University College of Medicine, the BCMM is seeking to fill multiple open rank tenure track positions. We are looking for candidates who can extend the quantitative and computational technologies of the BCMM in creative ways; who are interested in both basic quantitative research and collaborative biomedical research; and who seek a highly collaborative, research-focused environment. Appointments at the Assistant, Associate, and Full Professor level are anticipated. Candidates are expected to have a Ph.D. or equivalent degree in a statistical, mathematical or computational field, or an M.D. or Ph.D. in a biomedical field with a quantitative or computational research focus. Generous start-up packages are available.

Nationwide Children's Hospital is the fourth largest free standing children's hospital in the United States. The Research Institute is housed in a modern 300,000 square foot, dedicated research facility with outstanding shared facilities and core laboratories. Federal grant awards in 2008 will exceed 40 million dollars and total external research awards will exceed $50 million. The Research Institute is equipped with state-of-the-art transgenic, embryonic stem cell, DNA sequencing, morphology, functional genomics, flow cytometry and viral vector core facilities. In addition to appointments in the College of Medicine, joint faculty appointments in graduate departments at The Ohio State University are also available. For more information, please visit our website at www.nationwidechildrens.org/research. Send correspondence, including curriculum vitae and contact information for three references, to Karen Schmidt, Search Coordinator, The Research Institute at Nationwide Children's Hospital, 700 Children's Drive, Room JW3914, Columbus, OH 43205, FAX (614) 355-2728, or to Karen.Schmidt@Nationwidechildrens.org.

Nationwide Children's Hospital is an equal opportunity employer that values diversity. Candidates of diverse backgrounds are encouraged to apply.

Professional Opportunities

Review of applications will begin 2/15/09 and will continue until the position is filled.

Pomona College is an equal opportunity employer and especially invites applications from women and under-represented groups.

More information: www.cs.pomona.edu/search09.html

Tufts University
Tufts Medical School & Computer Science Department
Postdoctoral Fellowship in Information Retrieval & Social Network Analysis

A postdoctoral position is available for an outstanding individual capable of taking a leading role in research on data mining algorithms for social network analysis and information retrieval. This project is joint with the Tufts Medical School and Computer Science Department as part of the Tufts Clinical and Translational Science Institute. The Fellow will work directly with the Tufts machine learning group (http://www.cs.tufts.edu/research/ml/) headed by Profs. Carla Brodley and Roni Khardon and researchers at the Tufts Medical School. The initial period for the fellowship is 2 years with a possibility of being renewed for 1-2 more years. A Ph.D. in Computer Science in the areas of information retrieval, machine learning and data mining is required. The ideal candidate is expert in both text-based information retrieval and data mining algorithms for social network analysis.

The start date is negotiable, but applicants who can start in the next few months are preferred. Applications should be submitted online at AcademicJobsOnline.org and should include a curriculum vita, a brief summary of research, and three letters of recommendation.

To apply for the position go to: http://academicjobsonline.org/ajo/TuftsCS/ComputerScience/113

All applications received before 2/28/09 will be considered.

Tufts University is an Affirmative Action/Equal Opportunity employer. We are committed to increasing the diversity of our faculty. Members of underrepresented groups are strongly encouraged to apply.

University at Buffalo, The State University of New York
Computer Science and Engineering
Faculty Positions

The CSE Department invites excellent candidates in high performance computing and ubiquitous computing to apply for openings at the assistant professor level.

The department is affiliated with successful centers devoted to biometrics, bioinformatics, biomedical computing, cognitive science, document analysis and recognition, high performance computing, and information assurance.

Candidates are expected to have a Ph.D. in Computer Science/Engineering or related field by August 2009, with an excellent publication record and potential for developing a strong funded research program.

Applications should be submitted by March 15, 2009 electronically via recruit.cse.buffalo.edu.

The University at Buffalo is an Equal Opportunity Employer/Recruiter.

University of Denver
Department of Computer Science
Professor and Department Chair

The Department of Computer Science at the University of Denver is seeking a dynamic and visionary individual from business or academia to lead the department during this expansion phase of the School of Engineering and Computer Science. Through its strategic planning, the faculty of our CS department have

identified Software Engineering, Game Development, and Cyber Security as the key focus areas for the department. Our CS department benefits from a top quality faculty, strong partnership with industry, strong collaborations with other colleges within DU and internationally. The CS department offers degrees in both traditional and contemporary areas such as undergraduate degree in gaming, and graduate degree in Computer Science Systems Engineering. The primary focus of this new department chair will be on both educational and research programs at graduate and undergraduate levels. DU is a private university with a strong history of academic excellence, small classes, and emphasis on student engagement at all levels. DU is the oldest university in Colorado and its campus is located in the Denver metro area.

Individuals with a strong record of research, scholarship and excellence in teaching are encouraged to apply by sending their resume, statement of interest, and a list of five references to www.dujobs.org. PhD or PhD candidate in computer science or related areas and some level of leadership experience are required.

The University of Denver is an AA/EOE.

University of District of Columbia, Washington D.C.
Department of Computer Science and Information Technology
Position of Chair

The University of the District of Columbia is a comprehensive urban land-grant institution and is classified as a Historically Black College and University. The School of Engineering and Applied Sciences invites nominations and applications for the position of Chair, Department of Computer Science and Information Technology. Candidates must have an earned doctorate in Computer Science or closely related field and a strong record of teaching, research, and scholarly activities commensurate with appointment at the rank of associate professor or professor. Demonstrated knowledge and experience with ABET accreditation and with the Computing Accreditation Commission of ABET in particular is required. Candidates should have a strong commitment to undergraduate and graduate teaching. The successful candidate must have exceptional interpersonal communication and management skills necessary to promote programs and to sustain strong student enrollment. Experience with budget development and control is required. In addition to the BS programs in Computer Science and Information Technology, and the MS in Computer Science, the School offers ABET-accredited BS degree programs in Civil, Electrical and Mechanical Engineering, as well as programs in Aerospace Technology and Architecture. Candidates should send letter attesting to their qualifications for the position, a current curriculum vitae, and names and contacts for at least three professional references to Dr. Samuel Lakeou, Chair, CSIT Chair Search Committee, E-mail: slakeou@udc.edu. The position will remain open until filled.

The University of the District of Columbia is an equal opportunity employer.

This and other faculty positions are also available at the UDC website:
http://www.udc.edu/hr/jobs.htm

University of Illinois at Urbana-Champaign
Advanced Digital Sciences Center
Permanent Faculty and Post-Doctoral Fellow Positions

Advanced Digital Sciences Center (http://www.adsc.illinois.edu) invites applications for full-time research positions in Singapore. The ADSC, which will be led by distinguished faculty from the College of Engineering of the University of Illinois at Urbana-Champaign, will operate under Illinois at Singapore Pte Ltd, a wholly owned subsidiary of UI Singapore Research LLC, which in turn is wholly owned by the Board of Trustees of the University of Illinois. Funding is provided by the Agency for Science, Technology and Research (A*STAR), a Singapore government agency

Research areas of interest include communications and networking and control, computer systems, cyber-physical infrastructures, multimedia and human-machine interfaces, trusted information management, and related application areas. Candidates working in interdisciplinary areas related to these fields are strongly encouraged to apply.

With support from A*STAR and space in Fusionopolis, Singapore's newly opened science and engineering research complex, ADSC is led by outstanding Illinois Engineering faculty, with Benjamin W. Wah, the Franklin W. Woeltge Professor of Electrical and Computer Engineering and Professor of Computer Science as its director. The Center focuses on a signature project called the Human Sixth Sense Programme (HSSP) that addresses the seamless integration of man, machine

and the environment in the digital age. Technology innovations in ADSC will provide many exciting opportunities for new corporate spin-offs and economic development.

Qualifications for permanent faculty: PhD in Electrical Engineering or Computer Engineering or Computer Science or a closely related field, outstanding academic credentials and demonstrated excellence in past and current research, and the ability to supervise graduate and undergraduate students, as well as working with post-doctoral fellows and other researchers. A number of post-doctoral fellows in the same areas are also sought. Starting date: August 16, 2009. The salary is open, based on qualifications. To ensure full consideration, applications must be received by March 1, 2009. 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 through email to:

Prof. Benjamin W. Wah, Director
Advanced Digital Sciences Centre
1 Fusionopolis Way #08-10
Connexis (North Tower)
Singapore 138632
(wah@illinois.edu)

Questions and inquiries can also be sent to the same address.

ADSC is an employer committed to diversity and principles of equal opportunity.

Professional Opportunities

University of Massachusetts Lowell
Department of Computer Science
Faculty Position at All Ranks

The Computer Science Department at UMass Lowell invites applications for one anticipated tenure-track faculty position to start in September 2009. The rank and tenure status will depend on the qualifications of the successful candidate. We are particularly interested in recruiting an associate professor who has strong research and funding records.

Applicants must hold a PhD in computer science or a closely related discipline, and be committed to developing and sustaining an externally funded research program. Preference will be given to outstanding candidates in the areas of data mining and databases, who would also add the ability to teach one of our graduate-level core courses, including algorithms, computing theory, and design of programming languages.

Exceptional senior level candidates in any major computer science research area will be considered. Exceptional candidates are those who have made substantial contributions to their fields and have strong ongoing research projects funded by major US funding agencies.

In addition to developing a research program, the successful applicant will be expected to contribute to the collaborative research of the existing departmental groups.

UMass Lowell is located 30 miles northwest of Boston in the high-tech corridor of Massachusetts. The Computer Science department has 18 tenured and tenure-track faculty. It offers degree programs at the bachelor's, master's, and doctoral levels.

The Computer Science faculty received approximately $3.8M in the last two years in external research funding from the NSF, DOD, DOH, and corporations, including two NSF Career awards. For more information about the department please visit http://www.cs.uml.edu.

Applications received by March 1, 2009 will receive full consideration. Women and under-represented minorities are strongly encouraged to apply.

To apply, please submit a current CV, a research statement, a teaching statement, selected relevant publications, and information about residency status. Applicants for Assistant Professor should also arrange three letters of recommendations sent directly. Submit materials by email (preferred) to hiring@cs.uml.edu or by regular mail to:

Faculty Search Committee Department of Computer Science University of Massachusetts Lowell One University Avenue Lowell, MA 01854

The University of Massachusetts is an equal opportunity employer.

University of Nevada, Reno
Department of Computer Science and Engineering
Postdoctoral Scholar in Agent Modeling

The University of Nevada, Reno, has an open position for applied research on agent modeling in a simulation environment. Responsibilities include coordinating the work of a local team of graduate and undergraduate students with teams working on other parts of the simulation at other institutions. Some travel will be required. The starting date is 06/01/2009.

Requirements include a recent PhD in computer science or a closely related field, with a strong background in artificial intelligence research. Publications on autonomous intelligent agents and/or computational intelligence are a plus.

Citizenship restrictions may apply.

Visit www.unrsearch.com/applicants/Central?quickFind=53571 for application instructions.

Applications are accepted until April 1, 2009.

University of Southern California, Los Angeles
Center for Interactive Smart Oilfield Technologies
Postdoctoral Associate Position

A postdoctoral research position in Computer Science/Computer Engineering is available at the Center for Interactive Smart Oilfield Technologies (CiSoft), University of Southern California, Los Angeles. CiSoft is a USC-Chevron Center of Excellence for Research and Academic Training on Interactive Smart Oilfield Technologies. Established in December 2003, the Center includes participating research scientists from various departments in the USC Viterbi School of Engineering and from Chevron.

We are seeking applicants to join our Integrated Asset Management (IAM) project and apply advanced computer science technologies to challenging problems in IT-enabled oilfield operations.

The successful applicant will have a PhD in Computer Science with a willingness to receive the necessary cross-training in the basics of oilfield operation and the challenges in achieving the vision of IT-enabled smart oilfields. Research experience in one or more of the following areas is required: semantic web technologies, knowledge management, information integration, metadata management, grid computing, web services and service oriented architectures. Software development experience is also desirable.

The successful candidate will be a highly motivated self-starter with prior research experience that demonstrates creativity and independent thinking. Key components of your role will be interacting with various stakeholders to define tasks, objectives and milestones for the various areas of IAM project, translating business needs into short-term and long-term research directions for graduate students, and monitoring graduate students activities, deliverable and deadlines. Excellent skills in oral and written communication are essential.

The position offers a competitive salary and a flexible and attractive working environment.

To apply, please send your CV, a brief (1-2 pages) description of your thesis work and related research interests, and two of your best publications. Your CV should include your publication record and the names and contact information of 3 references.

The application must be addressed to Prof. Viktor K. Prasanna and sent by email to iamteam@gmail.com.

For more information:
Prof. Prasanna: http://ceng.usc.edu/~prasanna/
IAM Project: http://pgroup.usc.edu/iam/
CiSoft Center: http://cisoft.usc.edu/

University of Utah
Jay Lepreau Professorship of Computer Science
Tenure-Track or Tenured Faculty Position

The University of Utah's School of Computing is seeking to hire an outstanding tenure-track or tenured senior faculty member in systems, with a particular emphasis on operating systems, wireless networks, mobile networks or testbeds. This professorship is named in honor of Jay Lepreau, a professor of Computer Science at Utah. Candidates for this position should have an established record of leadership and an interest in large-scale systems research. To assist in discharging

research and leadership obligations, successful applicants for this position will have a reduced teaching load and an endowment providing funding into perpetuity.

This professorship provides an opportunity to work closely with the Flux Research Group, which Jay founded and led. This well-established group of research staff and students is more than a dozen years old and draws on decades-long history of strong systems research at Utah. Its past and ongoing projects span a range of systems topics including operating systems, networking, security, programming languages, compilers, software engineering, and testbeds. The group has been a part of research initiatives sponsored by NSF, DARPA and several major companies. One of the group's ongoing and best-known projects is Emulab, a network testbed with global impact. The Emulab software runs testbeds at dozens of sites, and the installation at Utah, in operation for eight years, is used by thousands of researchers at hundreds of institutions worldwide.

Applicants should have earned a Ph.D. in Computer Science or a closely related field. The University of Utah is located in Salt Lake City, the hub of a large metropolitan area with excellent cultural facilities and unsurpassed opportunities for outdoor recreation only a few minutes' drive away. Additional information about the school can be found at www.cs.utah.edu. Please send curriculum vitae, a research goals statement, a teaching goals statement, and names and addresses of at least four references to:

Faculty Recruiting Committee
c/o Mr. Chris Coleman
coleman@cs.utah.edu
Via email in PDF format
Applications will be evaluated as received until the position is filled. Applicants are encouraged to apply at their earliest convenience.

The University of Utah is an Equal Opportunity, Affirmative Action Employer and encourages nominations and applications from women and minorities, and provides reasonable accommodation to the known disabilities of applicants and employees.

The University of Utah values candidates who have experience working in settings with students from diverse backgrounds, and possess a strong commitment to improving access to higher education for historically underrepresented students

University of Wisconsin-Madison
Computer Sciences Department
Assistant Professor Position

The Department of Computer Sciences at the University of Wisconsin-Madison has an opening for a tenure-track Assistant Professor, beginning August 2009.

We invite applications from outstanding candidates in all areas of Computer Science, and are especially interested in applications from candidates working in human computer interaction (HCI). Applicants should have a Ph.D. in computer science or a closely related field, and demonstrated strength in scholarly research. Successful candidates will be expected to teach at the undergraduate and graduate level, in addition to establishing a significant and highly-visible research program.

Applicants should submit a curriculum vita, a statement of research objectives and sample publications, and arrange to have at least three letters of reference sent directly to the department. Electronic submission of all application materials is preferred (see http://www.cs.wisc.edu/recruiting for details).

To ensure full consideration, applications, along with supporting material, should be received by March 15, 2009. Early submission is appreciated.

The UW-Madison is an equal opportunity/affirmative action employer and encourages women and minorities to apply. Unless confidentiality is requested in writing, information regarding the applicants must be released on request. Finalists cannot be guaranteed confidentiality. Employment may require a criminal background check.

For further information, send emails to recruiting@cs.wisc.edu.