

COMPUTING RESEARCH NEWS

Serving the Computing Research Community Since 1972

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NSF IT Research Program Funding in FY 2000

By Lisa Thompson

As of mid-October, the annual Congressional appropriations process is nearing completion, with all but one spending bill at or through the House-Senate conference stage. On September 30, the final day of fiscal year 1999, the President signed a continuing resolution so agencies not covered by an enacted spending bill could continue to operate. The fate of the proposed information technology research initiative is mostly settled: a new IT program at the National Science Foundation was nearly fully funded, but other agencies got little or no new money for IT research.

The VA, HUD, and Independent Agencies appropriations spending bill emerged from a House-Senate conference committee with nearly full funding for the expansion of the NSF's IT programs. IT research would be increased by \$90 million,

just \$20 million less than the NSF's original request, and terascale computing would be funded at the full request of \$36 million. These numbers are close to what was recommended by the Senate VA-HUD appropriations subcommittee in mid-September, while the House panel had proposed only \$30 million in new money, as reported in the September edition of *CRN*.

The turnaround came after a concerted effort by a broad coalition of the IT community to persuade Congress that long-term IT research ought to be a high priority. Members of the President's Information Technology Advisory Committee, which developed the original concept for the IT research initiative, spoke at a news conference in early September, sponsored by CRA and the Technology Network (aka TechNet). A variety of organizations issued statements calling on Congress to fully fund the investment in IT

research, including CRA and TechNet, PITAC, EDUCAUSE, the Coalition for Advanced Scientific Computing, and the Internet 2 coalition.

A joint TechNet-CRA letter, which was sent to all Members of Congress and the President and Vice President, said in part, "It is imperative that (IT) budget requests be fulfilled. ... (W)e believe that full funding of long-term, precompetitive information technology research is especially warranted given its pervasive impact."

In its report accompanying its version of the bill, the Senate subcommittee cites a number of concerns about the NSF's plans for IT research; these provisions are likely to be included in the final conference report, which was not available at press time. In particular, the panel granted the IT research budget request under its own terms, rather than under the rubric of the Administration's Information Technology for the Twenty-First Century initiative (IT²). It directs the NSF to use the additional funds according to the PITAC recommendations, emphasizing fundamental research on software design, stability,

security and reliability, as well as scalable information infrastructure and high performance computing. In addition, \$5 million was also set aside for research into the impact of IT on society and the economy.

The Senate report also expresses concern that NSF's investment in IT R&D not duplicate activities that are more appropriately conducted by industry.

The comprehensive Request for Proposals for the new IT research program was issued by NSF last month (<http://www.nsf.gov/cgi-bin/getpub?nsf99167>). Plans for the terascale computing component of the new IT program have not been revealed, but it is expected to fund an open competition for a single-site multi-teraflop computer.

Overall, the NSF budget would grow to \$3.91 billion in FY 2000, an increase of \$240 million or 7 percent over the FY 1999 level. This is the highest percentage increase the NSF has seen in many years. Other scientific priorities to be addressed with the increased funding include biocomplexity and plant genome research; science and engineering education activities would also get a funding boost.

Other science agencies did not fare so well. DARPA only received

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"Engineering" in Canada: An Update

In the November 1997 issue of *Computing Research News*, we first ran an article about the controversy surrounding the supposed copyright infringement through the use of the term "engineer" or "engineering" in degree programs of software engineering centered in faculties of science in Canada (see "The Future of Software Engineering in Canada").

A court case was scheduled to begin this past September to decide the issue. In the end, the professional engineering societies who were bringing the suit against Memorial University of Newfoundland decided to drop the case in an effort to come to amicable terms. A representative committee will review the issue of future relations between computer science and professional engineering with members from the Canadian Council of Professional Engineers and other selected representatives from the Canadian Information Processing Society, as well as Deans of Engineering and Deans of Science. The committee will include four people and a chairman, and it is expected that the Deans of Science will support the nomination of a Computer Science representative.

The following letter was circulated last spring. The letter outlines how the University found itself on the doorstep of a court case.

**From: Arthur May, President and Vice-Chancellor
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1C 5Z7
Subject: Software Engineering**

I have received many communications on the issue of software engineering, mostly I suspect as a consequence of specific requests from APEGN or CCPE to write to the University. Forgive me for producing a "form letter" response, but it does have the advantage of providing consistent information to all of those who are concerned with the issue.

Several years ago the Canadian Council of Professional Engineers (CCPE) wrote about forty universities, warning that universities should not undertake academic programs labeled as software engineering outside Faculties of Engineering. Memorial University did not receive this letter; whether by design or oversight we do not know.

At the time, our Senate was discussing the offering of a software engineering option within Computer Science, a department within the Faculty of Science. Our Faculty of Engineering argued against this proposal.

After a long and sometimes acrimonious debate within Senate and Senate committees, including two special committees struck for the purpose of attempting to reconcile the issue, Senate voted to approve a software engineering option within the Computer Science Department within the Faculty of Science.

The degree is a Bachelor of Science degree. The degree certificate would not contain the words "software engineering." We have offered that both the University Calendar and the student transcript would contain the words "Completion of the Honors in Computer Science (Software Engineering) Program does not qualify persons to hold the designation 'Professional Engineer' as defined by various Provincial Acts governing the Engineering Profession."

You will appreciate therefore that this is not an Engineering degree and that no accreditation is sought, and further that graduates are specifically told that they are not Professional Engineers as a consequence of graduating from this program.

We were in communication with CCPE during the many months of debate and discussion within the University Senate, and we have done our best to

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Expanding the Pipeline

Broadening Ethnic Horizons in Computing

Less than one percent of the researchers in computer and computational science are African Americans, Latinos, Native Americans, Native Alaskans, and Native Pacific Islanders. As part of an ongoing effort to encourage minorities to pursue careers in these fields, twenty-three success stories of underrepresented students and professionals in the computing field will be featured in a new brochure, "Faces of Computing," to be published by the CRA/ACM/IEEE-Computer Society Coalition to Diversify Computing (CDC).

Sources Of Inspiration

"We're targeting minorities, especially high school students, to encourage them to seek higher education—college, graduate school, and post doctoral research—in computer science and engineering," said Sandra Johnson Baylor, IBM T.J. Watson Research Center, one of the CDC co-chairs (along with Andrew Bernat of the University of Texas at El Paso). The CDC receives support from the Education, Outreach, and Training program of the two NSF-funded Partnerships for Advanced Computational Infrastructure (EOT-PACI), NCSA and NPACI. It is also supported by the Computing Research Association, the Association for Computing Machinery (ACM), and the Institute of Electrical & Electronics Engineers Computer Society (IEEE-CS).

The CDC is trying in particular to reach minority students in their junior and senior years of high school, to encourage more students to choose careers in computing. The profiles in the brochure are a cross-section of success stories that includes students, people in the computing industry, and academia. "The goal is for those kids to be able to see people who look like them—people who are doing science or engineering work—so they will say to themselves, 'I could do that, too,'" said Jesse Bemley, director of Joint Educational Facilities in Washington, D.C., a program that exposes high school students to various disciplines related to information technology, and the CDC committee member in charge of the brochure.

The CDC's support from NPACI has included coordination of the brochure, according to Barbara Richmond, editor of the brochure. "NPACI's mission includes a strong outreach component, and we expect that this brochure, both in the printed and Web versions, will have a significant impact," she said. "We are earnestly trying to turn minority young people on to the computer sciences," she added. "Some of the people profiled in the brochure are sophomores in college—high school students can relate to peers at this level."

The CDC brochure is a complementary publication to the "Women in Computer Science" brochure

previously printed by the CRA Committee on the Status of Women in Computing Research (CRA-W). CDC and CRA-W are sister organizations, both supported by EOT-PACI. "Women in Computer Science" was highly successful, and, like "Faces of Computing," features successful role models at all stages of their careers.

Faces and Profiles

"Faces of Computing" features profiles such as that of Paul Kabotie, president of Colorado-based Kabotie Software Technologies. Kabotie, a member of the Hopi tribe, was born on the Santa Clara pueblo in New Mexico. He is a member of the board of directors and vice chair of the American Indian Science and Engineering Society, a chapter of which he helped found at the University of New Mexico when he was an undergraduate student at New Mexico's College of Engineering. Kabotie is also an entrepreneur helping Native American communities. "We don't need social 'programs,' little infusions of money that leave nothing behind," he said. "Those of us who left and benefited from an education must now come back and build the knowledge and education base, returning as helpers, not exploiters. I am hoping we can all have a kind of snowball effect."

IBM Systems Development Engineer Shirpaul McLaughlin also

appears in "Faces of Computing." McLaughlin, an African American, was the first minority female to graduate magna cum laude from the School of Electrical Engineering at Case Western Reserve University, where she earned a Bachelor of Science Degree in 1992. She later earned a Master's Degree in Electrical Engineering from the Georgia Institute of Technology in 1995. In addition, she teaches at Durham Technical Community College and Cuyahoga Community College, both in Ohio. But McLaughlin's path wasn't a smooth one. Her first two years in college were difficult and disappointing—so much so, that at one point she thought she might "just go off to beauty school." When she transferred to Case Western Reserve, however, everything changed. "The big difference is the environment that you're in," she said. "I was the same person with the same amount of intelligence; but in one setting I was barely maintaining a C average, and in the next one I was at the top of my class!"

"Faces of Computing" includes not only working professionals, but also college students like Paula Nelson, who is an undergraduate in the Computer Science Department at George Mason University. In her younger years, Nelson feared having to interact with or sit in front of a

Horizons Continued on Page 6

Soffa Receives Presidential Award

Mary L. Soffa, Professor of Computer Science at the University of Pittsburgh, and Vice Chair of the Computing Research Association Board of Directors, has been awarded one of the 1999 Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring. She is one of ten individuals and five institutions who received this prestigious award.

Up to ten individuals and ten institutions may qualify annually for the national award, which includes a \$10,000-grant and a commemorative presidential certificate.

"The mentoring awards recognize a long-term commitment to providing opportunities for greater participation in science and engineering by all Americans. The awards do this by honoring those whose personal and organizational activities have increased participation of underrepresented groups in mathematics, engineering, and science from kindergarten through graduate level."

"No personal influence is as powerful, long-lasting, and positive as that of a superlative mentor. The mentors receiving this award today are a true national resource who play a key role in defining the quality of our nation's future human resources

in science, mathematics, technology and engineering," said Rita Colwell (National Science Foundation Director). The award is funded and administered through NSF.

Soffa was honored for her work with her graduate students at the University of Pittsburgh. Of her sixteen graduated Ph.D. students, 50 percent are women. Of her master's degree students, 24 (53 percent) are women, one is African American, and one is physically disabled.

She currently advises six doctoral students including two women. Among her mentees is a Swedish female that was the first woman in her country to receive a doctorate in computer science. Among her graduates, eleven have received prestigious pre-doctoral fellowships, two are Full Professors, three are Associate Professors, two are Assistant Professors, and one has received the NSF Young Investigator Award. While serving as Dean of Graduate Studies, she implemented an innovative program to recruit underrepresented students that increased their number by 100 percent in four years.

This year's awardees were selected from among 36 nominated for the individual awards and another 19 from institutions. ■



Community Highlights

CRA Surveys CS Researcher Salaries in Industrial Labs

By William Gear

In November 1998, CRA conducted its second salary survey of computer science researchers with Ph.D.s who are employed in industrial laboratories. CRA initiated the survey in 1997 in response to the need for a survey that explicitly addressed the salaries paid to these researchers.

Eight companies, representing 644 employees in CS, completed the 1998 questionnaire, although not all respondents answered all questions. Companies that completed the survey received a summary of the data in January 1999.

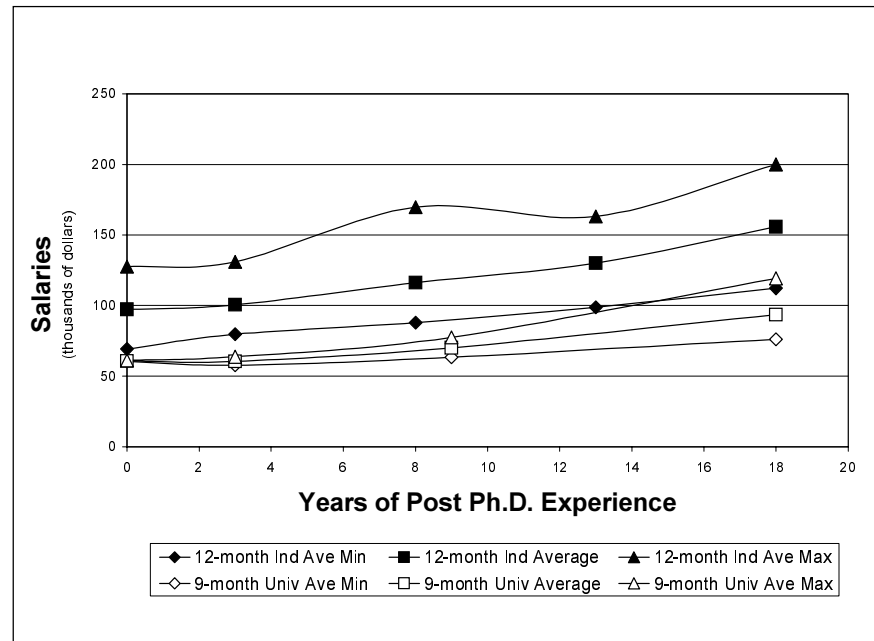
The 1998 survey asked respondents to provide minimum, average, and maximum starting salaries, as well as salary figures for researchers with post-Ph.D. experience of 1 to 5, 6 to 10, 11 to 15, and 16 to 20 years. The averages of these numbers are shown in the accompanying graph.

The graph plots the "base plus variable" 12-month salaries against post-Ph.D. experience. Fringe benefits are not included in the

survey. *Base salary* is the annual salary that is specified in the job offer; *variable salary* includes items such as bonuses and the value of stock options (which respondents were asked to estimate).

Because companies adjust salaries at different times of the year, respondents were also asked to indicate the month in which annual salary adjustments were made. In order to compare these data with those of the annual CRA Taulbee Survey of academic computer science salaries (which usually cover the period September to August), the data were adjusted so they approximate the pay scale for the same period. (This was done by assuming that the average company will adjust its scales for computer science by 4 percent from 1998 to 1999; this is not the same as assuming an average salary increase of 4 percent because the actual salary increases people receive also factor in an additional year of experience.)

The graph also shows the corresponding data for 9-month academic salaries of all U.S. CS



Departments responding to the latest Taulbee Survey (see *CRN*, January 1999, Table 1). The experience levels assumed for assistant, associate, and full professors are 3, 9, and 18 years, respectively.

CRA is currently conducting its survey of 1999-2000 industrial lab salaries. Results will be available in

December 1999 to companies that complete the survey.

The industry information in the graph is distributed with the permission of the companies that participated in last year's survey.

Dr. Gear, President of NEC Research Institute, Inc., chairs CRA's Industry Committee. ■

Department Chairs And Lab Managers: *Snowbird Alert*

The dates are **July 9, 10, and 11, 2000** in Snowbird, Utah.

Mark your calendars now for CRA's Conference at Snowbird 2000! This biennial event is a "must" for chairs and lab managers, and the planning committee is putting together a program that will address many of the major issues in computing research in the new millennium. The conference will also include a workshop for new chairs as well as workshops centered on government affairs.

Refer to future issues of *CRN* as well as the CRA website (<http://www.cra.org>) for updates, including program details and registration/accommodation instructions. CRA will again be offering online registration for the conference. If you would like to suggest a topic for the program, please contact any of the following committee members:

Academic Sessions:

Jack Stankovic (Chair) stankovic@mail.cs.virginia.edu
 James Kurose kurose@cs.umass.edu
 Eric Manning emanning@post.engr.uvic.ca
 Barbara Ryder ryder@cs.rutgers.edu

Industrial Sessions:

Frances Allen (Chair) franalte@us.ibm.com
 James Foley foley@meitca.com
 David Johnson dsj@research.att.com

Other programmatic questions should be directed to Jean Smith, jean@cra.org. The following organizations have generously signed on as sponsors of the CRA Conference at Snowbird 2000:

AAAI, Hewlett Packard, Lucent Technologies, Microsoft Research, USENIX.

If your organization would like to be a conference sponsor, there is still time. Contact Jay Vegso for further information about sponsorship, jvegso@cra.org. ■

Letter to the Editor



The "Best Practices" memo of the Computing Research Association (see *CRN*, September 1999), which has attracted national attention [Manger, "Journal Articles Are a Poor Basis for Judging Engineering and Computing Professors, Report Says,"], claims that traditional criteria for evaluating the scholarly contributions of academic computer scientists are inappropriate. The memo contends that the scholarship of experimental researchers should be judged not only by evaluating publications in journals but also by evaluating the impact of the artifacts that they create.

I agree with the CRA memo that the impact of a scholarly contribution should be a measure of its success, and that in some cases, industrial scientists may be more qualified to write evaluation letters than academic scientists. I am concerned that the memo's disparagement of journal publications as demonstrations of scholarly achievement may discourage journal publication in computer science.

I have argued elsewhere that computer science is an engineering discipline [Loui, "Computer Science Is a New Engineering Discipline,"]. Like academics in computer science, many academics in other engineering

disciplines create artifacts or prototypes of artifacts. As in experimental computer science, the new artifact must be demonstrably better than a previous device, system, or process for the same purpose. Results are announced at engineering research conferences that are as selective as the most prestigious computer science conferences. Many areas of engineering research are changing as rapidly as many areas of computing research. Yet the scholarly contributions of academic engineers are evaluated in the same way as in other scientific disciplines; through publications in scientific journals.

The CRA memo asserts that conference publication is superior to journal publication in computer science: "In those dimensions that count most, conferences are superior." According to the memo, the typical conference submission receives four to five evaluations, whereas the typical journal submission receives only two to three evaluations. The memo confuses quantity with quality. Over my long career, I have served as a reviewer for many conferences and journals, in both theoretical and experimental areas of computer

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Policy News

Recent Policy on IT Workers

By William Aspray

In the September 1999 issue of *Computing Research News*, I traced the early history of U.S. policy regarding information technology workers. The final section discussed the difficulties of increasing the annual production of doctorates in computer science. The goal set by the national leadership in 1967 was 1,000 doctorates per year by 1980. Although the annual number increased from 40 in 1967 to 213 in 1975, it peaked at 244 in 1976, and by 1978 had dropped to 196. But, increasing the production of doctorates was only one of several problems that worried academic and industrial computer scientists in the late 1970s.

Rapid increases in undergraduate enrollments were creating heavier teaching loads and faculty morale was low. Even with increased undergraduate enrollments in computer science, there were still too few graduates to

meet industry and government demands. Academic research was increasingly oriented toward theoretical studies, and it was more difficult to acquire the facilities or funding to conduct experimental research. Faculty recruitment became harder and harder, and it was not uncommon for a large research university to have five or more unfilled faculty positions in computer science.

Retention was also becoming a problem. Faculty and graduate students were increasingly being attracted away from the academy to the industrial sector. There were concerns that the academic community was "eating its seed corn" and that there would be insufficient faculty to train the next generation of computing professionals. Indeed, computer science doctorates were entering non-university jobs at twice the rate of the engineering field overall—a level that was regarded as unsustainable.

"Eating Our Seed Corn"

The seed-corn problem was addressed by industry, the professional societies, and the federal government. Industry agreed informally to exercise restraint in hiring away faculty. Companies also provided substantial funding for graduate students and provided equipment to university computer science departments. The problem was addressed at the CRA Conferences at Snowbird in 1978 and 1980, and by some of the other professional organizations.

NSF convened a workshop in 1978 on the issue, which resulted in a report known generally as the Feldman Report (after the study group chairman, Jerome Feldman from the University of Rochester). The report called for a five-year federal funding program to build twenty-five centers of excellence—a concept originated in the space program and used effectively by DARPA in computer science. Funding would be much larger than NSF typically supplied in the computer science area, with multi-million-dollar grants provided to support coherent, multi-investigator research projects in experimental systems design and to build up research groups having a critical mass.

The Feldman Report also called for new government policies—such as new tax laws, patent procedures, and antitrust legislation—to encourage industry-university interaction. These proposals went nowhere, but NSF did sponsor a scaled-down version of the Centers of Excellence Program under the title "Coordinated Experimental Research (CER) Program." The new program was not, however, without its detractors. Some people were concerned that the centers would take funding away from the traditional individual research grants. For

REMINDER TO CHAIRS:
 Taulbee Survey deadline was November 5.
 Please make certain your data has been submitted to:
www.cra.org/Survey/FillOut

Questions? Contact
survey@cra.org

example, the ACM Executive Committee called for a program of traineeships, expanded equipment grants, and a research computer network accessible to the entire research community, in place of the CER Program that was intended to reach only twenty-five schools.

The CER Program was implemented, and, by most accounts, it was a success. It enabled a number of schools to strengthen their research, especially experimental research, and increased their ability to recruit and retain faculty. In essence, the program helped broaden the base of universities that could provide strong computing research and education. The program was renamed the "Institutional Infrastructure Program" in 1986, reflecting the fact that it had become more widespread and less narrowly focused.

Despite its success, however, the program did not immediately lead to the annual production of 1,000 doctorates, a goal that was not achieved until 1991.

Computing Comes of Age

Computer science and computing began to achieve a new national

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Engineering from Page 1

make it clear to CCPE that academic programs, admissions, grading of courses, and the awarding of diplomas, certificates, and degrees are all matters which are entirely within the purview of the University Senate. The authority of Senate seems to be widely misunderstood within the engineering community and I think has never been accepted by Association of Professional Engineers & Geoscientists of Newfoundland (APEGN) and CCPE, notwithstanding the norms of all universities as expressed in various provincial legislation.

At an early stage, we suggested to CCPE that this was a matter for national attention given our growing awareness of the number of universities who were offering such courses and degrees outside Faculties of Engineering (including some which didn't have Faculties of Engineering) and the fact that some universities had already produced graduates. We received no response to a letter which made this suggestion, and shortly after we were sued in Federal Court for infringement of a trademark allegedly owned by CCPE/APEGN.

Given the fact that we had tried very hard over a long period of time to bring this matter to an amicable conclusion within the University, given the fact that we were unable to do so, and given the fact that a number of other universities were already offering similar programs, we really had no choice but to defend ourselves. The issue had by then evolved into a challenge of the right of universities to develop their own academic offerings, and would be seen by many as a direct challenge to the longstanding principle of academic freedom. Given that the matter was and is one of national rather than local proportions, we approached the Association of Universities and Colleges of Canada for support, both moral and financial, and we have received both in full measure.

Meanwhile, subsequent to the lawsuit being filed, we met with CCPE, APEGN, and AUCC in Ottawa to once again attempt to convince the engineering community that this matter had to be taken up at a national level with a view to creating a code of best practice, or recommended protocols, or whatever. We suggested that the legal maneuverings be put on hold while such a discussion took place. Again this was refused by CCPE/APEGN.

We had thus resigned ourselves to awaiting the outcome of the court proceedings scheduled for September. We remain convinced that this issue is being dealt with in the wrong place and by the wrong process. But we are not in court by choice.

Meanwhile, APEGN and CCPE combined to stop the process of accreditation for Memorial's engineering programs for reasons that have absolutely nothing to do with the structure and content of those programs. Some have described this as unprofessional and unethical; indeed an abuse of the public trust conferred upon APEGN by provincial legislation. Whatever prospect we had of bringing this issue together within the University, and given enough time I believe there was at least a prospect of doing so, has become immeasurably more complicated by the combination of a lawsuit and the subsequent escalation, even before the lawsuit was heard.

I think I have already gone on at more length than absolutely necessary, but you should be aware of how the issue has developed and how the University's attempts to deal with it internally and nationally have been persistent and genuine. Regrettably, the approach by APEGN/CCPE has been confrontational from the start, with the confrontation now having escalated to the point where reasonable people will not respond except to defend themselves. ■

NITR&D Legislation Moves Forward

On September 9, the House Science Committee approved HR 2086, the Networking and Information Technology Research and Development Act. The bill, sponsored by committee chair James Sensenbrenner (R-Wisconsin), would authorize continued funding for the High Performance Computing and Communications program and the Next Generation Internet program, as well as establish a new NITR&D program and a new terascale computing program to implement the recommendations of the President's Information Technology Advisory Committee for expanding the federal investment in long-term IT research (see *CRN*, September 1999).

The Committee adopted a number of amendments to the bill prior to approval. The ranking minority member of the Basic Research Subcommittee, Eddie Bernice Johnson (D-Texas), sponsored two successful amendments, one to add funds for IT education and training through existing NSF programs for community colleges and

minority institutions, and one to add research on the socioeconomic impact of IT to the authorized activities of the new NITR&D program, consistent with the PITAC recommendations. The original bill would have authorized research in only three of the four areas PITAC identified as priorities: software, scalable information infrastructure, and high end computing.

Rep. David Wu (D-Oregon) sponsored an amendment, approved by the committee, directing NSF to contract with the NRC for a study on Internet privacy issues. Rep. Mike Doyle (D-Pennsylvania) offered and then withdrew an amendment that would have authorized funds for the Department of Energy to participate in the terascale computing program. As it is, the legislation provides funds for terascale computing only for the NSF.

The Committee has yet to issue its report to accompany the legislation, and it is uncertain whether the bill will be considered by the House before the end of the Congressional session. The bill has not been introduced in the Senate. ■

Association News

Distributed Mentor Project

Mentoring Undergraduate Women in Computing Research

The application deadline for the Computing Research Association's Distributed Mentor Project for summer 2000 is January 15, 2000.

The objective of the Distributed Mentor Project, which is funded by the National Science Foundation (NSF), is to increase the number of women entering graduate school in computer science and computer engineering (CS&CE). The National Science Foundation awarded this project approximately \$240K for 1994 and 1995, \$530K for 1996, 1997 and 1998, and \$630K for 1999, 2000, and 2001. The project brings together CS&CE undergraduates and professors for a summer of research. The current coordinator for the project is Mary Jean Harrold, Ohio State University.

Students will be involved in research, learn how a research university operates, meet and interact with graduate students and professors, and work with successful researchers. This experience is invaluable for students who are considering applying to graduate school.

A committee will examine the applications and select at least twenty student/professor matches for funding. Notification of matches will be given by March 1, 2000.

Funding for the student consists of \$550 per week for research, plus travel assistance. A student's funding is intended to cover ten weeks of research in the summer of 2000, but alternative arrangements are possible. Mentors and their universities receive no funding. However, students and mentors who participate in the program may apply for funding to assist them in attending a conference after the summer of research.

Mentors and students will be given training packages on mentoring, and will participate in an electronic discussion group. This

discussion group will provide additional mentoring opportunities while distributing the load among mentors. The discussion group will establish cohesiveness among all participants, and should be a source of support for mentors and students.

One aspect of the continuing project is a longitudinal evaluation, covering all years of the project (1994-2000). This third-party evaluation will provide formative feedback and assess the long-term impact of the project. The evaluation is not intended to check the performance of individuals who participate in the project; thus participants' anonymity will be maintained as far as possible. All participants are expected to take part in the evaluation; the time involved will be minimal.

Evaluation reports are available on the Web at: <http://www.cra.org/Activities/craw/distmentor>.

Applicants should be undergraduates (U.S. citizens or permanent residents) at a U.S. college or university who are seriously considering graduate studies in CS&CE. First consideration will be given to sophomores and juniors who have completed two or three years by the summer of 2000. However, first-year students with the skills needed for research, as well as seniors considering graduate school, are encouraged to apply.

The deadline for receipt of all application materials is January 15, 2000.

For more information and application procedures for students and professors visit <http://www.cra.org/Activities/craw/distmentor/>.

For questions regarding the Mentor Project please contact this year's coordinator Mary Jean Harrold, harrold@cis.ohio-state.edu

For printed brochures contact mentor@cra.org or mail requests to: Computing Research Association
1100 17th Street, NW, Suite 507
Washington, DC 20036-4632 ■

February 15 Deadline For CRA Service Award Nominations

The Computing Research Association invites nominations for the CRA Distinguished Service Award and the A. Nico Habermann Award for the year 2000. The awards will be presented at CRA's Conference at Snowbird July 9-11, 2000.

Distinguished Service Award

CRA makes an award, usually annually, to a person who has made an outstanding service contribution to the computing research community. This award recognizes service in the areas of government affairs, professional societies, publications or conferences, and leadership that has a major impact on computing research.

Past Distinguished Service Award Recipients:

1999 - Bill Joy, Sun Microsystems, and Ken Kennedy, Rice University
1998 - Merrell Patrick, National Science Foundation
1997 - Anita Jones, University of Virginia
1996 - Paul Young, University of Washington
1995 - Randy Katz, University of California at Berkeley
1994 - William A. Wulf, University of Virginia
1993 - Not Awarded
1992 - Joseph Traub, Columbia University
1991 - David Gries, Cornell University
1990 - Robert Kahn, Corporation for National Research Initiatives
1989 - Peter Denning, George Mason University
1988 - Kent Curtis, National Science Foundation (deceased)

A. Nico Habermann Award

CRA makes an award, usually annually, to a person who has made an outstanding contribution to aiding members of underrepresented groups within the computing research community. This award recognizes work in the areas of government affairs, educational programs, professional societies, public awareness, and leadership that has a major impact on advancing these groups in the computing research community.

Past Habermann Award Recipients:

1999 - Sheila Humphreys, University of California at Berkeley
1998 - Bryant York, Northeastern University
1997 - Andrew Bernat, University of Texas at El Paso
1996 - Caroline Wardle, National Science Foundation
1995 - Eugene Lawler, University of California at Berkeley (deceased)
1994 - Richard A. Tapia, Rice University

Nomination Procedure:

The deadline for receipt of nominations is **February 15, 2000**. Nominations should not exceed two pages in length and should describe the contributions on which the nomination is based. Letters in support of the nomination are welcome but not required. Questions or comments may be addressed to awards@cra.org.

Send nominations electronically to: awards@cra.org (in plain ASCII text or as a Word attachment). Alternatively, mail or fax to:
CRA Service Awards
Computing Research Association
1100 17th Street, NW, Suite 507
Washington, DC 20036-4632
Tel. 202-234-2111
Fax: 202-667-1066
E-mail: awards@cra.org
<http://www.cra.org/main/cra.awards.html> ■

CALL FOR PARTICIPATION

Third Grace Hopper Celebration

September 14-16, 2000

Sheraton Hotels,
Cape Cod, MA

URL: www.sdsc.edu/Hopper

Authors are invited to submit papers and proposals for panels, workshops, and birds of a feather sessions. The deadline is **DECEMBER 15, 1999**. Submissions should be e-mailed (in either ASCII or postscript format) to: gh2000@ece.nwu.edu.

Complete details and information for authors are available on the

Web at: http://www.sdsc.edu/Hopper/call_for_participation.html.

The Grace Hopper Celebration of Women in Computing Conference is a technical conference that consists of plenary speakers, technical papers, panels, and workshops by successful researchers in the area of computing. The theme of the Third Grace Hopper Celebration is "Interconnection," as the computing field provides the necessary technology for interconnecting international communities. Conference sponsors include the Institute of Women and Technology and the Computing Research Association.

Questions about submissions may be addressed to: gh2000@ece.nwu.edu. ■

Recent from Page 4

recognition and prominence in the 1980s. In 1986, the National Research Council established its first sustained organization dedicated to computing, the Computer Science and Telecommunications Board. That same year, NSF formed a Directorate of Computer and Information Science and Engineering. Thus, for the first time, computing was given the same organizational status within NSF as other major scientific disciplines.

Historically, computing policy had primarily been either a product of defense policy or of science policy. During the 1980s, this continued to be the case. Within DARPA, a major new initiative, Strategic Computing, was promoted with the rhetoric of defense. This funding restored the deep funding cuts made in the DARPA computing program during the 1970s, and eventually led to a sizable increase in funding for academic computer scientists. The new supercomputer centers and national computing networks such as NSFnet were the result of science policy. Indeed, the physicists, rather than computer scientists, led the push for national supercomputers to meet their need for more powerful research tools in the United States.

The Reagan Administration supported the supercomputer centers because it considered them part of its national economic policy. The centers were viewed as aiding U.S. competitiveness, especially against the Japanese who were making inroads in the semiconductor industry as they had previously done in the automobile and steel industries. Federal attention to computing continued to increase as the development of the network became more visible in both Congress and the White House. In 1987, the Office of Science and Technology Policy proposed a major five-year research and development program on high-performance computing and networking. The resulting High Performance Computing and Communications Initiative was passed into law in 1991. The budget called for growth in out years to more than \$1 billion, and it provided for the participation of at

least twelve federal agencies. Computing had finally achieved national importance. All of these changes and this national recognition indicated that computing was increasingly being viewed as important to the nation—therefore, when issues concerning the IT workforce arose, the importance was recognized and an organizational structure was in place to address the issue.

Immigration

The Immigration Act of 1990, which tilted more toward career-based immigration and away from family-based immigration, would increase the number of high-tech workers who were being granted permanent visas to work in the United States. However, the increase was insufficient to meet the developing demand for IT workers. Science and engineering visas increased from 11,000 in the 1980s to 24,000 in 1993; of these, approximately one-tenth went to mathematics and computer science (e.g., 1,200 in 1992). But during the decade of the 90s, the demand for information technology workers grew dramatically because of the growing applications driven by Moore's Law and the Internet, the Y2K problem, and other reasons.

In a free market economy, the federal government has only limited ability to regulate workforce supply and demand. Recent experience also had made the government wary even of trying. In the late 1980s, some NSF program managers warned of a looming general "shortfall" of scientists and science teachers. Congress acted on these warnings, and the result was an overstimulation of the supply system and unemployment or underemployment for many new science doctorates in the early 1990s. Congressional hearings in 1992 led to harsh criticisms of NSF management from some of science's strongest allies in Congress, and this has affected the government's willingness to act to increase the supply of information technology workers.

One of the programs that emerged from the perceived science shortage of the late 1980s was a new temporary visa program for specialty workers that were viewed as being in short supply. These included foreign cuisine cooks, physical therapists, fashion models, and high-tech workers. The new H1-B program was modeled on the H-1A temporary visa program that was initiated in 1989 for nurses. H1-B visas were limited to 65,000 per year—perhaps 25,000 of which went to information technology workers (nobody knows the actual number). With an increasingly large unfilled demand for information technology workers, trade associations and industry began in 1997 to push for an increase in the number of H1-B visas. Congress and the White House recognized the importance of information technology to the national economy, as well as the political clout of the high-tech industry, and legislation to raise the immigration caps for three years was passed in 1998. A push in 1999 to further raise or

Funding from Page 1

about half of its requested funding for new IT research. The Department of Energy's plans for increased IT research funding were squelched entirely. The agency had requested \$70 million for a new civilian Scientific Simulation Initiative as part of the IT² initiative. Appropriators were not persuaded that a new program was needed given DoE's significant investment in the Advanced Strategic Computing Initiative.

The appropriations prospects for any new or expanded DoE programs this year were poor—Congress's relationship with the agency has deteriorated significantly after the mishandling of security lapses at DoE's national laboratories. In response, Congress has directed DoE to move its defense-related activities into a new semi-autonomous National Nuclear Security Administration, a measure that was strongly opposed by the Secretary of Energy.

Despite these setbacks, there has been a growing positive attitude among Members of Congress toward the PITAC recommendations and the need to expand the investment in fundamental IT research. CRA has already begun planning increased advocacy activities for next year, as the release of the FY 2001 budget proposal is only four months away. ■

Horizons from Page 2

computer. She never considered a career in computer science or electrical engineering until her junior year in high school, when she joined the Joint Educational Facilities program in Washington, D.C. There Nelson discovered the potential of computers, and became so enthusiastic about programming that she wrote an application using genetic algorithms. Through JEF, she wrote papers and gave several presentations throughout the nation about her application. Nelson hopes to graduate in 2002, after which she is considering attending graduate school. "Computer science is a field in which I can continually grow," she said.

As the eldest son of a businessman in the Dominican Republic and the nephew of a civil engineer, Ramón E. Vasquez-Espinosa comes from a family that fostered his interest in math and science. "My mother, who was an instructor of mathematics, has been the biggest influence and inspiration in my life," he said. He excelled in math and science in high school, but it wasn't until he enrolled at the University of Puerto Rico, Mayaguez Campus (UPRM) that he decided to become involved in electrical engineering. After earning his

Horizons Continued on Page 20

eliminate the caps was deferred by Congress, but it is expected that the issue will be considered again in the coming year.

The H1-B legislation is representative of a Clinton Administration economic policy that is targeted at the company level, rather than at the national level as it was during the Reagan years. Another example of this company-level policy is pending legislation to provide tax credits to companies for training their workers, targeted primarily at companies employing information technology workers.

Women and Minorities

The information technology worker shortage in recent years has been closely tied to the role of women and minorities in the workplace. If women and minorities were represented in the information technology workforce in the same percentage as they are represented in the population as a whole, the nation would have an adequate supply of workers to fill all of the IT openings (more than 300,000 unfilled positions, according to the Department of Commerce).

The situation for minorities is more serious than that for women only, but for the sake of brevity this discussion will focus on women. In the 1960s and 1970s, the percentage of women studying computer science and entering technical jobs in the workforce was small. Through scholarships and mentoring programs, a concerted effort was made to increase the number of women in the educational pipeline. Steady progress

was made in the early 1980s, and by the 1984-85 academic year, 37 percent of the bachelor's degrees in computer science were awarded to women. Unfortunately, that was the peak year for the participation of women, and the percentages have decreased steadily ever since. In the 1993-94 academic year, for example, only 28 percent of the bachelor's degrees in computer science were awarded to women. This trend is in contrast to other science and engineering disciplines, where the percentages of women have increased.

There have been many attempts, including numerous programs within NSF and other federal organizations, to increase the participation of women; however, the problem remains stubbornly intransigent. (There is a growing consensus that some of the programs can be successful if they are publicized better and are scaled up.) It is clear, however, that the work ahead will take considerable time and effort.

The situation is made more difficult for both women and minorities by the current political situation. Beginning during the Reagan Administration, and increasingly during the Bush and Clinton years, there has been an assault through the courts and through public referenda to eliminate state and federal affirmative action programs. NSF, for example, can no longer set aside 15 percent of its fellowships for minority students; and admissions to the University of California must now be race- and gender-neutral. Effective strategies

Recent Continued on Page 20

Workshops 2000

Industrial Careers Workshop
Monday, June 19, 2000

Effective Teaching in
Computer Science and
Engineering Workshop
Monday, June 19, 2000

Academic Careers
Workshop
June 20, 2000

CRA workshops held in conjunction
with the USENIX Technical
Conference in San Diego
<http://www.cra.org/main/cra.events.html>

Professional Opportunities

CRN Advertising Policy

Send copy and payment for Professional Opportunities advertisements to Advertising Coordinator, e-mail: crn@cra.org. **E-mail submissions are preferred.** Items may be mailed to *Computing Research News*, 1100 Seventeenth Street, NW, Suite 507, Washington, DC 20036-4632; fax: 202-667-1066.

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

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

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

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

Allegheny College

Department of Computer Science

The Department of Computer Science invites applications for a position in support of its new track, Applied Computing, beginning Fall 2000. Applicants must provide evidence of ability to teach effectively at the undergraduate level, commitment to liberal arts education, and continuing contribution to the discipline. Qualifications for a tenure-track position include a Ph.D. in Computer Science or Software Engineering; alternative credentials in software design can lead to a term appointment. Preference will be given to candidates with interests in software systems design and development. Responsibilities include teaching and advising undergraduates, guiding students in research projects, and contributing to the college-wide freshman/sophomore seminars that emphasize speaking and writing. Salary and rank commensurate with credentials and experience.

Allegheny College is a selective liberal arts college in northwestern Pennsylvania serving 1,900 undergraduates. Information about the Department, its traditional and new applied computing tracks is available on the Web at <http://www.alleg.edu/academics/CompSci/>.

Send letter of application, curriculum vitae, statement of teaching and research interests, applicable transcripts, and arrange to have three letters sent from references, at least one of whom can comment on teaching, to: Dr. Robert D. Cupper, Professor and Chair, Department of Computer Science, Allegheny College, Meadville, PA 16335, E-mail: cupper@sparc1.alleg.edu.

Review of applications will begin December 15 and continue until the position is filled. EOE. Women and minorities are especially encouraged to apply.

Barat College

Department of Mathematics & Computer Studies

www.mathcs.barat.edu

The Mathematics & Computer Studies Department invites applications for the position of Assistant Professor of Computer Science, a new position in a growing department. This is a tenure-track appointment beginning Fall 2000 at

Barat College, a four-year liberal arts college located on Chicago's North Shore. The successful candidate will teach a wide variety of courses at the undergraduate level and will demonstrate mastery of discipline and the ability to communicate subject matter effectively. Opportunities exist for curriculum design and development; student lab design and support. Other responsibilities include student advising, as well as professional and instructional interaction with other faculty in the Math/CS Department and with other departments.

The Doctorate in Computer Science is preferred, but a Masters in Computer Science or a closely related field may be considered. Experience in C and C++ or any OOP language is required. Experience in the following areas is desirable: Java, Unix, Internet, Webmaster, HTML, MS Office suite, Visual Basic, local area networks, database systems, business information systems, assembly. Must demonstrate commitment to continued professional growth and development.

Send application, curriculum vitae, and references to:

Bill Butterworth
Math/CS Department
Barat College
700 Westleigh Rd.
Lake Forest, IL 60045

E-mail: butterworth@barat.edu

Review of applications will begin immediately and continue until position is filled. Barat College is an EOE. Women and minorities are strongly encouraged to apply.

Boston University

Department of Computer Science

Applications are invited for four tenure-track assistant professorships beginning September 2000. Qualifications required of all applicants include a Ph.D. in Computer Science, a strong research record, and commitment to teaching.

The department has a special interest in candidates pursuing experimental computer science research, including: networking, operating systems, distributed systems, scalability, reliability and security of networked systems, databases, information retrieval and visualization, and computer graphics.

Currently, the Computer Science Department consists of thirteen faculty, and offers BA, MA, and Ph.D. programs. Our research interests include parallel, distributed, and real-time systems; networks; performance evaluation; image and video computing; logic of computation; type theory; and theoretical computer science. In addition, we have a close association with other groups on campus working on various areas of applied computing.

The Department has excellent computing resources that include PC's, Sun and SGI workstations, as well as Sun and SGI multiprocessor servers. In addition, the department has access to the university supercomputing facilities, high-speed campus networks, and national vBNS and I2 internetworking. Recently, the College funded construction of a new computer science research lab for research in distributed systems, real-time systems, networks, and graphics.

The department has been the recent recipient of significant government and industry grants for research, research infrastructure, and for graduate student support. We anticipate continuing this period of growth based on our recent successes and the continued strong support of the University.

Additional information on the department and this search is available from <http://www.cs.bu.edu>. Qualified applicants should send a detailed resume, recent publications, and arrange for at least three references to be sent to:

Faculty Search Committee
Computer Science Department
111 Cummington Street
Boston University
Boston, MA 02215

Please include a cover letter stating the names of your references and your major area(s) of specialization.

Boston University is an Equal Opportunity/Affirmative Action employer. Minorities, persons with disabilities, and women are particularly encouraged to apply.

Bowdoin College

Department of Computer Science

The Department of Computer Science at Bowdoin College invites applications for a tenure-track position at the rank of Assistant Professor or Instructor to begin in the Fall of 2000. Ph.D. preferred, ABD considered. The successful candidate will be expected to teach four courses per year including introductory, core, and advanced undergraduate courses. Area of specialization open; particular interest in graphics, scientific modeling, scientific visualization, or human-computer interaction. Applicants must possess a commitment to undergraduate education and demonstrate the potential to develop a productive research program.

Bowdoin is a highly selective, coeducational, liberal arts college of 1,550 students located two hours north of Boston, close to Portland, along the Maine coast in a community of 24,000. The CS Department has just moved into a newly renovated building, along with the Mathematics and Physics departments, with whom we maintain close and collegial relationships. Departmental lab facilities include Macintoshes for the introductory courses, and a network of Linux machines for use by students in intermediate and advanced courses. Further information about Bowdoin and the department is available at www.bowdoin.edu

Applicants should send a letter of application, a curriculum vitae, statements of teaching philosophy and research interests, and arrange for three reference letters to be sent to:

David Garnick
Department of Computer Science
8650 College Station
Brunswick, ME 04011

Questions can be directed by email to garnick@bowdoin.edu. Consideration of applications will begin January 3, and continue until the position is filled. Bowdoin is committed to equal opportunity through affirmative action. Women and members of minority groups are encouraged to apply.

Bowie State University

Department of Computer Science

The Department of Computer Science invites applications for four tenure-track appointments, effective Spring 2000, at the Assistant/Associate Professor rank. Candidates must exhibit the potential for excellent teaching, research, and curricular development.

Computer Science Program: (2) Candidates must have a Ph.D. degree in Computer Science or closely related field. Preferred specializations are computer network/distributed systems, graphics, software engineering, operating systems, and/or compilers.

Computer Technology Program: (2) Candidates must have a Master's degree in Computer Science, Information Systems, or related field with experience. Ph.D. preferred.

The Department offers BS (CSAB Accredited) and MS degree programs, PostGraduate Certificate Program in Computer Science and BS degree program in Computer Technology. Twelve full-time faculty members serve 450 undergraduate and 100 graduate majors. The Department has research collaborations with NASA, UMCP, and UMBC.

Bowie State University (the oldest historically black institution in Maryland and a regional comprehensive university) is one of the institutions in the University of Maryland System. It serves over 5,000 students in thirty-six undergraduate and thirty-one graduate programs. It is centrally located in the Baltimore-Washington-Annapolis corridor. You may visit us at www.cs.bowiestate.edu/cosc.

Qualified candidates need to submit curriculum vitae and transcripts, and have three letters of references sent directly to:

Office of Human Resources
Attention: Computer Science Faculty Search Committee
Henry Administration Building
Bowie State University
Bowie, MD 20715

Full consideration will be given to applicants who submit their complete application by November 30, 1999; however, the positions will remain open until filled. The University offers a competitive salary and an excellent benefits package.

Brooklyn College, The City University of New York (CUNY)

Department of Computer and Information Science (CIS)

We are seeking to fill two tenure-track vacancies at either the assistant or associate professor level. We are an urban liberal arts college, and our department has twenty-two full-time faculty, over 700 undergraduate majors, over 200 Master's students and over twenty affiliated doctoral students of the CUNY Graduate Center. Several major research projects are currently underway. Extensive faculty and student SUN/UNIX and PC networks are used in teaching and research.

We would prefer to hire two individuals, one specializing in any area of computer science, and a second specializing in multimedia computing.

A successful candidate will teach undergraduate and/or graduate courses in CIS and is expected to develop a research program in the field. He or she should have a broad knowledge of computer science and should have good teaching skills. The multimedia specialist will also work with the Department of TV and Radio and will help develop multimedia curricula for the College. For appointment as an Assistant Professor, a candidate for the first position should have a Ph.D. in computer science or a related area. For the second position, a candidate should have a Ph.D. in an area relevant to multimedia computing and significant experience in the field. For appointment as an Associate Professor, a preferred candidate should also have a record of participation in research grants and high-quality research in the field.

Please send a curriculum vitae and three letters of reference to:

Aaron Tenenbaum
Dept. of CIS, Brooklyn College
2900 Bedford Avenue
Brooklyn, NY 11210
E-mail: tbaum@sci.brooklyn.cuny.edu

Professional Opportunities

Please indicate whether you are applying for the Assistant or Associate Professor position and whether you are applying for the computer science or the multimedia computing position. Please include your e-mail address and a phone number. Review of applications will begin December 1 and will continue until positions are filled. EOE/AA/IRCA/ADA

California Polytechnic State University

Computer Science Department
Assistant/Associate/Full Professor, tenure-track, beginning Fall 2000

Duties include teaching core undergraduate courses, and upper-division and master's level courses in a specialty area; performing research in a mainstream area of computer science; contributing to the computer engineering program; and service to the department, university and community. Candidates must have a strong commitment to teaching excellence, dedication to continued professional development, and a broad-based knowledge of computer science. Doctorate in Computer Science or equivalent is required. Salary commensurate with qualifications and experience.

Applications and inquiries should be directed to:

Recruitment Committee (Recruitment #03013)

Computer Science Dept.

Cal Poly

San Luis Obispo, CA 93407

Tel. 805-756-2824

E-mail: recruit@csc.calpoly.edu

<http://www.csc.calpoly.edu>

To be considered, submit a resume, names and addresses of three references, and a statement of goals and plans for teaching and research and your desired balance between the two. All materials must be received by the closing date of December 15, 1999.

Cal Poly's Computer Science Department offers BS and MS degrees in Computer Science and jointly offers the BS degree in Computer Engineering with the Electrical Engineering Department. Teaching emphasizes "learn-by-doing," involving extensive lab work and projects. Facilities for instruction and research are modern and extensive. Cal Poly emphasizes undergraduate education and encourages faculty interaction with industry.

Cal Poly is strongly committed to achieving excellence through cultural diversity. The university actively encourages applications and nominations of women, persons of color, applicants with disabilities, and members of other underrepresented groups.

AA/EEO.

California Institute of Technology

Computer Science Department

Caltech invites applicants for tenure-track or tenured faculty positions in Computer Science with possible joint appointments in Electrical Engineering and other disciplines. Faculty searches have been approved for positions in the broad area of Computer Science, including, but not restricted to:

- * Computer Networks
- * Information Systems: Multimedia Databases and Internet Data Systems
- * Fundamentals of Computer Science: Algorithms, Complexity, and Logic.

The principal requirements include demonstrated excellence in innovative research and the potential for high quality teaching and mentoring. Completion of a Ph.D. in Computer Science or in a related field is required. The initial appointment term for tenure-track positions is four years.

Interested persons should send a one-page summary of their future research and teaching plans, a resume, names of at least three references, a list of publications, and a URL of a personal webpage that includes pre/reprints of publications. Applications should be mailed to:

CS Search

Caltech, MC 256-80

Pasadena, CA 91125

In addition, applicants are requested to fill out an online summary of their application at <http://www.cs.caltech.edu/search>.

Questions about the application process may be directed to: search@cs.caltech.edu.

Caltech is an Equal Opportunity/Affirmative Action Employer. Women, minorities, veterans, and disabled persons are encouraged to apply.

California State University, Bakersfield

Department of Computer Science

California State University, Bakersfield invites applications for an Assistant Professor tenure-track position to begin Fall 2000. All areas will be considered. We especially encourage applicants with a background in networks and operating systems. A doctorate in Computer Science or in a closely related discipline is required.

Review of applications begins December 15, 1999 and will continue until the position is filled. Send letter of application, curriculum vitae, copy of graduate transcripts, and three letters of recommendation to: Dr. Thomas Meyer, Chair, Dept. of Computer Science, California State University, Bakersfield, 9001 Stockdale Highway, Bakersfield, CA 93311-1099

For more information telephone: 661-664-3082, fax: 661-665-6960, or E-mail: plampkins@csbak.edu.

CSU Bakersfield is an AA/EEO. Applications from women, ethnic minorities, veterans, and individuals with disabilities are welcome.

Clemson University

Department of Computer Science

Department Chair

Clemson University invites applications and nominations for the position of Chair of the Department of Computer Science. Applicants should hold a doctorate in Computer Science or closely related area, have a strong commitment to effective and innovative teaching and have a strong research record. A background in one of the Department's research focus areas (algorithms, graphics, and software engineering) is considered a plus. Applicants should be at a level of experience that would support an appointment as a tenured full professor. The position is available beginning July 2000.

The Department currently has twenty-one faculty positions, more than 500 undergraduate majors and more than 125 graduate students, and offers BA, BS (CSAB-accredited), MS and Ph.D. degrees. Descriptions of faculty research projects and additional information about the Department are available at: <http://www.cs.clemson.edu>.

Clemson University, located in the town of Clemson, SC, is the land-grant university of South Carolina and has an enrollment of more than 17,000. Clemson is a small college town located on Lake Hartwell in the foothills of the Blue Ridge Mountains.

Applicants should send a curriculum vitae and names of three references to: Professor Stephen T. Hedetniemi, Department of Computer Science, Chair Search Committee, Clemson University, Clemson, SC 29634-0974

Screening will begin January 1, 2000 and will continue until the position is filled. Qualified women and minority candidates are especially encouraged to apply. Clemson University is an Equal Opportunity/Affirmative Action Employer.

Clemson University

Department of Electrical and Computer Engineering

Applications are invited for faculty in the Computer Engineering area of the Department of Electrical and Computer Engineering. The Department has active research in wireless communications and signal processing, robotics and mechatronics, computational electromagnetics, solid-state device reliability, power systems, and computer engineering. The Computer Engineering area has strong research programs in parallel computer systems, wireless networking, robotics, and computer vision and image processing. There is particular interest in embedded systems, hardware/software co-design, and real-time systems with applications to robotics and control. Candidates should have high potential for establishing a sustained research program and quality teaching.

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

Send resume and names and addresses of five references to: Chair, Holcombe Department of Electrical and Computer Engineering, 105 Riggs Hall, Box 340915, Clemson University, Clemson, SC 29634-0915. Evaluation will begin October 1, 1999, and will continue until the positions are filled. Clemson University is an Equal Opportunity/Affirmative Action Employer.

Colgate University

Department of Computer Science

Colgate University invites applications for a tenure stream position at the rank of Assistant Professor starting in the Fall 2000. A Ph.D. degree or equivalent with strong interest in both teaching and research are expected. Applicants are sought in all areas of computer science with preference given to the areas of graphics, networking, and vision. Successful applicants will teach in their area of expertise, help staff other department courses, and be encouraged to participate in all-university programs.

Colgate University is a highly competitive liberal arts college situated in upstate New York. The university is committed to promoting excellence in both teaching and research.

Review of applications will begin November 15 and continue until the positions are filled. Resumes and three letters of recommendation should be sent to:

Chair, Faculty Search Committee

Department of Computer Science

Colgate University

13 Oak Drive

Hamilton, New York 13346

Colgate University is an Equal Opportunity/Affirmative Action employer. Women and minorities are encouraged to apply.

College of William and Mary

Department of Computer Science

Senior Faculty Position

Are you interested in a tenure-track faculty position that offers an exciting opportunity to influence and contribute to the continuing growth of the Department of Computer Science at one of the nation's oldest and most prestigious universities? We are seeking candidates at either the associate or full professor level with a documented history of outstanding research and teaching, coupled with the desire and ability to play an active leadership role in defining the characteristics of a growing and rapidly evolving department.

Applicants must hold a Ph.D. in Computer Science or in a closely related scientific field. The department currently consists of fourteen faculty members who support BS, MS and Ph.D. programs graduating approximately 40 BS students annually and enrolling approximately 40 MS and 35 Ph.D. students.

More information about the department and the College can be obtained by connecting to <http://www.cs.wm.edu>. The department maintains a contemporary computing environment for both teaching and research and is currently supported by a competitive NSF Major Research Instrumentation grant for several high performance computing research projects. Opportunities exist for joint research activity within the department, with members of the Computational Science Cluster, and with scientists and engineers at the nearby NASA Langley Research Center, ICASE, and the DoE's Thomas Jefferson National Accelerator Facility.

A resume and any supporting documents should be sent to: Faculty Search Committee, Department of Computer Science, College of William & Mary, P.O. Box 8795, Williamsburg, VA 23187-8795

Questions can be e-mailed to search@cs.wm.edu. Review will begin on February 1, 2000 and continue until the

position is filled. The College is an EEO/AA employer.

Colorado State University

Department of Computer Science

Tenure-Track Faculty Positions

The Department of Computer Science at Colorado State University solicits applications for two tenure-track faculty positions, beginning Fall 2000. One of the positions is contingent upon the availability of funds. The appointments will be preferably made at the level of Assistant Professor, but appointment at a more senior level is also possible for candidates who can demonstrate a strong connection to ongoing department research. Candidates for these positions should have research interests in software engineering, databases, networking, embedded systems, or human-computer interaction, but exceptional candidates in other areas will also be considered. Applicants must have a Ph.D. in Computer Science or Computer Engineering. Applicants will be expected to teach undergraduate and graduate courses, and they must demonstrate potential for excellence in research and teaching. Candidates for the second position should have the potential to establish teaching and research collaborations with other information science disciplines and an interest in working with industry to increase the supply of information science professionals.

The Computer Science Department has 600 undergraduate majors and eighty graduate students enrolled in Master's and doctoral programs. The department currently has sixteen tenure-track faculty. Computer facilities are excellent, and there are ample opportunities for research collaborations with local industry. Colorado State University, with an enrollment of 22,000 students, is located in Fort Collins, Colorado, an attractive community of over 100,000 people, at the base of the Front Range of the Rocky Mountains, sixty-five miles north of Denver. The northern Front Range offers a wide range of outdoor recreational activities. More information about the department and its research programs can be obtained from the department's homepage at <http://www.cs.colostate.edu>.

Applicants should send a curriculum vitae and letters from at least three professional references to:

Faculty Search Committee

Computer Science Department

Colorado State University

Fort Collins, CO 80523

Please include a statement indicating how your background and interests match the expectations of the position(s) described above. The department's telephone number is 970-491-5862, and e-mail inquiries should be directed to faculty-search@cs.colostate.edu. Screening of applications will begin December 1, 1999, and continue until the positions are filled.

Colorado State University is an EEO/AA employer. Office of Equal Opportunity: 101 Student Services.

Computists International

Computists' Weekly

Weekly digests of AI-related M.S./Ph.D. research and teaching jobs, grant opportunities, industry news, research software, free online resources, career tips, philosophy, humor, etc. Browse archives at <http://www.computists.com>.

DePaul University

School of Computer Science, Telecommunications, and Information Systems Faculty Positions

The School of Computer Science, Telecommunications, and Information Systems (CTI) of DePaul University invites applications for multiple tenure-track positions beginning September 2000. We welcome applications from outstanding applicants in all areas of specialization. CTI is a young and growing school in downtown Chicago, offering BS, MS and Ph.D. degrees in Computer

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Science, Information Systems, Software Engineering, Human-Computer Interaction, Telecommunications, E-Commerce Technology and Distributed Systems. CTI currently has over fifty-five full-time faculty and a student body currently growing at a rate of 30 percent per year.

By bridging faculty from several areas of computing and information technology and by placing them in the Loop—the heart of Chicago's business and financial district—DePaul has established a unique, dynamic, and entrepreneurial school. CTI rewards excellent teaching, provides strong support for research, and encourages creative applied scholarship.

Computer Science faculty are actively pursuing research in artificial intelligence, biomedical signal and image processing, computational complexity, computer vision, intelligent agents, distributed computing, databases, human computer interaction, foundations of programming languages, graphics, parallel and distributed algorithms, quantum computation, software engineering, and software reliability.

Information Systems faculty are actively pursuing research in electronic commerce, technology-supported learning, group support systems, collaborative systems design, and IT strategy.

Telecommunications faculty are actively pursuing research in performance analysis of data networks, techniques for providing differentiated quality of service to Internet applications, formal methods in protocol development, simulation tools for network education, and distributed multimedia systems.

More information about CTI can be found at <http://www.cs.depaul.edu>.

Candidates should have a Ph.D. in a relevant field by the date of appointment. To apply, complete the application form at <http://www.cs.depaul.edu/facultyapp.html> and send a curriculum vitae, a research statement, a teaching statement, and at least three letters of reference to:

Donna Max, Executive Assistant to the Dean
School of Computer Science, Telecommunications, and Information Systems
DePaul University
243 South Wabash Avenue
Chicago, IL 60604-2301
E-mail: faculty_search@cs.depaul.edu.
Electronic submissions are encouraged.

Applications will be accepted until positions are filled.

DePaul University is an Equal Opportunity Employer

Drexel University Department of Mathematics and Computer Science

The Department anticipates multiple tenure-track (Assistant Professor) faculty positions in Computer Science. Ph.D. in Computer Science or equivalent and demonstrated excellence in teaching and research required. The department also encourages exceptionally qualified applicants for Associate or Full Professor positions to apply.

Drexel's Computer Science program is one of the fastest growing CS Programs in the nation, with rapidly expanding graduate education and research programs in software engineering, AI, HCI and scientific computing. The Department currently has over 600 undergraduate and 150 graduate students; and is supported by major research grants from the NSF (including CAREER and KDI Awards), DARPA, NIST, AT&T, Unisys, and Sun Microsystems. Our Computer Science cooperative employment program is the largest in the country, with formal relationships in place with over 300 local, national, and multi-national companies.

Our major areas of interest are SOFTWARE ENGINEERING and NETWORKING/SYSTEMS, however, exceptional candidates in other areas (such as human-computer interaction, databases, programming languages, and problem solving environments for science and engineering) are also encouraged to apply. Send letter, curriculum vitae, and four letters of reference to:

CS Search Committee
Department of Mathematics and
Computer Science
Drexel University

Philadelphia, PA 19104
E-mail: cs_search@mcs.drexel.edu
WWW: http://www.mcs.drexel.edu/cs_pos/.

Applicant review and interviews begin immediately and will continue until the anticipated positions are filled. Drexel University is an Equal Opportunity/Affirmative Action Employer.

Duke University Department of Computer Science *Artificial Intelligence and Experimental Systems Faculty Searches*

We invite applications and nominations for two positions at Duke University: One junior position in Artificial Intelligence and one open position in experimental systems. These positions are in the Department of Computer Science at Duke University and start September 2000.

Our AI faculty is a small but active and distinguished group. Current research activity includes automated reasoning, deductive databases, dialogue systems, natural language understanding, planning, reinforcement learning, and robotics. We welcome research interests in all areas, in particular those associated with robotics or numerical/statistical approaches to AI.

With the experimental systems position, we continue to build upon an already strong, highly collaborative group. We are broadly interested in all areas of experimental systems including high-speed networking, Internet environments and services, mobile computing, databases and large-scale storage, computer architecture, parallel and distributed systems, compilers and programming languages, digital libraries and data mining, and operating systems.

These faculty hires will be in a position to help guide and influence the continued expansion of our vibrant and growing department. For more information about the faculty, facilities and other resources, please refer to www.cs.duke.edu.

Applicants should include their curriculum vitae, a list of publications, and copies of their most important publications. A Ph.D. in Computer Science or related area is required. Applicants should arrange for at least four letters of reference to be sent directly to the AI Faculty Search Chair or the Systems Faculty Search Chair. To guarantee full consideration, applications and letters of reference should be received no later than January 15, 2000.

Please send all information to the appropriate committee chair:

AI Faculty Search Chair or Systems
Faculty Search Chair
Department of Computer Science
Duke University
Durham, NC 27708-0129
aisearch@cs.duke.edu or
systemssearch@cs.duke.edu

Duke University is an Equal Opportunity/Affirmative Action employer.

Florida State University Department of Computer Science

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

Teaching and Research Positions

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

engineering and computer and network system administration. Selection will be based on evidence of outstanding research accomplishments and teaching ability.

The department is also recruiting non-tenure-track faculty in the following two areas:

Director of the Master's Track in Computer and Network Systems Administration

This person would serve as manager and mentor to the department's System Group and director of the department's CNSA master's track (see <http://www.cs.fsu.edu/academics/grad/cnsa>). The System Group is a collection of paid apprentice system administrators who are working toward degrees. This person will be expected to teach courses in the CNSA track. The minimum requirements for such a position include a master's degree in Computer Science or a closely related discipline, several years of professional experience in CNSA, and ability to qualify for graduate faculty status. However, preference will be given to a person who holds a Ph.D. and can qualify for master's directive or doctoral directive status.

Undergraduate Teaching Positions

A person in this type of position would be primarily responsible for teaching undergraduate computer sciences courses, and participating in the gradual conversion of such courses to formats that can be offered via Distributed or Distance Learning (see <http://connected2.fsu.edu/2+2>). Qualifications for such a position would include a master's or Ph.D. degree in Computer Science or closely related discipline, and evidence of excellence in teaching.

Please send a resume and arrange for at least three letters of reference to be sent to the following address:

Faculty Search Committee
Computer Science Department
PO Box 4530
Florida State University
Tallahassee, FL 32306-4530

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

FSU is an Internet 2 university, whose

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

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

George Washington University Department of Computer Science

The Department of Computer Science is embarking on a strategic plan to add a significant number of tenure-track faculty. We are seeking qualified applicants for at least two anticipated tenure-track faculty positions beginning Fall 2000. We are particularly interested in candidates in the areas of distributed computing, computer networks, software engineering, and computer security. The positions require a Doctoral degree in Computer Science or a closely related field, evidence of strong research potential, as well as a commitment to quality teaching at both undergraduate and graduate levels.

The Department of Computer Science, formerly a part of the Department of Electrical Engineering and Computer Science, was formed July 1, 1999. The department currently has fourteen fulltime faculty and over 170 undergraduate majors, 300 master's, and 125 doctoral students. Major areas of research include distributed

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systems, computer graphics, adaptive learning, and human computer interaction. For further information please refer to: <http://cs.seas.gwu.edu>.

The George Washington University is located in the heart of Washington, DC, about five blocks from the White House.

Candidates should send curriculum vitae, a research summary and at least three sealed reference letters to: Chair, Computer Science Search Committee, Department of Computer Science, The George Washington University, Washington, DC 20052, E-mail: cssearch@seas.gwu.edu, Web: cs.seas.gwu.edu.

The George Washington University is an Equal Opportunity/Affirmative Action employer.

Georgia Institute of Technology College of Computing TENURE TRACK FACULTY

Georgia Tech's College of Computing invites applications for tenure track faculty positions. We are primarily interested in entry level candidates but will consider exceptional individuals at all levels. With an academic faculty of fifty-one, a research faculty of eighteen and two postdoctoral fellows, the College has a current enrollment of 1,185 undergraduates, eight-five Master's students, and 147 Ph.D. students. The College has strengths in a broad range of areas and is ranked among the top computer science and information technology programs nationally. One of the College's missions is to interact significantly with other academic units, so candidates with an inter-disciplinary research focus and/or interest in potential joint appointments are welcome.

Preference will be given to applications received by January 14, 2000. Hardcopy applications, including a resume, names of at least three references, and any publications you'd like us to read, should be sent to: Dr. Janet Kolodner, Chair, Faculty Search Committee, College of Computing, Georgia Institute of Technology, Atlanta, GA 30332-0280, Phone: 404-894-9947, Fax: 404-894-9846.

In addition, please e-mail a URL pointing to your online resume and publications. E-mail: recruiting@cc.gatech.edu

Georgia Tech is an Affirmative Action/Equal Opportunity Employer; applications from women and under-represented minorities are strongly encouraged.

Georgia State University Department of Computer Science

The Department of Computer Science of Georgia State University invites applications for anticipated tenure-track positions for Assistant or Associate Professor starting Spring, 2000, semester in the fields of computer architecture, graphics, networks, software engineering, and systems programming.

Specialties of particular interest include: optical networks, high speed access devices, content processing, internet multimedia communications, modeling and simulation of optoelectronic devices and systems, modeling and simulation of mixed-signal ICs and boards, methodology for embedded software development, development of a middle layer for embedded software, development of an auto-coding environment for embedded software, and the design and fabrication of prototype products. The anticipated positions are part of a strategic initiative by the State of Georgia to make the state the global leader in the electronic design of high bandwidth communications.

Earned Ph.D. in Computer Science, or a closely related discipline, and a commitment to excellence in teaching and research in computer science are required with preference for extramural funding. Departmental computing facilities for research and instruction include a departmental network of PCs, UNIX workstations, and a 16-processor Origin 2000 supercomputer and five laboratories, one with ATM switches for network research and another for hypermedia and visualization research. The departmental computing facilities are supported by two full-time Systems Programmers.

Applicants should send a letter of application, curriculum vitae without birthdate, but with citizenship status, and

three letters of reference and transcripts of all graduate and undergraduate work to: Chair, Department of Computer Science, Georgia State University, University Plaza, Atlanta, Ga. 30303-3083; or e-mail to: mfraser@cs.gsu.edu.

Applications will be accepted until positions are filled.

Georgia State University is an EEO/AA institution.

Gettysburg College Department of Computer Science

Gettysburg College invites applications for a tenure-track Assistant Professor position in computer science beginning August 2000. A Ph.D. in Computer Science or a closely related field, promise of excellence in teaching, and a commitment to continued scholarship are essential. Applicants are expected to have a strong interest in undergraduate teaching and a desire to involve undergraduate students in their research programs.

Gettysburg College is a highly selective liberal-arts college located within ninety minutes of the Baltimore-Washington area. Established in 1832, the College has a rich history and is situated on a 220-acre campus with an enrollment of 2,200 students. The College has received national recognition for its innovative use of advanced technology.

The computer science major was established in 1987, and as the result of rapid growth a new Department of Computer Science has been organized. The Department currently has three full-time faculty members and will expand to four when this position is filled. Thus, the successful applicant will have a unique opportunity to influence the direction of a growing department.

All department members are active in undergraduate research, which frequently results in student presentations at regional and national conferences. The College is prepared to assist in establishing a research program that actively involves undergraduate students. This assistance includes a paid pre-tenure leave program.

Send letter of application, curriculum vitae, statement of teaching interests and scholarship goals in a liberal-arts environment, and three letters of recommendation to: Professor Rodney S. Tosten, Chair, Department of Computer Science, Gettysburg College, Gettysburg, PA 17325.

At least one letter must address teaching effectiveness.

Review of applications will begin immediately and will continue until the position is filled.

The College seeks to promote diversity in its community through its Equal Opportunity/Affirmative Action programs; included in an attractive benefits package is a Partner Assistance Program.

Indiana University Computer Science Department Faculty Positions

The Indiana University Computer Science Department anticipates filling several tenure-track faculty positions as well as one non-tenure-track position beginning 2000-01.

The department interacts with a new, multi-disciplinary School of Informatics involving Cognitive Science, Computer Science, Library and Information Science, Information Systems, and Scientific and Biomedical Informatics.

Areas of interest include, but are not limited to, graphics, programming languages, and systems. In addition, senior level positions are open in the areas of distributed systems, networking, pervasive computing, security, and distributed information systems. A Ph.D. in Computer Science is required. Applicants must have demonstrated potential for excellence and productivity in research. In addition, a strong contribution to the educational mission of the department and the School of Informatics is expected.

The non-tenure-track position is for a part-time Lecturer/Director of Educational Development. We are looking for a vigorous computer scientist with interest in teaching, developing, and administering undergraduate courses. Research interests in computer science pedagogy is an advantage. The specific title will be dependent on background and qualifications.

The department occupies a spacious limestone building with extensive state-of-the-art computing facilities. The attractive wooded campus of Indiana University is located in Bloomington, chosen as one of the most cultural and livable small cities in the United States, and only one hour from the Indianapolis airport. To learn more about the department please visit our website at www.cs.indiana.edu.

Please send a detailed curriculum vitae and a list of references to: Faculty Search, Computer Science Department, Indiana University, Lindley Hall 215, Bloomington, IN 47405-7104, E-mail: search@cs.indiana.edu.

Indiana University is an Equal Opportunity/Affirmative Action Employer. The Computer Science Department strongly encourages applications from women and minorities and welcomes inquiries from two-career couples.

Iowa State University Center for Bioinformatics and Biological Statistics

Applications are invited for Assistant, Associate, or Full Professor in BIOINFORMATICS in the Center for Bioinformatics and Biological Statistics. Appointee will affiliate with an appropriate academic department.

Applications are encouraged from individuals conducting research emphasizing algorithmic and statistical approaches to problems in bioinformatics, genomics, functional and post-genomic analyses, metabolic pathways, and protein structure/function prediction. See www.plantsciences.iastate.edu. A Ph.D. in a computational or biological area, extensive experience in bioinformatics, and strong teaching potential are required.

Send cover letter, curriculum vitae, selected reprints, and have three letters of reference sent by December 15, 1999 to: Dr. James L. Cornette, Iowa State University, 107 Beardshear Hall, Ames, IA 50011-2021. Iowa State is an AA/EO employer.

Iowa State University Department of Computer Science <http://www.cs.iastate.edu>

We seek outstanding applicants for several tenure-track faculty positions at all levels. Preference will be given to candidates in parallel and distributed computing, networks, bioinformatics, database and knowledgebase systems, software engineering, intelligent software agents, machine learning, and programming languages. The position requires a Ph.D. in Computer Science or a related field, and strong evidence of research and teaching potential.

The department currently has thirteen full-time tenure-track faculty and offers BS, MS, and Ph.D. degrees in Computer Science. It also participates in interdepartmental graduate programs in Bioinformatics and Computational Biology and Neuroscience. It has strong research and education programs in algorithms, artificial intelligence, bioinformatics and computational biology, complexity theory and complex systems, databases, networks, parallel and distributed computing, programming languages, robotics, software engineering, and theory of computing. A strong graduate program, a well-funded research program, opportunities provided by the Iowa Computational Biology Laboratory, DoE Ames Laboratory, Virtual Reality Applications Center, and moderate teaching load (three courses per year) provide an excellent work environment that nurtures leading edge research and innovative education.

Iowa State University is a major land-grant university located in Ames, Iowa. Ames is a pleasant small yet cosmopolitan city with a population of 50,000 (25,000 students), a vibrant cultural scene, and a secondary school system that ranks as one of the best in the United States. It is within convenient driving distance from the cultural and entertainment opportunities offered by Kansas City, Minneapolis, and Chicago.

Applicants should send a curriculum vitae, including names of three references, to: Chair of Search Committee, Department of Computer Science, Iowa State University, Ames, IA 50011, Fax: 515-294-0258, Tel. 515-294-4377, E-mail: faculty-search@cs.iastate.edu.

The deadline for applications is February 15, 2000 or until the position is filled. ISU is an Equal Opportunity/Affirmative Action employer. Women and minorities are particularly encouraged to apply.

Knox College Department of Computer Science

The Department of Computer Science invites applications for a tenure-track position at the assistant professor level to begin September 1, 2000. Candidates must have a Ph.D. in Computer Science or a closely related field (ABD will be considered), and must demonstrate the potential for excellence in teaching and research in a liberal arts institution. All areas of specialization will be considered.

Knox is a highly selective independent liberal arts college with students from forty-two states and thirty-four countries. The college is consistently ranked as one of the "Best Values" among national liberal arts colleges in the U.S. News & World Report survey of quality and price in higher education. Small classes, a strong advising system, and an emphasis on independent research foster close student/faculty interaction. Please visit <http://www.knox.edu> for more information about the College, the department, and our facilities.

To apply, please send a curriculum vitae, a letter of interest which includes a discussion of teaching philosophy and research goals, and three letters of reference, at least one of which addresses teaching experience, to: Sahnny Johnson, Chair, Department of Computer Science, Knox College #67, Galesburg, IL 61401-4999, E-mail: sjohnson@knox.edu.

Review of applications will begin as soon as they are complete and will continue until the position is filled.

Knox College is an Equal Opportunity/Affirmative Action employer. In keeping with its 162-year commitment to equal rights, the College particularly welcomes applications from individuals in underrepresented groups.

Louisiana State University Department of Computer Science Anticipated Assistant Professor

The Department of Computer Science at Louisiana State University invites applications for a tenure-track faculty position at the Assistant Professor level starting either in Spring or Fall 2000. Applicants should have an earned Ph.D. in Computer Science or a closely related field. Candidates should have a commitment to excellence in both research and teaching. Candidates in all areas are encouraged to apply; however, the areas of particular interest are networking, architecture, theory, programming languages, and operating systems. Salary level will be competitive and commensurate with the qualifications of the candidate.

Research interests of the faculty in the department include artificial intelligence, software engineering, robotics, computer version and image processing, databases, information retrieval, parallel and distributed algorithms, and high performance computing. The department offers the BS, MS, and Ph.D. degrees with approximately 250, 60, and 45 students, respectively. In recent years, we have established strong research groups in HPCC-headed by the Concurrent Computing Laboratory for Materials Simulations (CCLMS) and intelligence systems Robotics Research Laboratory (RRL), and software Engineering Laboratory. They receive federal grants of about \$1 million/year from AFOSR, ARO, DOE, NASA, DARPA, NSF, and other agencies. Awards and honors received by the members of these groups include: DoD Challenge Applications Awards (through which they have been allocated 1.8 million node-hours of computing in 1999—the largest allocation given to a single group); Sustained Excellence Award; and IEEE Fellow. The department has recently installed new computing facilities, which include DEC Alpha and Sun Ultra workstations and servers. More details on the departmental research facilities are described at www.csc.lsu.edu.

A complete application shall include a curriculum vitae, list of publications, names and addresses of at least three references, and a statement of research

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and teaching objectives. The department will begin reviewing applications December 1, 1999 and will continue until the position is filled. Applications and inquiries should be sent to:

Professor S.S. Iyengar Chairman
Department of Computer Science
Ref. Log# 0349
Louisiana State University
Baton Rouge, LA 70803-4020
Tel. 225-388-3901
E-mail: iyengar@bit.csc.lsu.edu
LSU is an equal opportunity/equal access employer.

Massachusetts Institute of Technology Department of Electrical Engineering and Computer Science

Faculty Positions

The Department of Electrical Engineering and Computer Science seeks candidates for faculty positions starting in September 2000. We anticipate openings for several faculty appointments for individuals who are completing, or who have recently completed, a doctorate. In special cases, a senior faculty appointment may be possible. Faculty duties include teaching at both the graduate and undergraduate levels, research, and supervision of theses.

We are looking for candidates with backgrounds and interests in all areas of electrical engineering, computer science, and artificial intelligence. We are particularly interested in interfaces among computation, communication, electronics, biology, and medicine.

All candidates should write to the address below, describing their professional interests and their goals in both teaching and research. Each application should include a curriculum vitae and the names and addresses of three or more individuals who will provide letters of recommendation. Please arrange to have such letters sent directly to the address below. All candidates should indicate citizenship and, in the case of non-U.S. citizens, describe their visa status. Please respond by January 15, 2000.

Send all applications to: Prof. F. C. Hennie, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Room 38-435, Cambridge, MA 02139. M.I.T. is an Equal Opportunity/Affirmative Action employer.

McGill University

School of Computer Science

The School of Computer Science at McGill University wishes to invite applications for four tenure-track positions at the assistant professor level, to begin June 1, 2000. Applications for more senior positions are also welcome. Areas of priority include, but are not limited to, software engineering, software verification, networks, architecture, real-time systems, machine learning, model-checking, reasoning with uncertainty, speech understanding, and computational biology.

Hardcopy applications, including a curriculum vitae, a list of publications with copies of one or two sample reprints, a research proposal, and the names and e-mail addresses of three references should be sent to: Head, Search Committee, School of Computer Science, McGill University, McConnell Engineering Building, #318, 3480 University Street, Montreal, QC H3A 2A7.

The review process will start November 15, 1999 and the search will continue until the positions are filled. Information about our department can be found at www.cs.mcgill.ca.

McGill University is committed to equity in employment and, in accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada.

New York University

Computer Science Department

The department anticipates multiple faculty positions beginning in September 2000 and invites candidates at all levels. We are particularly interested in areas pertaining to the increasing connectivity and pervasiveness of computing devices, including: interfaces (graphics, language, vision), educational systems, security, e-commerce, data mining, mobile and

autonomous computing, web-related systems, distributed systems, real-time systems and verification. We will also consider outstanding candidates in other areas.

Faculty members are expected to develop an independent first-rate research program and to participate in teaching at all levels from the undergraduate to the doctoral. The new appointees will be offered highly competitive salaries, startup packages, and low-cost university housing within short walking distance of the department. New York University is located in Greenwich Village, one of the most attractive residential areas of Manhattan.

The department may also have one or more visiting positions, with appointments for either one or two semesters.

The department has twenty-six regular faculty members and several adjunct, clinical, research, and visiting faculty members. Current strengths of the department lie in algorithms, artificial intelligence, computer graphics, computer vision and image processing, databases, distributed and parallel computing, multimedia, natural language processing, programming languages, and scientific computing. There are specialized laboratories and research facilities for computer graphics and multimedia, computer vision, and parallel and distributed computing. Collaborative research with industry is facilitated by the geographic proximity to the main research centers of AT&T, BellCore, IBM, Lucent, Matsushita, NEC, and Siemens.

Applications should include a resume, a statement of career objectives, key publications, and names of references, at least three for junior positions and at least five for senior positions. Applicants are encouraged to provide a URL for a description of their activities. To guarantee full consideration, applications should be received no later than Jan. 7, 2000; however, this is not a hard deadline as all candidates will be considered to the extent feasible, until all positions are filled.

Please send applications to: c/o Karen Christie, Faculty Search, Department of Computer Science, New York University, 251 Mercer Street, New York, NY 10012-1185.

New York University is an Equal Opportunity/Affirmative Action employer.

North Carolina State University

Department of Computer Science

Computer Networking

The Department of Computer Science at North Carolina State University seeks an Assistant Professor in the area of network management or mobile computing or wireless networking. Candidates are expected to have both strong theoretical and applied interests in the area of networking research and education. The successful candidate will have a Ph.D. in Computer Science or a related field and an extensive research record. This new position has been created to further strengthen our activities in advanced networking research, as well as the interactions of the Department with the high technology industry. A number of faculty have an interest in networking technologies and applications. Their work is supported among others by AFOSR, Cisco, DARPA, Ericsson, Fujitsu, IBM, MCNC, Nortel, NSA, NSF, and the State of North Carolina. The successful candidate is also expected to play an important educational role within the new Master of Science in Computer Networking, offered jointly by the Departments of Computer Science and Electrical Engineering, and the College of Management. This unique educational program addresses the needs of North Carolina's rapidly growing computer networking industry. The Department is in a period of rapid growth and advancement, and is positioning itself to be at the forefront of selected areas in computer science. In addition to funding from the above organizations, we attract support from many other organizations. The candidate will have access to our state-of-the-art high-performance ATM-based network, and the North Carolina Giga-POP and Internet-2 facilities.

The University is located in Raleigh, which forms one vertex of the world-renowned Research Triangle Park. The Research Triangle area was recently recognized as one of the "best places to live" in the U.S. and boasts a high concentration of high technology companies. The core of our networking activities takes place at NCSU's Centennial Campus, an advanced technology community for university, corporate, and government R&D facilities and business incubators, which is quickly emerging as the Research Triangle area's fastest growing development.

Interested candidates should send their curriculum vitae (including citizenship and visa status) and the names of four references to: Chair, Network Recruitment Committee, Department of Computer Science, North Carolina State University, Campus Box 8206, Raleigh, NC 27695-8206.

Prospective candidates are encouraged to access the Department's homepage (<http://www.csc.ncsu.edu>) and to send mail to net_search@csc.ncsu.edu. The University is an Equal Opportunity/Affirmative Action employer. Individuals with disabilities desiring accommodations in the application process should contact the Computer Science Department at NCSU at 919-515-2858.

North Carolina State University

Department of Computer Science

Operating Systems

The North Carolina State University Department of Computer Science seeks a tenure-track Assistant Professor in the area of operating systems to begin August 16, 2000. We are seeking candidates who have worked on operating systems support for distributed computing, real-time embedded computing, parallel computing, networked multimedia computing, or mobile wireless computing. Candidates are expected to have both strong experimental and theoretical interests in the areas of operating systems research and education. The successful candidate will have a Ph.D. in Computer Science or a related field, and demonstrated potential to establish a strong research and teaching program in NCSU. This new position has been created to complement our established research strength in computer networking and distributed systems. A number of faculty have an interest in multimedia networking, optical networks, network security, real-time communication, quality-of-service, concurrent system testing, distributed database systems, and object-oriented programming. Their work is supported by NSF, DARPA, AFOSR, Cisco, Ericsson, Fujitsu, IBM, MCNC, Nortel, NSA, and the State of North Carolina. The Department is in a period of rapid growth and advancement, and is positioning itself to be at the forefront of selected areas in computer science. The candidate will have access to our state-of-art high-performance ATM-based network, and the North Carolina Giga-POP and Internet-2 facilities.

The University is located in Raleigh, which forms one vertex of the world-renowned Research Triangle Park. The Research Triangle area was recently recognized as one of the best places to live in the U.S. It also boasts a high concentration of high technology companies. Interested candidates should send their curriculum vitae and the names of four references to: Operating Systems Recruitment Committee, Department of Computer Science, North Carolina State University, Campus Box 8206, Raleigh, NC 27695-8206.

Prospective candidates should access the department's home page (<http://www.csc.ncsu.edu>), and write to os_search@csc.ncsu.edu if necessary. NC State is an Equal Opportunity/Affirmative Action employer. Individuals with disabilities desiring accommodations in the application process should contact the Computer Science Department at NCSU at 919-515-2858.

Northeastern University

College Of Computer Science

Boston, Massachusetts

The College of Computer Science of Northeastern University invites applications for one or more tenure-track faculty

positions at the assistant or associate professor level beginning in Spring or Fall 2000. Candidates will be considered from all major disciplines of computer science. A Ph.D. in Computer Science or related field is required.

The College maintains a strong research program with significant funding from the major federal research agencies and private industry. It has particular strengths in programming languages and software engineering, distributed computing, databases, artificial intelligence, and cryptography. The College's NSF-sponsored 32-node Beowulf-class network for research in distributed systems will begin operation this year in a special laboratory housed in the new Egan Engineering Science Research Center.

The College has a diverse full-time faculty of twenty-one. There are 500 undergraduates, 125 Masters students and thirty Ph.D. students. The College this year inaugurates an innovative BS program in Information Science, combining traditional computer science with relevant material from the social sciences in an integrated program that focuses on the interaction between information, computers, and people.

Located on the Avenue of the Arts in Boston's historic Back Bay, the College takes advantage of its location to foster collaborations with other institutions in the greater Boston area.

Please send a resume, statement of research interests, and three letters of recommendation to:

Faculty Hiring Committee
College of Computer Science
161 Cullinane Hall
Northeastern University
Boston, Massachusetts 02115

Screening of applications began on October, 15 1999. For further information, send e-mail to hiring@ccs.neu.edu or see the College's homepage at <http://www.ccs.neu.edu/hiring>. Applications will be accepted until the position is filled.

Electronic submission of documents is encouraged; see the webpage for details.

Northeastern University is an Equal Opportunity/Affirmative Action Employer. We strongly encourage applications from women and minorities.

Northern Illinois University

Department of Computer Science

Cognitive Scientist Position

The Department of Computer Science at Northern Illinois University seeks candidates for an Assistant Professor position whose research interests are in the areas of computational linguistic processing, neural networks, or knowledge representation. Required: Ph.D. in Computer Science, Cognitive Science, or a closely related discipline and a strong interest in both teaching and research.

This position, which begins in Fall 2000, is part of a new multidisciplinary initiative in Cognitive Studies within the College of Liberal Arts and Sciences that is intended to facilitate and strengthen multidisciplinary collaboration in research and teaching/learning among faculty members and students. This new multidisciplinary initiative will include newly hired faculty within Anthropology, Computer Science, Linguistics (English), and Psychology with expertise in the overlapping interests of these four departments in exploring the interdisciplinary implications of cognitive science. Information about the department and Northern Illinois University can be obtained by consulting the department's homepage, www.cs.niu.edu.

A letter of application, curriculum vitae, at least three letters of recommendation, reprints/preprints, and an official transcript of graduate coursework should be sent to:

The Cognitive Studies Search
Committee
Office of the Dean
College of Liberal Arts and Sciences
Northern Illinois University
DeKalb, IL 60115

Preference will be given to applications received by December 1, 1999, but applications will be accepted until the position is filled.

Northern Illinois University is an AA/EEO Institution.

Professional Opportunities

Northern Illinois University

Department of Computer Science

The Department of Computer Science invites applications for an anticipated tenure track position at the assistant professor level. Applicants are sought in all areas, but software engineering, networking, or database experience is desirable. Candidates must have a Ph.D. in Computer Science or a closely related discipline and have a strong interest in both teaching and research. Remuneration is commensurate with qualifications and experience.

Pending funding, a second position for candidates meeting the above criteria may also be available.

Interested candidates should submit curriculum vitae to: Rodney Angotti, Chai, Department of Computer Science, Northern Illinois University, DeKalb, Illinois 60115, E-mail angotti@cs.niu.edu.

Preferences will be given to applications received by December 1, 1999 but applications will be accepted until the position is filled.

Information about the department and Northern Illinois University can be obtained by consulting the Department's homepage, www.cs.niu.edu.

Northern Illinois University is an Equal Opportunity/Affirmative Action Employer.

Ohio State University

Department of Computer and Information Science

Applications are invited for tenure-track faculty positions in the Department of Computer and Information Science (CIS) at The Ohio State University. Areas of primary interest include AI, graphics, human-computer interaction, networking, parallel and distributed computing, and software engineering. Appointments at all ranks will be considered.

One of the openings is designated for Human-Computer Interaction (HCI), in which expertise in one or more of the following areas is particularly desirable: human-computer interaction, human-centered intelligent systems, computer-supported cooperative work, distributed cognitive systems, visualization, information display, and user interfaces. The successful candidate for the HCI position will hold a full-time faculty appointment in the CIS Department, and will be expected to interact significantly with the University's Institute for Ergonomics, which is an interdisciplinary center focusing on cognitive and physical ergonomics.

Applicants should send a curriculum vitae, along with a cover letter, by e-mail to fsearch@cis.ohio-state.edu, or by hardcopy to: Chair, Faculty Search Committee, Department of Computer and Information Science, The Ohio State University, 2015 Neil Avenue, DL395, Columbus, OH 43210-1277.

Review of applications will begin immediately and will continue until the positions are filled. For additional information please see <http://www.cis.ohio-state.edu>.

The Ohio State University is an Equal Opportunity/Affirmative Action Employer. Qualified women, minorities, and individuals with disabilities are encouraged to apply.

Ohio State University

Department of Computer and Information Science

Ohio Board of Regents Professor

The Department of Computer and Information Science at The Ohio State University invites applications for a newly created Ohio Board of Regents Professorship, which will be a tenured position at the level of Full Professor.

Applicants should have distinguished credentials, with research focuses in one or more of the following areas: AI, database systems, graphics, parallel and distributed computing, networking, and software engineering.

Interested persons please send resume by e-mail to fsearch@cis.ohio-state.edu, or by hardcopy to: Chair, OBR-Professor Search Committee, Department of Computer and Information Science, The Ohio State University, Columbus, OH 43210-1277

Review of applications will begin immediately and continue until the

position is filled. For additional information please see <http://www.cis.ohio-state.edu>.

The Ohio State University is an Equal Opportunity/Affirmative Action Employer.

Oklahoma State University

Computer Science Department

Department Head Search

The Oklahoma State University (OSU) Computer Science Department is seeking applications from qualified candidates for the position of Professor and Department Head. The term of initial appointment will begin July 1, 2000.

The OSU Computer Science Department is a growing department that is committed strongly to the goal of excellence in research, teaching, and extension. It offers a full range of undergraduate and graduate courses leading to BS, MS, Ph.D., and Ed.D. degrees in Computer Science. The department recently expanded its BS and MS programs to the new OSU campus in Tulsa, OK and also offers courses to students at remote sites using interactive video and the World Wide Web. There are currently more than 200 undergraduate students and more than 150 graduate students enrolled in the department. The department has a goal of CSAB/CSAC accreditation within the next few years.

Applicants must qualify for the rank of Professor in the Computer Science Department and have a commitment to research, teaching, and extension excellence. A record that clearly demonstrates strong leadership, innovation, and consistent success in securing external research funding is a requisite for this tenured position.

Stillwater is a small, attractive university city of about 38,000, located on the prairie in north-central Oklahoma. Stillwater is sixty-five miles west of Tulsa and sixty-five miles north of Oklahoma City. There are numerous cultural activities within a two-hour drive of Stillwater. The Oklahoma State University campus is one of considerable beauty with modified Georgian architecture.

Oklahoma State University encourages applications from qualified women, minorities, and persons with disabilities. Please send curriculum vitae and names of three references to: Chair, Computer Science Head Search Committee, Computer Science Department, Oklahoma State University, Stillwater, OK 74078-1053, Telephone: 405-744-5668, Fax: 405-744-9097, E-mail: head-search@cs.okstate.edu, WWW: <http://www.cs.okstate.edu/search>.

Review of applications will begin January 15, 2000, but applications will be accepted until the position has been filled. Oklahoma State University is an Equal Opportunity/Affirmative Action Employer.

Oregon Graduate Institute of Science and Technology

Department of Computer Science and Engineering

The Department of Computer Science and Engineering has immediate openings for qualified faculty candidates. Currently identified goals include starting new programs in networking, computational science, and computer architecture, and expanding our existing efforts in systems, computational finance, data management, software engineering, and applied formal methods. In addition we are interested in candidates in our other established research areas, which include database systems, distributed computing, functional programming, neural networks, human computer interaction, and spoken language systems. We encourage applicants at all ranks, but will give preference to applicants with prior faculty or postdoctoral research and teaching experience. Exceptional candidates who are anticipating completion of a Ph.D. may also be considered.

OGI is a private graduate school. It conducts internationally acclaimed research and provides outstanding graduate and professional education in science and technology. OGI is located near Portland, Oregon, in the beautiful Pacific Northwest. Portland offers extensive cultural amenities (gourmet coffee, brew pub ale, and fine local Pinot Noir are popular local favorites) as well as spectacular natural wilderness. It is

possible to spend summer mornings skiing on Mt. Hood, followed by some of the best windsurfing in the world in the Columbia River Gorge in the afternoon. In short, the quality of life in Portland is extraordinary. OGI offers career faculty appointments but does not subscribe to academic tenure.

More information about our department can be found at <http://www.cse.ogi.edu>. To find out why the Portland area is a great place to live go to <http://www.portland.citysearch.com>.

To apply, send a brief description of research interests, the names of at least three references, and a curriculum vitae with a list of publications to: Chair, Recruiting Committee, Department of Computer Science and Engineering, Oregon Graduate Institute, 20000 NW Walker Road, Beaverton, Oregon 97006, E-mail: csedept@cse.ogi.edu.

OGI is an Equal Opportunity/Affirmative Action employer. We particularly welcome applications from women, minorities, and individuals with disabilities. Appointment is subject to the availability of funding.

Pennsylvania State University

Department of Computer Science and Engineering

Applications are invited for several tenure-track faculty positions at all ranks. Outstanding candidates in all areas of computer science and engineering will be considered. However, we are particularly interested in candidates who build and evaluate software and hardware systems and who have expertise in areas such as compilers, networks, multimedia, operating systems, databases, and computer graphics. We can consider multiple and coordinated hires in these targeted areas. In addition, we are also looking for a position in computational molecular biology.

Applicants should hold a Ph.D. in Computer Science, Computer Engineering, or a closely related field and should be committed to excellence in research and teaching.

The Department of Computer Science and Engineering has twenty-three tenure-track faculty and is committed to grow with several open tenure-track positions in the next several years. The Department is scheduled to move into a new building in Fall 2002.

Applications should be received by January 29, 2000 to receive full consideration. To apply by electronic mail, send your resume (including curriculum vitae and the names and addresses of at least three people willing to write a letter of recommendation) as a postscript file to recruiting@cse.psu.edu or by post to: Chair, Faculty Search Committee, The Pennsylvania State University, Department of Computer Science and Engineering, 220 Pond Laboratory, Box CRA, University Park, PA 16802-6106 USA. For more information about the Department of CSE at PSU, see <http://www.cse.psu.edu/>. PSU is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.

Pomona College

Computer Science Program

Tenure-track Assistant Professorship, beginning July 2000. Candidates at more senior levels will be considered. Requirements include a Ph.D. in Computer Science, one or more years of full-time college or university teaching, broad background in computer science, excellence in teaching a wide range of courses. Should be able to teach ethnically diverse student body, have strong independent research agenda, and be excited about directing student research.

Application includes: curriculum vitae; graduate transcripts; three or more letters of recommendation, at least one of which evaluates teaching; and a description, for the non-specialist, of research accomplishments and plans. Send to: Search Committee, Computer Science Program, Pomona College, 610 North College Avenue, Claremont, CA 91711-6348

Applications completed by December 15, 1999, will receive full consideration. Pomona College is an AAEO employer and especially invites applications from

women and minorities.

Further information is available from <http://www.cs.pomona.edu/faculty-search> or cs_search@pomona.edu

Purdue University

Department of Computer Sciences

The Department of Computer Sciences at Purdue University invites applications for tenure-track positions beginning August 2000. Positions available are at the assistant professor level. Appointments at the associate and full professor levels, however, will be considered for highly qualified applicants. Areas of interest are: software engineering, computer graphics and scientific visualization, systems, and scientific computing. Excellent candidates in other areas of Computer Science and its applications will be seriously considered. Senior candidates must possess a distinguished record of accomplishments in research, teaching, and service.

Applicants should hold a Ph.D. in Computer Science, or a closely related discipline, and should be committed to excellence in teaching and research. Salary is competitive and depends on background and experience.

Successful applicants will find at Purdue a stimulating and nurturing academic environment. Computer Sciences at Purdue is a growing department with a variety of interesting research activities in analysis of algorithms, databases, distributed and parallel computing, geometric modeling and scientific visualization, information security, networking and operating systems, compilers, programming languages, scientific computing, and software engineering. Each faculty member has access to the departmental and University computing facilities, which include a variety of high performance computing platforms. Further information about the department is available at <http://www.cs.purdue.edu>.

Candidates should send curriculum vitae, statement of career objectives, and have at least three references send letters of recommendation to:

Chair, Faculty Search Committee
Department of Computer Sciences
Purdue University
West Lafayette, IN 47907

Inquiries may be sent to personnel@cs.purdue.edu. The interviewing process will continue until positions are filled.

Purdue University is an Equal Opportunity/Affirmative Action employer.

Purdue University

School of Electrical and Computer Engineering

Purdue University, School of Electrical and Computer Engineering, seeks outstanding candidates in computer engineering for research and teaching in the following areas: artificial intelligence, compilers, computer architecture, computer networks, distributed computing, multimedia systems, operating systems, software engineering, VLSI and CAD. Strong candidates in all areas of computer engineering are encouraged to apply. Openings are for tenure-track faculty at all levels.

Send a resumé, including a statement of research and teaching interests and a list of at least three references, to:

Head, School of Electrical and Computer Engineering
Purdue University
1285 EE Building
West Lafayette, IN 47907-1285

Applications will be considered as they are received. Purdue University is an Equal Opportunity/Affirmative Action employer.

Rensselaer Polytechnic Institute

Department of Mathematical Sciences

Tenured and Tenure-Track Positions

Applications are invited for one or more tenured and tenure-track positions in applied mathematics, to begin in August 2000. Applicants are expected to possess an outstanding record in research and a strong interest and ability in teaching. Of particular interest are

Professional Opportunities

MCMASTER UNIVERSITY FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTING AND SOFTWARE

FACULTY POSITIONS IN COMPUTING and SOFTWARE

McMaster University, recognized as one of the most innovative universities in Canada, has a new department, Computing and Software, in the Faculty of Engineering. It offers a new program in Software Engineering and an established program in Computer Science. The department currently has 21 faculty and is rapidly expanding. Our web page is www.cas.mcmaster.ca.

We are seeking new colleagues at all levels. We seek outstanding candidates from all areas of Software Engineering and Computer Science, but we are especially interested in applicants working in: performance prediction, biomedical computing, computers in communication systems, computer security, distributed data networks, high performance computing, real-time control systems, man-machine interfaces, and software design methods.

We treat Software Engineering as a branch of engineering distinct from Computer Engineering and Computer Science. We have designed an innovative new program to meet the engineering accreditation criteria of the Canadian Engineering Accreditation Board. Ability to be registered as a Professional Engineer in the Province of Ontario, or become registered within three years of appointment, will be considered an advantage.

Applicants should have a Ph.D. in engineering, computer science, mathematics or a related field. We consider creative experience in industry to be as relevant as academic experience. All our faculty members are expected to teach graduate, undergraduate, and service courses as well as supervise graduate student research. They must have a strong and demonstrated commitment to research in a university environment and will have normal faculty administrative and committee responsibilities.

McMaster University has an employment equity program that encourages applications from all qualified candidates, including women, aboriginal people, persons with disabilities and visible minorities. In accordance with Canadian Immigration requirements, priority will be given to Canadian citizens or permanent residents of Canada.

Salary is commensurate with experience and qualifications. Applications, including a curriculum vita, a statement detailing research and teaching interests and the names of five referees should be sent to: Chair, Department of Computing and Software, Faculty of Engineering, McMaster University, 1280 Main St. West, Hamilton, Ontario, Canada L8S 4L7.

Applications will be accepted until the positions are filled.

candidates with a commitment to interdisciplinary research and who are knowledgeable in scientific computation. When applying applicants should indicate whether they are applying for an assistant, associate professor, or full professor position.

Applicants should submit a letter of application, a curriculum vitae, a description of research interests, and arrange to have three letters of recommendation sent directly to:

Search Committee Chair
Department of Mathematical Sciences
Rensselaer Polytechnic Institute
Troy, NY 12180

Evaluation of applications will begin January 15, 2000, and will continue until a candidate is selected.

Rensselaer is an Equal Opportunity/Affirmative Action employer and strongly encourages applications from women and underrepresented minorities.

Rice University

Department of Computer Science

The Department of Computer Science, the Department of Electrical and Computer Engineering, the Center for High Performance Software, and the Center for Multimedia Communication at Rice University expect to have at least four positions in the areas of computer science and engineering available beginning in the academic year 2000-2001 and invite applications for faculty and research staff positions. We are interested in receiving applications for appointments to the tenure-track faculty at the rank of Assistant Professor (however, appointment as Associate or Full Professor will be considered for exceptionally well-qualified candidates), to the research faculty which may be at the rank of faculty fellow, senior faculty fellow, and distinguished faculty fellow (these are research positions), and to the research staff as a research scientist or as a postdoctoral research associate. We are especially interested in candidates with research experience in algorithms and complexity, artificial intelligence, compilers, computer graphics, computer systems, database management systems, digital libraries, distributed and mobile computing, embedded systems, high-performance hardware, information retrieval, networks, programming languages, software engineering, and parallel computing. We will consider strong candidates in other areas as well.

Applicants should hold a Ph.D. degree or the equivalent in Computer Science or a related discipline or expect to complete such requirements prior to assuming an appointment. Strong evidence of a commitment to excellence both in research and teaching is required for a tenured or tenure-track appointment. Preference will be given to early applications.

The Departments of Computer Science and of Electrical and Computer Engineering share superb research facilities. NSF Educational Innovation, Research Infrastructure and Science and Technology Center grants, along with major grants and contracts from both industrial organizations and government agencies, have enabled the departments to build parallel and multiprocessor systems laboratories, a large network of engineering workstations, an extensive local area network, a high-speed network test-bed, and access to scientific communities via NSF, NASA, and Department of Energy electronic networks. The Center for High Performance Software supports several major research projects and provides access to massively parallel computer systems located at several cooperating institutions. The Center for Multimedia Communication develops embedded systems, distributed systems, and network architectures for tetherless and multimedia communication applications through collaborative research efforts. Both departments and associated centers are located in the new Computational Engineering Building, along with the Departments of Computational and Applied Mathematics and Statistics.

Rice is a well-endowed private university with a strong reputation for academic excellence, particularly in undergraduate teaching. It attracts outstanding students nationally and

internationally and provides a stimulating environment for research, teaching and joint projects with industry. Teaching loads are low to accommodate faculty research and faculty salaries are competitive.

Send a resume, a statement of research and teaching interests, as well as the names and addresses of at least three references to:

Computer Science and Engineering
Search Committee
Department of Computer Science MS
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Rice University
P.O. Box 1892
Houston, Texas 77251-1892

before January 15, 2000. Please specify the position for which you are applying. For more information, see <http://www.cs.rice.edu/> or call Iva Jean Jorgensen (713-527-4834) or send e-mail to ivajejan@rice.edu. Rice University is an Equal Opportunity/Affirmative Action employer.

Rutgers University

Department of Management Science and Information Systems

Senior Faculty Position

The Department of Management Science and Information Systems (MSIS) has a senior faculty opening starting September 2000. A candidate must be an active researcher and have a record of proven scholarly excellence in Information Systems or a closely allied field. Special consideration will be given to candidates with interests in electronic commerce, telecommunications, human-computer interaction, and software engineering. Leadership in research and in curriculum development at the undergraduate, MBA and Ph.D. level is expected.

Applications should be received by November 30, 1999 to receive full consideration. Send curriculum vitae and the names of at least four references to:

Carol Gibson
MSIS Department
94 Rockefeller Road
Piscataway, NJ 08854

Fax: 732-445-6329

E-mail: gibson@business.rutgers.edu.

Rutgers is an Equal Opportunity/Affirmative Action employer.

Shippensburg University of Pennsylvania

Mathematics/Computer Science

Department

Assistant Professor of Computer Science for August 2000

QUALIFICATIONS: Ph.D. in Computer Science or completion of a Ph.D. within two years to be considered on a contingent contract basis. The position requires a commitment to excellence in teaching and effective communication skills, as well as experience or potential in research and academic service. Candidates must demonstrate the ability to teach the undergraduate and graduate computer science courses offered by the department. The candidate's willingness to teach off-campus and evening courses will be considered.

THE DEPARTMENT: The department has seven computer science faculty. We offer BS and MS degrees in Computer Science, and share an MS in Information Systems with our College of Business. We currently have 170 undergraduate majors, 45 Masters students, and 30 MSIS students. In addition to a thorough curriculum, we offer our undergraduates a strong internship program with many local industrial partners. This program has provided about fifty paid internships per year. Our department is housed in a three-year old building and has four computer classrooms, four traditional classrooms, and our own computer lab.

THE POSITION: This is a tenure-track position and the primary responsibilities are to teach undergraduate and graduate computer science courses (a maximum of twenty-four credits per year), advise students, conduct research, and contribute to the academic life of the department and the university. As Shippensburg is a teaching-centered institution, there are many unique opportunities to further your professional development, all of which count toward

Professional Opportunities

the "research" portion of the position. As a primarily undergraduate institution, there are opportunities for funded undergraduate research. In addition, every masters student is required to complete a research project with an advisor and, therefore, can further faculty research. Both the State System of Higher Education and Shippensburg University offer grant opportunities for supplies and stipends to further research, pedagogical interests, and travel to relevant conferences. Also, the industrial connections made through our internship program offer consulting opportunities for our faculty.

APPLICATION: Candidates must submit copies of graduate and undergraduate transcripts, a statement of teaching philosophy, publications (if any), and three letters of recommendation from persons familiar with candidate's teaching. Incomplete applications and applications sent by e-mail will not be considered. Candidates will be judged on potential for teaching, research, and university service. A demonstration of teaching effectiveness will be required as part of the interview. Review of applications will commence on December 1, 1999, and will continue until the position is filled. Apply to:

Computer Science Selection Committee
Department of Mathematics and
Computer Science
Shippensburg University
Shippensburg, PA 17257

Shippensburg University is committed to equal employment opportunity. Women, persons of color, veterans, and the disabled are encouraged to apply.

Southern Methodist University Computer Science and Engineering

The Computer Science and Engineering Department at Southern Methodist University invites applications for two faculty positions beginning Fall 2000. Priority will be given to individuals with expertise in distributed operating systems, networking, communications, telecommunication software, software engineering, or computer systems architecture. Candidates at all ranks will be considered. The successful candidates must hold a Ph.D. in Computer Science, Computer Engineering, or a closely related area and demonstrate a strong commitment to excellence in teaching and research.

The Dallas/Fort Worth area, one of the top three high-tech industrial centers in the country, has the largest concentration of telecommunications corporations in the United States, providing abundant opportunities for industrial research cooperation and consulting. Dallas/Fort Worth is a multifaceted business and engineering community, offering exceptional museums, diverse cultural attractions, and a vibrant economy.

The CSE Department resides within the School of Engineering and Applied Science and offers BS, MS, and Ph.D. degrees in Computer Science and in Computer Engineering. The department currently has fifteen faculty members with research concentrations in computer arithmetic, computer networks, database systems, software engineering, natural language processing, operations research, and related areas. Additional information may be found at www.seas.smu.edu/cse.

Interested individuals should send a complete resume and names of three references, including a one-page statement of research interests and accomplishments to: Dr. Sukumaran Nair, Search Committee Chair, Department of Computer Science and Engineering, SMU, Dallas, TX 75275-0122.

To ensure full consideration, applications must be postmarked before February 15, 2000; however, the committee will continue to accept applications until the positions are filled.

SMU is an Equal Opportunity/Affirmative Action, Title IX employer.

State University of New York at Buffalo Department of Computer Science & Engineering

Faculty Positions in Computer Science and Engineering

The Department of Computer Science and Engineering (CSE) has several faculty openings at all levels. We seek faculty in

all areas who will contribute to building focused research groups in electronic commerce, high-performance computing, and scalable information infrastructures.

CSE faculty are affiliated with the Center for Computational Research, a leading academic supercomputing center in the United States, the Center of Excellence in Document Analysis and Recognition, the National Center for Geographic Information and Analysis, and the Center for Cognitive Science. The faculty include AAAI, ACM, Guggenheim, and IEEE Fellows as well as NSF Career awardees. The average annual research expenditure over the past three years has been \$3.7 million.

Junior candidates are expected to have a Ph.D. in Computer Science/Engineering by September 2000, and must demonstrate evidence of potential for publishing and developing a successful funded research program. Senior candidates are expected to have an excellent record of publication and funded research as well as international stature and recognition commensurate with rank.

All applications should include a cover letter, curriculum vitae, and the names and addresses of three references (applicants for senior positions should have five references). Address applications to:

Chair, Faculty Search Committee
226 Bell Hall
University at Buffalo
Buffalo, NY 14260-2000

E-mail: cse-search@cse.buffalo.edu

In addition, all applicants should have letters of reference sent to the above address. Deadline for receipt of applications and letters of reference is January 3, 2000.

The University at Buffalo is New York's largest and most comprehensive public university. As the second largest city in New York state, Buffalo is the hub of a metropolitan area with a population over 1.1 million. University life is enriched by scenic, recreational, and cultural opportunities in the city, suburbs, and the neighboring Niagara and Metro Toronto regions. For more information about our department, the university, and the metropolitan area, please visit our website at <http://www.cse.buffalo.edu>.

SUNY is an Equal Opportunity/Affirmative Action employer, and strongly encourages applications from women and minorities.

Texas Tech University Computer Science Department

The Department of Computer Science at Texas Tech University is committed to being a nationally recognized program in the computing field. We invite applications for several positions at all levels to begin employment in the Fall 2000. We will begin reviewing applications on January 15, 2000. Priority will be given to applicants whose areas of interest include databases, distributed and high performance computing, and software engineering. Our plans are to hire one person in each of these areas. Applicants at the assistant professor level must have the requirements for the Ph.D. in Computer Science or related field completed before employment, and should demonstrate clear potential for effective teaching and research. Applicants at other ranks should also have a proven record of scholarly accomplishments, including a strong record of publications, and funded research commensurate with rank.

The Department of Computer Science is within the College of Engineering, and offers BS, MS, and Ph.D. degrees in Computer Science and a new MS degree in Software Engineering. The department participates in both an EE/CS dual degree program and a Computer Engineering program in conjunction with the Department of Electrical Engineering, as well as dual degrees with both Chemical Engineering and Mathematics. At present, there are over 500 undergraduate and fifty graduate students in computer science degree programs. The graduate program offers specialties in computer engineering, software engineering, and intelligent systems.

Faculty perform scholarly and funded research in many areas, including: distributed computing and modeling, graphics and haptics, high performance computing, multimedia systems, neural networks,

knowledge representation, real-time systems, software methodologies, computer languages, logic programming, robotics, image processing, and software metrics. Applicants should send a letter expressing interest in the position, a detailed resume, and the names and addresses of three professional references to:

Daniel E. Cooke, Chairperson
Department of Computer Science
PO Box 43104
Texas Tech University
Lubbock TX 79409-3104

For additional information, see our website: <http://www.cs.ttu.edu/FacSearch/>.

All questions should be directed to dcooke@coe.ttu.edu. Applications will be reviewed as they are received, until the positions are filled. Applicants must be able to lawfully accept employment in the United States.

Texas Tech University is an Equal Opportunity/Affirmative Action Employer.

Tulane University Department of Electrical Engineering and Computer Science

Faculty Positions in Computer Science

The Department of Electrical Engineering and Computer Science invites applications for a tenure-track faculty position in Computer Science or Computer Engineering starting in Fall 2000. Candidates should have a Ph.D. in Computer Science or Computer Engineering, a strong commitment to both research and teaching, a publication record in their area, and demonstrate potential for obtaining external research funding. Outstanding candidates at all levels and from all areas of specialization will be considered.

Applicants should send a letter of intent, a statement of research and teaching interests, a resume, and the names of at least three references including the reference's address, e-mail, telephone, and fax number to:

Dr. Boumediene Belkhouche
Search Committee Chair
Department of Electrical Engineering
and Computer Science
Tulane University
New Orleans, LA 70118

Applications will be accepted until the positions are filled. Tulane University is an Equal Opportunity/Affirmative Action employer.

University of Arizona Department of Computer Science

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

Applications are invited for tenure-track faculty positions at all ranks, beginning employment August 2000. Candidates must hold a doctorate in Computer Science or related field, have a commitment to excellence in teaching, and have demonstrated strong potential for excellence in research. Primary consideration will be given to computer scientists who work in algorithms, theory of computation, computer graphics, and computer systems and networks.

The Department of Computer Science at The University of Arizona has a long history of research accomplishment, influential software distribution (e.g., Icon, SR, FAKtory, x-kernel, glimpse) and substantial external funding to individual faculty, exceeding \$2.5 million last year. Major funding has included two NSF Institutional Infrastructure grants and a Research Infrastructure grant, providing a broad array of equipment for computing research. Research areas include programming languages, compilers, operating systems, networks, algorithm design, database systems, and theory of computation.

Applicants must send a curriculum vitae and the names of at least three references to:

Faculty Recruiting Committee
Department of Computer Science
The University of Arizona
PO BOX 210077
Tucson, AZ 85721-0077

We will start the review of applications on October 1, 1999, and will continue to consider applicants until the positions are filled, subject to availability of funds. The University of Arizona is an EEO/AA employer - M/W/D/V.

University of Arkansas Department of Computer Science and Computer Engineering

The Department of Computer Science and Computer Engineering invites applications for tenured/tenure track faculty positions at all ranks. The department seeks candidates interested in developing a strong research program along with a strong commitment to teaching. Candidates are sought with expertise that complements the strategic areas of emphasis, but strong candidates in all areas will be considered. Desired areas of expertise include database systems, software engineering, networks and telecommunications, VLSI design and test, reconfigurable computing systems, distributed and parallel systems, AI and Robotics. A Ph.D. in Computer/Electrical Engineering, Computer Science, or a closely related field is required.

The department has approximately 600 undergraduate and seventy-five graduate students, and is seeking to double the graduate program. Research and teaching facilities include HIDECE (the High Density Electronics Center) and laboratories for computer architecture, cluster computing, networking, database systems, artificial intelligence/robotics, and others.

Applications should be sent to:
Chair, Faculty Search Committee
Department of Computer Science and
Computer Engineering
313 Engineering Hall
University of Arkansas
Fayetteville, AR, 72701

Electronic submissions and questions should be sent to search@csce.ark.edu. Information on the department and area can be accessed at <http://www.csce.ark.edu>.

A complete application includes a cover letter discussing teaching and research interests, curriculum vitae, and names and addresses of three references. Applications will be accepted and reviewed until all positions are filled.

The University of Arkansas is committed to achieving racial, ethnic, and gender diversity in its faculty. Therefore, the University is interested in applications from all qualified candidates who would contribute to such diversity within the Department.

University of California, Berkeley Department of Electrical Engineering and Computer Sciences

THE UNIVERSITY OF CALIFORNIA, BERKELEY invites applications for tenure-track positions in ELECTRICAL ENGINEERING AND COMPUTER SCIENCES beginning in Fall Semester 2000.

Several faculty searches have been approved. We are also considering the possibility of joint searches with other UC Berkeley departments. Applications for appointments at the ASSISTANT PROFESSOR level will be given highest preference, but other levels will be considered under exceptional circumstances.

Applicants should have received (or be about to receive) a doctoral degree in Computer Science, Electrical Engineering, or Computer Engineering or a related field. All areas of research in Computer Science and Electrical Engineering will be considered. A principal requirement is demonstrated excellence in research. In addition, potential for excellence in teaching and leadership are important requirements. Successful applicants will be expected to establish a quality research program and to teach both graduate and undergraduate courses in their general area of specialty.

Interested persons should send a resume, a select subset of publications, a one- to two-page statement of their future research plans and interests, and the names of three references before January 1, 2000, to the appropriate address below. THE APPLICANT SHOULD REQUEST THEIR REFERENCES TO FORWARD LETTERS OF REFERENCE DIRECTLY TO THE SAME ADDRESS TO ARRIVE BEFORE JANUARY 1, 2000. These letters will NOT be requested directly by the department. Applications and letters of reference received after January 1, 2000 may not be considered.

Electrical Engineering applications should be sent to:

Professional Opportunities

EE Faculty Search Committee Chair
c/o Jean Richter
Department of Electrical Engineering
and Computer Sciences
University of California, Berkeley
231 Cory Hall # 1770
Berkeley, CA 94720-1770

Computer Science applications should be sent to:

CS Faculty Search Committee Chair
c/o Anita Bailey
Department of Electrical Engineering
and Computer Sciences
University of California, Berkeley
381 Soda Hall # 1776
Berkeley, CA 94720-1776

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

University of California, Irvine

Department of Information and Computer Science

Open Faculty Positions

The Department of Information and Computer Science (ICS) has several tenured or tenure-track positions open in the following areas of research emphases:

- Computer Graphics
- Systems Software: Databases, Operating Systems, Compilers, and Networks
- Computer-supported cooperative work: social impacts of computing, information studies, and human-computer interactions.

D. Other areas of computer science such as software and software engineering, computer security, cryptography, bioinformatics or medical informatics.

Available positions are for an Associate or Assistant Professor in Computer Graphics and Assistant Professor positions in other areas, but exceptional candidates from all ranks will be considered. In all cases, we are looking for applicants with a Ph.D. degree in Computer Science or a related field, and strong research credentials as evidenced by scholarly publications. Applicants for senior positions must also demonstrate a proven track record in funded research activities.

The ICS Department is organized as an independent campus unit reporting to the Executive Vice Chancellor. It runs the second most popular major at UCI and has designed an undergraduate honors program that attracts the campus' most qualified students. External funding from government and industrial sponsors exceeded \$10 million last year. The Department currently has thirty-eight fulltime faculty and 150 Ph.D. students involved in various research areas including computer science theory, embedded computer systems, artificial intelligence, networks and distributed systems, databases, multimedia systems, computer systems design, software/software engineering, human-computer interaction, and computer-supported cooperative work. ICS faculty are involved in the forefront of research in the emerging areas of the computer science discipline such as multimedia/embedded computing, knowledge-discovery in databases, bioinformatics and the role of information in computer science and society. The faculty has effective interdisciplinary ties to colleagues in digital arts, biology, cognitive science, engineering, management, medicine, and the social sciences.

Although UCI is a young university, it has attained remarkable stature in the past three decades. Two Nobel prizes were recently awarded to UCI faculty. UCI is located three miles from the Pacific Ocean near Newport Beach, approximately forty miles south of Los Angeles. The climate is ideal year-round avoiding extreme temperatures in winters and summers. Irvine is consistently ranked among the safest cities in the U.S. and has an exceptional public school system. The campus is surrounded by high-technology companies that participate in an active affiliates program. Both the campus and the area offer exciting professional and cultural opportunities. Mortgage and housing assistance are available including newly built, for-sale housing located on campus and within short walking distance from the department.

Applicants should send a cover letter indicating which of the areas above [A-D]

best fits their research, a curriculum vitae, three sample papers and contact information for three or four references to: recruit@ics.uci.edu (PDF, postscript, Word, or ASCII).

Applicants are requested to ask their references to send letters of evaluation to recruit@ics.uci.edu by January 15, 2000. Those that insist upon sending hard copy may send it to:

ICS Faculty Position [A-D]
c/o Lori Miskell
Department of Information and Computer Science
University of California, Irvine
Irvine, CA 92697-3425

Application screening will begin immediately upon receipt of curriculum vitae. Maximum consideration will be given to applications received by January 7, 2000.

The University of California is an Equal Opportunity Employer, committed to excellence through diversity.

University of California, Los Angeles

Department of Computer Science
The Department of Computer Science at the University of California, Los Angeles, invites applications for tenure-track positions at all levels. Applications are especially welcome from distinguished candidates at more senior levels.

Quality is our key criterion for applicant selection. Applicants should have a strong commitment to both research and teaching and an outstanding record of research for their level. We seek applicants in any mainstream area of Computer Science, but we particularly welcome those with a strength in operating systems, compilers, graphics, database systems, embedded systems, networking and security.

Interested applicants should send a letter of application, a resume, and the names of four references to:
Professor Richard R. Muntz, Chair
UCLA Computer Science Department
4732 Boelter Hall
Los Angeles, CA. 90095-1596

University of California, Riverside

Marlan and Rosemary Bourns College of Engineering
Faculty Positions in Computer Science & Engineering
The University of California at Riverside invites applications for tenure-track or tenured faculty positions in the Department of Computer Science and Engineering, starting in the 2000-2001 academic year. Applicants should have a Ph.D. degree in Computer Science or in a closely related field. Candidates in all areas of Computer Science are encouraged to apply. However, the area of computer systems—including such specialties as architecture, databases, operating systems, and software engineering—is of particular interest.

Senior candidates must have established an exceptional record of achievement in both research and teaching. Junior candidates must demonstrate evidence of outstanding potential in research and teaching. Salary level will be competitive and commensurate with the appointment rank and qualifications of the candidate.

The University of California at Riverside is a major research institution and a member of the nine-campus University of California System, widely regarded as the most distinguished system of public higher education in the United States. UC Riverside is embarking on a major program of expansion, and the College has resource commitments to hire a number of junior and senior faculty members over the next five years. A state-of-the-art building, Bourns Hall, houses the College, which has extramural research funding in excess of \$7 million. Graduate degrees in computer science are offered at both MS and Ph.D. levels. More information is available on the WWW at <http://www.cs.ucr.edu/>.

The city of Riverside, located about sixty miles away from Los Angeles, offers easy access to mountains, Pacific Ocean beaches, cultural activities, shopping, and other attractions.

Applications and inquiries should be sent to:

Chair, Faculty Search Committee
Department of Computer Science and Engineering
University of California, Riverside, CA 92521-0304

Tel. 909-787-5639 or by e-mail at hire@cs.ucr.edu

A complete application shall include curriculum vitae, list of publications, the names and addresses of at least four references, and a statement of research and teaching objectives. To receive full consideration, complete applications must be received by January 14, 2000. Late applications may be considered if the position(s) is not filled from the original pool of applicants.

The University of California, Riverside is an Equal Opportunity/Affirmative Action Employer.

University of California, Santa Cruz

Computer Engineering Department
The Computer Engineering Department of the University of California, Santa Cruz (UCSC) invites applications for three tenure-track faculty positions at the Assistant Professor level in the following areas:

Position #141
1. Image processing/systems: imaging, image and multimedia systems, compression, user interfaces, networking, real-time multimedia, and multimedia database systems.

Position #450
2. Computer networks: including wireless and mobile networking, internetworking system-area networking and very high-speed networks, network management, middleware and electronic commerce, network security, and policy-based networking.

Position #451
3. Computer systems: including systems on a chip, storage systems, distributed systems, parallel systems, real-time embedded systems, nomadic computing, and digital systems with optical, mechanical, chemical, or biological components.

We are seeking outstanding candidates with demonstrated research experience and expertise in building computer systems. The successful candidates are expected to maintain a quality research program, teach at both the graduate and undergraduate levels, and exercise leadership.

Positions available in Fall 2000. All applicants should submit by January 11, 2000, a curriculum vitae, a statement of research, a statement of teaching interests and experience, and copies of selected reprints to:

Chair, Computer Engineering Search Committee
Baskin Engineering Bldg.
University of California
Santa Cruz, CA 95064

Please arrange for at least three letters of recommendation to be sent, and refer to the appropriate position number from above in your cover letter.

For additional information on the positions e-mail recruit@cse.ucsc.edu. For further details about the Computer Engineering Department and the Jack Baskin School of Engineering at UCSC, see <http://www.cse.ucsc.edu/>.

Women and Minorities are encouraged to apply. UCSC is an EEO/AA/IRCA Employer.

University of California, Santa Cruz

Computer Science Department
The Computer Science Department of the University of California, Santa Cruz (UCSC) invites applications for two faculty positions, one tenure-track Assistant Professor and one tenured Associate Professor, in the following areas:

(1) Computer systems, especially storage systems, distributed systems, parallel systems, operating systems, and compilers.

(2) Database systems (especially distributed or heterogeneous databases), data mining, multimedia systems, genomics/biomolecular databases.

We are seeking outstanding candidates with demonstrated research experience and expertise in building computer systems. The successful candidates are expected to maintain a quality research program, teach at both the graduate and

undergraduate levels, and exercise leadership.

Positions available in Fall 2000. All applicants should submit by January 11, 2000 a curriculum vitae, a statement of research, teaching interests and experience, and copies of selected reprints to:

Chair, Computer Science Search Committee
Baskin Engineering Bldg.
University of California
Santa Cruz, CA 95064

Candidates for the Assistant Professor position: have at least three letters of recommendation sent, and refer to position #453 in your cover letter. Candidates for the Associate Professor position: have the names and addresses of at least five references sent, and refer to position #452 in your cover letter.

For additional information on the positions e-mail: recruit@cse.ucsc.edu.

For further details about the Computer Science Department and the Jack Baskin School of Engineering at UCSC, see <http://www.cse.ucsc.edu/>.

UCSC is an EEO/AA/IRCA Employer.

University of Connecticut - Storrs, Connecticut

Computer Science & Engineering Department

Assistant/Associate Professor

The Computer Science & Engineering Department seeks outstanding candidates in the areas of networking, computer architecture, real-time systems, distributed systems, or high-performance computing for one and possibly two tenure-track faculty positions at Assistant or Associate rank for Fall 2000. However, outstanding candidates in all areas of CS&E will also be considered. The University of Connecticut is the land-grant, flagship graduate degree-granting institution in Connecticut. The CS&E Department offers Ph.D., MS, and BS degrees. The Department is strongly committed to research and teaching excellence, continued growth, and increasing national visibility.

Our research foci include distributed computing, networks, intelligent systems, agent-based computing, network computing, parallel algorithms, object-oriented computing, data security, graphics, geometric modeling, databases, real-time systems, computational medicine, performance modeling and analysis, and human-centered computing. With the new appointment we aim to broaden our research foci or strengthen the existing areas. Candidates are encouraged to state the primary areas of their research interests. Candidates must have completed all requirements for their Ph.D. in Computer Science, Computer Engineering or a related field by August 1, 2000. Candidates are also expected to have a research/publication record commensurate with experience, and a strong commitment to scholarly research and teaching at undergraduate and graduate levels.

Applicants are invited to submit resumes and the names (including phone numbers and e-mail addresses) of three references to:

Dong-Guk Shin, Chair
Faculty Search Committee
Computer Science & Engineering Department
University of Connecticut
191 Auditorium Rd.
Box U-155
Storrs, CT 06269

Administrative inquiries may be directed to: leenie@engr.uconn.edu. Research and teaching inquiries can be directed to: cs_srch@engr.uconn.edu. For further information see <http://www.engr.uconn.edu/cse>. To guarantee full consideration, all application materials must be received by January 5, 2000. Applicants are responsible for contacting their references to have letters sent before the deadline.

The University of Connecticut is committed to building a culturally diverse faculty and strongly encourages applications from women, minorities, and people with disabilities. The University of Connecticut is an Equal Opportunity/Affirmative Action Employer. (Search 00A14.)

Professional Opportunities

University of Florida

Computer and Information Science and Engineering

BellSouth Eminent Scholar's Chair in Computer Communication and Networking

The College of Engineering at the University of Florida invites nominations and applications for an endowed, chaired professorship in the field of computer communication and networking. It is expected that the successful candidate will interact with faculty from both the Department of Computer and Information Science and Engineering (CISE) and the Department of Electrical and Computer Engineering (ECE). The university is a member of the American Association of Universities and is the 16th ranked public university. The University of Florida College of Engineering is ranked 13th among AAU public universities with engineering colleges. For the BellSouth Chair we seek a researcher and teacher of great distinction whose work has been internationally acclaimed. Preference will be given to the candidate with research emphasis in one or more of the following areas: network communication, multimedia networking, distributed and heterogeneous systems, mobile/wireless networks, and computer/communication security. Proceeds from an endowment and additional resources will provide an environment commensurate with the qualifications of the candidate sought.

The Department of Computer and Information Science and Engineering offers degrees in the Colleges of Engineering, Liberal Arts and Science, and Business Administration. It has a current enrollment of about 1,000 undergraduate and 160 graduate students. The Gourman Report ranks the department 10th among leading U.S. institutions with computer engineering programs. The Department of Electrical and Computer Engineering currently has enrolled about 540 undergraduates and about 270 graduate students. The Gourman Reports ranks the department 22nd of more than 250 electrical engineering undergraduate programs. The ECE and CISE faculty includes fourteen fellows of professional engineering societies (twelve IEEE Fellows) and two members of the National Academy of Engineering, one of whom holds an endowed chair in Microelectronics.

Nominations and applications should be sent to:

Dr. Gerhard X. Ritter, Chair
Department of Computer and Information Science and Engineering
Attn: BellSouth Chair Search Committee

University of Florida
Post Office Box 116120
Gainesville, FL 32611-6120
Telephone: 352-392-1211

The application deadline is March 1, 2000. The University of Florida is an Affirmative Action Employer and women and minorities are encouraged to apply.

University of Florida

Department of Computer and Information Science and Engineering

The Department of Computer and Information Science and Engineering at the University of Florida invites applications for several tenure track positions at all ranks beginning August 2000. While applications in all areas of computer science and engineering are welcome, we are particularly interested in outstanding candidates with expertise in the following fields: multimedia and web technology, interdisciplinary multimedia application, bioinformatics and biocomputing, computer graphics and visualization, database systems, and software engineering.

All applicants should hold a Ph.D. in Computer Science, Computer Engineering, or a closely related discipline, and should be committed to excellence in teaching and research. Salary and support are competitive and depend on background and experience.

The Department of CISE currently has a faculty of twenty-seven and a student body of 160 graduate and 1,000 undergraduate students. The Department

encompasses a wide range of research areas including high performance computing, database systems, computer vision and visualization, computer networks and security, distributed and real-time systems, and software engineering.

Candidates should send a curriculum vitae with the names of at least three references. The closing date for applications is March 1, 2000. Please send applications to:

Professor Randy Chow
Chair, Faculty Search Committee
Department of Computer and Information Science and Engineering
301 CSE
University of Florida
Gainesville, FL 32611
E-mail: chow@cise.ufl.edu
Tel. 352-392-1487

The University of Florida is an Affirmative Action Employer and women and minorities are encouraged to apply. For more information about the department and the positions, please visit <http://www.cise.ufl.edu/>.

University of Houston-Downtown Computer & Mathematical Sciences Department

Tenure Track Position at the rank of Assistant Professor

Requirements: Ph.D. in Computer Science, commitment to excellence in teaching and scholarship, and U.S. permanent residency. Postmark deadline for applications: November 15, 1999. Search reopened at 30-day intervals until position is filled. Starting date: August 2000.

The University of Houston-Downtown is an undergraduate, open admission institution.

Please send a statement of interest, curriculum vitae, transcripts, and three letters of recommendation to:

Chairman, CS Search Committee
CMS Department
University of Houston-Downtown
One Main Street
Houston, TX 77002

University of Kentucky

Department of Computer Science

The University of Kentucky Computer Science Department invites applications for several tenure-track positions beginning August 15, 2000 at all levels. Review of credentials will begin on November 1, 1999; however, applications will be accepted until the positions are filled.

We are especially interested in candidates with expertise in all areas of applied and experimental computer science including networking, computer graphics and computer vision, software engineering, programming languages, multimedia, and databases. Appointed individuals will be expected to conduct innovative research and participate in the Department undergraduate and graduate instructional programs. Additional research opportunities will be created by the Center for Advanced Networking, to open in the Department in late Spring 2000.

The University of Kentucky is the flagship graduate degree-granting institution in Kentucky. The Department of Computer Science is strongly committed to the goal of maintaining research and teaching excellence and high national visibility.

Please check the departmental WWW page, <http://www.cs.engr.uky.edu/>, for more information.

Please send curriculum vitae and the names of three references to:

Faculty Search Committee
c/o Ms. Diane Mier
Department of Computer Science
University of Kentucky
Lexington, KY 40506-0046
diane@cs.engr.uky.edu
Fax: (606) 323-1971

An Equal Opportunity/Affirmative Action employer

University of Manitoba

Department of Computer Science

Applications are invited for three full-time tenure-track positions, subject to

final budgetary approval, at the Assistant Professor level, commencing July 1, 2000, or as soon as possible thereafter. Minimum qualifications are a Ph.D. in Computer Science or allied discipline, complete or nearing completion, and evidence of a strong research potential in computer science. Prior teaching experience will be considered an asset. A Faculty of Science startup research grant will be awarded to all newly appointed faculty members.

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

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

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

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

Applicants should send a curriculum vitae and the names of three references to the address below. Qualified women are particularly encouraged to apply. Consideration for the positions will commence on November 15, 1999 and will continue until June 1 2000, or until the positions are filled. Please send to:

Chair of Search Committee
Department of Computer Science
University of Manitoba
Winnipeg, Manitoba, CANADA R3T 2N2
E-mail: search@cs.umanitoba.ca
Tel. 204-474-8313
Fax: 204-474-7609

Further information concerning the Department and the University may be obtained from the Department's website at www.cs.UManitoba.ca, and the University's website.

University of Maryland Baltimore County

Department of Computer Science and Electrical Engineering

The Department of Computer Science and Electrical Engineering (CSEE) of the University of Maryland Baltimore County (UMBC) invites applications for one or more tenure-track faculty positions at the rank of Assistant Professor. Higher ranks may be considered.

We are especially interested in applicants in the areas of computer engineering, software systems, or computer networks, but outstanding candidates in other areas may be considered. Applicants must have, or be about to receive, a Ph.D. in Computer Science, Computer Engineering, Electrical

Engineering, or a related discipline.

The department offers BS, MS, and Ph.D. degrees, currently has thirty-three full time faculty, over 1000 students, more than \$7M/year in sponsored research, and is planning on significant growth. UMBC generates more information technology graduates than any other U.S. research university.

Applications, including curriculum vitae, and a statement of teaching and research interests and goals, should be sent to:

CSEE Faculty Search
Department of Computer Science and Electrical Engineering
University of Maryland Baltimore County
1000 Hilltop Circle
Baltimore, MD 21250
Tel. 410-455-3500
Fax: 410-455-3969

Applicants should arrange for three letters of reference to be sent to the same address. Selection of candidates will start immediately, and will continue until all the positions are filled.

The application and the three reference letters should be received as soon as possible, but not later than March 1, 2000.

Further information about UMBC and the CSEE Department can be obtained through the WWW server <http://www.csee.umbc.edu/>.

UMBC is an Affirmative Action/Equal Opportunity employer.

University of Michigan

Computer Science and Engineering Division

*Ann Arbor, Michigan
Faculty Positions Available*

Applications and nominations are solicited for several junior and senior faculty positions in all areas of the Computer Science and Engineering (CSE) Division. Qualifications include an outstanding academic record, a doctorate or equivalent in Computer Engineering or Computer Science, and a strong commitment to teaching and research. Particular areas of interest include: computer security, computer networks, distributed systems, computation theory, machine learning, embedded systems, computer architecture, programming languages and emerging applications like e-commerce, bio-informatics, home computing, and manufacturing.

The University of Michigan is a Non-Discriminatory/Affirmative Action Employer.

Please send resume and names of three or more references to:

Professor Kang G. Shin
Chair of the Faculty Search Committee, CSE Division
Department of Electrical Engineering and Computer Science
University of Michigan
1301 Beal Avenue, Room 3402
Ann Arbor, MI 48109-2122

URL: <http://www.eecs.umich.edu/cse>
You may submit applications and inquiries via e-mail to csesearch@eecs.umich.edu

University of Minnesota - Twin Cities Department of Computer Science and Engineering

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

The Department of Computer Science and Engineering encompasses a wide range of research areas, including software engineering, networking and distributed multimedia, databases, computer architecture, artificial intelligence, robotics and computer vision, algorithms and complexity theory, computational

Professional Opportunities

geometry, human-computer interaction, parallel computing, and scientific computing. Its faculty members have access to outstanding computing facilities both within the department and at the various research centers on campus, including the Minnesota Supercomputing Institute, the Institute for Mathematics and its Applications, and the Army High Performance Computing Research Center. Information about the department, its facilities, and faculty, is available from the World Wide Web homepage: <http://www.cs.umn.edu>. The Minneapolis-St. Paul area is a major center for advanced technology and computer industry, and the Department of Computer Science and Engineering enjoys strong interactions with local companies.

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

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

Electronic submissions of applications material are welcome and may be sent via e-mail to applications@cs.umn.edu. (Electronic submissions in standard postscript are preferred.) Review of completed applications will begin January 15, 2000, but the search will remain open until all positions are filled.

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

University of Minnesota

Department of Computer Science and Engineering

Temporary Faculty Positions

One to three full- or part-time, nine-month, non-tenure track faculty positions, with teaching responsibilities in programming fundamentals, software engineering, networks, database, computer engineering, and/or software systems are open. These are one year teaching positions with a possibility of renewal for up to three years, depending on need, performance, and availability of funds. A Ph.D. in Computer Science or related disciplines, and a commitment to good teaching are required.

Applicants should send a curriculum vitae, documentation of teaching excellence, and names of at least three teaching references to:

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

Anticipated starting date is August 28, 2000. Salary and rank are open and are based on qualifications. Review of completed applications will begin January 15, 2000, but the search will remain open until the positions are filled.

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

University of Minnesota

Department of Computer Science and Engineering

Teaching Specialist/Lecturer/Instructor Positions Available

The Department of Computer Science and Engineering expects to have temporary instructional positions available during the 2000-01 academic year and/or during the 2001 summer session to teach courses (both in University Extension and regular day courses). Minimum qualification for the Teaching Specialist position is a BS in Computer Science or related field; for the Instructor position an MS in Computer Science or related field; and a Ph.D. in Computer Science or related field for the Lecturer position. Teaching experience is desirable. Preference will be given to applicants with teaching experience, advanced degrees, and whose areas of expertise meet departmental needs.

Interested individuals are invited to submit a letter of application and a resume including documentation of teaching experience to:

Chair of Instructional Search Committee
Department of Computer Science and Engineering
University of Minnesota
4-192 EE/CS Building
200 Union Street, SE
Minneapolis, MN 55455

Review of completed applications will begin January 15, 2000, but the search will remain open until the positions are filled. Appointments will start August 28, 2000 or on a mutually agreed upon date later in the academic year.

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

University of Nebraska-Lincoln

Department of Computer Science and Engineering

The Department of Computer Science and Engineering (CSE) at the University of Nebraska-Lincoln (UNL) invites applications and nominations for the position of Department Chair. CSE, with nineteen faculty, 594 undergraduates, and 105 graduate students, offers degrees in computer science and computer engineering, with programs leading to the BS, MS, and Ph.D. degrees. The Department is developing internationally recognized research and academic programs in software engineering, spatio-temporal information systems, distributed systems, and communications and networking.

Qualifications: an earned doctorate in Computer Science, Computer Engineering, or a closely related field, evidence of demonstrated leadership and accomplishment in academic and research programs, and credentials appropriate for appointment as a tenured faculty member. The candidate's academic credentials or background should permit him/her to be a credible and effective advocate for CSE in both the College of Arts and Sciences and the College of Engineering and Technology.

For a complete job announcement, details of the application process, and additional information about CSE and UNL, please visit <http://www.cse.unl.edu/> or contact Brian Wilcox at 402-472-3130 or bwilcox1@unl.edu. Application screening will begin December 1, 1999 and continue until the position is filled. Salary will be competitive and commensurate with qualifications. Women and minorities are particularly encouraged to apply.

The University of Nebraska-Lincoln is the state's land-grant institution and premiere research campus. UNL has approximately 23,000 students. The University of Nebraska is committed to a pluralistic campus community through Affirmative Action and Equal Opportunity and is responsive to the needs of dual career couples. We assure reasonable accommodation under the Americans with Disabilities Act; contact Ed Schmidt at 402-472-2891 for assistance.

University of Nebraska, Lincoln

Computer Science and Engineering Department

The UNL CSE Department invites applications for several tenure-track faculty appointments at Assistant, Associate, or Full Professor rank to begin August 2000. Applicants should have promise for innovative research and teaching in at least one of the following areas:

Database and information systems
Human-computer interaction
Physical design or high-level synthesis
Enterprise software engineering and electronic commerce
Geographic information systems
Distributed object technologies and middleware
Computer communications and network security
Theory and algorithms

and hold or be completing a Ph.D. in Computer Science, Computer Engineering, or related field. Exceptional candidates in other areas will be considered.

The CSE Department offers both computer science and computer engineering programs leading to BS, MS, and Ph.D. degrees and has twenty tenured or tenure-track faculty, about 600 undergraduates

and 100 graduate students. UNL is Nebraska's comprehensive research university with Carnegie I standing and membership in the American Association of Universities. Last year, UNL received the second largest gift in its history to establish the JD Edwards Honors Program in Computer Science and Management. In conjunction with this program, the Department has several new named professorships.

Review of applications begins December 1, 1999, and will continue until all positions are filled. A resume, statement of research and teaching interests, and three references letters should be sent to:

Peter Revesz, CSE Search Committee Chair
Computer Science and Engineering Department
University of Nebraska, Lincoln
Lincoln, Nebraska 68588-0115
See www.cse.unl.edu; email

search@cse.unl.edu; phone 402-472-2401; fax 402-472-7767. The University of Nebraska is committed to a pluralistic campus community through AA/EO, is responsive to dual career couples, and makes reasonable ADA accommodations; contact Peter Revesz at 402-472-3488 for assistance.

University of Nevada, Reno

Department of Computer Science

Applications are invited for a tenure-track Assistant Professor beginning in January or August 2000. A Ph.D. in Computer Science or Computer Engineering is required by the date of appointment. Candidates should possess a demonstrated potential for quality research and a strong commitment to teaching at the undergraduate and graduate levels. Candidates with expertise

in one or more of the following areas may be given preference: software engineering, operating systems, programming languages, human-computer interaction, networking, databases, graphics, and algorithms. The department is dynamic, growing, and offers BS, MS, and Ph.D. degrees. Visit www.cs.unr.edu or e-mail varol@cs.unr.edu for further information.

The Reno area has four mild seasons and is a scenic half-hour drive to Lake Tahoe, one of the largest and most beautiful alpine lakes on the planet. The Pacific Crest Trail is nearby for hiking and fantastic ski areas abound. The wineries of Northern California and cultural amenities of San Francisco are within a short half-day's drive.

To apply, send a letter, curriculum vitae, and information on three references to:

Prof. Y.L. Varol, Chair
Computer Science Department/171
University of Nevada
Reno, NV 89557

Consideration of applicants will begin on December 1, 1999. UNR is an AA/EOE and employs only U.S. citizens or persons lawfully authorized to work in the United States

University of New Mexico

Department of Computer Science

Faculty Positions at All Ranks in Software or Systems

The Department of Computer Science at the University of New Mexico is conducting a search to fill two tenure-track faculty positions. We are particularly interested in hiring faculty members with research interests in:

* computational science, including, graphics, modeling, visualization, and applications;

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Professional Opportunities

- * software, including: analysis, design, development tools, and testing;
- * systems, including: architecture, compilers, networks, operating systems, and security; or
- * robotics, including: task planning and simulation, computer integrated manufacturing, and geometric computations.

Preference will be given to candidates who have a strong interest in interdisciplinary research.

Candidates must have completed, or be about to complete, a doctorate in Computer Science, Computer Engineering, or closely related field. Applicants should demonstrate a commitment to undergraduate and graduate education and the ability to establish a nationally visible research program. Applicants for all ranks will be considered, although preference will be given to applicants for junior positions.

Currently, the Department of Computer Science consists of seventeen tenure-track professors, a lecturer, and one visiting professor. Active research programs include: adaptive computation, artificial intelligence, automated reasoning, computer security, data mining, experimental algorithmics, scalable systems and high-performance networks, scientific computing, scientific visualization, specification and verification, and symbolic computation. The department has internationally recognized research programs in several of these areas and enjoys strong research collaborations with the Santa Fe Institute and Sandia and Los Alamos National Laboratories. The department also enjoys a strong association with the Albuquerque High Performance Computing Center, a member of the National Computational Science Alliance (NCSA).

The Department of Computer Science is one of five departments in the School of Engineering at the University of New Mexico. The department has an undergraduate population of 250 students with a BS accredited by CSAB. The department also offers the MS and Ph.D. with approximately 100 graduate students. The University of New Mexico has a student enrollment of approximately 25,000 and is a Carnegie Institute Division I research university. For further information about the Computer Science Department at the University of New Mexico, see: <http://www.cs.unm.edu>.

For best consideration, applications must be received by January 15, 2000, although we will continue to accept applications until the positions are filled. Each application should include a curriculum vitae, a research statement, a teaching statement, and the names of four references. A cover letter should summarize your experience and indicate the level of the appointment you are seeking.

Printed applications should be sent to: Arthur B. (Barney) Maccabe, Chair, Faculty Search Committee, Department of Computer Science, The University of New Mexico, Albuquerque, NM 87131-1386, faculty_search@cs.unm.edu. E-mail should be sent to: maccabe@cs.unm.edu [Arthur B. (Barney) Maccabe]

The University of New Mexico is an Equal Opportunity/Affirmative Action employer and educator.

University of New Mexico Department of Electrical and Computer Engineering

The Department of Electrical and Computer Engineering (EECE) at the University of New Mexico (<http://www.eece.unm.edu>) is seeking one or more full-time faculty members for tenure-track positions at either the junior or senior level starting Fall semester 2000. Salary and position will be commensurate with candidate qualifications and experience.

The faculty positions will entail teaching both undergraduate and graduate courses in the field of Computer Engineering, supervising graduate students, and developing an externally funded research program. The minimum qualifications are a Ph.D. degree in Computer Engineering, Electrical Engineering, Computer Science,

or a closely related field. Specifically, applicants at both levels must demonstrate the capabilities to teach at both the undergraduate and graduate levels, along with the ability to supervise graduate students. Candidates with research interests in any area of Computer Engineering will be considered. Senior applicants must demonstrate a history of quality research. Junior candidates should demonstrate a high potential for establishing a quality research program.

The department is comprised of thirty-two tenure-track faculty, an endowed chair, and twenty-one research faculty. Sponsored research expenditures for the 1998/99 academic year were over \$12M, including research performed by EECE faculty and students associated with the Albuquerque and Maui High Performance Computing Centers, the Microelectronics Research Center, the Center for Autonomous Control Engineering, and the Center for High Technology Materials. The EECE department also enjoys extensive interactions with the federal laboratories located in New Mexico (Los Alamos National Laboratory, Sandia National Laboratories, the Air Force Research Laboratory), as well as with high technology industries both locally and nationally. Additional information about the department, its research activities, its student population, and other information can be found at the Department's website. Applicants must send a resume, a list of at least three references, including names, addresses, telephone numbers, and a 1-2 page statement of teaching and research interests and accomplishments to:

Chair, CE Search Committee
Department of Electrical & Computer Engineering
University of New Mexico
Albuquerque, NM 87131-1356

For best consideration, applications must be received by December 15, 1999. The School of Engineering at the University of New Mexico is currently ranked in the top forty among engineering schools in the nation. The University of New Mexico, which is both a Carnegie I Research University and a Minority Serving Institution, is an Equal Opportunity/Affirmative Action employer and educator.

For more information about the EECE Department at the University of New Mexico, please visit our website at: <http://www.eece.unm.edu>.

University of Notre Dame Department of Computer Science and Engineering

Department Chair

The University of Notre Dame invites applications and nominations for the position of Department Chair and Schubmehl/Prein Chair of Computer Science & Engineering in the College of Engineering, effective August 22, 2000.

The CSE Department provides a center of scholarship in the areas of information and computing technologies. We see a continuing need for education and discovery in these fields to meet the demands of an expanding world population in areas such as medicine, food production, shelter, transportation, communication, and commerce.

The University of Notre Dame undergraduate program consistently ranks in the top twenty among national universities. The CSE Department, established in 1990, conducts undergraduate degree programs in Computer Engineering and in Computer Science, and a graduate program leading to the MS and Ph.D. degrees. A full-time faculty of fourteen, with scheduled growth to eighteen, develops curricula and directs research for multidisciplinary collaborative programs in information technology, with particular focus on parallel distributed systems for high-performance computing, and the interactions among hardware, software, algorithms, and VLSI technology. Strong research programs achieve national recognition for technical contributions and growth.

The chair has a unique opportunity with support from a new Dean of Engineer-

ing to substantially advance the role of computing and information technologies within the University. Candidates must be eligible for appointment as a tenured full professor, and have appreciation, breadth, and involvement in the range of disciplines embodying departmental growth. The chair must share the Department's vision for academic excellence and foster productive academic relationships with other departments, especially in the College of Engineering. The chair must have a personal research program with demonstrated experience in establishing standards for graduate scholarship and forming active relationships with industry, government agencies, and other universities.

For further information, visit our website at <http://www.cse.nd.edu/>.

Applicants should send a complete resume with names of five references to: Prof. Eugene W. Henry, CSE Chair Search Committee, 384 Fitzpatrick Hall, University of Notre Dame, Notre Dame, IN 46556, Tel. 219-631-6408, Fax: 219-631-9260, E-mail: ewh@cse.nd.edu

The University of Notre Dame is an Equal Opportunity/Affirmative Action employer.

University of Oklahoma School of Computer Science

The School of Computer Science at the University of Oklahoma, invites applications for two faculty positions: one a senior position in the area of telecommunications and networking, the other a position in software engineering with interest in applications of formal methods to the practice of software development or in another field, such as database systems, human-computer interaction, or visualization, that would enhance the strength of the School's existing research programs.

Applicants must hold a doctorate in Computer Science or a related discipline. Applicants for the senior position must have sufficient academic accomplishments or industrial experience for appointment as Associate or Full Professor. In addition to success in research, candidates must demonstrate a strong commitment to excellence in teaching at both the undergraduate and graduate levels. A strong research core in telecommunications and networking is an integral part of the strategic plan of the School. Candidates should be highly motivated, energetic, and have demonstrated communication and leadership skills in both the university and industrial settings. Many exciting opportunities in the networking area exist within the School of Computer Science with support from the College of Engineering. One example is the development of a statewide tera-bit testbed, to be used in developing and evaluating next-generation high-speed switching technology. The School and College actively support collaboration with industry, especially when technology transfer is a prominent goal.

The School of Computer Science offers bachelors, masters, and doctoral degrees. About 350 students are enrolled in the undergraduate program, which is CSAB accredited. The School has about 100 graduate students. Faculty research interests include telecommunication networks, software engineering, functional programming, database systems, fault tolerance and testing, embedded systems, computer vision, human-computer interaction, parallel and distributed computing, large scale scientific computing, graph theory and combinatorial optimization, and theoretical computer science. Norman is a suburb of about 90,000 people within the Oklahoma City metropolitan area (approximate population of 1,000,000). Norman offers award-winning schools, cultural festivals, diverse local industry and an inexpensive cost of living.

Applications with a list of five references must be submitted to: S. Lakshminarayanan, Chair, Faculty Search Committee, School of Computer Science, The University of Oklahoma, 200 Felgar Street, Room 114

Norman, OK 73019-6151
Tel. 405-325-2978
Fax: 405-325-4044
E-mail: varahan@cs.ou.edu

The preferred start date for the senior position is January of 2000, but a later start date is also possible. Screening will begin on October 1, 1999 for the senior position and January 1, 2000 for the other position. Applications will be accepted until the positions are filled. The University is an Equal Opportunity/Affirmative Action employer. Women and minorities are especially encouraged to apply. OU is responsive to the needs of dual-career couples.

University of Rochester Department of Computer Science

The Computer Science Department at the University of Rochester invites applications for tenure-track positions. Candidates at the assistant professor level must have received, or be about to receive, a doctorate in Computer Science or a related discipline, and must demonstrate exceptional potential for both research and teaching. Candidates at more senior levels must possess an outstanding record of scholarly achievement. Research interests in all areas of computer science will be considered, but we are particularly interested in networking, IO/databases, compilers, and other areas of experimental systems.

Our department is small (twelve faculty), with a strong record of research publication and external funding. We offer an outstanding research environment, with excellent students and facilities, and an unusually close-knit and collegial atmosphere. Current research interests include artificial intelligence (vision/robotics/virtual reality, natural language/knowledge representation), parallel systems (compilers, operating systems and runtime environments, computer architecture, performance analysis and prediction), and theory of computation (algorithms, computational complexity, data mining, DNA computing). Total enrollment in the Ph.D. program is approximately forty students. Further information can be found at <http://www.cs.rochester.edu>.

Applicants should send a curriculum vitae, copies of relevant papers, and the names and addresses of at least three references to:

Faculty Recruiting Committee
Department of Computer Science
University of Rochester
Rochester, NY 14627-0226

The University of Rochester is an Equal Opportunity employer; women and members of minority groups are strongly encouraged to apply.

University of San Diego Department of Mathematics and Computer Science

USD, an independent Catholic University of about 7,000 students, invites applications for a tenure-track Assistant Professor position in the Department of Mathematics and Computer Science, starting with the Fall semester of 2000.

Candidate must have a Ph.D. in Computer Science or a related field. The teaching load is effectively six three-hour undergraduate courses per year. Faculty are expected to have a strong commitment to excellence in teaching and to maintain active scholarly pursuits. Send resume, three letters of recommendation, and a summary of recent teaching evaluations to:

CS Search Committee
Department of Mathematics and Computer Science
University of San Diego
5998 Alcalá Park
San Diego, CA 92110

USD is an AA/EOE employer. Priority will be given to applications which arrive by February 1.

University of San Francisco College of Arts and Sciences Computer Science

The Department of Computer Science at the University of San Francisco invites applications for a fulltime tenure-track

Professional Opportunities

position at the Assistant Professor level, to begin in Fall 2000.

Department. Our growing Department currently serves eighty undergraduate majors and thirty-five Master's degree students. Faculty interests include software engineering, user interfaces, computer networks, programming languages, parallel programming, operating systems, artificial intelligence, and logic. The Department operates several computer laboratories with networked PC's and SGI systems. The University's location fosters interaction with industry in Silicon Valley and San Francisco's Multimedia Gulch.

Responsibilities may include teaching any of our undergraduate and graduate courses in Computer Science. Upper-division and graduate courses are usually relatively small. Faculty normally teach three courses per semester. Faculty are expected to guide masters level graduate students and to develop an independent and ongoing research program.

Qualifications. University teaching experience, evidence of scholarship, an earned doctorate in Computer Science by Fall 2000, experience and willingness to work in a culturally diverse environment, an understanding of and commitment to support the mission of the University are required.

We particularly encourage minority and women applicants for all positions. The University of San Francisco is an Equal Opportunity and Affirmative Action Employer, and will provide reasonable accommodations to individuals with disabilities, upon request.

Applicants should submit a letter of application, curriculum vitae, graduate transcripts, brief description of research plans, evidence of teaching ability (including available student evaluations), brief statement of teaching philosophy, and three letters of recommendation to:

Computer Science Search Committee
c/o Peter Pacheco
Associate Professor and Chair
Department of Computer Science
University of San Francisco
2130 Fulton Street
San Francisco, CA 94117-1080

In order to insure full consideration applications should be received by February 1, 2000.

Established as San Francisco's first institution of higher learning in 1855, the University of San Francisco presently serves 8,000 students in the arts and sciences, business, education, nursing, law, and professional studies. The University is a private, Catholic and Jesuit institution and particularly welcomes candidates who will contribute positively to such an environment.

University of Texas at Austin Department of Computer Sciences

The Department of Computer Sciences of the University of Texas at Austin invites applications for tenure-track positions. We are particularly interested in candidates at the assistant professor level in the areas of systems, intelligent robotics, or natural language, but excellent candidates in all areas and at all levels will be seriously considered. All tenure-track positions require a Ph.D. or equivalent degree in Computer Science or a related area at the time of employment. Successful candidates are expected to pursue an active research program, perform both graduate and undergraduate teaching, and supervise graduate students.

The department is ranked among the top ten computer science departments in the country. It has thirty-six tenure-track faculty members across all areas of computer science and participates in the University's Computational and Applied Mathematics interdisciplinary program. Austin, the capital of Texas, is located on the Colorado River, at the edge of the Texas Hill Country, and is famous for its live music and outdoor recreation. Austin is also a center for high-technology industry, including companies such as IBM, Dell, Motorola, Sematech, AMD, MCC, Tivoli, Trilog, Dejanews, and Origin Systems. For more information please see the department webpage, <http://www.cs.utexas.edu/>.

For instructions on submitting an application, please see: <http://>

www.cs.utexas.edu/faculty-search or send e-mail to faculty-search@cs.utexas.edu. Inquiries about your application should also be directed to faculty-search@cs.utexas.edu.

Evaluation of applications will be done throughout the academic year until available positions are filled. Candidates are encouraged to apply early; applications received after January 14, 2000 will only be considered if positions remain available. Women and minority candidates are especially encouraged to apply. The University of Texas is an Equal Opportunity Employer.

University of Texas at El Paso Department of Computer Science

UTEP's Department of Computer Science invites applications for at least two tenure-track faculty positions at all ranks to begin in Fall 2000. We value excellence in research and education, our environment of collegiality, faculty collaboration across a wide range of interests, and involvement with students outside the classroom. We seek colleagues who share these values and who have a strong commitment to both education and research, can collaborate with other faculty, can build a strong research program, and enjoy working in a culturally diverse community.

The Department is part of UTEP's College of Engineering and offers BS and MS degrees in Computer Science and, with the Department of Electrical and Computer Engineering, a Ph.D. degree in Computer Engineering. We have an internationally distinguished record of research, and our teaching program is a nationally recognized model of excellence.

UTEP, with an enrollment of 15,000 students, is located close to where the Rocky Mountains meet the Rio Grande and echoes the beauty of the surrounding high desert. El Paso, a dynamic community of 700,000 people, is a major meeting point between the United States and Latin America.

We will consider applications in all areas of computer science. Candidates must hold a Ph.D. in Computer Science or a closely related field. Send a curriculum vitae, a list of publications, a statement of research and teaching interests, and the names of at least four references to:

Faculty Recruiting Committee
UTEP
Department of Computer Science
El Paso, Texas 79968-0518

Information about the department is available at <http://www.cs.utep.edu>. Send e-mail inquiries to recruiting@cs.utep.edu. The University of Texas at El Paso does not discriminate on the basis of race, color, national origin, sex, religion, age, sexual orientation, or disability in employment or the provision of services.

University of Utah Department of Computer Science

The University of Utah's Department of Computer Science seeks applicants for tenure-track faculty positions at either the Assistant or Associate Professor level. The department places a strong emphasis on interdisciplinary, multi-investigator research activities addressing large-scale problems of significant impact. Both research areas and course offerings benefit from the quality and breadth of our faculty and emphasize a balance of theoretical foundations and practical engineering.

Our recruiting emphasis is in systems, networking, languages, and artificial intelligence, but we will consider strong candidates in all areas of computer science. 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 department can be found at <http://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 Shawn Darby, Department of Computer Science, 50 So. Central Campus Drive, Rm 3190 MEB, University of Utah, Salt Lake City, UT 84112-9205.

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.

University of Washington, Tacoma Computing and Software Systems

The Computing and Software Systems Program at the University of Washington, Tacoma has immediate openings for appointment of tenure-track and non-tenure-track faculty at all ranks. Requirements for the tenure-track position are a Ph.D. in Computer Science or a closely related discipline, a commitment to quality teaching, and a commitment to continuing research. Requirements for non-tenure-track positions are at least an MS in Computer Science or a closely related discipline and a commitment to quality teaching. Non-tenure-track appointments are renewable.

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

Candidates should send a curriculum vitae, three letters of reference, and evidence/discussion of teaching experience/effectiveness, and research interest to:

University of Washington, Tacoma
Finance and Administration
Computing and Software Systems
Faculty Search
Box 358431
1900 Commerce Street
Tacoma, WA 98402-3100

Preference will be given to applications received by November 15. However, applications will be considered until the positions are filled. Salary is competitive and will be commensurate with experience and qualifications.

Specific inquiries may be directed by e-mail to Larry Crum, Director, Computing and Software Systems, at lcrum@u.washington.edu.

The University of Washington, Tacoma is building a culturally diverse faculty and strongly encourages racial and ethnic minorities and persons with disabilities to apply. The University of Washington is an equal opportunity employer.

University of Wisconsin-Milwaukee Department of Electrical Engineering and Computer Science

The Department of Electrical Engineering and Computer Science at the University of Wisconsin-Milwaukee is seeking qualified candidates to fill several tenure-track faculty positions at the assistant professor level in computer graphics, networks, and software and systems. Candidates should have outstanding promise and a strong commitment to both research and teaching. Exceptional candidates in other areas of computer science consistent with the needs of the department, as well as outstanding senior candidates, may also be considered.

The Department offers BS, MS and Ph.D. programs, and current faculty research interests include artificial intelligence, computational geometry, computer graphics, cryptography and data security, distributed systems, and programming languages and software systems. We are committed to continuing the development of computer science at UWM and establishing it as an outstanding program. UWM is located in a pleasant residential neighborhood near the shores of Lake Michigan. Additional information on the Department and UWM may be obtained from <http://www.cs.uwm.edu>.

Applicants should send a curriculum vitae along with the names of at least three references to:
Professor Ichiro Suzuki
Department of Electrical Engineering and Computer Science
University of Wisconsin-Milwaukee

P.O. Box 784
Milwaukee, WI 53201
E-mail: suzuki@cs.uwm.edu
Tel. 414-229-3718

Applications must be postmarked or E-mailed by February 1, 2000.

UWM is an Equal Opportunity/Affirmative Action Employer. The names of those who have not requested that their identities be withheld and the names of all finalists will be released on request.

Wake Forest University Department of Mathematics and Computer Science

Applications are invited for a tenure-track position in computer science at the Assistant Professor level beginning August 2000. Duties include teaching computer science at the undergraduate and graduate levels and continuing research. A Ph.D. in computer science or equivalent is required. Preferred areas of research expertise include computer networks, software engineering, and theoretical computer science; but all specializations will be considered.

The department has nine computer science positions and offers a BS and MS in Computer Science. Send a letter of application and resume to: Richard Carmichael, Department of Mathematics and Computer Science, Wake Forest University, Box 7388, Winston-Salem, NC 27109-7388. AA/EO Employer.

Washington State University School of Electrical Engineering and Computer Science

The School of Electrical Engineering and Computer Science (<http://www.eecs.wsu.edu>) invites applications and nominations for several positions to be filled in Computer Science and Computer Engineering. In CS, areas of interest are very large databases, intelligent data analysis, mobile/wireless computing, and security. In CE, areas of interest are digital hardware design, high performance digital systems, FPGAs, embedded and real-time processor systems. Outstanding candidates in other areas are also encouraged to apply. Candidates at all ranks will be considered. Senior applicants must have a strong record of achievement in academia and/or industry. Junior applicants must have earned a Ph.D. by August 16, 2000, in Computer Science for CS positions or in Electrical or Computer Engineering for CE positions.

Screening of applications will begin December 15, 1999, and continue until the positions are filled. Applicants should send a cover letter that includes a summary of their research and teaching interests, a curriculum vitae, and the names and addresses of three references to:

Chair, Computer Science or Computer Engineering Search Committee
School of EECS
Washington State University
PO Box 642752
Pullman, WA 99164-2752
WSU is an EO/AA educator and employer.

Western Connecticut State University Department of Mathematics and Computer Science

Two tenure track positions (immediate and ongoing)

Appointed academic rank dependent on candidate's background and experience. Ph.D. in CS is preferred; Master's degree CS with extensive relevant experience may be considered.

Duties: teach in several areas of computer science including C++; one position requires teaching operating systems; participation in curriculum development, participation in the University community and development of the candidate's research interests.

Submit a cover letter, a curriculum vitae, a statement describing your teaching philosophy, undergraduate and graduate transcripts, and three letters of recommendation. Send material to:
Dr Ronald Kutz
CS Search Committee
Dept. of Mathematics and Computer Science
WCSU 181 White St.

Professional Opportunities

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Danbury, CT 06810
Application Deadline is Dec. 1, 1999.
AA/EOE/E.

Yale University

Computer Science Department

The Yale Computer Science Department is looking for highly qualified candidates for junior faculty positions beginning in the 2000-2001 academic year. We seek to expand and broaden both the applied and theoretical sides of our research and teaching program, building on existing strengths in applied discrete mathematics, combinatorial optimization, compilers, complexity theory, computer vision and robotics, cryptography and security, distributed computing, coordination languages, formal methods and logic, functional programming languages, high-performance scientific computing, medical applications, network protocols, numerical methods, and parallel architectures. Other areas of particular interest include computational biology, computational neuroscience, computational geometry, computer graphics and visualization, databases, digital libraries, human-computer interaction, multimedia, networking and communications, real-time systems, and software engineering.

Applicants are expected to excel in both research and teaching. They will find many opportunities for research collaborations both inside and outside of the Computer Science department. Interdisciplinary activities are encouraged with Yale's many world-class research groups in computationally-active fields such as biology, chemistry, economics, engineering, geophysics, mathematics, medicine, psychology, physics, and statistics. Yale is known for excellence in teaching, and applicants will have the opportunity to teach bright students in relatively small graduate and undergraduate classes.

Candidates should hold a Ph.D. in Computer Science or related discipline. Applications submitted by February 1, 2000 will be given highest priority. Qualified women and minority candidates are encouraged to apply. Yale is an Equal Opportunity/Affirmative Action employer. Our homepage may be found at www.cs.yale.edu.

Send curriculum vitae and have at least three letters of reference sent to:
Faculty Recruiting Committee
Department of Computer Science
Yale University
P.O. Box 208285
New Haven, CT 06520-8285.

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that fall within current legal requirements are being sought, but these are not yet in place.

Another Round of "Eating Our Seed Corn"

There are early signs of another cycle of "eating our seed corn." The conditions are similar to 1980: undergraduate and graduate students moving to industry jobs rather than continuing their education through the doctorate, faculty recruitment and retention problems, multiple open faculty positions, heavy teaching loads, and low faculty morale. (There also has been a downward trend in the number of computer science doctorates awarded (894 in 1996-97, down 17 percent from 1990-91).)

Horizons from Page 6

bachelor's and master's degrees in electrical engineering from UPR, he received his doctoral degree from Louisiana State University. Today, Vasquez-Espinosa is a Professor of electrical engineering at his alma mater, UPRM, where he has also served as Associate Dean for the engineering faculty, as well as directing two organizations there: the Laboratory of Remote Sensing and Image Processing, and the Center for Computing Research and Development. He is also a consultant for NASA and other private and government agencies, has published more than eighty research publications, and is a husband and father. "My mother taught me to never be afraid," he said. "You can do whatever you dream, if your heart is in it."

Long-term Impact

One of the greatest challenges for minority students to overcome is a common one for many students: mathematics. Thorough knowledge of this subject, of course, is essential

The current situation, however, differs in some important respects. Fewer differences exist between university and industry facilities, so there is less opportunity to address a seed-corn problem through a university facilities program. Highly skilled IT professionals today are employed in many different sectors of the economy, not just in the IT production and services sectors; thus it is more difficult to get companies to work together to agree not to raid the universities or to cooperate in providing grants to university computer science departments. Universities have become more focused on short-term research than they were in the past; thus the opportunities they provide to faculty and graduate students are less different from those in industry. (One strategy currently under consider-

ation, e.g., in the recommendations of the President's Information Technology Advisory Committee, is to bring more long-term research back into the university, making it a more attractive place for certain kinds of faculty and graduate students.)

Looking at IT workforce policy in the United States from a historical perspective suggests that while problems continue to be addressed on a variety of fronts, the issue of balancing the supply of and demand for trained IT workers is a difficult one that is likely to be on the national agenda for some time to come.

William Aspray is the Executive Director of CRA and co-author of CRA's recent report, "The Supply of Information Technology Workers in the United States" (<http://www.cra.org/reports/wits/cra.wits.html>). ■

for a career in computing. According to Bemley, this problem arises regardless of whether a student receives his or her education at a public or private school. The trouble does not arise from calculating an answer to a math problem, but rather in naming its various components. "We take kids around the country," Bemley said. "I find that what's happening on the mathematics side of the house is that young people don't know the names of the concepts they know about."

For example, when teaching arithmetic, everyone knows what subtraction is. But many students don't know terminology such as "difference." So, when they see this word, they may be confused, despite knowing how to actually do subtraction problems. "They don't know what they know," Bemley said. "In most cases, it's a matter of semantics."

Other projects planned by the CDC include a traveling lecture series at various campuses across the country, to encourage underrepresented minorities to attend graduate school in the computing

disciplines. With its multifaceted approach, the CDC hopes to make a long-term impact all along the science and engineering pipeline from K-12 to graduate degrees. "We came up with projects that would get a lot of leverage," Baylor said, "in addressing what we perceive as a problem of minorities choosing careers in computing."

According to Baylor, "The issue of attracting and retaining minorities in scientific careers is critical to this nation. There is a very strong interest nationwide in seeing successful programs, such as those sponsored by the CDC, scaled to a larger audience. 'Faces of Computing' will reach thousands of students, but projects such as this need to be combined with other outreach programs. Of particular importance are mentoring and research opportunities, which are also supported by the CDC and other equally determined organizations."

This article appeared in © 1999 Online: News about the NPACI and SDSC Community. <http://www.npaci.edu/online/>, as CRA-W is a partner of NPACI's. ■

Letter from Page 3

science. I have seen conference committees enlist inexperienced graduate students as reviewers of papers in order to meet the quota for reviews. Because conference papers are limited in length, and because a large number of papers must be reviewed within a short time, the quality of reviews of conference papers is generally low. In contrast, for journals, because there are usually no page limits, authors can explain their ideas completely. Editors can choose qualified reviewers carefully. Reviewers can take adequate time to write thorough reviews.

The CRA memo notes that conference publications enjoy shorter time to print: seven months versus one to two years. Why is this so? To quote the comic strip character Pogo, "I have met the enemy, and he is us." On the whole, our expectations and standards for timeliness in journal reviewing in computer science are

abysmal. I find this situation deplorable, and I challenge all of us leaders in computer science to educate our students and younger colleagues about their obligation to return timely, thoughtful reviews.

Journal publications benefit both the authors and the discipline. By polishing a manuscript for journal publication, the author minimizes the number of errors and improves the clarity of the exposition. Thus, journal papers are more likely to be correct and readable than conference papers. Journals are more widely distributed through libraries than conference proceedings, which go out of print quickly. I have visited libraries at research universities that subscribe to journals but carry none of the proceedings of so-called "prestige conferences." Thus, journals provide greater access to the ideas and contributions of authors.

As campus-level administrator, with responsibility for all graduate programs at Illinois, I understand that

different disciplines have different mechanisms for evaluating scholarly contributions. Historians are evaluated on the quality of the books they write. Musicians are evaluated on their performances. Agricultural extension faculty members are evaluated on their public service. In all disciplines, the criteria for quality include innovation, thoroughness, and clarity, appraised through rigorous peer review. Across disciplines, there are common standards for the evaluation and documentation of publicly presented scholarly work [Glassick et al., 1997]. I believe that computer science is not sufficiently different from other engineering disciplines to warrant evaluation on completely different grounds. The evaluation of scholarship of academic computer scientists should continue to emphasize publications in rigorously refereed, archival scientific journals.

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Letters may be edited for space and clarity.