

# COMPUTING RESEARCH NEWS

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## President's FY 2006 Budget Cuts IT R&D Funding Overall

### *IT R&D at NSF Sees Small Increase; DOE, NIH, NASA Face Reductions*

By Peter Harsha

Citing a need to continue to foster economic growth and address the deficit, as well as continue to prosecute the War on Terror, President Bush released an austere FY 2006 Budget Request that would sharply limit overall discretionary spending, including a significant reduction in the overall federal investment in information technology research and development.

The President's budget plan, released February 7, 2005, would cut overall spending in FY 2006 for the Networking and Information Technology Research and Development (NITRD) program—the federal crosscut for all agencies involved in funding information technology R&D—by 7 percent compared with FY 2005, decreasing the federal investment to \$2.127 billion from \$2.282 billion planned for FY 2005.

The \$155-million cut includes a significant reduction in IT R&D activities at the National

Aeronautics and Space Administration, and additional cuts at the National Institutes of Health and the Department of Energy. The National Science Foundation, Department of Defense, Department of Commerce, and the Environmental Protection Agency would all see slight increases under the President's plan compared with their FY 2005 funding levels.

#### National Science Foundation

NSF is the lead agency in the NITRD program and would benefit from a slight increase in FY 2006 in the President's budget request. Funding for IT R&D at NSF would increase by \$8 million to \$803 million for FY 2006, an increase of 1 percent. NSF's overall budget would increase 2.4 percent to \$5.6 billion in the President's plan—making up the ground lost after a 2 percent overall cut to the agency by appropriators in the FY 2005

Omnibus Appropriations bill passed in December. However, given an average annual inflation rate of 2.75 percent, the President's requested level for NSF represents a slight decrease in real dollars for the agency.

Within NSF, the Computer and Information Science and Engineering (CISE) directorate, home to the bulk of IT R&D funding, would also see an increase in funding in the President's budget. For FY 2006, CISE would grow by \$6.8 million over the FY 2005 level to \$621 million, an increase of 1.1 percent. However, CISE also benefited from some additional priority-setting by NSF Director Arden Bement for the FY 2005.

Concerns from inside NSF and within the computing community over exceptionally low award rates in CISE put pressure on the NSF Director to address the issue by finding additional funding for the directorate. As Peter Freeman, Assistant Director for CISE, reported in the January 2005 edition of *Computing Research News* (vol. 17, no. 1), the directorate's overall award

rate of 16 percent in FY 2004—with award rates in some critical programs like Cyber Trust falling below 10 percent—was the lowest among directorates in the Foundation.

Bement took advantage of some flexibility in funding decisions provided by congressional appropriators in the FY 2005 Omnibus Appropriation to place a priority on CISE funding for the FY 2005 fiscal year. While most directorates suffered cuts ranging from \$4 million to \$6 million, CISE was provided an increase of \$8.5 million in FY 2005 and a smaller \$6.8 million increase in FY 2006. As a result of the increase in the FY 2005 planned budget and the President's requested FY 2006 budget, CISE would see a growth of \$15.2 million in FY 2006 compared with the year just completed (FY 2004), a total increase of 2.5 percent. Only the Social, Behavioral and Economic directorate would grow faster over that period (by 7.9 percent, to \$199 million in FY 2006).

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## CRA Elects Officers to Two-Year Terms

The CRA board has recently elected its officers who will serve two-year terms (July 1, 2005 to June 30, 2007). Dan Reed (University of North Carolina at Chapel Hill) was elected Board Chair; Lori Clarke (University of Massachusetts, Amherst) will serve as Vice Chair; and Carla Ellis (Duke University) was elected Secretary. Phil Bernstein (Microsoft Research) was re-elected CRA's Treasurer.



**Daniel A. Reed** is Chancellor Eminent Professor, Director of the Renaissance Computing Institute, and Vice-

Chancellor for Information Technology at the University of North Carolina at Chapel Hill.

Professor Reed has been a member of the CRA Board of Directors since 1998. He has chaired CRA's High-End Computing Revitalization Taskforce (HECRTF) Workshop;

CRA's Government Affairs Committee, Awards Committee, and Distinguished Service Award Committee; and currently chairs the Communications Committee and is an active member of the Government Affairs Committee. Professor Reed also serves as CRA's Liaison to the Committee to Diversify Computing (CDC) and the American Association for the Advancement of Science (AAAS).

In 2003, Reed was appointed to the Presidents Information Technology Advisory Committee (PITAC), and chairs its Computational Science Subcommittee. He was previously Head of the Department of Computer Science at the University of Illinois, and Director of the National Center for Supercomputing Applications. In 2003 and 2004, Professor Reed testified before House and Senate committees on computational science. He is a Fellow of the ACM and of IEEE, and has received a number of awards and honors.

Professor Reed's research interests include interdisciplinary

collaboration, high-performance computing, experimental performance analysis, parallel I/O, resource management, distributed systems and Grids. He is a graduate of Purdue University with a Ph.D. in Computer Science.



**Lori Clarke**, Professor of Computer Science at the University of Massachusetts, Amherst, joined the CRA board

in 1999. She currently serves on the Executive Committee and was a member of the program committee for the CRA Conference at Snowbird 2004. As a member of CRA-W, Clarke has worked since 2001 to increase its funding and program participation, and also served as a panelist for the Grad Cohort and CAPP programs. She participated in CRA-W's Distributed Mentor

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## Expanding the Pipeline

## Want to Increase Retention of Your Female Students?

By Linda L. Werner, Brian Hanks, Charlie McDowell, Heather Bullock, and Julian Fernald

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## Affiliate Societies



A nerdy-looking guy sits alone working at a computer late at night. Is this a portrait of your typical computer science student? Or instead, does your typical student look like one of a pair of students working together at one computer—laughing, talking, pointing to the monitor, looking at each other, and having fun?

This latter picture is possible if you use pair programming. Pair programming has been found to be very beneficial in educational settings. Students who pair in their introductory programming course are more confident, have greater course completion and pass rates in that course, and are more likely to persist in computer-related majors. Although pairing helps all students, we believe that it is particularly beneficial for women because it addresses several significant factors that limit women's participation in computer science—their fears for safety while working in computer laboratories on weekends and late at night, their reported lack of confidence, and the perceived competitive and anti-social view that most people have of computer programming and computer science.

A 2000 UCLA survey of more than 400,000 entering freshmen at 717 colleges and universities across the United States reported the largest gender gap in computer skills confidence in the 35-year history of the survey. The gender gap in computer use was almost nonexistent (79.5% of men and 77.8% of women report frequent computer use); however, only 23.2 percent of the women vs. 46.4 percent of the men rated their computer skills as "above average" or within the "top 10 percent." Also, 9.3 percent of the men vs. 1.8 percent of the women indicated they intended to pursue computer programming careers [Sax 2000]. This gender gap has been written about extensively and, unfortunately, the pipeline has been shrinking. Even among the most mathematically talented, women favor medicine and law as professions over careers in information technology because they perceive these professions as more socially meaningful and more interactive [Lightbody et al. 1997]. This is consistent with the AAUW report [AAUW 2000] that girls are not avoiding high-tech careers because they are failing.

The use of pair programming in your CS1 introductory programming course has the potential to increase the retention of women in your CS-related majors. In the working world, essentially all non-trivial software projects are created collaboratively. This informal process involving two collaborating individuals using a single computer has been formalized as pair programming and is one of the key practices of the extreme programming (XP) development methodology [Beck 2000]. In XP, all software is designed, developed, and

tested using pair programming. While pairing, one of the programmers, referred to as the 'driver,' controls the keyboard and mouse and is responsible for entering program code. The second programmer, known as the 'navigator,' sits next to the driver and watches for errors, discusses alternative design approaches, and offers suggestions. The programmers regularly trade roles while pairing.

Traditional introductory programming courses for undergraduates generally require that students work individually on their programming assignments. In these courses, working with another student on a homework programming assignment constitutes cheating and is not tolerated. The only resources available to help students overcome any problems that they are having are the course instructor, the textbook, and the teaching assistant. They are not allowed to work with their peers, who are struggling with the same material. This pedagogical approach teaches students that software development is an individual activity, potentially conveying the mistaken impression that software engineering is an isolating and lonely career.

We have experimented with pair programming in CS1 with more than 500 students. We have found that students who participated had more confidence in their programming solutions and enjoyed completing the assignments more than students who programmed alone. Paired students were more likely to complete the course and, consequently, to pass it [McDowell et al. 2003].

On individually taken final exams, paired students performed as well as solo students, were just as likely to pass the subsequent programming course where pair programming was not used, and were more likely to be registered as CS-related majors one year later.

With respect to the CS gender gap, pair programming holds promise for closing it. Three academic quarters after our experiment, we looked at the declared majors for those students who participated in our study. We wanted to know if the paired women students were more likely to declare a CS-related major one year after completing the introductory programming course. Significantly more paired women programmers than solo women programmers went on to declare a CS-related major. Among the group of women who indicated on the first day of the introductory course that they planned to major in a CS-related field, those who paired were more likely to have declared a CS-related major one year later than those who worked individually. Out of 42 women who indicated they planned a CS-related major and worked in a pair for CS1, 25 (59.5%) of them had declared a CS-related major one year later, compared with only 2 out of 9 (22.2%) of the

women who worked alone. This result is both practically and statistically significant ( $\chi^2(1) = 4.14$ ,  $p < .05$ ).

The results are great for the men, too. Among the group of men who indicated on the first day of the introductory course that they planned to major in a CS-related field, those who paired were also more likely to have declared a CS-related major one year later than those who worked individually. Out of 150 men who indicated they planned a CS-related major and paired in CS1, 111 (74%) of them had declared a CS-related major one year later, compared with only 17 of the 36 (47.2%) who worked alone. This result is also both practically and statistically significant ( $\chi^2(1) = 9.70$ ,  $p < .005$ ).

For more detailed information regarding our pair programming experiments, our results, or for guidelines and teaching materials for its use in your programming courses, see <http://www.soe.ucsc.edu/~charlie/projects/pairprogramming>.

*Linda Werner is a lecturer in Computer Science at the University of California, Santa Cruz (UCSC); Brian Hanks is an assistant professor of Computer Science Information Systems at Fort Lewis College, Durango, CO; Charlie McDowell is a professor of Computer Science (UCSC); Heather Bullock is an associate professor in Psychology (UCSC); and Julian Fernald is assistant director of Institutional Research at UCSC.*

*This work was funded by National Science Foundation grants EIA-0089989. Any opinions, findings, and conclusions or recommendations expressed in this paper are those of the authors and do not necessarily reflect the views of the National Science Foundation.*

## Notes:

American Association of University Women Education Foundation Commission on Technology, Gender, and Teacher Education, 2000, "Tech-Savvy: Educating Girls in the New Computer Age (2000)," [http://www.aauw.org/research/girls\\_education/techsavvy.cfm](http://www.aauw.org/research/girls_education/techsavvy.cfm)

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Lightbody, P., G. Siann, L. Tait, and D. Walsh 1997, "A Fulfilling Career? Factors Which Influence Women's Choice of Profession," *Educational Studies*, 23, 1997, pp. 25-37.

Sax, L.J., Astin, A.W., Korn, W.S., and Mahoney, K.M., 2000, "The American Freshman: National Norms for Fall 2000." See [http://www.gseis.ucla.edu/heri/norms\\_pr\\_00.html](http://www.gseis.ucla.edu/heri/norms_pr_00.html) for a summary. ■



# CS Bachelor's Degree Production Grows in 2004; Poised for Decline

By Jay Vegso

CRA's Taulbee Survey of Ph.D.-granting Computer Science (CS) and Computer Engineering departments in North America has been conducted each fall since 1974. Results from the latest survey were provided to participants and CRA members in February. They will be published on CRA's website ([www.cra.org/statistics/](http://www.cra.org/statistics/)) and in *Computing Research News* in May. Due to the interest in the data on undergraduate degrees, however, CRA has decided to release a portion of the results early.

This article reports on CS bachelor's degree enrollments and production among Ph.D.-granting departments in the United States since the mid-1990s. For figures that group CS departments by rank, the rankings are based on information collected in the 1995 assessment of research and doctorate programs in the United States conducted by the National Research Council (see <http://www.cra.org/nrc>).

As can be seen in Figure 1, total bachelor's degree production increased in the 2003/2004 academic year to 14,185. Nevertheless, this was its slowest rate of growth (5 percent) since the mid-1990s. In addition, growth in the number of degrees granted by the top 36 departments ranked by the NRC began to slow in 2001/2002, and production shrank last year by 3 percent. The median number of degrees granted by the top 36 departments has declined for the past two years, to 109. At the same time, growth among those ranked 37 and above continued at about 10 percent last year, and the median number of degrees granted by them increased to 65.

It is important to remember that these results are for Ph.D.-granting departments only. The National Science Foundation publishes results for all institutions that grant CS degrees, but its most recent data are from 2000/2001. Traditionally, the Taulbee Survey's Ph.D.-granting schools have produced a little less than 30 percent of the undergraduate

CS degrees reported by the NSF. As a result, it is possible to estimate that a little more than 50,000 undergraduate CS degrees were granted in 2003/2004.

While the current undergraduate CS degree production numbers are strong, they appear poised to decline in coming years. The number of students who declared their major in CS has declined for the past four years and is now 39 percent lower than in the fall of 2000 (Figure 2). The number of new CS majors among departments ranked 37 and above has declined steadily since 2000, and since 2002 for those ranked in the top 36. The impact of these declines is now being felt among enrollments, which have decreased by 7 percent in each of the past two years (Figure 3). The greatest decline in the past few years has occurred among the top 36 departments, where enrollments fell by 19 percent between 1999/2000 and 2003/2004. In comparison, enrollments for those ranked 37 and above dropped 13 percent between their peak in 2001/2002 and last year.

A downturn in undergraduate CS degree production therefore seems likely in the coming decade. This is not surprising in light of the volatile history of the field. According to the NSF, undergraduate CS production nearly quadrupled between 1980 and 1986, to over 42,000 degrees. This period was followed by a swift decline and leveling off during the 1990s, with several years during which the number of degrees granted hovered at around 25,000. During the late 1990s, CS degree production again surged, to over 43,000 in 2001. Another downward trend was foreseeable. Indeed, survey results from the Higher Education Research Institute have indicated a declining interest in CS as a major among incoming freshmen for the last five years: from 3.8 percent in 1999 to 1.4 percent in 2004. How much of an impact this will have on degree production, and whether this will simply be part of a pattern, are unknown. ■

Figure 1. CS Bachelor's Degrees Granted

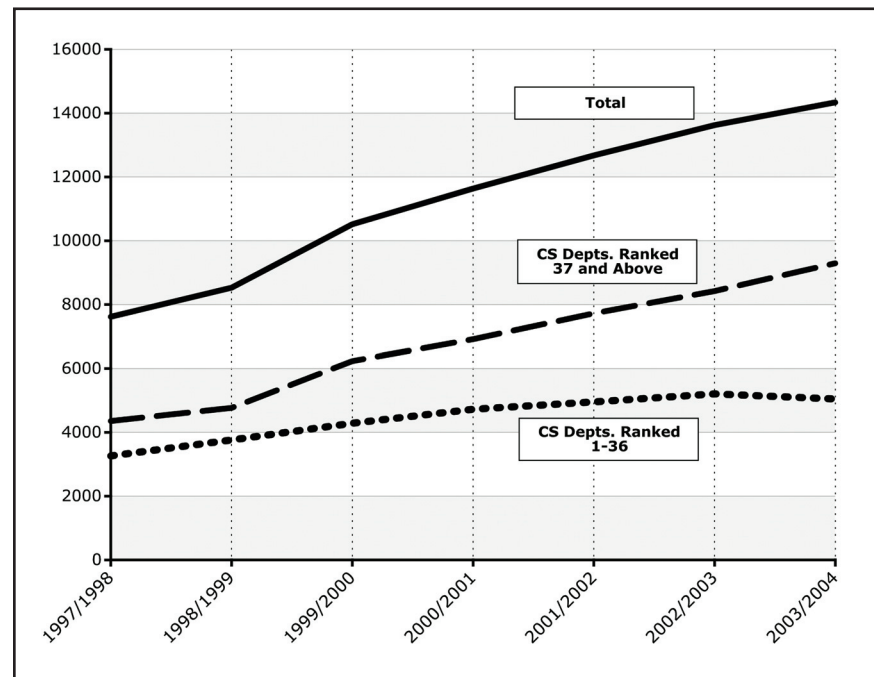


Figure 2. Newly Declared CS Majors

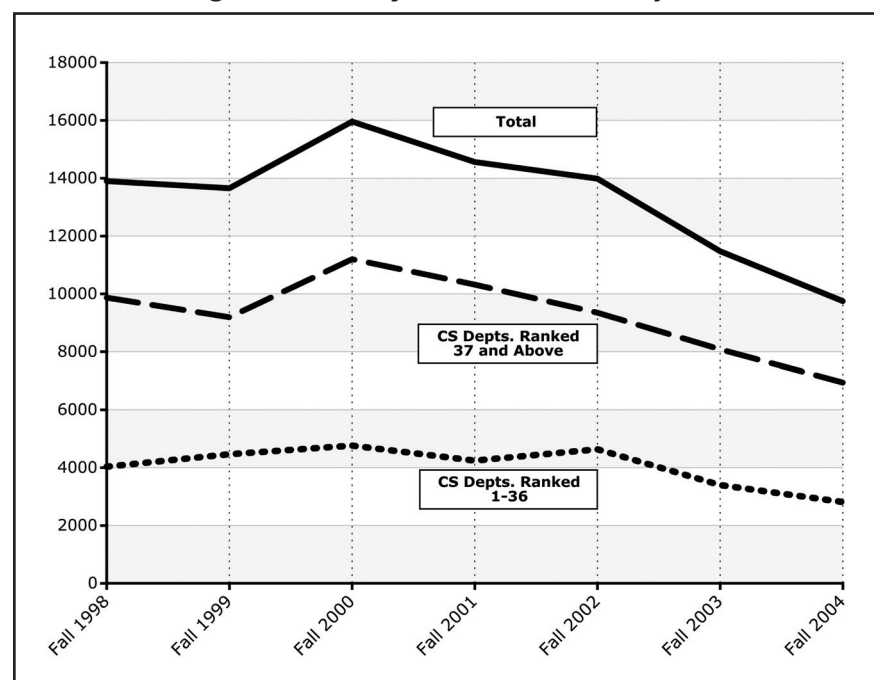
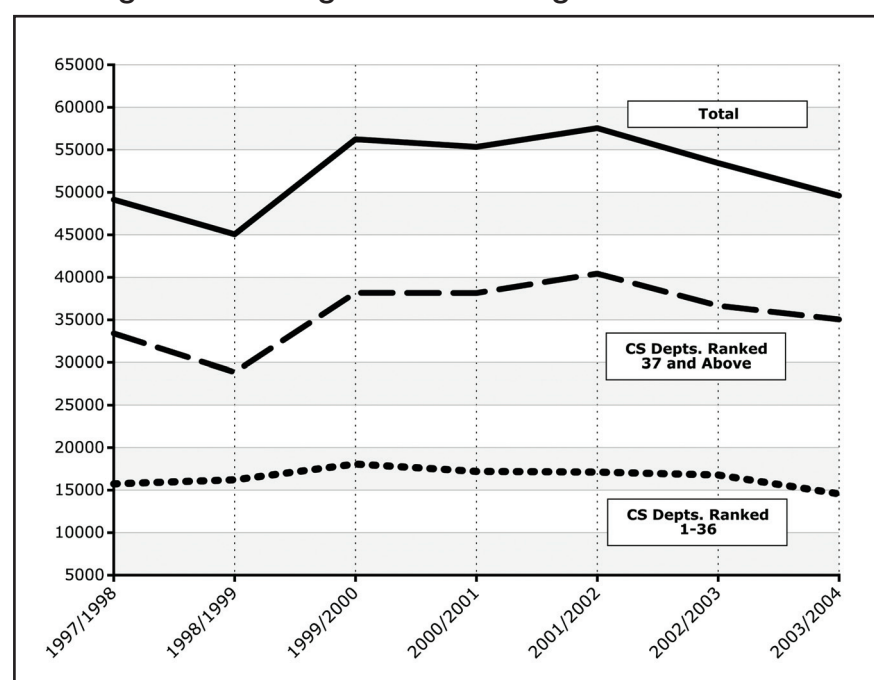


Figure 3. Undergraduate CS Degree Enrollments



## Richard Tapia Celebration of Diversity in Computing Conference 2005

October 19-22, 2005 in Albuquerque, New Mexico

Call for Participation  
Submission Date March 4, 2005

See: <http://www.ncsa.uiuc.edu/Conferences/Tapia2005/cfp.html>

**FY06 Budget  
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The biggest cut at NSF would be made to the Education and Human Resources directorate, which would fall 12.4 percent in FY 2006 to \$737 million, a \$104-million reduction. Major Research Equipment and Facilities would see an increase of \$76 million in FY 2006 to \$250 million, an increase of 44 percent. That increase would go to fund existing MRE projects. NSF is requesting no new major research equipment starts in FY 2006.

**Department of Defense**

Both basic and applied research in the Department of Defense would see large reductions overall in FY 2006 under the President's plan. DOD basic research ("6.1" research in defense parlance) would decrease \$194 million to \$1.31 billion in FY 2006, a reduction of 14 percent. DOD applied research ("6.2" research) would see a \$711-million reduction to \$4.13 billion, a 15-percent reduction.

The DOD contribution to NITRD is harder to assess. The President's budget, though it includes numbers for DOD, notes that the agency will "reassess which of its IT R&D programs are appropriate to count as part of the NITRD program" and report any changes to the NITRD coordinating office—indicating there is some question as to whether the funding level reported is accurate. The funding level included in the President's Budget Request—the only numbers available at press time—indicate DOD's contribution to NITRD would actually increase \$17

million in FY 2006 to \$294 million under the President's request, an increase of 6 percent.

While basic research at DARPA is also slated to drop to \$222 million in FY 2006 from \$246 million planned in FY 2005, applied research at the agency would see a slight gain to \$2.01 billion, from \$1.96 billion in FY 2005. Two funding lines at DARPA of particular interest to computing research would also see increases. Information and Communications Technology would grow by \$11 million in FY 2006 to \$199 million, an increase of 6 percent. Cognitive Computing Systems would grow by \$51 million to \$201 million, an increase of 34 percent.

**Department of Energy**

Overall, the Department of Energy Science Programs would see a reduction of \$137 million in FY 2006, to \$3.46 billion from \$3.60 billion planned for FY 2005, a decrease of 4 percent. Included in that reduction is a \$28-million cut to DOE NITRD-related funding. In FY 2006, DOE would spend \$355 million on IT R&D, down from \$383 million in FY 2005.

The President's plan also calls for an 11 percent cut to DOE's Advanced Scientific Computing program, to \$207 million in FY 2006 from \$233 million.

**National Aeronautics and Space Administration**

The NASA IT R&D budget would take the largest hit of any NITRD agency, according to the funding levels included in the President's budget. While the agency

would enjoy an overall funding increase of \$377 million in FY 2006, to \$9.5 billion from \$9.1 billion in FY 2005, that increase would fall solely to the Exploration Systems accounts at NASA in support of the President's Moon/Mars initiative. NASA's Science and Aeronautics accounts would both see reductions of \$51 million and \$54 million, respectively (1 percent and 6 percent).

NASA's IT R&D contribution would fall \$135 million in FY 2006 to \$57 million from \$192 million in FY 2005, a decrease of 70 percent. Details of the cut were not available as this article went to press. For the latest information, see CRA's *Computing Research Policy Blog* at: <http://www.cra.org/govaffairs/blog>.

**Health and Human Services/National Institutes of Health**

The President's plan includes a reduction in NIH's contribution to the NITRD program in FY 2006. NIH would invest \$551 million in FY 2006, \$22 million less than FY 2005, a decrease of 4 percent. However, the President's Budget plan includes baseline budget levels for NIH—funding for FY 2004 Actual

and FY 2005 Estimated—that are \$119 million higher than similar levels the agency reported in last year's budget request, with no additional detail about the source of the additional funding, or where it was directed, available at press time. Please see the CRA *Computing Research Policy Blog* for the latest information.

The release of the President's budget request marks the first step in the year-long process of setting the final budget and appropriations for federal agencies. The President's budget is a useful guide for Congress as it begins its deliberations, but it is hardly definitive. Congress will work in the coming months to set its own budget priorities, the first step being the attempted passage of a Joint Congressional Budget Resolution, likely in March or April.

CRA will continue to track the budget through this process and work to ensure that computing research is adequately supported. For all the latest developments, check CRA's *Computing Research Policy Blog* at <http://www.cra.org/govaffairs/blog>. ■

**CRA-W Career Mentoring Workshop**

**April 16-17, 2005  
Washington, DC**

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

**CRA Officers  
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Program in 2001, 2002, and 2004. Clarke chaired CRA's Academic Careers Workshop Committee in 2002 and 2004, and has chaired the CRA Outstanding Undergraduate Awards Committee.

In 2004, Professor Clarke was awarded the Distinguished Engineering Alumni Award in the Research and Invention Category from the University of Colorado School of Engineering. She has received both a Faculty Fellowship Award and Chancellor's Distinguished Faculty award from the University of Massachusetts. Her research interests include software verification and testing of distributed systems. Clarke has a Ph.D. in Computer Science from the University of Colorado.



**Carla Schlatter Ellis** is Professor of Computer Science at Duke University. Professor Ellis joined the

CRA board in 2003. She has been a member of CRA's Committee on the Status of Women in Computing Research since 2000, and is currently its co-chair. She also served on CRA's Committee on Recruitment and Retention in 2000-01, and has frequently been a mentor in CRA-W's Distributed Mentoring Program.

Professor Ellis has chaired ACM SIGOPS (1995-99) and SIG's Governing Board (1998-2000). She has served on the ACM Executive Committee and as a Council Member. Other activities include Editor-in-Chief, *ACM Transactions on Computer Systems* (TOCS) in 2003; and Program Chair of the USENIX Annual Technical Conference in 2002.

Professor Ellis's research interests include operating systems, mobile computing, parallel and distributed systems, and energy management. She is a graduate of the University of Washington with a Ph.D. in Computer Science.



**Philip A. Bernstein** is a Senior Researcher at Microsoft Research and an Affiliate Professor at the University

of Washington. He has worked as an industrial researcher, executive manager, executive technical consultant, and product architect at both hardware and software companies, and as a professor in large and small computer science departments. Bernstein's research interests include database systems, meta-data management, and transaction processing. Dr. Bernstein is an ACM Fellow and a winner of the ACM SIGMOD Innovations Award (1994). He received a Ph.D in Computer Science from the University of Toronto.

Bernstein was elected to the CRA Board in 2001. He has been a member of the Executive Committee since 2002, and was elected Treasurer in 2003. He is currently a member of CRA's Industry Committee and Communications Committee. Dr. Bernstein was co-chair of the 2002 Snowbird Conference. He also co-

chaired the Industry-University Committee and currently serves as a member.

Dr. Bernstein is also an active contributor to professional activities in the database research community. He is currently a member of the Board of Trustees of the Very Large Data Base Endowment, a member of the Advisory Board of University of Washington, Tacoma, and has been both a member and chair of the ACM SIGMOD Awards Committee.

CRA is grateful to all the members of the current Executive Committee for their service during the period July 2003 to June 2005—James D. Foley (Georgia Institute of Technology) as Chair; Janice Cuny (University of Oregon) as Vice Chair; Phil Bernstein (Microsoft) as Treasurer; Kathleen McKeown (Columbia University) as Secretary; and Lori Clarke (University of Massachusetts, Amherst)), appointed member. ■



## Transitions/Appointments

The University of Waterloo has announced that **Thomas F. Coleman** has been named Dean of the University of Waterloo's Faculty of Mathematics, effective July 1, 2005. He is currently Professor of Computer Science and Applied Mathematics at Cornell University and Director of the Cornell Theory Center and its spinoff, CTC-Manhattan. Professor Coleman received his Ph.D. from Waterloo.

Former CRA board member, **Barbara J. Grosz**, has been appointed chair of the Task Force on Women in Science and Engineering at Harvard. This is one of two task forces recently appointed by Harvard's President to address the barriers to advancement that women faculty face in academic careers. (<http://www.news.harvard.edu/gazette/daily/2005/02/03-women.html>).

**Jennifer Rexford** has been appointed a Professor of Computer Science at Princeton University, effective February 2005. Professor Rexford, who recently became one of ACM's representatives on the CRA board of directors, was previously a member of the Network Measurement and Engineering department at AT&T Labs—Research in Florham Park, New Jersey. ■

## NAE Announces New Members and Foreign Associates

Congratulations to all members of the CSE community who were recently elected members and foreign associates of the National Academy of Engineering.

CRA board member **Leah H. Jamieson**, Ransburg Professor of Electrical and Computer Engineering and associate dean for undergraduate education, Purdue University, was elected to the NAE for innovations in integrating engineering education and community service.

Others recognized for computer-related accomplishments include: **Rodney C. Adkins** (IBM Systems and Technology Group); **Paul G. Allen** (Vulcan Inc.); **Ivo M. Babuska** (University of Texas, Austin); **Marsha J. Berger** (New York University); **Mark T. Bohr** (Intel Corp.); **John Edward Bowers** (UC, Santa Barbara); **Edmund M. Clarke** (Carnegie Mellon University); **James Q. Crowe** (Communications Inc.); **David E. Culler** (UC Berkeley); **Richard D. Gitlin** (Bell Labs, Lucent Technologies, retired); **Shafira Goldwasser** (MIT); **Gerard J. Holzmann** (Jet Propulsion Laboratory); **Roger T. Howe** (UC Berkeley); **David A. Landgrebe** (Purdue University); **Michael E. Lesk** (Rutgers University); **Jonathan J. Rubinstein** (Apple Computer Inc.); **Frederick D. Weber** (AMD); **Jennifer Widom** (Stanford University); and **Bruce F. Wollenberg** (University of Minnesota). New foreign associates include **William M. Kahan** (UC Berkeley) and **Walter M. Wonham** (University of Toronto).

According to the NAE press release dated February 11, 2005, election to the National Academy of Engineering is among the highest professional distinctions accorded an engineer. Academy membership honors those who have made outstanding contributions to "engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature" and to the "pioneering of new and developing fields of technology, making major advancements in traditional fields of engineering, or developing/implementing innovative approaches to engineering education."

The Academy elected a total of 74 new members and 10 foreign associates. A complete list and additional details can be accessed from the NAE website at: <http://www.nae.edu>. ■

## New STEM Workforce Report

*Preparing the STEM Workforce of the 21<sup>st</sup> Century: Broadening Participation through a Comprehensive, Integrated System*, prepared by C. Dianne Martin (The George Washington University) and Willie Pearson, Jr. (Georgia Institute of Technology), has recently been released.

The report summarizes discussions and recommendations resulting from a workshop convened at the National Science Foundation to examine issues surrounding the development of a diverse and well-prepared science and engineering workforce for the 21<sup>st</sup> century. Workshop attendees represented a range of diverse leaders employed in a variety of sectors and representing the disciplines supported by the National Science Foundation.

The continuing lack of full and diverse participation of all citizens in the science, technology, engineering, and mathematics (STEM) workforce threatens the economic strength, national security, and well-being of U.S. citizens. As groups under-represented in the STEM workforce become an increasingly larger part of the U.S. population, the vitality of the STEM workforce may further decline unless action is taken to broaden participation of all parts of our society.

Federal agencies and other funding organizations must implement program principles designed to increase the full and diverse participation of all citizens in STEM fields, and seven principles that apply to all research, education and infrastructure funding programs were recommended by the workshop. Realizing the capability of all its citizens requires that the nation's policy makers view the development of human resources as inseparable from the goal of expanding the research frontier.

The full report can be found at: [www.seas.gwu.edu/~stem/](http://www.seas.gwu.edu/~stem/)

Hard copies can be ordered from: School of History, Technology and Society, 685 Cherry Street, NW, Georgia Institute of Technology, Atlanta, GA 30332-0345. Tel: 404-385-2265.

### COMPUTING RESEARCH NEWS

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## New CRA Staff Member



We are pleased to welcome our new accountant, Kenneth E. Hoffman, to the CRA staff.

Ken is an experienced CPA who has worked with non-profit organizations, healthcare providers, the mortgage industry, and the federal government. He will be handling the accounting side of CRA, working with the auditors and assuming a number of the tasks previously handled by them. ■

Copies of the new CRA Report, *Using History to Teach Computer Science and Related Disciplines* (\$15.00 each) can be purchased by e-mailing [info@cra.org](mailto:info@cra.org) or by calling (202) 234-2111.

### CRA-W Cohort of Associate Professors Project

#### CRA-W Announces New Meeting

CRA-W announces the second meeting of the Cohort of Associate Professors Project (CAPP). Sponsored by an ADVANCE grant from NSF, this project aims to increase the percentage of Computer Science and Engineering women faculty with the rank of full professor by forming and mentoring a cohort of women from the associate professor ranks. Associate professors and the CRA-W Distinguished Professors will meet to share critical career information and build on strategic leadership skills. The format will be highly interactive, including time for discussions and social interactions along with presentations and panels. The meeting will be held June 10-11, 2005, in the Washington, D.C. area. Travel support is available. More details will be available shortly at <http://www.cra.org/craw/capp>.



## Professional Opportunities

## CRN Advertising Policy

See <http://www.cra.org/main/cra.jobshow.html>**Georgia State University**  
The Brains & Behavior Program  
Neuroscience and Computational  
Biomedicine  
*Brains and Behavior*

The Brains & Behavior Program (B&B) at Georgia State University ([manager@cs.gsu.edu](mailto:manager@cs.gsu.edu)) offers graduate fellowships for its new interdisciplinary initiative in neuroscience and behavior.

The B&B Program brings together seventy faculty members from eight participating departments, Biology, Chemistry, Computer Science, Computer Information Systems, Mathematics & Statistics, Philosophy, Physics & Astronomy, and Psychology, to conduct collaborative research and graduate training. Interdisciplinary research groups within B&B include Brains & Computers, Neurons & Networks, Molecules & Brains, Adaptability & Behavior, and Brains & Social Behavior. Each B&B Fellow will matriculate in a member department and be jointly supervised by a neuroscientist and a member from their home department.

The Brains & Behavior Program is affiliated with the Center for Behavioral Neuroscience (<http://www.cbn-atl.org/research/index.cfm>), a National Science Foundation Science and Technology Center.

**Molecular Basis Of Disease**

The Molecular Basis of Disease Area of Focus (MBD) at Georgia State University, Atlanta, GA, ([manager@cs.gsu.edu](mailto:manager@cs.gsu.edu)) is recruiting students for its newly established Ph.D. fellowship program. The MBD Area of Focus is an interdisciplinary program in computational biomedicine that includes over seventy faculty members in the Departments of Biology, Chemistry, Computer Science, Physics and Astronomy, Mathematics and Statistics, and Computer Information Systems. Interdisciplinary research foci within the MBD include Structural Biology, Computational Biology and Bioinformatics, Cancer and Infectious Diseases.

Applications should be made directly to the Ph.D. programs of the participating departments. MBD fellows receive an annual stipend of \$22,000 plus a full tuition waiver.

For more information and to request application materials, please contact:

Ms. Adrienne Martin  
Phone: 404-651-0610  
[manager@cs.gsu.edu](mailto:manager@cs.gsu.edu)

**Indiana University**  
Department of Computer Science &  
School of Informatics  
*Tenure-Track Faculty Position*

The School of Informatics and the Department of Computer Science at Indiana University at Bloomington are expanding their Cybersecurity research team and invite applications for a tenure-track or tenured position starting Fall 2005. Applicants must possess an outstanding record of research and a sincere commitment to teaching. Additionally, a Ph.D. degree or equivalent in computer science or a related discipline is required. Preference will be given to candidates with demonstrated strength in network security but applications from extraordinary candidates in all areas of computing research are welcome.

We are going through an exciting growth phase and have recently added 42 tenure-track faculty. With a current combined academic faculty of 62, in the School of Informatics and the Department of Computer Science cover a broad range of research areas. Further, research centers like CACR (Center for Applied Cybersecurity Research) and PTL (Pervasive Technology Labs) support a wide variety of focused as well as collaborative research projects spanning multiple academic units on campus. More information about the School of Informatics can be found at [www.informatics.indiana.edu](http://www.informatics.indiana.edu). The department of Computer Science can be visited at [www.cs.indiana.edu](http://www.cs.indiana.edu).

Applicants should submit a curriculum vitae, a statement of research and teaching emphasizing informatics and computer science, and 3 reference letters for junior faculty and 6 reference letters for associate and full professors. You may either apply online at: <http://xavier.informatics.indiana.edu/cgi-bin/recruit/index.cgi>

or submit materials to:  
Faculty Search Committee  
901 E. 10th Street  
Bloomington, Indiana 47408

Indiana University is an equal opportunity employer and applications from under represented groups are strongly encouraged.

**Iowa State University**  
Electrical and Computer Engineering  
Department  
*Faculty Positions*

The Electrical and Computer Engineering Department has several open faculty positions and invites individuals with core expertise in software engineering to apply. Applicants in other areas will also be considered relative to existing and emerging needs in the department. Duties and responsibilities include undergraduate and graduate teaching, impact-oriented research, and professional/institutional service.

Candidates must have a Ph.D. degree in electrical engineering, computer engineering, computer science, or a related field, demonstrate potential to excel in the classroom, and demonstrate potential to establish and maintain a productive externally funded research program. Associate and Full Professor candidates should, in addition, have an excellent record of externally funded and internationally recognized research. Rank and salary are commensurate with qualifications.

The website <http://cassie.ece.iastate.edu/newfac> provides application details and additional information about these positions. ISU is an AA/EEOE.

**Johns Hopkins University**  
Whiting School of Engineering  
*Faculty Position: Language and Speech Processing*

The Johns Hopkins University, Whiting School of Engineering, invites applications for a tenured or tenure-track faculty appointment in the area of automatic speech recognition. Rank will be dependent on the experience and accomplishments of the candidate. The School is seeking an exceptional person who will play a leadership role in the Center for Language and Speech Processing (CLSP), a center involving faculty, research scientists, and students from five departments within the Schools of Engineering, and Arts & Sciences.

Candidates must have a Ph.D. in a relevant discipline (e.g., electrical engineering, computer engineering, computer science); demonstrated research accomplishment appropriate to rank desired; and a strong commitment to teaching and research. The candidate should be able to lead CLSP's automatic speech recognition research programs, and should have the experience and ability to participate in major speech recognition experimental evaluations. It is expected that the appointed candidate will hold an appointment in either Electrical and Computer Engineering or Computer Science.

Additional information on the Center for Language and Speech Processing and the Whiting School of Engineering can be found at [www.clsp.jhu.edu](http://www.clsp.jhu.edu) and [www.wse.jhu.edu](http://www.wse.jhu.edu), respectively.

Candidates should submit curriculum vitae, including the names and addresses of at least three references, to:

CLSP Search Committee  
c/o Sue Porterfield  
320 Barton Hall  
Johns Hopkins University  
3400 North Charles Street  
Baltimore, MD 21218

Review of applications will begin on February 1, 2005 and will continue until the position has been filled.

The Johns Hopkins University is an EEO/AA employer.

**Kansas State University**  
Department of Computing and Information  
Sciences  
*Faculty Position*

The department of Computing and Information Sciences at Kansas State University invites applications for a tenure-track position beginning in Fall 2005. Preference will be given to candidates in the areas of Bioinformatics data mining, data management, and data integration. Applicants must be committed to both teaching and research. Applicants should have a PhD degree in computer science with demonstrated expertise in Bioinformatics; salary will be commensurate with qualifications. Applications must include descriptions of teaching and research interests along with copies of representative publications.

Kansas State University is committed to the growth and excellence of the CIS department. The department offers a stimulating environment for research and teaching, and has several ongoing collaborative projects involving researchers in different areas of computer science as well as other engineering and science departments. The department has a faculty of nineteen, more than 100 graduate students, 300

undergraduate students, and offers BS, MS, MSE, and PhD degrees. Computing facilities include a large network of servers, workstations and PCs with more than 300 machines and a Beowulf cluster with 100+ processors. The department building has a wireless network and state-of-the-art media equipped classrooms. The department hosts several laboratories for Embedded systems, Software analysis, Robotics, computational engineering and science, and Data-mining. Details of the CIS Department can be found at the URL <http://www.cis.ksu.edu/>. Details about Bioinformatics research at K-State can be found at <http://www.cis.ksu.edu/bioinformatics>.

Please send applications to:  
Chair of the Recruiting Committee  
Department of Computing and Information Sciences  
234 Nichols Hall  
Kansas State University  
Manhattan, KS 66506  
Email: [Recruiting@cis.ksu.edu](mailto:Recruiting@cis.ksu.edu)  
Review of applications will commence February 1 and continue until the position is filled.

Kansas State University is an Affirmative Action Equal Opportunity Employer. The department is committed to diversity, and women and minority candidates are encouraged to apply.

**National Science Foundation**  
Division of Computing and  
Communication Foundations  
*Program Director*

NSF's Directorate for Computer and Information Science and Engineering (CISE), Division of Computing and Communication Foundations (CCF) is seeking qualified applicants for the position of Program Director in the Theoretical Foundations (TF) Cluster. The Program Director will have primary responsibilities involving proposal evaluation, project development and support, program planning, and related administrative duties. Additional responsibilities will include coordination, Foundation-wide education efforts, and advising on logistics requirements of the computer science and education technology field.

Applicants must have a Ph.D. or equivalent experience in computer science, computer engineering, computational science, communication, information science, or allied disciplines, and significant experience in

education. Six years of successful research experience beyond the Ph.D. are required. Applicants must be United States Citizens. The TF cluster covers a broad range of topics summarized under the headings Scientific foundations for computing and communication; models for representing mathematical and scientific information, models of computation, parallel and distributed computation, algorithmic and computational approaches to mathematics, advanced scientific computing and large-scale, high-end application methodologies, advanced techniques for communicating information on a variety of channels, advanced signal processing techniques for multiple media, centralized and ad hoc wireless networks, and distributed sensor systems and networks. Women and under-represented minority candidates are especially encouraged to apply.

The announcement E20050046-Rotator which includes position requirements and application procedures is located on NSF's Division of Human Resource Management website at:

<http://www.nsf.gov/jobs>.

Hearing impaired individuals may call TDD (703) 292-8044. Applications must be received by April 18, 2005.

NSF is an equal opportunity employer committed to employing highly qualified staff that reflects the diversity of our nation.

**New Jersey Institute of  
Technology**  
Department of Computer Science  
*Faculty Positions*

The Department of Computer Science at New Jersey Institute of Technology invites applications for faculty positions, beginning fall 2005. NJIT seeks applicants with research interests in information & data security & bioinformatics. System-building experience will be a plus. Strong candidates in other fields will also be considered. Applicants should have a PhD in computer science or a closely allied field. Senior applicants should have an outstanding record of research, teaching & service. Junior applicants should have demonstrated potential for original research & a commitment to excellence in teaching. Salaries are competitive & commensurate with appointment rank & qualifications. NJIT is an equal opportunity, affirmative action, equal access employer.

NJIT is a public research university. The Department of Computer Science, with 29

**CAL POLY**  
DEAN, COLLEGE OF ENGINEERING

**THE POSITION:** The Dean provides support for the faculty of the College by creating a positive environment for teaching, scholarship, research and professional engagement, and service to the University and community. The Dean is responsible for the quality of academic programs and for managing the fiscal, human resources, and physical facilities of the College. Because of the learn-by-doing philosophy at Cal Poly, the Dean is responsible to support the current laboratory-based curricula and to support the development of new laboratories. The Dean is expected to build partnerships with alumni and the business community, and to seek supplemental financial support for both new and existing programs. The successful applicant should be prepared to demonstrate the leadership ability to distinguish the College of Engineering as a nationally prominent learning center that is reflective of the polytechnic character of the University. The Dean participates in the development of University-wide policy as a member of the Academic Deans' Council and the President's Strategic Management Group. The Dean is appointed by the President and reports directly to the Provost and Vice President for Academic Affairs.

**QUALIFICATIONS:** An earned doctorate in one of the instructional areas within the College. Credentials appropriate for a tenured appointment at the rank of professor to include a distinguished record of teaching and scholarship. Successful record of academic and administrative experience encompassing human resources and fiscal management; a strong commitment to academic excellence; a demonstrated capacity for academic leadership and team building; commitment to fostering a technology-enhanced collaborative learning environment; capability to expand alliances with the private sector; experience in the design and continuous implementation of the strategic planning process; strong experience and a commitment to engage the College in a comprehensive program of advancement activities; ability to enhance and to work effectively with an ethnically and culturally diverse campus community and to address student needs in a multicultural educational environment.

**COMPENSATION:** Salary is commensurate with the background and experience of the individual selected. All rights associated with the appointment are governed by the Management Personnel Plan adopted by the CSU Board of Trustees.

**THE COLLEGE:** The College of Engineering is organized into the following departments: Aerospace Engineering, Civil and Environmental Engineering, Computer Science, Electrical Engineering, Industrial and Manufacturing Engineering, Materials Engineering, and Mechanical Engineering. The mission of the College of Engineering is to educate students for careers of service, leadership and distinction in engineering or other fields by using a participatory, learn-by-doing, "hands-on" laboratory, project- and design-centered approach. Nearly 130 full-time faculty members teach over 4,800 students enrolled in twelve baccalaureate and nine Master's degree programs. The College is the largest undergraduate engineering college west of the Rockies and one of the nation's premier institutions for undergraduate engineering education. Over half of all engineering courses have associated laboratories that provide the hands-on experience necessary to link theory with practice. In addition, students have the opportunity to participate in "real world" engineering problem solving through co-ops and internships with industry and government and through the senior project capstone design experience. Graduates are accustomed to working in diverse, goal-oriented teams.

**THE UNIVERSITY:** Cal Poly is a state university with nearly 18,000 students. The University has a distinctive mission and is best known for its polytechnic programs. It also offers comprehensive curricula in the arts and sciences. One of the 23 campuses of The California State University, Cal Poly has built an exemplary reputation on its learn-by-doing approach to the preparation of undergraduate and graduate students. The University is organized into seven colleges: Agriculture, Architecture and Environmental Design, Business, Education, Engineering, Liberal Arts, and Science and Mathematics. Nearly two-thirds of the University's students major in agriculture, architecture and environmental design, business, or engineering. Student quality is high, with applications significantly exceeding admissions. University families live in San Luis Obispo and nearby communities both on the coast and inland. San Luis Obispo, a city of 44,000, is located twelve miles from the Pacific Ocean and midway between San Francisco and Los Angeles on California's scenic central coast. Excellent recreational facilities are available, and the area has an outstanding climate, with an average daily maximum temperature of 62.2 in January, 77.0 in August, and an annual average of 70.2.

**APPLICATIONS AND NOMINATIONS:** The search committee will begin to review nominations and applications on February 25, 2005, and will continue to review them until the position is filled. The preferred start date for the position is September 1, 2005. Using the internet (go to <http://www.calpolyjobs.org>), candidates must complete electronically the on-line Cal Poly Management Employment Application and apply to Requisition Number 100477. In addition, each applicant must provide (either as attachments to the on-line application or sent by surface mail) the following documents: (1) cover letter; (2) detailed curriculum vitae or resume; (3) personal statement (two page maximum) of the applicant's view on academic administration and the role and responsibilities of the faculty in a college of engineering; (4) salary history for the last five years; and (5) the names, addresses, and phone numbers of at least five references, including two from faculty. Please reference Requisition Number 100477 on all correspondence. Nominations and other correspondence should be addressed to: Dr. Warren J. Baker, President, c/o Academic Personnel Office, One Grand Avenue, California Polytechnic State University, San Luis Obispo, CA 93407

**INQUIRIES AND ADDITIONAL INFORMATION: Contact Academic Personnel via E-mail: [academic-personnel@calpoly.edu](mailto:academic-personnel@calpoly.edu); FAX: (805) 756-5185; Phone: (805) 756-2844**

Cal Poly is strongly committed to achieving excellence through cultural diversity. The University actively encourages applications and nominations of all qualified individuals. Equal Opportunity Employer



## Professional Opportunities

faculty members & 1,400 students, is part of the College of Computing Sciences. Departmental research interests include algorithms, bioinformatics, medical informatics, computer vision, databases, parallel processing, simulation & modeling, software engineering & computer networking. The department offers programs at the undergraduate, master's & PhD levels in CS. The department plans to offer degree programs in Bioinformatics starting fall 2005 (pending approval).

NJIT is located in Newark's University Heights, a multi-institutional campus it shares with Rutgers University at Newark, the University of Medicine & Dentistry of New Jersey & Science Park. NJIT's location in the NY/NJ metro area is ideal for research collaboration. The area is home to other universities as well as major pharmaceutical, telecommunications, financial companies & research laboratories offering excellent opportunities for collaboration, consulting & industry-sponsored collaborative research. New Jersey enjoys a high standard of living & quality of life. Newark is minutes from New York City & close to the Jersey Shore, providing a wide range of cultural & leisure activities.

Applicants should send a CV along with a cover letter & list of 3 references to:

New Jersey Institute of Technology  
Attn: Personnel Box CS-AP  
University Heights  
Newark, NJ 07102-1982

Inquiries may be directed to faculty-search@cs.njit.edu. For more information about NJIT's Computer Science Dept., visit the website at cs.njit.edu. The website also has the recruiting information.

### Oklahoma State University Computer Science Department Department Head

The Oklahoma State University (OSU) Computer Science Department invites applications and nominations of qualified candidates for the position of Department Head. The Computer Science Department is in the College of Arts and Sciences and the Department Head reports directly to the Dean of Arts and Sciences. The term of initial appointment will begin July 1, 2005, or as negotiated.

The OSU Computer Science Department is a growing department that is committed strongly to the goal of excellence in research, teaching, and outreach. It offers a full range of undergraduate and graduate courses leading to

the B.S., M.S., and Ph.D. degrees in Computer Science. These degrees are offered by the department both at the OSU campus in Stillwater and at the OSU campus in Tulsa. The department 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 accreditation of its B.S. program within the next few years.

The Department Head will be expected to provide visionary leadership and advocacy for the department's undergraduate and graduate programs and for its research and scholarship. It is anticipated that the Department Head will oversee a substantial increase in funding and faculty positions. Responsibilities of the Head include, but are not limited to: hiring, supervising, supporting, and evaluating faculty and staff, managing the budget, and representing the department's interests to the Dean, the higher administration, and the public.

Applicants must qualify for the rank of Professor in the Computer Science Department and have a commitment to excellence in research, teaching, and outreach. A record that clearly demonstrates strong leadership, innovation, and consistent success in securing external research funding is 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 65 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. Tulsa, located in northeastern Oklahoma, is one of two metropolitan cities in Oklahoma. Tulsa is 65 miles east of Stillwater, where the main campus of Oklahoma State University is located. The population of Tulsa is about 380,000, and the population of Tulsa County is about 530,000. There are numerous cultural activities in Tulsa, including a performing arts center that regularly hosts touring Broadway shows and the Tulsa opera, ballet, and philharmonic orchestra. Just a few minutes away, one also can enjoy outdoor activities such as fishing, boating, and hiking.

Oklahoma State University encourages applications from qualified women, minorities, and persons with disabilities. To nominate

someone, please contact the search committee chair via e-mail or phone. To apply, please send a curriculum vitae and the names of three references to:

Chair, Computer Science Head Search Committee  
Computer Science Department  
219 MSCS  
Oklahoma State University  
Stillwater, OK 74078-1053  
Telephone: 405-744-5668  
Fax: 405-744-9097  
E-mail: head-search@cs.okstate.edu  
URL: <http://www.cs.okstate.edu/head-search.html>

The Dean of Arts and Sciences, Dr. Peter Sherwood, also welcomes direct inquiries to him at 405-744-5663 or peter.sherwood@okstate.edu.

For full consideration all applications plus supporting material must be received by February 4, 2005, however, applications will be accepted until the position has been filled.

Oklahoma State University is an Affirmative Action/Equal Opportunity Employer.

### The Pennsylvania State University Department of Computer Science and Engineering

#### Charles Godfrey Binder Professorship

Applications are invited for the Charles Godfrey Binder Professorship. Outstanding candidates in all areas of computer science and engineering will be considered. The candidates are expected to have successful, highly visible research programs that are internationally recognized. They should have the potential to significantly enhance the quality and reputation of the departmental research program. Candidates able to build interdisciplinary connections are especially encouraged to apply.

The Charles Godfrey Binder Professorship comes with a generous endowment. A strong candidate is expected to play a leadership role in the department. The Department of Computer Science and Engineering (CSE) has 29 collegial, tenure-track faculty. The undergraduate and Doctoral programs are ranked in the top 20 by the US News and World Report. The university is committed to growing the faculty ranks over the next several years. Eight members of our faculty are recipients of the NSF Career Award. Our faculty also received 7 NSF ITR Grants and a \$2.5M Research Infrastructure Grant in recent years. There are state-of-the-art research labs for microsystems design and VLSI, computer vision and robotics, virtual environments, high performance computing, bioinformatics, networking and security. The Department offers a graduate program with about 42 Masters students and 142 Ph.D. students, and undergraduate programs with minimum GPA requirements in computer science and computer engineering. In December, 2003, the Department relocated into a new 100,000 square foot building housing both CSE and IST (<http://www.cse.psu.edu/ist.html>).

Penn State is a major research university and is ranked second in the nation in industry-sponsored research among universities. US News and World Report consistently ranks PSU's College of Engineering undergraduate and graduate programs in the top 15 of the nation. The university is located in the beautiful college town of State College in the center of Pennsylvania. State College has 40,000 inhabitants and offers a variety of cultural and outdoor recreational activities nearby. The university offers outstanding events from collegiate sporting events to fine arts productions. Many major population centers on the east coast (New York, Philadelphia, Pittsburgh,

Washington D.C., Baltimore) are only a few hours drive away and convenient air services to several major hubs are operated by three major airlines out of State College.

To apply by electronic mail, send your resume (including curriculum vitae and the names and addresses of at least three references) as a postscript file or PDF file to [recruiting@cse.psu.edu](mailto:recruiting@cse.psu.edu). Applications may also be sent by mail to:

Chair, Faculty Search Committee  
The Pennsylvania State University  
Department of Computer Science and Engineering  
111 Information Science and Technology Building, BOX BIND  
University Park, PA 16802-6822 USA

For more information about the Department of CSE at PSU, see <http://www.cse.psu.edu>. For inquiries, you may contact the chair of the Faculty Search Committee, Thomas F. La Porta (tlp at cse.psu.edu).

PSU is an Equal Opportunity/ Affirmative Action Employer. Women and minorities are encouraged to apply. Click on the link to fill out and print an Affirmative Action Application Data Card.

NOTE: This will require you to have Adobe Acrobat Reader 4.0 or newer to download this form and fill it in prior to printing it. This form can then be faxed to Beth Kennedy at (814) 865-3176.

### Skidmore College Mathematics and Computer Science Tenure-Track Faculty Position in Computer Science

The Department of Mathematics and Computer Science at Skidmore College invites applications for a tenure-track position in Computer Science beginning September 2005. Qualifications include a Ph.D. (or A.B.D.) in Computer Science or a closely related field. The appointment will be at the rank of Assistant or Associate Professor. A commitment to quality instruction of undergraduates and continuing scholarly activity is essential.

Responsibilities will include developing and teaching a wide range of courses across the undergraduate CS curriculum (normally four courses per year) and active research in a field of CS. Startup funds and pre-tenure sabbaticals are available. For detailed information, see <http://www.skidmore.edu/academics/mcs/mcs-home/index.htm>.

Candidates for the position should submit a letter of application and resume, and have three letters of recommendation sent separately to:

Mark C. Hofmann, Chair  
Department of Mathematics and Computer Science  
Skidmore College  
815 North Broadway  
Saratoga Springs, NY 12866

Letter of application and resume may be sent via email to [anita@skidmore.edu](mailto:anita@skidmore.edu). Review of applications will begin immediately and continue until the position is filled. Applications from members of under-represented groups are especially encouraged.

### St. Jude Children's Research, Memphis, TN System Integration Engineer - 09982

Works with a team responsible for the architecture, design, implementation, and maintenance of the Hartwell Center production and research-computing servers. Team is responsible for the scalability, redundancy, performance, and functionality of all aspects of the UNIX servers.

Coordinates integration activities with database administrators, release engineers,

(cont'd)



## Computer Science at TTI-Chicago

### Faculty Positions at All Levels

Toyota Technological Institute at Chicago (TTI-C) is a new institute of Computer Science located on the University of Chicago campus. Applications are being accepted for tenure-track and tenured faculty positions at all ranks. In addition to traditional faculty positions, TTI-C has a larger number of limited term positions. The Institute is expected to grow to a steady-state of 30 faculty by 2009.

TTI-C has use of the interest on a fund of \$100 million set aside by TTI in Japan. We are dedicated to the education of doctoral and master's students, and to basic research in fundamental areas of computer science. Faculty members are expected to receive continuing research grants and will have a maximum teaching load of one course per year in a quarter system. TTI-C has close ties with the Computer Science Dept. of the University of Chicago.

Faculty is particularly sought with research programs in:

- Computational Geometry
- Databases and Data Mining
- Human-Computer Interaction
- Large-Scale Scientific Simulation
- Machine Learning
- Networking and Distributed Computing
- Software and Programming Systems
- Theoretical Computer Science

All positions require a Ph.D. Degree or Ph.D. candidacy, with the degree conferred prior to date of hire.

Please submit your application electronically at:  
<http://www.tti-c.org/apps/faculty.htm>

Toyota Technological Institute at Chicago is an Equal Opportunity Employer



## The University of New Mexico

Great people doing great things.

### Lecturer II Non-Tenure Track Department of Computer Science

#### SCHOOL OF ENGINEERING

We invite applications for a non-tenured position of Lecturer II in the Computer Science Department. The department is committed to excellence in both undergraduate and graduate education, with an ABET-accredited B.S. degree program in computer science, as well as M.S. and Ph.D. programs involving students in leading edge research.

The Department of Computer Science seeks an individual who has an earned Master of Science in Computer Science, Computer Engineering, or closely related field and proven teaching skills in undergraduate education. The successful candidate should have a commitment to undergraduate teaching and ability to teach computer sciences courses in areas of department needs. An earned Ph.D. in Computer Science, Computer Engineering, or closely related field is preferred.

Please submit letters of nominations and applications to: **Computer Science Search Committee, University of New Mexico, MSC 01 1130, Albuquerque, NM, 87131.** Applications should be accompanied by a detailed resume, teaching statement, transcripts, and teaching evaluations along with the names and addresses of five references. For best consideration, applications should be received by March 28, 2005.

New Mexico has a rich and varied culture, and representatives of all underrepresented groups are encouraged to apply. The University of New Mexico, which is both a Carnegie Doctoral/Research University-Extensive and a Minority Institution, is an equal opportunity/affirmative action employer and educator.

## Professional Opportunities

network operations, engineering and QA. Maintains an enterprise-wide complex range of UNIX computer systems and application software.

### Requirements:

- Bachelor's degree in Computer Engineering or Computer Science, four years directly applicable systems integration/management experience.
- Master's degree w/two years directly applicable systems integration/management experience preferred.
- Knowledge of UNIX OS including: Solaris, Linux, IRIX, Tru64, Windows 2000 preferred.
- Experience supporting an Oracle environment a plus. \*Background w/software and hardware concepts: Firewall, SAN and Cluster helpful.
- Familiarity with AIX, Citrix, LDAP, Active Directory, Globus, Grid, IBM, Apache, Veritas, Nfs, Nis, Perl, C, C++ preferred.

To apply: [www.stjude.org/jobs, #09982](http://www.stjude.org/jobs/#09982).  
[www.stjude.org](http://www.stjude.org).

### University of Colorado at Boulder

#### Department of Computer Science Assistant Professor, Tenure-Track

The Department of Computer Science is seeking outstanding candidates for a tenure-track faculty position targeted at the level of Assistant Professor, but experienced candidates with outstanding credentials may be considered for Associate or Full Professor. This position is targeted for candidates whose research focuses on computational biology or bioinformatics, and whose interests overlap the department's core strengths in high-performance computing, machine learning, security, systems and software, and theory.

This position is one of several that the University has committed to bioinformatics as part of a larger initiative in Molecular Biotechnology. It provides an unrivaled opportunity for a top computer scientist to join a critical mass of colleagues from many disciplines including life sciences and biological engineering.

Candidates must have a PhD degree in computer science or a related discipline, enthusiasm for working with both undergraduates and graduates, and the ability to develop an innovative interdisciplinary research program.

Review of applications will begin immediately. Candidates should submit the following:

- a curriculum vitae
- research and teaching statements
- names of at least three references to: Elizabeth Bradley, Chair Department of Computer Science University of Colorado at Boulder 430 UCB Boulder, CO 80309-0430

Further inquiries and electronic submissions should be sent to Stephanie Morris at [scmorris@cs.colorado.edu](mailto:scmorris@cs.colorado.edu).

The University of Colorado is committed to diversity and equality in education and employment.

### University of Maryland, College Park

#### College of Information Studies

#### Assistant, Associate, or Full Professor

We seek colleagues who will join us in advancing our doctoral and masters programs. We strive to prepare leaders in the development and implementation of new techniques and organizational forms for bringing people and information together. We believe that strong interaction of research and teaching is essential to achieve this goal. Among the areas important for this pursuit are:

- Digital Government
- Information Access for the Public
- Leadership for the Information Professions

Affiliation with other units, such as the School of Public Policy or the Institute for Advanced Computer Studies, may be possible for appropriately qualified candidates. For best consideration apply by February 1, 2005. For further details, please see the full position announcement at [www.clis.umd.edu](http://www.clis.umd.edu) or contact:

Douglas Oard, Search Committee Chair  
College of Information Studies  
4105 Hornbake  
University of Maryland  
College Park, MD 20742-4345  
301-405-2035  
[faculty-search@clis.umd.edu](mailto:faculty-search@clis.umd.edu)

The University of Maryland is an equal opportunity/affirmative action employer.

### University of Missouri-Kansas City

#### Computer Science Electrical Engineering Faculty Positions

The Department of Computer Science and Electrical Engineering (CSEE) at the

University of Missouri-Kansas City (UMKC) is seeking applications for several junior level tenure-track positions starting Fall 2005 (exceptional senior applicants will be considered.)

UMKC is one of four premier campuses in the University of Missouri System and Kansas City is sometimes referred to as the best kept secret of the mid-west. We are seeking outstanding candidates with a solid record of research accomplishments (publications and externally generated research funds appropriate for the rank), and with outstanding teaching and leadership abilities for these areas:

- 1) Electrical and Computer Engineering, (mixed signal design, computer architecture and design, chip or VLSI design)
- 2) Software Systems (software engineering, web engineering, multimedia, distributed systems), and
- 3) Networking (network computing, sensor networks, protocols, network management)

The Department has 20 tenured/tenure-track faculty members with funding accomplishments from NSF, DARPA and industries. CSEE provides a rich environment for junior faculty including faculty mentoring. Candidates must have a Ph.D. degree (by August 2005) in Computer Science, Electrical or Computer Engineering, or a closely aligned discipline.

Submit your application materials to: [CSEEFacPos@umkc.edu](mailto:CSEEFacPos@umkc.edu).

See <http://www.csee.umkc.edu> for additional information regarding application procedures and about the department. Review of applications will begin January 15, 2005 and continue until positions are filled.

UMKC is an Equal Opportunity Employer/Affirmative Action employer. Members of under-represented groups are especially encouraged to apply.

### University of Southern California Program in Molecular and Computational Biology, Department of Biological Sciences

#### Faculty Position in Computational Biology and Bioinformatics Assistant Professor or Associate Professor

The University of Southern California invites applications for a position at the Assistant Professor or Associate Professor level in Computational Biology and Bioinformatics.

Candidates with a strong background in computer science, statistical computing or systems biology with applications to molecular biology including genomics and proteomics are

encouraged to apply. The position is in the interdisciplinary Program in Molecular and Computational Biology in the Department of Biological Sciences. Many of the current faculties hold joint appointments in other departments.

Interested candidates should send a curriculum vitae, including research plans and names of three references sent to:

Michael S. Waterman  
Search Committee  
Department of Biological Sciences,  
SHS 172  
University of Southern California  
Los Angeles, CA 90089-1340  
Website: <http://www.cmb.usc.edu>

### University of Victoria

#### Department of Computer Science Faculty Positions

Applications are invited for two regular tenure-track positions at the Assistant Professor level. Applicants in all areas of computer science will be considered. However, one position is designated to be in support of teaching and research in networks and distributed systems; the second position is to support one or more of our new combined programs. These are with Geography (in Geomatics), Health Information Science, Music, Psychology, and Visual Arts. Duties will include teaching at the undergraduate and graduate levels, graduate student supervision, and research. Applicants should possess a Ph.D. in an appropriate field, a strong research record, and a strong commitment to teaching. Full details may be found at: <http://www.csc.uvic.ca/career/index.html>.

The University of Victoria is an equity employer and encourages applications from women, persons with disabilities, visible minorities, aboriginal peoples, people of all sexual orientations and genders, and others who may contribute to the further diversification of the University. The University has excellent policies which support faculty with family obligations, including paid maternity/parental leave and a generous pension plan.

# Tenure Track Position Faculty of Engineering and Computer Science

The Department of Computer Science and Software Engineering at Concordia University invites applications for one tenure-track faculty position. We are looking for an excellent candidate in any area of Computer Science or Software Engineering. The rank and salary will be commensurate with qualifications and experience. The new position requires a PhD degree in Computer Science or Software Engineering, or a closely related field, completed or near completion.

The department places a strong emphasis on teaching and on fundamental and applied research. For the rank of Assistant Professor we seek primarily candidates who have recently obtained a PhD or who are about to receive it. A publication record or very strong research potential is required, as is strong interest and ability in teaching at the undergraduate and graduate levels. For the rank of Associate Professor, excellent credentials in both research and teaching are required. A successful candidate is expected to contribute to course and laboratory development at all levels of instruction, to be active in research, and to secure external research funding. The department encourages interdisciplinary research partnerships, industrial collaborations, and technology transfer.

The department offers Bachelor of Computer Science and Bachelor of Engineering (Software Engineering) programs. The programs are accredited by CSAC and CEAB, respectively. At the graduate level, it offers a Master of Computer Science, a Master of Applied Computer Science, a PhD (Computer Science), and a Postgraduate Diploma in Computer Science. The department houses about 1100 undergraduates and 500 graduate students. The 38 full-time faculty members are assisted by 18 full-time staff members. The Department has a research centre CENPARMI (Centre for Pattern Recognition and Machine Intelligence), is involved in two inter-university research centres (mathematical computing and VLSI architectures), and participates in the Network of Centres of Excellence. The University has several programs to provide seed grants for research in the beginning years.

The department is located in downtown Montreal, an exciting and dynamic city noted for fine restaurants, excellent entertainment, and an urban setting with many opportunities for a rich social life. Montreal combines the excitement of a modern, multicultural city with affordable housing and easy access to outdoor activities. It is also noted for its four major universities and more than two hundred local high-tech companies.

Montreal is currently enjoying high growth in the software industry's main areas of development, especially in telecommunications, aerospace, software development, and multimedia. Montreal is rapidly gaining a reputation as one of Canada's leading high-tech centres. There is ample opportunity for industrial collaboration.

Although the primary language at Concordia University is English, proficiency in French is considered an asset. Interested applicants should send a detailed curriculum vitae, a list of publications, and at least three references to:

Prof. C. Lam, Chair Department of Computer Science  
and Software Engineering Concordia University  
1455 de Maisonneuve West Montreal, Quebec H3G 1M8 Canada  
Tel: (514) 848-2424 ext. 3001  
Fax: (514) 848-2830  
Email: [hiring@cse.concordia.ca](mailto:hiring@cse.concordia.ca)  
Website: <http://www.cse.concordia.ca>

*All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority. Concordia University is committed to employment equity.*