Congress on Track to Provide Big Boost to Physical Sciences, Computing

But Despite Gains, DARPA IT Research Still at Risk

By Peter Harsha

Before adjourning for the traditional August congressional recess, appropriations bills that provide boosts to the research budgets of the National Science Foundation, National Institute of Standards and Technology, and the Department of Energy’s Office of Science, effectively endorse—at least in the short term—a Presidential initiative to double research funding for those agencies over the next 10 years.

The President’s “American Competitiveness Initiative,” (ACI) announced as part of his 2006 State of the Union address in January, aims to boost future U.S. innovation and competitiveness by addressing a number of areas of concern, including research investments, education, workforce and immigration issues, and tax credits.

A key element of the ACI is the acknowledgment that the federal research investment in fundamental “physical sciences” (broadly defined as including physics, chemistry, computer science and mathematics) has lagged the overall increase in the federal research and development portfolio. To address this shortfall, the ACI commits to a 10-year plan to double the research budgets of the agencies most responsible for funding that research: NSF, NIST and DOE’s Office of Science.

Though initially there appeared to be resistance among the House Leadership to any significant increase in federal discretionary spending for physical sciences, computing and engineering efforts in the physical sciences, math and computer science. As early as the 1970s, Argonne spearheaded a series of software engineering projects that culminated in the release of EISPACK, LINPACK, FUNPACK, and MINPACK. Today, MCS researchers are continuing this tradition, with an added emphasis on portability and scalability. Projects in the division range from algorithm development and software design in core areas such as optimization and automatic differentiation, to exploration of new technologies such as distributed (Grid) computing and bioinformatics, to numerical simulations in challenging areas such as talaria and more.

Mathematics and Computer Science Division (MCS)

The basic mission of Argonne’s MCS Division is to increase scientific productivity by providing intellectual and technical leadership in the computing sciences. As early as the 1970s, Argonne spearheaded a series of software engineering projects that culminated in the release of EISPACK, LINPACK, FUNPACK, and MINPACK. Today, MCS researchers are continuing this tradition, with an added emphasis on portability and scalability. Projects in the division range from algorithm development and software design in core areas such as optimization and automatic differentiation, to exploration of new technologies such as distributed (Grid) computing and bioinformatics, to numerical simulations in challenging areas such as...
Almost 20 years ago, in 1987, seven women met at SCOS (Symposium on Operating Systems Principles). As the only women at the conference they all felt like outsiders, so they banded together to be less isolated. At a dinner meeting, they discovered that they had many experiences in common. Anita Borg, one of those original seven, offered to host a mailing list for the group to continue their interactions. The name chosen for the group was “systers,” a wordplay on sisters and systems. As the systers list approaches its twentieth anniversary, it seems timely to reflect on its history and its current goals.

Word spread quickly about the interesting discussions held on systers, and other women asked to join. The community grew rapidly, reaching more than 2,000 members by the mid-’90s, despite the fact that the only publicity was by word of mouth from one woman in computing to another. System has evolved its own culture in response to a variety of issues that came up in the early years.

There was an explicit decision to exclude men from the community (http://athena.systers.org/about.html), based on experience with USENET bulletin boards where posting were not uncommon. At various times, systers have used a system (primarily implemented by DEC WRL, launched a research project to create a system (called Mecca) that would enable a much wider range of discussion topics, where individual system could opt in and out as they liked. The system was also designed to make it easier to contact particular subgroups (those living in a particular area; those going to a specific conference) so the entire group wouldn’t be disturbed for these more targeted inquiries. Mecca grew into a very powerful system that was used by systers for many years. It never lived up to its full potential, however, because of the syntactic challenges it required for simple tasks like targeting a message toward a particular group.

At various times, systers have mobilized to fight something the group considers anti-women. One case was the Barbie doll that said, “Math is sooo hard”; another was a Sony ad that showed some piece of Sony electronics stuffed into the waistband of a bikini worn by an attractive model (you could only see her lower torso and upper legs). While in neither case did the company admit that the letter-writing and phone-in campaign influenced their decision to withdraw the product or ad, both were withdrawn.

As the moderator (Her Systers’ Keeper) for systers, Anita was fought out as a spokesperson on issues related to women in computing, as she was the visible face of the medium and a dynamic speaker as well. In 1997, Anita left DEC/Compaq to found the Institute for Women and Technology (now the Anita Borg Institute for Women and Technology, http://anitaborg.org) to devote herself full time to making sure that women are “full partners in driving the creation of the new technology that will define their lives.” I had been a member of systers for some time, and was well aware that Mecca, while technically very sophisticated, wasn’t easy to use.

Anita planned to have the Institute build a better systers’ system, and I volunteered to help design the user interface. Anita, always a very persuasive woman, managed to convince me and Sun Microsystems, my employer at the time, that I should be in charge of the project. This eventually resulted in a new system (primarily implemented by Ellen Spertus, a faculty member at Mills College and long-time systers member) and my assuming the role of Systers’ Keeper as Anita became more swept up, first in her new role as the Institute’s president and later as her health failed.

Systers has now about 2,100 members from 40 to 50 countries. As ever, the topics covered by the list are wide-ranging and interesting. For example, I as I write this, recent discussion topics have included:

1) how to cope with relationship issues when you get the job of your dreams and your partner is placed in the role of “accompanying spouse”; 2) how to get tech support to treat you like a knowledgeable human being (and how much does this have to do with being female); and 3) what’s it like being an older woman who moved into technology as a second career.

The list isn’t especially high volume, by design. While the Internet as a whole has become more polite place since its early days, members mention that systers, in its own culture in response to a particular group.

By Robin Jeffries, Her Systers’ Keeper

Musings from the Chair

Education: Research by Another Name

By Dan Reed, CRA Board Chair

By the time you hold this issue of CRN in your hands, the fall semester will be well under way. New students will be walking the hallways, revising course materials will be online and yes, that bun of all academics—committee meetings—will have returned. Hence, it seems appropriate to consider the continuum of research and education as we recommit our academic roles.

I call it “the Tom Sawyer effect,” where Tom convinces a peer group that fence painting is a privilege. How many times have you lured students into research by calling it a class project? You know the drill—either assign students to small teams or let them self-select, and then require them to generate draft project descriptions that you modify and approve. At the end of the semester, you encourage the teams that produced the best projects to invest additional time and write a conference paper. Is it education or research? Does it matter?

As we examine how to reshape the perception of computing—not as a province of ACM and IEEE in their curriculum. The latter is rightly the domain of self-directed learning that can and should permeate the entire educational milieu.

In the coming months, CRA will be defining what, if any, role it should play in helping to shape the future of computing education. As the Computing Research Association, our charter and focus are on research, not curriculum. The latter is rightly the province of ACM and IEEE in their roles as standards bodies; any CRA educational activities must be complementary to and in partnership with these organizations.

Instead, I expect CRA to focus on the intersection of research, image and education to build community consensus on emerging research opportunities, change the image of computing, and discuss new approaches to computing education. As I described at Snowbird in my “State of CRA” presentation, this tripartite approach builds on discussions arising from the annual Leadership Summit of computing organization leaders.

At Snowbird, Rick Rashid, chair of the Image of Computing Task Force, discussed plans to create a sense of excitement about computing education, research and applications. In that spirit, I offer a comment from the late Peter Medawar:

“I am often asked, “What made you become a scientist?” But I can’t stand far enough away from myself to give a really satisfactory answer, for I cannot distinctly remember a time when I did not think that a scientist was the most exciting possible thing to be.

All of us have felt that joy. It is, after all, why most of us are in computing; it is the most exciting thing we can imagine. Alas, the public and many of our students have a different, albeit incorrect, perspective: off-shoring, menial jobs, obsolescence and dying companies.

We want our prospective students to know the truth: computing is ever more central to our lives; it is the place to make a difference. Our educational approaches must reflect that truth. How do we make that a reality is the critical question.

Finally, it was a pleasure to see so many departmental leaders at Snowbird this past summer. The air was electric with discussions of research policies and funding, interdisciplinary education, and computing’s image. If you were not able to attend, the slides from several of the presentations, including my own “State of CRA” talk, are now on the CRA website (http://www.cra.org).”

Dan Reed, CRA’s Board Chair, is the Chancellor’s Eminent Professor and Vice-Chancellor for Information Technology at the University of North Carolina at Chapel Hill. He also directs the interdisciplinary Renaissance Computing Institute (RENCI). Contact him at: Dan_Reed@unc.edu.

February 2 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 2007 (see http://www.cra.org).

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. For “Guidelines for Nominators” at: www.cra.org/distinguished.service.award.

A. Nico Habermann Award

CRA makes an award, usually annually, to a person who has made outstanding contributions aimed at increasing the numbers and/or successes of underrepresented groups in the computing research community. This award recognizes work in areas of government affairs, educational programs, professional societies, public awareness, and leadership that has a major impact on advancing these groups in the computing research community. Recognized contributions can be focused directly at the research level or at its immediate precursors, namely students at the undergraduate or graduate levels. See “Guidelines for Nominators” at: www.cra.org/habermann.award.

For a list of previous recipients of these two awards, see: http://www.cra.org/main/cra.projects.html.

Nomination Procedures (for both awards)

Send a nomination letter (no longer than two pages) that describes the contributions on which the nomination is based to: awards@cra.org. Refer to the appropriate “Guidelines for Nominators” for the award. Include a current curriculum vitae for the candidate. Questions or comments may be addressed to: awards@cra.org.

The deadline for receipt of nominations is February 2, 2007. Nominators are responsible for collating the nomination materials before e-mailing the complete package to: awards@cra.org.

UPDATE
CRA Welcomes New Staff Member

Melissa Nott joined the CRA staff as a policy analyst in mid-June. Melissa will be responsible for monitoring and tracking a portfolio of issues important to CRA’s government affairs efforts. She will also be tasked with helping CRA communicate its policy activities more effectively to policymakers and to our membership.

Melissa has a BA in Public Relations with a minor in English from Penn State University. She comes to CRA from the Optical Society of America, where she was the Government and Public Relations Coordinator.

CRA Welcomes New Academic Members

George Mason University CS
Nova Southeastern University CS
Another Year, More Dollars
By Peter A. Freeman
Assistant Director of NSF for CISE

For the fifth—and probably last—year, it is my honor on behalf of the NSF and CISE to welcome you back after what I hope was a productive and relaxing summer. The coming year promises to be an important one for NSF and CISE, so in addition to commenting briefly on the year past I want to highlight some issues for the coming year.

I have received a number of comments—all almost positive—on my article in the May 2006 issue of CRN (http://www.cra.org/CRN/ may06/tables.1to8.html). I am pleased to note that it struck a responsive chord, and even more pleased to report that we are making good progress on the Computing Community Consortium (described in the May issue of CRN) and GENI (www.nsf.gov/cise/geni/ and www.geni.net). We expect an announce to be made very soon to create the Consortium and we also expect to release a solicitation to establish a GENI Project Office (GPO) by early fall. As we play the FY07 budget request to Congress (which will be made public in February), we are paying close attention to how we can help the community tackle bigger and bolder projects.

Speaking of budget, the FY08 outlook in general is quite positive. The American Competitiveness Initiative emphasizes the importance of basic research and highlights in a number of ways the work that CISE supports. It is important that you not only let us at NSF know of how your research is having impact (by sending us cogent results of your research and education projects, keeping us generally informed, and proposing great research and educational activities), but also by making sure that those in your community have an understanding of how your research and educational work makes a difference.

Looking back, FY05 granted us a bit of a reprieve in terms of funding success rates and we anticipate that FY06 will finish at a similar level; we plan to have a fuller report in the November issue of CRN. On the other hand, as I hope you understand, looking at only a single year’s data is imperfect at best—the timing of competitions, the fact that proposals submitted in one fiscal year may be funded in another, changes in community behavior, all impact success rates. As I have said, there is no question that funding is much tighter now than it was five or ten years ago and is something we must all continue to work on.

The creation over the past year of NSF’s new Office of Cyberinfra-structure has gone as smoothly as could be expected. The Deputy AD for CISE, Dr. Deborah Crawford, served as the Acting Director from last July until this June when Prof. Dan Atkins assumed the position of Director/OCI. CISE is working closely with OCI to ensure that their efforts are well informed and that the results of CISE-supported research make their way into deployment of cyberinfrastructures as quickly as possible.

While a direct successor to the very successful ITR initiative is not foreseen, I continue to hear of computer scientists who are working with scientists in other domains utilizing a variety of funding sources. Indicative of this is that at this summer’s Snowbird meeting, when a speaker asked a plenary session how many in the audience had engaged in such interdisciplinary work, a sizeable fraction of the room raised their hands and indicated, in response to a subsequent question, that they would like to continue such work. We do emphasize our support of those who are trying to develop new generations of concepts and tools that will be fundamental to the progress of all of science and engineering. If you haven’t, I encourage you to read http://research.microsoft.com/ towards2020/science/downloads.htm.

Another topic that was addressed at Snowbird was the coming shortage (yes, shortage!) of CS graduates at all levels. I will address this topic in more detail in a column in the future, but let me note, with the advantage of more than 40 years in the field, that we know enrollments are cyclical, but that the spread of computer science-related topics continues its relentless increase in importance to our society. This is something that CISE will be addressing in an upcoming solicitation.

CISE supported a small, but successful, tour of Chinese universities and labs late this spring that I believe was an eye-opener for those who participated. This was a start at what we are planning to be a heightened and more focused emphasis on international activities involving those who seek funding from CISE.

Two other areas on which we hope to place more emphasis are software design and productivity, and IT and innovation. Regarding the former, we are discussing how to best build on our existing programs in Science of Descriptive Software Engineering, and related areas. Regarding the latter, we have brought to CISE as a Visiting Scientist a distinguished researcher and educator, Dr. Mary Lou Maher, to help us formulate efforts that will both enable the use of IT-related concepts and tools in the innovation process generally, and the use of creativity/innovation enablers in the process of creating IT-intensive systems.

The CISE Advisory Committee (AC) has given us broad, strategic guidance over the past year, and we will be seeking more of the same in the coming year. Professor Al Aho of Columbia University will be leading the AC again this year, and we are in the process of appointing a new group of members. I will be asking them to help us address strategic issues in the coming year, and I encourage you to interact with the AC members to express your views and assist them in helping CISE. Our meetings are always public and are posted on our website in advance. The next meeting will be held at NSF on October 19-20, 2006. Regarding CISE personnel, we are very pleased that Prof. Haym Hend of Rutgers University will begin as Division Director of IIS in October. We will be posting recruitments for this fall for the other two Division Director positions to be filled within a year as Dr. Wei Zhao ends his notation and Dr. Michael Foster ends a three-year term and assumes other responsibilities. Dr. Sari Lacono, who has been acting D/VHS since Dr. Michael Patna used to become VP Research at Rutgers, will return to the front office of CISE as a senior advisor.

A distinguished search committee was appointed by the Deputy Director of NSF and has submitted to her a short list of candidates to replace me within the year. The Office of the Director conducts that process and anticipates identifying a new AD/CISE before next summer, at which time I will transition out of NSF to pursue a variety of professional and personal activities. Last September in this column I wrote:

Computer science, the disciplines based on it, and the students and results that flow from your efforts are at the heart of everything from economic development to national defense to better human communication.

Yet, the future will see developments that even we cannot imagine. We are exceedingly fortunate to spend our time on something that is so important and also so much fun. Yet, with that comes great responsibility to utilize our resources strategically for the benefit of all and to lead, not only technologically, but also in helping to guide the productive use of the wonders that come from our efforts.

That statement is even truer today as our Nation faces increased challenges on all fronts. Be bold and have a great year!

Peter Freeman (pfreeman@nsf.gov) is the Assistant Director of NSF for CISE.

CRA-W Cohort of Associate Professors Project:
New Meeting—Expanded Goals, Oct. 20-21, 2006

CRA-W announces the third Cohort of Associate Professors Project (CAPP) that has been expanded to include associate professors with education as their primary function. Sponsored by an NSF ADVANCE grant, 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 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 program will include two Professional Development Workshops—one for women whose primary function is research (CAPP-R) and one for women whose primary function is education (CAPP-E). The workshops will be held in Fort Myers, Florida, October 20-21, 2006. Travel support is available through the NSF grant. For additional details, see: http://www.cra.org/cw/capp.
Gail Murphy, UBC, Wins Anita Borg Award

The Committee on the Status of Women in Computing Research (CRA-W) is pleased to announce the recipient of the 2006 Anita Borg Early Career Award. This year’s recipient is Gail Murphy, Associate Professor in the Department of Computer Science at the University of British Columbia.

Gail Murphy is an Associate Professor in the Department of Computer Science at the University of British Columbia. She received a B.Sc. (Honours) degree in Computing Science from the University of Alberta in 1987, and the M.S. and Ph.D. degrees in Computer Science from the University of Washington in 1994 and 1996, respectively.

Between her undergraduate degree and attending graduate school, she worked as a senior software engineer at MPR Teletech, a telecommunications research and development company, in Burnaby, B.C.

Her research and teaching focus is software engineering. More specifically, the research projects in her group focus on methods and tools to help software developers manage and evolve the structure of the systems they are developing both at design time and in source code. Since new methods and tools have little value unless useful to “real” software developers, the group is also working on assessment methods to understand how to better validate software engineering research results. The work in the research group is currently funded by NSERC, IBM, Siemens and Nokia.

Dr. Murphy has served on numerous program committees for the leading conferences in software engineering research, and was the general chair for the 2004 Aspect-oriented Software Development Conference. She also served two years as the Associate Head for Graduate Affairs in UBC’s Department of Computer Science. In 2005, she received the Dahl-Nygaard Junior Prize from AITI, and in 2006 she was awarded a NSERC Steacie Fellowship. One of the most rewarding parts of her career has been collaborating with many talented graduate and undergraduate students.

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

By Jay Vegso

Computer science has the dubious distinction of being the only science field to see a fall in the share of its bachelor’s degrees granted to women between 1983 and 2002. Among all S&E fields tracked by the NSF, linguistics was the only other discipline to see its share of women drop—but it is a field where the majority of degrees (71 percent) are granted to women.

Between 1983 and 2002, the share of CS bachelor’s degrees awarded to women dropped from 36 to 27 percent. The number of female degree recipients grew by 52 percent in that period, and in 2002 numbered 13,504. Nevertheless, this was lower than the 15,126 degrees granted to women in 1986, during the last boom in degree production.

It is notable that the drop in women’s representation did not recover during the surge in bachelor’s degree production that occurred in the late 1990s. In fact, the interest of incoming freshmen women in CS as a major has fallen for the past several years, and is now at its lowest point since the late 1970s.

Transitions, Appointments, and Awards

New CRA board member, Annie Antón, North Carolina State University, received an award for the most influential paper published in the IEEE International Requirements Engineering Conference ten years ago. The award is based on the importance of the paper to the field after a decade of further research and experience has passed. Barry Boehm, University of Southern California, was also recognized for his 1996 conference paper.

The computing community was saddened by the death of well-known computer scientist, Denice D. Denton, on June 24. Dr. Denton was serving as Chancellor at the University of California, Santa Cruz. For more on her career and accomplishments, see: http://www.usc.edu/administration/denice_denton/

Hays Hersh, Professor and Chair of the Computer Science Department at Rutgers University, has been appointed Director of the CISE Division of Information and Intelligent Systems at the National Science Foundation. Dr. Hirs will join CISE on October 16, 2006.

Congratulations to CRA Board Member, Leah H. Jamieson, who was named the John A. Edsardon Dean of Engineering at Purdue’s College of Engineering. The appointment was effective August 15. She recently served as interim dean and was the Ramsburg Professor of Electrical and Computer Engineering at Purdue.

Nominees Sought for CRA Board

The Computing Research Association seeks your help in suggesting nominations for its Board of Directors. The deadline for receipt of nominations is December 1, 2006.

Each spring CRA’s member organizations elect about one-third of the association’s board members to three-year terms. Candidates are not required to be affiliated with CRA member organizations. It is important that the CRA Board represents the interests of the entire computing research community, and it is CRA’s policy to solicit a broad range of candidates.

Note that there is a new procedure for CRA Board elections beginning this year.

• On January 9, 2007, from the nominations received, the Elections Committee will announce its candidates for the ballot.
• On February 9, 2007, nominations are due for candidates nominated by petition signed by the heads of at least 10 Constituent Member Organizations that are current in dues payment.

The CRA board is a working board, and all members are expected to actively participate. Although CRA has a small professional staff, board members have detailed involvement in all major projects.

Recent and current projects include:

• Planning the biennial CRA Conference at Snowbird.
• Conducting the annual CRA Taulbee Survey.
• Conducting other surveys (e.g., industrial lab salaries; departmental budgets, space, personnel).
• Developing workshops on critical policy issues for computing research.
• Planning workshops on academic and industrial careers and effective teaching.
• Increasing the participation of women and minorities in computing research, with the help of National Science Foundation grants.
• Improving public and policymaker understanding of the importance of computing and computing research in our society.

In addition to actively participating in board projects, board members are asked to attend two board meetings per year and pay their travel and hotel costs.

Additional information on CRA and its activities is available on the Web at http://www.cra.org or by e-mailing elections@cra.org. Nominations must reach CRA by December 1, 2006.

Sources


2007 CRA Outstanding Undergraduate Awards
Deadline October 16

The Computing Research Association is pleased to announce the 13th annual CRA Outstanding Undergraduate Awards Program, which recognizes undergraduate students in North American universities who show outstanding research potential in an area of computing research.

Nominations must attend a university or college located in North America, and must be nominated by two faculty members and recommended by the chair of their home department. No more than two male and two female candidates can be recommended by the same department chair in the same year.

The awards committee looks for demonstrated excellence of computing research ability. The type of department in which the student is majoring and the area of computing in which the student has demonstrated ability are immaterial. What is important is the quality of the research work done by the student. The awards committee also considers the student’s academic record and service to the community. Preference is given to students in their senior year (or the equivalent).

A cash prize of $1,000 will be awarded to each of two undergraduate students, one female and one male. A small number of other outstanding candidates will be recognized as Runners-Up and Finalists. All nominees whose work is considered to be exemplary are recognized with Honorable Mentions.

The awards are presented at one of the major computing research conferences sponsored by CRA, ACM, the IEEE Computer Society, SIAM, AAAI, or USENIX. The two first-prize winners will receive financial assistance from CRA toward their travel to the conference. CRA encourages home departments to provide similar assistance to the Runners-Up and Finalists.

CRA gratefully acknowledges the support of Microsoft Research and Mitsubishi Electric Research Labs (MERL) who sponsor the Outstanding Undergraduate Awards Program in alternate years. Microsoft Research is the 2007 sponsor.

Additional information about the nomination procedure and criteria for selection is available on the CRA website: http://www.cra.org. All nominations must reach CRA by October 16, 2006.

Outstanding Undergraduate Awards Presented

Jenny Yuen (left), University of Washington, and Susanna Ricco, Harvey Mudd College, received CRA’s 2006 outstanding undergraduate awards (Female Winner and Female Runner-Up, respectively) at the IEEE Computer Society Conference on Computer Vision and Pattern Recognition in New York on June 19. CRA’s Director of Programs, Carla Romero, made the presentations.

The male winner of CRA’s 2006 Outstanding Undergraduate Award, David Eisenstat, is pictured following the presentation at ACM’s Principles of Distributed Computing Conference in Denver, Colorado, on July 25. CRA’s Executive Director, Andy Bement, presented the award. David recently graduated from the University of Rochester and will attend Princeton University in the fall.

As this goes to press, it is not yet clear what the motivation is behind the cuts. Based on similar cuts last year, speculation within the computing research advocacy community is that the SAC remains unconvinced of the military utility of the Integrated Cognitive Systems program targets for cuts—this the time on the order of $70.8 million in FY 2007, a reduction of 32 percent versus the request and 9 percent versus the FY 2006. Programs targeted by the SAC are “Integrated Cognitive Systems” (-$60 million vs. FY 2006), “Learning Locomotion and Navigation,” (-$3.8 million), and “Improved Warfighter Information Processing” (-$7 million).

In addition, the SAC would cut $13.4 million from the Information and Communications Technology account at DARPA, a cut of 5 percent from the request (but still an increase of $34 million versus FY 2006). The SAC also would cut the Computer Science Study Group program at DARPA—established this year to help expose young faculty to DoD-oriented problems in Computer Science—from the requested level of $6.6 million in FY 2007 to $3 million. All three accounts—Cognitive Computing, Information and Communication Technologies, and Computer Science Study Group—received full funding in the House version of the Defense Appropriations.
magnetohydrodynamics. Thousands of researchers in academia and industry use MCS software in applications that include computational chemistry, protein structure, vortex dynamics, astrophysics, climate modeling, computational fluid dynamics, and more.

Many of these activities involve collaboration or partnerships with universities, industry and other research institutions worldwide.

Four Thrusts

One major thrust of the division is scientific simulation, a natural outgrowth and complement of traditional computational chemists to ensure that their research institutions worldwide. MCS is also leading the Grid Infrastructure Group for TeraGrid. This National Science Foundation-funded project provides extraordinarily large and fast distributed infrastructure for open scientific research. It is linked by networks operating at tens of gigabits per second. TeraGrid integrates high-performance computers, data resources and tools. These resources include more than 100 teraflops of computing capability and more than 15 petabytes (quadrillions of bytes) of online and archival data storage. TeraGrid supports rapid access and retrieval, enabling researchers to access over 100 discipline-specific databases around the globe. Argonne coordinates the entire multi-million-dollar, multi-institutional project as a joint effort with the University of Chicago. These resources are used for computationally intensive projects from severe weather prediction and earthquake modeling to detail modeling of blood circulation and understanding of the human brain.

A Small Group with a Wide Impact

While the staff of MCS is relatively small, just under a hundred, the permanent staff positions, its impact is great. The group measures its success based on the number of users of MCS software and the diversification of the applications. Argonne’s computer science research is used by a broad community of thousands, enabling them to solve complex problems and take advantage of parallel architectures.

Gail Piper is Coordinator of Technical Editing and Writing at Argonne National Laboratory.

Making Waves

Grace Hopper Celebration of Women in Computing 2006 Conference

October 4-7, 2006—San Diego, California

Details: http://www.gracehopper.org/

Sarah Murphy (right), University of Notre Dame, discusses her poster “Using Nanotechnology to Solve Hard Problems Better” with Jaime Moreno, IBM Research, at the Computer Architecture workshop at Princeton in July.

CRA-W Summer School Workshop

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exploit parallel supercomputers. Research covers a broad spectrum—from parallel programming and performance visualization tools, to high-performance I/O, to operating systems and network systems software that are crucial for data management on petascale computers. When the MPI standard for message passing was under development, MCC computer scientists developed an implementation, called MPICH2, that enabled rapid acceptance of the new paradigm. MPICH2, the latest release of this software, has been widely adopted by major computer vendors and users and recently won an R&D 100 award. One of the most exciting new projects at MCS is ZeptoCS, a collaboration between Argonne and the University of Oregon to develop very efficient and customized Linux kernels for petascale architectures with 10,000 to 1 million CPUs. A third research thrust in MCS is distributed, or Grid, computing. Identified as one of the “ten technologies that will change the world” by MIT Technology Review in 2003, Grid computing seeks to facilitate scientific collaborations across geographic boundaries.

The fourth thrust within the MCS Division is scientific simulation, a natural outgrowth and complement of traditional computational chemists to ensure that their research institutions worldwide. MCS is also leading the Grid Infrastructure Group for TeraGrid. This National Science Foundation-funded project provides extraordinarily large and fast distributed infrastructure for open scientific research. It is linked by networks operating at tens of gigabits per second. TeraGrid integrates high-performance computers, data resources and tools. These resources include more than 102 teraflops of computing capability and more than 15 petabytes (quadrillions of bytes) of online and archival data storage. TeraGrid supports rapid access and retrieval, enabling researchers to access over 100 discipline-specific databases around the globe. Argonne coordinates the entire multi-million-dollar, multi-institutional project as a joint effort with the University of Chicago. These resources are used for computationally intensive projects from severe weather prediction and earthquake modeling to detail modeling of blood circulation and understanding of the human brain.

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While the staff of MCS is relatively small, just under a hundred, the permanent staff positions, its impact is great. The group measures its success based on the number of users of MCS software and the diversification of the applications. Argonne’s computer science research is used by a broad community of thousands, enabling them to solve complex problems and take advantage of parallel architectures.

Gail Piper is Coordinator of Technical Editing and Writing at Argonne National Laboratory.

Making Waves

Grace Hopper Celebration of Women in Computing 2006 Conference

October 4-7, 2006—San Diego, California

Details: http://www.gracehopper.org/

Sarah Murphy (right), University of Notre Dame, discusses her poster “Using Nanotechnology to Solve Hard Problems Better” with Jaime Moreno, IBM Research, at the Computer Architecture workshop at Princeton in July.

CRA-W Summer School Workshop
Indiana University – Bloomington
Program in Bioinformatics and Computational Biology
Campus Grids Lab
Campus Postdoctoral Researcher –
RSP#0027068 & RSP#0027069

The Campus Grid Laboratory at Indiana University invites qualified applicants to apply for postdoctoral research positions in the fields of parallel and high performance computing and distributed informatics research. Applicants should possess a Ph.D. in Computer/Computational Science or a related area with a strong background in computational biology, and systems biology.

The position of Research Scientist (Computational Biology) positions are available to support the Biotechnology Applications Institute in Frederick, Maryland.

High Performance Computing Software Applications Institute in Bloomington, Indiana.

Indiana University is an Affirmative Action/Affordable Opportunity Employer.

McMaster University
Department of Computing and Software
Tenure-Track/Tenured Faculty Position

The Department of Computing and Software jointly with the School of Computing and Engineering invites applications for a tenure-track assistant professor position starting September 1, 2007. The successful applicant will have a Ph.D. degree in Computer Science or a closely related discipline.

See http://www.cra.org/main/cra.jobshow.html for further information about the Openings. Applicants should send their letters directly to the Search Committee Chair.

Tata Research Development & Design Centre (TREDDC)
Software R&D
Member of Research Staff

The position of Research Scholar or Research Associate at TREDDC, a research unit of Tata Consultancy Services Ltd. (TCS), current and emerging technologies. We are offering software development, data intensive systems, data privacy, decision support systems, formal methods, natural language processing, program analysis, requirements analysis, software architectures and software testing. We are looking for exceptional and highly motivated MS/MTech/PhD candidates with research experience or strong experience in problem solving skills in these areas, but also those who are the next generation of researchers.

TREDDC is today one of India’s premier R&D centers in software engineering. R & D work at TREDDC leads to the creation of intellectual assets, which take the form of patents, trade secrets and other intellectual products that serve the needs of software engineering and TCS in a wide range of industry verticals. TREDDC also supports technical seminars and conferences on advanced areas of R & D, and maintains strong links with universities and academic institutions all over the world. We provide a friendly and informal research environment and actively participate in the activities of the research community worldwide. Our research scientists have the unique opportunity to see their research used in products and services in the industry. If you have a top-flight academic record and a passion for research and development, write to us at:

TREDDC
4 B Hudspeth Industrial Park
P.O. 413
INDIA

or email to: ttreddc@tcs.com

For further details visit http://www.tcs-treddc.com.

The University of Connecticut
Department of Computer Science & Engineering
Tenure-Track Assistant Professor

The Department of Computer Science and Engineering at the University of Connecticut seeks outstanding candidates for a tenure-track assistant professor position in the following areas:

Leveraging commercial sector.

We provide a friendly and informal research environment and actively participate in the activities of the research community worldwide. Our research scientists have the unique opportunity to see their research used in products and services in the industry. If you have a top-flight academic record and a passion for research and development, write to us at:

Continued on Page 12
Are you looking for a unique opportunity to make petascale computational systems a reality? Argonne National Laboratory invites outstanding candidates to apply for managerial positions in the Argonne Leadership Computing Facility (ALCF).

Argonne is the site of the U.S. Department of Energy’s newest Leadership Computing Facility. We will provide the computational science community with a world leading computing capability dedicated to breakthrough science and engineering. In 2007 we will deploy the first of several planned systems for petascale computations, drawing on deep experience in high performance systems and software, operation of one of the earliest IBM Blue Gene/L systems, and leadership of the highly successful Blue Gene Consortium.

Argonne has a long history of leadership roles in high-performance computing – from DOE’s Advanced Computing Research Facility in the 1980s offering a series of innovative computer architectures; to ubiquitous software tools such as MPICH for message passing, PETSc scalable equation solvers, and the Globus Toolkit middleware for distributed computing; to today’s leadership of the TeraGrid national cyberinfrastructure project.

Manager, Application Performance Engineering and Data Analytics
(Requisition 310412 CLS)
We are seeking a highly-qualified individual to lead the ALCF application performance engineering and data analytics effort. You will have the opportunity to work closely with project teams – both at Argonne and at other laboratories and universities – to develop world class solutions for petascale systems. Considerable knowledge of performance analysis, code optimization, software engineering, computational analysis, and software design and methodology for high-performance computing is required. Well-developed collaboration skills are essential. Applicants should hold an advanced degree and have at least 6 years of relevant experience.

Manager, Facility Operations and Networking
(Requisition 310538 CLS)
We are seeking a highly-qualified individual to manage the operation of the ALCF computing, storage, and network systems. You will have the opportunity to shape the operating environment of ALCF, recruit FON staff and establish group processes and operating environments. Working closely with the ALCF management and other team leads, you will oversee the day-to-day operations of the FON group and lead incident response and resolution as needed. This position requires comprehensive skills in leading system support efforts; in deploying and operating advanced computing systems; and in developing effective operations processes. Also required is comprehensive experience in supercomputing systems and software, operation of one of the earliest IBM Blue Gene/L systems, and leadership of the highly successful Blue Gene Consortium.

We invite you to submit your resume through the Argonne job openings web page (http://www.anl.gov/jobs) and search by Requisition number.

Argonne is a U.S. Department of Energy laboratory managed by The University of Chicago. Argonne is an equal opportunity employer, and we value diversity in our workforce.
The University of Pennsylvania does not discriminate on the basis of race, sex, sexual orientation, gender identity, religion, color, national or ethnic origin, age, disability, or status as a Vietnam Era or disabled veteran in the administration of its educational policies, programs, or scholarship, loan, and employment activities. All offers of employment are made contingent upon the successful completion of a background check. The University is an equal opportunity employer and is committed to a pluralistic campus community through affirmative action and equal opportunity and is sensitive to "two–body problems" and would be pleased to assist with opportunities in the Philadelphia region. UNC Greensboro, one of 16 campuses of the University of North Carolina system, is a medium-sized city of about 220,000 in the Piedmont Triad region of North Carolina. Near the Research Triangle Park and other major universities, a location providing easy access to recreational opportunities on the beach and the mountains. The local metropolitan area (which includes the cities of High Point and Winston-Salem) has a population of almost 1 million and offers an excellent quality of life. (For more information on the city and the region, visit http://www.thedepot.com/).

Review of applications will begin on November 15 and will continue until the position is filled. Nominations and informal inquiries are encouraged. E-mail should be directed to rlmiller@uncg.edu. Inquiries and applications will be treated confidentially on request. Applicants should submit a letter explaining their interest in the position separate statement that describes their approach to the responsibilities of a Department Head, a research statement, a vitae, and names and addresses of four references to:

Robert L. Miller, Chair
College of Arts and Sciences
University of Nebraska-Lincoln
200 Engineering
Lincoln, NE 68588-0103

The University of North Carolina at Greensboro invites applications and nominations for a tenured professor/department head position in Computer Science (formerly a division within the Department of Mathematical Sciences). Applicants for this leadership position should hold a doctorate in computer science or a closely related area and have a strong record of theoretical or applied research and a commitment to exemplary teaching at the graduate and undergraduate levels. Previous administrative experience will be an advantage but is not required. The successful candidate will be appointed to the rank of Professor with tenure effective August 1, 2007.

The Department of Computer Science is one of 21 departments in the College of Arts and Sciences at UNC Greensboro. This excellent core faculty consists of 12 tenure-track members plus additional lecturers and part-time faculty. The department currently offers the B.S. and M.S. degrees in computer science. There are approximately 210 students currently enrolled in the various programs. The B.S. in Computer Science is accredited by the Computing Sciences Accreditation Board. For additional details, including brief accounts of faculty research interests, visit the Department's web page at http://www.uncg.edu/computer.

UNC Greensboro, one of 16 campuses in the University of North Carolina System, is a doctorate-granting university with approximately 16,000 students in the College and six professional schools. Winston-Salem is a medium-sized city of about 220,000 in the Piedmont Triad region of North Carolina. Near the Research Triangle Park and other major universities, a location providing easy access to recreational opportunities on the beach and the mountains. The local metropolitan area (which includes the cities of High Point and Winston-Salem) has a population of almost 1 million and offers an excellent quality of life. (For more information on the city and the region, visit http://www.thedepot.com/).

CRA Conference at Snowbird 2006

Program Slides Now Available:

http://www.ca активити/snowbird/2006/agenda.html