The State of CRA

By Jim Foley

This is one of a series of occasional columns that CRA's new Board Chair will contribute during his term of office.

I am pleased to tell you that our organization is very healthy. Indeed, CRA has never been healthier.

Recall that the mission of CRA is to strengthen research and advanced education in computing and allied fields. We do this by working to influence **policy** that impacts computing research, encouraging the development of **human resources**, contributing to the cohesiveness of the professional **community,** and collecting and disseminating **information** about the importance and the state of computing research.

Why is CRA healthier than ever? Here are some of the reasons.

Our activities continue to grow— thanks to an active board of directors and an expanding group of non-board volunteers, all supported by an excellent staff in our Washington office that has grown from five to eight in the past 5 years. We owe many thanks to all of our volunteers and to our excellent and *very professional* professional staff. If you haven't recently visited www.cra.org, you will be quite impressed with the scope of activities, all of which address our four mission areas.

Let me highlight a few recent areas of notable impact:

• A program of the CRA Women's Committee (CRA-W) was cited in NSF's budget submission to Congress earlier this year: "The CISE-supported Distributed Mentor Project is increasing the pipeline of women advancing into graduate study in science and engineering. Participants in the program are 20 times more likely to continue to graduate or professional school than non-participants."

• Our IT workforce study, *The Supply of Information Technology Workers in the United States*, attracted considerable attention from policy makers and the media. More than 3,500 copies were distributed, and it remains one of the most popular items on our website.

• CRA, working in coalition with other professional groups, helped enact into law the major funding recommendations of PITAC, the President's Information Technology Advisory Committee.

Our membership rolls include 182 academic departments and 25 research labs and centers, compared with 142 and 17 just 5 years ago. We have had five affiliate members—

ACM, AAAI, IEEE Computer Society, SIAM, and USENIX—for some time, and CACS/AIC (The Canadian Association of Computer Science/Association Informatique Canadienne) has recently become the sixth affiliate member.

Financially, a series of good years have allowed us to build our reserve fund to cover 6 months of operating expenses—a criterion used by many professional associations. This means we have a solid buffer against economic downturns and cash-flow variations.

But the past is only prologue. Where is CRA going? What of the future? The Board of Directors' Executive Committee (Vice Chair Jan Cuny, Secretary Kathy McKeown, appointed member Dan Reed, Treasurer Jack Stankovic, Executive Director Bill Aspray [*ex-officio*], and myself) has developed three priority themes on which to focus special attention for the coming year, while maintaining our current programs. The themes are:

1. Human Resources

Let there be no mistake—while the temporary economic slowdown may be giving a bit of breathing room to the demand for Ph.D. computing professionals, the supply still is woefully short. In fact, our most recent Taulbee Survey found that

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Board Chair

Ph.D. production actually decreased this past year by 6 percent. Here's what we intend to do:

• Find the funding to provide CRA-W with the support it needs to scale up its efforts in areas such as distributed mentoring, and support its new NSF-funded study "Recruitment and Retention of Women Graduate Students in Computer Science and Engineering."

• Support the Coalition to Diversify Computing (CDC) to help improve the status of minorities within computing research.

• Establish and support a new Workforce Committee to carry out an NSF-funded project to provide suggestions for improving the recruitment

Panasonic Information & Networking Technologies Lab

By Robert S. Fish

The eighth in a series of CRN articles describing the activities of CRA's industry laboratory members.

"Just slightly ahead of our time." For many years this has been the advertising slogan used by Panasonic in the United States. For Panasonic's research and development labs, the aim is to assure that Panasonic products and systems maintain this leadership position despite the increasing pace of technological innovation and development.

Who are we? The Panasonic Information and Networking Technologies Laboratory (PINTL) is the principal U.S. computer science-oriented lab of the Matsushita Electric Industrial Company (MEI). Along with other U.S. labs, it is organized under the umbrella of Panasonic Technologies, Inc. (PTI), the main U.S. research and development arm for MEI. Globally, the MEI group has sales of about $60 billion with products identified under the brand names of Panasonic,

Robert Fish

Technics, JVC, National, and others. Our Princeton, New Jersey-based lab provides technology and intellectual property for products that the company will need to sell two to five years into the future—principally products that need software and networking technologies.

A Strategic Location

PINTL was founded in 1991 in Princeton, New Jersey as the Matsushita Information Technology Laboratory (MITL). It was purposely located near the thriving "Video Valley" R&D community on the Route 1 corridor, Princeton and Rutgers Universities, and the many large industrial research labs in central New Jersey. PINTL 's researchers come from various disciplines, but are primarily computer scientists and electrical engineers. The laboratory's name was changed from MITL to PINTL in 1997 to reflect the recognition of the Panasonic brand name in the U.S. market.

R&D in an Evolving Market

Although Panasonic has historically done business in the computer sphere directly (e.g., in the early 90s, Panasonic owned Solbourne Computers, a SUN clone workstation vendor, and Panasonic sells laptops today), many people associate Panasonic with consumer electronics (CE)—TVs, VCRs, camcorders, and the like. It is a little-known fact that only about a third of Panasonic's sales come from CE. The balance comes from the sale of components (including computer components like mass storage, memory, and displays), as well as from the sale of systems to corporations, service providers, and network operators.

However, it also shouldn't be a surprise that as the marketplace evolves—with the emergence of the Internet as an enabler for digital products and the convergence of computer and communications technologies—CE products themselves are evolving into something that is a hybrid of CE, computer, and computer networking technologies. The CE device of the near future, although preserving the traditional CE virtues of interesting functionality, low cost, and ease of use, will also have within it a general purpose

Note to Department Chairs

Watch for the Taulbee Survey

Coming Soon!

Expanding the Pipeline

CRA-W Takes its Show on the Road to Recruit for Graduate School

By Carla Schlatter Ellis

While faculty in computer science and engineering departments may be gratified by the attention that IT industry recruiters lavish on the undergraduates they have trained, the level of awareness among those undergrads about the full range of career options remains limited. Even in the recent economic downturn, recruiters have been descending on college campuses with stacks of pizza boxes, logo-bearing toys, gadgets to raffle off, and well-crafted messages about employment opportunities in their companies.

Meanwhile, alternatives involving graduate school and research careers that require advanced degrees suffer from the lack of effective recruiting campaigns. Traditionally it has been left to individual faculty members to encourage selected students to consider graduate school, but often that doesn't happen until the student initiates the conversation by expressing interest in getting a letter of recommendation. Even in the top research-oriented departments, the undergraduates may hold a number of misconceptions about the lives of the graduate students around them. In schools where there is little contact with graduate students, students tend to assume that graduate school will be a continuation of their undergraduate experience. There is a need to raise the level of understanding among undergraduates about the attractions of graduate study.

The under-representation of women in the fields of computer science and engineering is another familiar issue to readers of this column, with declining percentages at each higher level referred to as the "incredible shrinking pipeline." The lack of role models is often cited as a contributing factor. There are those rare occasions, such as the Grace Hopper Celebrations, where technical women congregate in significant numbers, and these events result in a very different and powerful experience for young women. Even the opportunity to meet and interact with four or five successful women computer scientists at one time may provide a glimpse of the fact that a community of women, and not just a few exceptional and isolated individuals, exists in the field.

In order to address both of these issues, the CRA-W/Lucent Distinguished Lecture Series and Graduate School Recruiting Program was created. The goal is to highlight the accomplishments and experiences of successful women researchers from both academia and industry by bringing them to college campuses across the United States and Canada to talk directly to undergraduates. Each event features a research seminar given by a distinguished speaker, a panel discussion encouraging students to consider going on to graduate school, and a luncheon for women in the department and the eminent women researchers who are visiting.

The program was the brainchild of Margaret Wright, former director of Scientific Computing Research at Bell Labs and a strong promoter of graduate education. She proposed the program to Lucent's University Relations Office and secured initial funding; then she enlisted CRA's Committee on the Status of Women in Computing Research (CRA-W) to organize the events. Additional funding has been provided by the National Partnership for Advanced Computational Infrastructure (NPACI).

In the first year of the program (the 2000-01 academic year), 35 computer science or computer engineering departments responded to the call for applications to host an event. Twelve sites were chosen across North America: Carnegie Mellon University; Duke; Texas A&M; University of California-Berkeley; University of California-Irvine; University of Illinois-Urbana Champaign; University of Massachusetts-Amherst; University of Mississippi and Mississippi Valley State (an historically black college); University of Toronto; University of Virginia; and the University of Washington. The Distinguished Speakers were Mary Baker (Stanford), Jessica Hodgins (CMU), Barbara Liskov (MIT), Margaret Martonosi (Princeton), Kathryn McKinley (University of Massachusetts), Lori Pollock (University of Delaware), Margo Seltzer (Harvard), Valerie Taylor (Northwestern), and Katherine Yelick (University of California-Berkeley).

The panel discussions have been a key part of each event. Not only did Lucent Technologies provide funding, but also a commitment to participate. Women researchers from Bell Labs have served on each panel, offering an industry perspective on the value of a graduate education for a research career. These panels featured Raissa D'Souza, Juliana Freire,

Girija Narlikar, Joann Ordille, Serap Savari, Liddy Shriver, and Lisa Zhang, all from Bell Labs. Students have been surprised to hear someone from industry advocating graduate school and surprised to learn about the exciting work that one can do in industry (rather than just academia) with a Ph.D. degree.

Each panel also included two or three women graduate students relating their experiences and the view "from the trenches." The professors who have come as distinguished speakers also sit on the panel, contributing their insights into their own choice of an academic career and what the graduate admissions process looks like from the faculty perspective. While these panel discussions have been open to all undergraduate students at the host school, the fact that the panelists and the moderator have all been women has helped to encourage women students to attend.

The most important message we hope to convey through the panel discussions is that Ph.D. training offers the chance for a research career with a great deal of creative freedom. The panelists show their enthusiasm for research and the ability to define their own problems. The panelists also try to characterize how the graduate school experience differs from the classroom-based education most undergraduates receive. Graduate school at the Ph.D. level is described as an apprenticeship, and the relationship with one's advisor becomes a major focus.

Several of the panelists' stories about their own graduate school experiences highlight that there are many paths that can lead into a graduate program, and that uncertainty about precisely what one wants to do is OK. Questions from the audience tend to cover the more concrete issues such as what admissions committees look for in an application, advice on choosing which schools to apply to, and how graduate school is financed. One point that consistently comes up is the value of having some undergraduate research experience, both for the strength of the application and for determining whether graduate school is a good choice for the student.

At the end of each panel discussion, we asked audience members to fill out an exit survey to help us evaluate the success of the event. Estimates by the hosts indicate that more than 400 students attended the panels last year, and from 25 to 33 percent of the attendees were women. Approximately 30 percent of those attending the panels returned the surveys and rated the value of the program as an average of 3.1 out of 4. In survey questions trying to ascertain whether the panel had affected the choices students might

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Welcome/Bienvenue

To CRA's Newest Affiliate Member

CACS/AIC

Canadian Association of Computer Science/
Association Informatique Canadienne

Evolution of Next-Generation Internet Services and Applications

By Kevin C. Almeroth

As the second Computer Research Association (CRA) Digital Government Fellow, I was given the opportunity to give a talk at the Government Technology Conference 2001 (GTC) for the Western Region.

Both the fellowship and my talk had the same goal: finding ways to bridge the gap between academia and government's use of the Internet. As technology evolves ever more rapidly, it is a challenge for government agencies to keep up with these changes. Therefore, the goal of my talk was to help those in attendance better understand 1) where the Internet was evolving next, and 2) how the evolution is going to happen.

Given the close ties between my research in one-to-many (multicast) communication and related applications, and my work with the Internet2 initiative, the logical conclusion was to give a talk entitled, "The Evolution of Next-Generation Internet Services and Applications." I expected that the audience would be interested in hearing where the Internet was likely to evolve; what kinds of applications and services were already being deployed; and what kinds of technologies they would soon be expected to deploy.

For an academic, the conference represented a truly unusual environment. While my colleagues and I often interact in a conference setting, this conference was unusual in that the topics were a far cry from

hardcore networking. Some of the sessions I looked in on covered topics like record preservation in the digital age, privacy, and launching government on the Web. There were some seemingly traditional sessions like "Designing High Availability Systems," but these had a strange perspective. For example, one of the questions heard in this session was about how important Universal Power Systems (UPSs) were, given the likelihood of rolling blackouts in California. Sessions presented prior to mine were a good reminder to be prepared for a widely diverse audience.

In the first part of my talk, I polled the audience to determine the kinds of jobs and responsibilities that each of them had. About half the audience dealt with and understood the network, but the rest simply saw it as a black box. This second group held positions like "City Manager" and used the Internet as a service. They were less concerned with how the Internet worked, but were certainly interested in the kinds of things the future Internet was capable of doing. Even the half of the audience that was aware of the details beyond the host was still very focused on the short term. These audience members were responsible for keeping their own networks running; hence, they were less interested in the theory behind next-generation Internet services and more interested

in what they would have to deploy and how they would manage it.

My talk followed the theme that both applications and the network are in flux. Applications adapt to the kind of communication services provided by the network, and the network seeks to evolve to provide new services to enable an even richer set of applications. My premise was that the Internet no longer evolves very much. For all the evolution, the Internet still only provides best-effort delivery of IP packets. There is no quality of service to speak of, little IPv6 deployment, only a marginal amount of multicast deployment, and no active network-style services to speak of (except maybe firewalls). Therefore, the question I created and sought to answer was why was this the case, and what could be done about it.

The technical part of my talk was to focus on multicast. I showed the audience how multicast trees were dynamically built; gave an overview of tree construction protocols; and then focused on the issues of multicast traffic and group monitoring efforts. My own research has focused on building both real-time diagnostic tools and long-term statistical collection mechanisms. An indirect result of my work is to understand some of the deployment challenges beyond the technical challenges.

Monitoring multicast traffic is somewhat similar to monitoring

Kevin Almeroth

unicast traffic, but there are differences. The key difference derives from the simple fact that multicast traffic can be destined for multiple receivers. With multicast, this level of abstraction carries additional importance because of the added complexity associated with delivering a packet to multiple receivers. Instead of monitoring connectivity between pairs of users, multicast deals with potentially very large groups of users. And instead of monitoring the links along a single path, multicast deals with links organized into a tree.

Anonymity of group members and use of the User Datagram Protocol (UDP) to carry multicast data make it difficult to monitor multicast groups. For example, the current multicast model is an open service model that supports sessions in which anyone can send data to a multicast group and/or join and receive data from the group.

DMCA's Chilling Effect on Research and Innovation

By Jeffrey H. Grove

When Congress passed the Digital Millennium Copyright Act (DMCA) in 1998, supporters hailed it as necessary to provide legal intellectual property protection in today's increasingly complex digital era. As predicted by others, however, the DCMA has caused a chilling effect to ripple across the computing research community by restricting the freedom of computer scientists to engage in research and exchange ideas.

CRA, ACM, and other leading scientific and engineering societies believe the DMCA has demonstrated substantial negative impacts on the conduct of our nation's computing research, particularly in cryptography and other computer security areas. The new law is effectively undermining open scientific collaboration— the tenet that is fundamental to the progress of innovation that has been the cornerstone of U.S. technological preeminence. This cornerstone is being dismantled by implementation

of the DMCA's overzealous anti-circumvention provisions.

The provisions of the law make it a crime to:

"manufacture, import, offer to the public, provide or otherwise traffic in any technology, product, service, device, component or part thereof ... (that) ... is primarily designed or produced for the purpose of circumventing protection afforded by a technological measure that effectively protects a right of a copyright owner."

Rather than narrowly penalizing infringing behavior, the overly broad anti-circumvention provisions criminalize multi-use technologies. Absent clear criminal intent, it is not right to penalize researchers for conducting research that is crucial to developing and testing copyright protection systems, security software, and better software engineering tools. Yet the new law does just that.

When the DMCA was first debated in Congress, CRA, ACM, and others in the computing community urged that:

1. the anti-circumvention provisions of the legislation should be revised to restrict only circumvention related to infringement;
2. a "fair-use" defense to the cause of action should be provided; and
3. limited anti-circumvention exceptions for specific types of research should be expanded.

Our concerns, unfortunately, were not addressed as the legislation was enacted.

The new law arms the entertainment and software industries—working with the government in criminal enforcement actions—to vigorously pursue scientists and researchers engaged in activities that they deem unacceptable. As a consequence, it is likely that researchers will increasingly become entangled in litigation simply for conducting research previously considered to be legitimate.

In one of the first criminal prosecutions under the new law, the U.S. Department of Justice arrested a

Russian cryptographer for allegedly violating the anti-circumvention provisions of the DMCA by trafficking in a program to bypass copy protection for e-books. The cryptographer—a Ph.D. candidate in computer science named Dmitry Sklyarov—was arrested while visiting the United States to present electronic security research at a conference in Las Vegas. In reaction to the arrest, foreign scientists and international members of computing societies like ACM have indicated they may no longer attend conferences in the United States while the law is in force.

In other instances, the mere threat of litigation under the anti-circumvention provisions of the new law have deterred scientists from publishing scholarly work, or even publicly discussing their research. At a computing workshop held earlier this year, a team of researchers, led by Princeton University computer science professor Ed Felton, declined to present an academic paper describing methods for demonstrating security flaws in certain watermarking technologies proposed by

> **Note:** Included with this edition of *CRN* you will find a copy of CRA's 2000-01 Annual Report and a copy of the recently completed CRA-W report, *Recruitment and Retention of Women Graduate Students in Computer Science and Engineering.*

Historical Trends from Taulbee Surveys: Women Students & Faculty

By Jay Vegso

This is the second in a series of articles on trends in data from the Taulbee Survey and its antecedents, which stretch back to 1970. The first article dealt with faculty salaries and is available on the CRA website (www.cra.org). This article reports on the proportion of women who either have received degrees from or are on the faculty of computer science and engineering (CS/CE) departments in the United States and Canada.

Figure 1 charts the percentage of bachelors, masters, and Ph.D. degrees granted to women since 1985. Although the gender of Ph.D. recipients has always been tracked by the Taulbee Survey, questions about the gender of bachelors and masters recipients have only been included since 1994. The results from Taulbee are compared with data from National Science Foundation surveys on science and engineering degrees (S&E). The most recent results for the NSF surveys are from 1998 for bachelors and masters degrees, and 1999 for Ph.D. degrees.[1]

Figure 2 focuses on the percentage of bachelors and masters CS/CE degrees that have been granted to women. Although the NSF figures reflect CS degrees only, while the Taulbee results combine CE and CS results, the inclusion of CE data has little impact on the ratio of men to women in Taulbee's results.
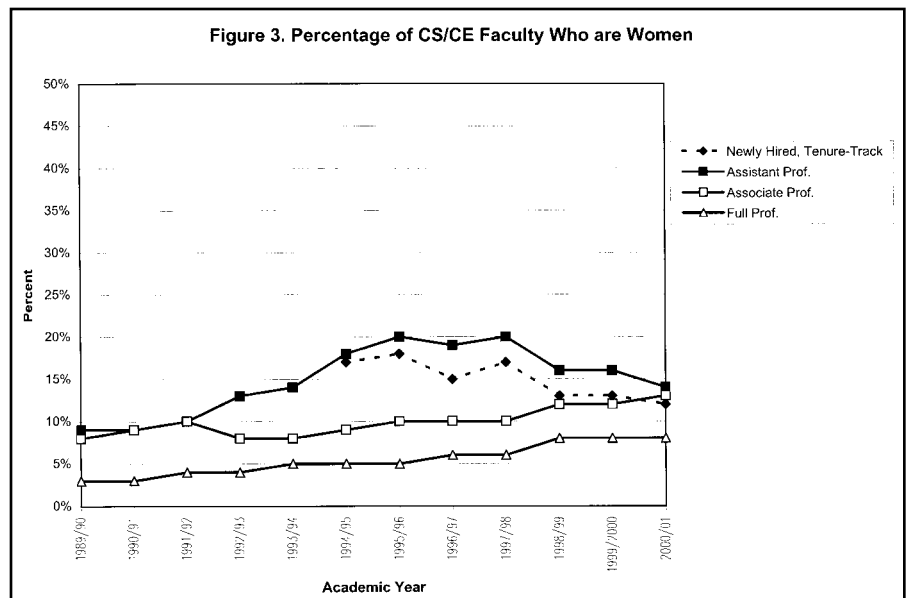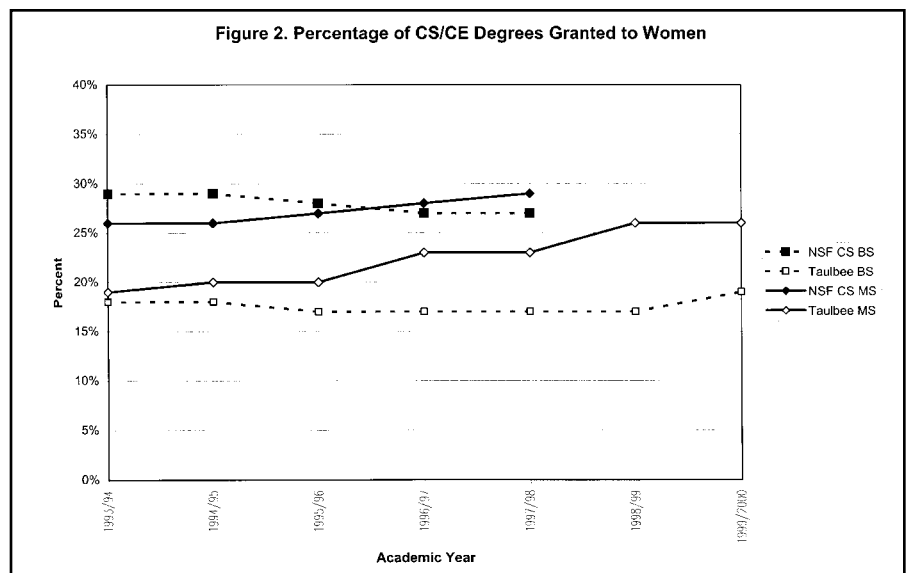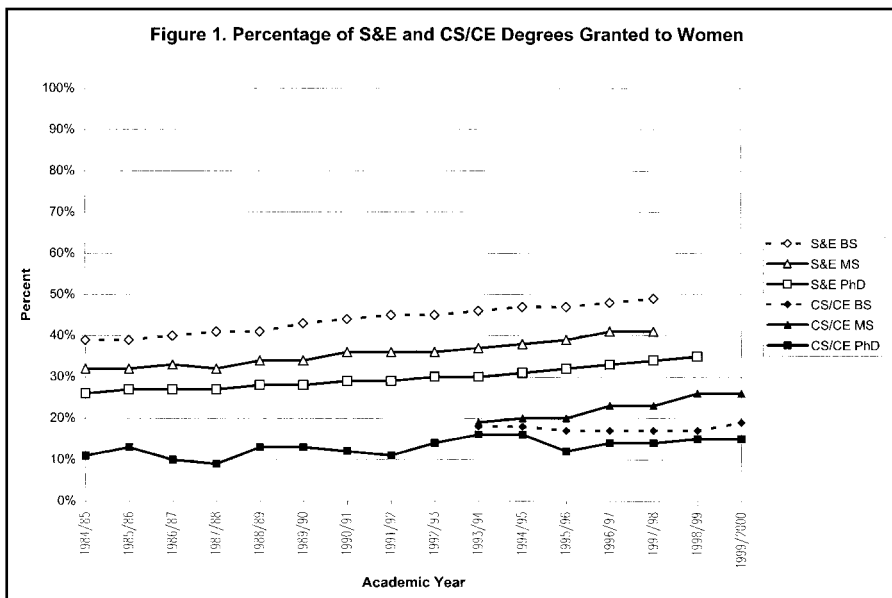
Figure 2 reveals that the Ph.D.-granting departments targeted by the Taulbee Survey grant a lower proportion of bachelors and masters degrees to women than the much broader range of schools that are surveyed by NSF.

Figure 3 looks at the percentage of faculty, both current and those newly hired, who are women. As can be seen, the proportion of newly hired faculty who are women has either declined or failed to rise in the past few years, even as the ratio of Ph.D. degrees granted to men and women has been stable.

As a point of comparison for the data found in Figure 3, according to NSF, 11% of full-time full professors, 22% of associate professors, and 33% of assistant professors in S&E departments were women in 1997.[2] The Taulbee results for the same year indicate that only 6% of full professors, 10% of associate professors, and 19% of assistant professors were women in CS/CE departments. ∎

[1] NSF, *Science and Engineering Degrees: 1968-98*, NSF 01-325 (2001); *Science and Engineering Doctorate Awards: 1999*, NSF 01-314 (2001).

[2] NSF, *Women, Minorities, and Persons With Disabilities in Science and Engineering: 2000*, NSF 00-327 (2000).

Figure 2. Percentage of CS/CE Degrees Granted to Women

Figure 1. Percentage of S&E and CS/CE Degrees Granted to Women

Figure 3. Percentage of CS/CE Faculty Who are Women

CPU, an operating system, and networking capability. So, preserving the virtues for the consumer while taming the technology has become the goal of the CE industry.

PINTL's Goals and Organization

The goal of the lab is to create software and intellectual property that will be used in products and services that encompass the secure networked devices of the future. Trends in the marketplace show that the Internet will continue to grow steadily, while growth in personal computer penetration is slowing down. Meanwhile, alternative Internet devices are starting to catch on in the marketplace—and the television set and its peripherals like VCRs, DVD players, and Set Top Boxes (STBs) are prime candidates for transformation. So the strategy at

PINTL is not to focus on next-generation computers, but rather to think of a future in which Panasonic is selling interesting products and services that contain computer-like elements.

PINTL's researchers focus on product areas or on core technologies and competencies, which are then blended together to address particular product themes. PINTL's core technical competencies are in networking, security, languages, database, and operating systems technologies—basic computer science sub-disciplines. These core competencies are then focused on product themes such as interactive digital television, residential networking, professional digital broadcast, mobile communications, and multimedia document technology. This allows a balance between maintaining competence in core technical disciplines while meeting the needs of the business to address new markets in a timely fashion.

Projects Follow Broad Themes

When it comes to selecting particular projects at the lab, the company provides broad themes about where it wants to do business in the future—for instance, digital television or mobile communication. Within these themes, individual groups in the lab look to create projects in which technical innovation will have an impact on business for the company.

In addition, the modern marketplace really demands that technologies and intellectual property be developed and utilized quickly. If a company spends too much time deciding whether to develop technology in a particular area, industrial competitors pass by it very quickly. So it is always a challenge for researchers to know when to start and, maybe even more importantly, when to stop working on a project. For PINTL's members, a shift in research themes represents an

opportunity to do something new and different.

In order for its work to have impact, PINTL devotes a lot of its energy to interacting and collaborating with other organizations in MEI's global R&D effort. For instance, an algorithm created in Princeton could be integrated with other software in the United Kingdom, incorporated into a product release in Japan, and finally manufactured into a product in Malaysia for sale in Germany. This global collaboration structure encourages every lab to find the correct niche for its efforts. Not every lab can do everything and be cost effective about it. In the United States, the emphasis tends to be on high-value, high-return innovation rather than on tasks that can be done more effectively elsewhere.

Innovation Areas

What are some of the particular areas that PINTL is working on now?

make, about 40 percent of the responses indicated an increased likelihood that the student would consider going to graduate school. Of course, it would require follow-up to determine whether the program has actually had a long-term effect on the behavior of the attendees, and that has not yet been done.

The comments on the exit surveys were extremely positive. One Berkeley undergrad said: "This event has been very inspirational. I never thought of grad school as exciting before this talk!" A student from the University of Washington said: "It is very useful to have an opportunity to hear perspectives from research labs, grad students, and academia." It is clear from many of the comments that there is a desire on the part of undergraduates for more information about graduate programs, and that this program fills a serious need. Women students were especially enthusiastic about a panel composed entirely of women.

Plans for the current academic year (2001-02) are shaping up. This year 33 schools applied with incredibly strong proposals. The sites selected so far include Bryn Mawr and Swarthmore, Colorado State, Cornell, Florida International University (an Hispanic-serving institution), Georgia Institute of Technology, Princeton, Purdue, Tufts, University of British Columbia, University of California-Berkeley, and the University of California-Santa Cruz. In addition to geographic distribution of the selected sites, we have tried to include some small liberal arts colleges in addition to big universities. Several of the sites have proposed coordinating with nearby colleges for their event. The list of distinguished speakers for the 2001-02 series will be available on the program's website (http://cra.org/Activities/craw/projects/dist_lect.html) as soon as it has been finalized.

Resources for Graduate School Recruiting

The panel discussion held last year at Illinois was videotaped and can be viewed from http://www.cs.uiuc.edu/education/grad/forum.html

CRA-W Graduate School Information brochure http://cra.org/Activities/craw/pubs.html

Advice for undergraduates considering graduate school http://www.acm.org/crossroads/xrds3-4/gradschool.html

How to succeed in graduate school http://www.acm.org/crossroads/xrds1-2/advice1.html http://www.acm.org/crossroads/xrds1-3/advice2.html

Choosing a PhD program in computer science http://www.acm.org/crossroads/xrds6-1/choosing.html

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the music recording industry to protect digital music. The team cited the threat of legal action by the music industry under provisions of the DMCA as the reason for canceling their presentation. Clearly, preventing scientists and programmers from exchanging ideas and fully developing their own research harms research and innovation.

Ed Felten and his colleagues, however, are fighting back. They have filed suit requesting a federal court to rule that they have a First Amendment right to present their research findings at a computing conference. Additionally, the researchers have petitioned the court to declare the anti-circumvention provisions of the DMCA unconstitutional. Recognizing the importance of this judicial challenge to the computing community, CRA and ACM are formulating plans to support this legal effort.

Overturning the detrimental impacts of DMCA does not, however, rest solely with the judiciary.

Congress also needs to revisit the DMCA and address the law's intended, as well as unintended, consequences. Recently, Congressional supporters of the DMCA suggested that the law is working exactly as intended. Additionally, they even suggested that "no credible opposition to the DMCA exists." Therefore, it is incumbent upon the computing community to deliver a clear and resounding message to Congress demanding that changes must be made to the DMCA.

It is important that you contact your representatives in Washington and inform them of our community's concerns. Tell them that the anti-circumvention provisions of the DMCA have had a profound chilling effect on research and scientific freedom in the United States. Make sure your voice, and that of the computing community, is heard.

Jeff Grove is Director of ACM's Public Policy Office in Washington, DC (jeff_grove@acm.org). ▌

At the moment, Panasonic's leadership is committed to the idea that the next generation of globally available systems will connect people to the worldwide Internet, and PINTL is working on ways to facilitate this transformation. Some of the particular project themes are:

• **Secure Operating Systems**. The next generation of operating systems will have to set a new standard for reliability, security, and compactness as CE devices become nodes in a global-scale, distributed computing environment.

• **Media and Network Security**. One of the challenges in the CE arena is that many audio/video devices have evolved from being analog waveform reproducers to containers for perfect digital copies of intellectual property. One only needs to look at the MP3 phenomenon to understand that this change has many communities of interest very concerned about their futures. Balancing the needs of users, platform providers, and content providers presents both technical and sociological challenges. In addition, the home is traditionally a very private domain, so connecting it to the global Internet presents a particular set of security challenges. Key relevant technologies in designing networked digital appliances are cryptography, software tamper resistance, and data hiding.

• **Middleware**. Once one has a basic secure platform, creating content that can run on a variety of CE platforms, that has compelling production values and is interactive, becomes a high priority. Various approaches that involve designing, placing, and maintaining presentation and execution engines on CE platforms are being investigated. Whether interactive DTV is able to transform the television from a passive receiver to the nerve center of a networked home depends largely on the development of appropriate middleware.

• **Residential Networking**. Computer networking grew up to serve the need to move vast quantities of bursty data between computers. Legions of professionals could be relied on to master the more arcane aspects of networking in order to keep the bits flowing. However, once networking becomes an integral part of consumer environments, creating easy-to-use, remotely upgradeable, zero-configuration environments becomes a key issue.

PINTL's People

Like any R&D organization, the principal asset is the people who work there. The staff currently consists of 50 employees, 40 of whom are scientists and engineers and 50 percent of whom have Ph.Ds. Besides our core staff, we usually increase our numbers by about 25 percent every summer as we accommodate graduate student interns and visiting scientists. We maintain relationships with many universities, both domestic and overseas, to facilitate the exchange of students and other personnel. This resource is relied on for access to a wider variety of special expertise than is available in-house. Exchanges with overseas universities give a global perspective to our work that is quite refreshing.

In addition, PINTL enters into many partnerships and alliances that allow us to collaborate on cutting-edge technology. The lab partners with universities, typically funding several projects a year to work on a certain area of technology that Panasonic believes may be useful. For example, recently we have funded some open source projects in areas where we believe that Panasonic could benefit from the results. In addition, there are technology consortia (e.g., the Java Community Process) of various sorts in which we participate in order to raise the general level of technology in industry.

Overall, PINTL attempts to provide an intellectually stimulating environment in which to work, while focusing on problems that will have some impact on the lives of consumers. For more information, see our website at http://www.research.panasonic.com.

Robert S. Fish is Vice President, Panasonic Technologies, Inc. and Director of Princeton, NJ-based Panasonic Information and Networking Technologies Laboratory (robf@research.panasonic.com). ▌

CRA Offers Workshop for New Faculty and Advanced Graduate Students

The CRA Academic Careers and Effective Teaching Workshop is scheduled for **February 10-12, 2002** at the Key Bridge Marriott Hotel in Arlington, Virginia. Designed for new faculty and advanced graduate students in computer science, computer engineering, computational science, and other computing-related disciplines, it focuses on practical methods for having a successful and fulfilling academic career. Topics include learning styles, designing a course, lecturing effectively, and collaborative learning. Other sessions will discuss important aspects of the academic career, such as selecting and managing a research project, preparing a tenure dossier, time management and family issues, and writing a successful research-funding proposal.

The workshop will include talks by senior members of the two largest funding agencies for computing research, NSF and DARPA, and a session by NSF staff on how to write a good funding proposal.

CRA has received a grant from the National Science Foundation to assist a number of advanced graduate students interested in an academic career who want to attend the workshop. For details about the application process and other information, see: http://www.cra.org/Activities/workshops/academic.careers/

CRA Board Members Begin New Terms

Incumbents

Leah Jamieson is Professor of Electrical and Computer Engineering at Purdue University. Her research interests include parallel algorithms and software for image, signal, and speech processing applications; and speech analysis and recognition. She is an IEEE Fellow (1993), and in 2000 received the IEEE Education Society's "Outstanding Woman Engineering Educator" award and IEEE's Millennium Medal. Jamieson led the development of Purdue's BS in Computer Engineering degree, and is co-founder of the Engineering Projects in Education (EPICS) program. She has played an active role in CRA's Committee on the Status of Women in Computing Research, serving as co-chair from 1996-99, and has just completed a two-year term as Secretary of the CRA Board. From 1997-2000, she was a member of the Advisory Committee of NSF's CISE Directorate. Professor Jamieson earned a Ph.D. in Electrical Engineering and Computer Science from Princeton University.

Edward Lazowska, Professor and Acting Chair of the Department of Computer Science and Engineering at the University of Washington, recently completed a four-year term as CRA's board chair. Lazowska is an ACM Fellow, IEEE Fellow, NAE member, and a winner of the Outstanding Public Service Award at the University of Washington. He is a member of: NRC's Computer Science and Telecommunications Board (CSTB); DARPA's Information Science and Technology Working Group; the Technical Advisory Board for Microsoft Research; and the Board of Directors, Washington Software Alliance. Lazowska served as chair of NSF's Advisory Committee for CISE (Computer and Information Science and Engineering) in 1999-2000. He was awarded a Ph.D. in Computer Science from the University of Toronto.

David Waltz, President of NEC Research Institute, is an ACM Fellow, AAAI Fellow, and a Senior Member of IEEE. His research interests include constraint propagation and applications to computer vision; massively parallel systems for relational and text databases; memory-based and case-based data mining and reasoning systems; protein structure prediction using hybrid methods; and connectionist models for natural language processing. Waltz participated in a number of CRA activities in his role as President of the American Association for Artificial Intelligence, a CRA member society. His experience spans academia, start-up R&D, corporate board membership, industrial research management, professional society leadership, and funding-agency service. He serves on a number of editorial boards, and currently chairs CRA's Industry Committee. Dr. Waltz received a Ph.D. in Electrical Engineering from the Massachusetts Institute of Technology

Appointees

Frank Tompa, Professor of Computer Science at the University of Waterloo, served as a CRA board member and chair of the Canada Committee from 1999-2001. He recently was appointed to represent CRA's new Canadian affiliate member, CACS/AIC, on the board. Tompa has been named a "leader in Canadian science" by the Natural Sciences and Engineering Research Council of Canada and is a recipient of a University-Industry Synergy R&D Partnership Award from the Conference Board of Canada and NSERC. His research interests span the fields of data structures and databases, particularly the design of text management systems suitable for maintaining large reference texts and large, heterogeneous text collections. He was a founding member of the board of directors of Communications and Information Technology Ontario (CITO). Professor Tompa has a Ph.D. in Computer Science from the University of Toronto.
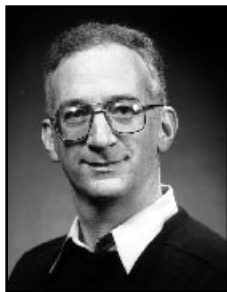
Newly Elected

Philip 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 departments.

Bernstein's research interests include database systems, meta-data management, and transaction processing. Bernstein is currently a member of the Board of Trustees of the Very Large Data Base Endowment and chairs the ACM SIGMOD Awards Committee. He has played an organizational role in a number of database research conferences and served on many program committees. He is particularly committed to promoting university-industry cooperation, educating students about career alternatives, and increasing workforce diversity. Dr. Bernstein received his Ph.D. in Computer Science from the University of Toronto.

Barbara Grosz, Gordon McKay Professor of Computer Science at Harvard, was recently named the first Dean of Science at the Radcliffe Institute for Advanced Study. Professor Grosz is an AAAS Fellow and an AAAI Fellow, and the winner of AAAI's Distinguished Service Award and the Donald E. Walker Distinguished Service Award, IJCAI. Her research interests include collaborative multi-agent systems; modeling of collaborative behavior; human-computer interface design; and natural-language dialogue processing. She was a member of NRC's Computer Science and Telecommunications Board (1994-98), and served as Conference Chair and Chair of the Board of Trustees of the International Joint Conference on Artificial Intelligence (1989-1991). Grosz has been active in the American Association for Artificial Intelligence in a variety of roles, serving as its President from 1993-95. At Harvard she serves on the FAS Ad Hoc Committee on Faculty Diversity. Professor Grosz received a Ph.D. in Computer Science from the University of California, Berkeley.

James Horning is the Laboratory Director and Senior Vice President, Research, at InterTrust Technologies Corp. Strategic Technologies and Architectural Research Laboratory (STAR Lab). He is an ACM Fellow (1998) and was awarded the IFIP Silver Core (1981). His research interests include formal languages and translation; electronic commerce; and programming methodology. Dr. Horning has a long-standing interest in improving public policy on computing, as well as strengthening university/industry interactions. He has been a member of ACM's Committee on Computers and Public Policy since 1985, and served on USACM from 1994 to 1999. Dr. Horning previously worked as a Senior Consultant Software Engineer at DEC Systems Research Center and as a Principal Scientist at Xerox PARC. At the University of Toronto Computer Science and Electrical Engineering Departments he chaired the Computer Systems Research Group. Dr. Horning received a Ph.D. in Computer Science from Stanford University.

Moshe Vardi is the George Professor and Chair of Computer Science at Rice University. He is an ACM Fellow (2000) and was awarded the Goedel Prize in 2000. Vardi also has won a number awards for innovation. His research interests include database management systems; logic in complexity theory; multi-agent systems; and design specification and verification. The author of more than 150 technical papers, Moshe Vardi has also served as Conference Chair, ACM Symposium on Principles of Database Systems; and Program Chair, 8th IEEE Symposium on Logic in Computer Science. Currently he chairs the Steering Committee for the Federated Logic Conference; is a member of the Kanellakis Award Committee; and serves on a number of editorial boards. Professor Vardi received a Ph.D. in Computer Science from Hebrew University in Jerusalem. ∎

**Richard Tapia
Celebration of Diversity in Computing
Symposium 2001**

Celebrating the technical contributions and career interests of diverse people in computing fields.

**October 18-20, 2001
Houston, Texas**

Details: www.sdsc.edu/Tapia2001

UBIQUITY

Grace Hopper Celebration of Women in Computing 2002 Conference

Hyatt Regency Vancouver, British Columbia, Canada

October 9-12, 2002

Call for Participation Deadline: October 1, 2001

Details: http://gracehopper.org

2000-01 Computing Research Association Members

Academic Members
*New members 2000-01

Abilene Christian University - MCS
Arizona State University - CSE
Auburn University - CSSE
Ball State University - CS
Boston University - CS
Bowie State University - CS
*Bradley University - CS
Brandeis University - CS
Brigham Young University - CS
Brown University - CS
*Bryn Mawr College - MCS
Bucknell University - CS
*California State Polytechnic
   University - CS
Carnegie Mellon University - CS
Carnegie Mellon University - ECE
Case Western Reserve University -
   EE&CS
City University of New York,
   Graduate Center - CS
Clemson University - CS
*College of Charleston - CS
College of William & Mary - CS
Colorado State University - CS
*Colorado Technical University - CS
Columbia University - CS
Cornell University - CS
Dalhousie University - CS
Dartmouth College - CS
DePaul University - CS
Duke University - CS
Florida Atlantic University - CSE
Florida Institute of Technology - CS
Florida International University - CS
Florida State University - CS
*Florida State University - IS
Georgia Institute of Technology - CS
*Georgia Institute of Technology -
   ECE
*Georgia Southern University - MCS
*Grinnell College - IT
Harvard University - CS
*Harvey Mudd College - CS
Indiana University - CS
*Indiana University - I
Iowa State University - CS
Johns Hopkins University - CS
Kansas State University - CIS
Kent State University - CS
Lehigh University - EECS
Louisiana State University - CS
Massachusetts Institute of Technology
   - AA
Massachusetts Institute of Technology
   - EECS
Michigan State University - CS
Michigan Technological University -
   CS
Mississippi State University - CS
Montana State University - CS
New Jersey Institute of Technology -
   CIS
New York University - CS
North Carolina State University - CS
Northeastern University - CS
Northwestern University - CS
Northwestern University - ECE
Oakland University - CSE
Ohio State University - CIS
Ohio University - EECS
Oklahoma State University - CS
Old Dominion University - CS

Oregon Graduate Institute - CSE
Oregon State University - CS
Pace University - CSIS
Pennsylvania State University - CSE
*Pennsylvania State University - IST
Polytechnic University - CIS
Portland State University - CS
Princeton University - CS
Purdue University - CS
Purdue University - ECE
Rensselaer Polytechnic Institute - CS
Rice University - CS
*Rochester Institute of Technology -
   CS
Rutgers University, Busch Campus -
   CS
Santa Clara University - CE
Simon Fraser University - CS
Southern Methodist University - CSE
*Southwest Texas State University -
   CS
Stanford University - CS
State University of New York, Albany
   - CS
State University of New York, Buffalo
   - CSE
State University of New York, Stony
   Brook - CS
Stevens Institute of Technology - CS
Swarthmore College - CS
*Syracuse University - IS
Temple University - CIS
Texas A&M University - CS
Texas Tech University - CS
Tufts University - EECS
Tulane University - EECS
University of Alabama, Birmingham -
   CIS
University of Alabama, Tuscaloosa -
   CS
University of Alberta - CS
University of Arizona - CS
University of Arkansas - CSCE
University of British Columbia - CS
University of California, Berkeley -
   EECS
*University of California, Berkeley -
   IMS
University of California, Davis - CS
University of California, Irvine - ICS
University of California, Los Angeles -
   CS
University of California, Riverside -
   CS
University of California, San Diego -
   CSE
University of California, Santa
   Barbara - CS
University of California, Santa Cruz -
   CE
University of California, Santa Cruz -
   CS
University of Central Arkansas - CS
University of Central Florida - CS
University of Chicago - CS
University of Cincinnati - ECECS
University of Colorado, Boulder - CS
University of Delaware - CIS
University of Denver - MCS
University of Florida - CIS
University of Houston - CS
University of Idaho - CS
University of Illinois, Chicago - EECS
University of Illinois, Urbana
   Champaign - CS
University of Iowa - CS
University of Kansas - EECS

University of Kentucky - CS
University of Louisiana at Lafayette -
   CACS
University of Maryland - CS
University of Maryland, Baltimore Co
   - CSEE
University of Massachusetts, Amherst
   - CS
University of Michigan - EECS
*University of Michigan - I
University of Michigan, Dearborn -
   CIS
University of Minnesota - CSE
*University of Minnesota, Duluth -
   CS
University of Mississippi - CIS
University of Missouri, Columbia -
   CECS
University of Missouri, Rolla - CS
University of Nebraska, Lincoln - CSE
University of Nevada, Las Vegas - CS
University of Nevada, Reno - CS
University of New Mexico - CS
University of North Carolina, Chapel
   Hill - CS
University of North Dakota - CS
University of North Texas - CS
University of Oklahoma - CS
University of Oregon - CIS
University of Pennsylvania - CIS
University of Pittsburgh - CS
*University of Puerto Rico, Mayaguez
   - ECE
University of Puget Sound - MCS
University of Rochester - CS
*University of South Alabama - CIS
University of South Carolina - CSE
University of South Florida - CSE
University of Southern California -
   EES
University of Southern California -
   CS

University of Tennessee, Knoxville -
   CS
University of Texas, Austin - CS
University of Texas, Dallas - CS
University of Texas, El Paso - CS
University of Toronto - CS
University of Tulsa - MCS
University of Utah - CS
University of Virginia - CS
University of Washington - CSE
*University of Washington - I
*University of Washington, Bothell -
   CS
University of Waterloo - CS
*University of West Florida - CS
University of Western Ontario - CS
*University of Wisconsin, Green Bay -
   CS
University of Wisconsin, Madison -
   CS
University of Wisconsin, Milwaukee -
   EECS
University of Wyoming - CS
Vanderbilt University - EECS
Virginia Tech - CS
Wake Forest University - CS
Washington State University - EECS
Washington University in St. Louis -
   CS
Wayne State University - CS
*Wesleyan University - CS
West Virginia University - CSEE
Western Michigan University - CS
Williams College - CS
Worcester Polytechnic Institute - CS
Wright State University - CSE
Yale University - CS
York University - CS

Industry and Government Labs and Centers
*New members 2000-01

AT&T Labs
*Avaya (Supporting Member)
Compaq Computer Corp.
*Computer Science Research
   Institute at Sandia National
   Labs
Fraunhofer Center for Research in
   Computer Graphics
FX Palo Alto Laboratory, Inc.
Hewlett-Packard Co.
Honda R&D Americas, Inc.
IBM Research
*Institute for Human & Machine
   Cognition
Intel Corp. (Supporting Member)
InterTrust Technologies Corp.
Lucent Technologies, Bell Labs

Microsoft Corp.
Mitsubishi Electric Research Labs
NASA Ames Research Center
*National Center for Atmospheric
   Research
National Center for
   Supercomputing Applications
NEC Research Institute
Panasonic Information &
   Networking Technologies Lab
Ricoh Innovations
San Diego Supercomputer Center
Sun Microsystems, Inc.
Telcordia Technologies
   (Sponsoring Member)
Xerox Corp.

Affiliate Professional Societies

American Association for Artificial Intelligence

Association for Computing Machinery

IEEE Computer Society

Society for Industrial and Applied Mathematics

USENIX Association

In this model, senders and receivers may not be known to one another. Support for dynamic groups makes multicast management more difficult. In particular, reachability monitoring—the task of verifying if multicast data from a session source can be received at a session receiver site—requires additional mechanisms. This is because in the current IP multicast service model there is no implicit group coordination or management. Therefore there can be no implicit way of knowing the group members.

As an example of why the specific characteristics of multicast are more of a challenge than unicast, we consider the case of monitoring reachability. One mechanism for determining who group members are and whether reachability exists between source(s) and receiver(s) is the ping utility. In unicast, ping allows a source/receiver to test bi-directional reachability to a peer receiver/source. In the case of multicast, because of the open service model and because ping requests are made to a group instead of a receiver, the source does not know from whom and from how many group members to expect responses.

This creates a number of problems. First, there is the problem of implosion that can occur if a very large number of group members choose to send a response within a small interval. Second, the responses that are sent may only be from a subset of group members. Receivers who do not have bi-directional connectivity with the source will not be heard, i.e., receivers who do not hear the ping request (in the case of a broken link), or receivers who do not have connectivity in the reverse direction. On the other hand, a multicast version of ping tool that is truly analogous to the unicast ping should return reachability status for all the receivers in the group.

To finish the talk and round out the afternoon, I focused on Internet2 and its role in the development, refinement, and deployment of these kinds of advanced services. The Internet2 engineering working groups are focused on doing in Internet2 what is extremely difficult in the commodity Internet

(for reasons of size). Through the academic institutions as well as affiliated government and industrial partners, Internet2 is working to build a small but highly advanced next-generation Internet infrastructure.

While the audience was certainly impressed they were also a bit confused. The part I did not explain very well was how Internet2 integrates into the commodity Internet. Given that Internet2 is already integrated into the commodity Internet; given that participation in Internet2 does not require wholesale replacement of an existing enterprise's infrastructure; and given that advanced services will be deployed incrementally; the usefulness of Internet2 is much easier to understand.

What I have already learned from the CRA Digital Government Fellowship is that a wide gap exists between the kinds of research that academics do and the kinds of roadblocks there are to the deployment of Internet-based technology in the U.S. government. No doubt a better understanding of the importance and complexity of advanced Internet services will benefit all affected.

Kevin Almeroth (almeroth@cs.ucsb.edu) is an Assistant Professor of Computer Science at the University of California, Santa Barbara. Dr. Almeroth received his Ph.D. from the Georgia Institute of Technology. His research interests include computer networks and protocols; large-scale multimedia systems; performance evaluation; and distributed systems. A summary of his research is available at: http://www.cs.ucsb.edu. The slides used in the above presentation are available at: http://www.cra.org/ Activities/fellows/almeroth.pdf

The CRA Digital Government Fellowship is supported by the National Science Foundation's Digital Government Program, and is intended to build ties between academic and industrial computing research communities and information technology workers in federal, state, and local governments. ∎

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and retention of all faculty and graduate students in computing-related disciplines.

• Establish and support an Academic Structures Task Force to recommend how CRA can best work with the evolving Information Technology schools and colleges, with the Electrical and Computer Engineering Department Heads Association (ECEDHA, formerly NEEDHA), with other non-traditional (i.e., not computer science or computer engineering) academic units, and with other professional societies.

2. **Funding for Computing Research**
With the new administration come new challenges and new opportunities for enhanced research funding. We intend to help the Government Affairs Committee to:

• Engage our membership more actively in communicating with the Administration and Congress;

• Partner with individual companies as well as industrial alliances to convince the Administration and Congress of the importance of increasing computing research funding; and

• Work with coalitions of professional societies to spread our message.

3. **Communications**
Our ability to have an impact depends in part on the overall awareness of CRA among those whom we seek to influence and serve. We intend to help the newly revitalized communications committee to:

• Improve the awareness of CRA and its activities among deans and provosts, as well as among opinion-makers in government and industry;

• Enhance efforts to increase coverage of CRA's activities in major publications such as the *Chronicle of Higher Education*, *Business Week*, and *The Wall Street Journal*;

• Widely disseminate CRA reports and White Papers; and

• Make the CRA website the definitive source for data concerning

computing research and human resources.

Your Board of Directors, its Executive Committee, and I as Board Chair will consider our terms of office to have been successful if, and only if, our members judge that over the coming years CRA has continued to strengthen its services to the computing research community. We all thank each of you in advance for *your* role in helping to achieve this goal.

Jim Foley is Associate Dean, Professor and Stephen Fleming Chair in Telecommunications at Georgia Tech. He began a two-year term as CRA's Board Chair on July 1. ∎

Transitions and Announcements

Jon Doyle, former Principal Research Scientist in the Clinical Decision Making Group at the Laboratory for Computer Science of the Massachusetts Institute of Technology and research faculty member of the Tufts University School of Medicine, has been named Professor and SAS Institute Chair of Computer Science at North Carolina State University effective August 1, 2001. An AAAI Fellow and former AAAI Council member, Dr. Doyle helped organize the ACM/CRA Workshop on Strategic Directions in Computing Research and co-edited its report on artificial intelligence.

Barbara Grosz, a CRA board member, will become the first Dean of Science at the Radcliffe Institute for Advanced Study. Beginning in September 2001, Professor Grosz will divide her time between Radcliffe and the Faculty of Arts and Sciences at Harvard where she is Gordon McKay Professor of Computer Science. At Radcliffe, her responsibilities will be to build a program that enables the Institute to make significant contributions to the advancement of scientific knowledge and to the enhancement of the position of women within a field in which they have been especially underrepresented.

James Hendler, who has spent the past three years at the Defense Advanced Research Projects Agency (DARPA) as Chief Scientist of the Information Systems Office and the Program Manager responsible for DARPA's Agent-Based Computing Initiative, will be leaving in September. He will be returning to the University of Maryland where he is a Professor in the Computer Science Department and the Institute for Advanced Computer Studies. Upon his return, Hendler will assume the position of Director of Semantic Web and Agent Technologies for the newly formed Maryland Information and Network Dynamics (MIND) Laboratory.

Marek Rusinkiewicz, Vice President, Telcordia Technologies, has been appointed general manager of the Information and Computer Sciences Laboratory. ∎

CRA Undergrad Award Presented at IJCAI-01

The female winner of CRA's Outstanding Undergraduate Award for 2001, Lisa Anthony of Drexel University, received her award on August 9 at the International Joint Conference on Artificial Intelligence in Seattle. CRA board member, David Waltz, President of NEC Research Institute, made the presentation.

The awards to the male winner (Kevin Zatloukal, University of Washington), male runner-up (Russell Cox, Harvard University), and several honorary mentions were presented in March at the ACM1 conference in San Jose. ∎

CRA Outstanding Undergraduate Awards 2002

Deadline: October 22, 2001

Nomination Details available at
http://www.cra.org

Professional Opportunities

Ball State University
Department of Computer Science
The Department of Computer Science seeks an applicant for a full-time, tenure track faculty position available August 17, 2001. Rank open. Responsibilities: desire and interest to teach all undergraduate and master's level graduate courses with a special background in one or more of the following areas— database, programming languages, computer networks, and software engineering; must be able to teach CS1 and CS2. An active, productive research program is required for tenure and promotion. Minimum qualification: doctorate in computer science or closely related field by August 17, 2001. Preferred qualifications: Ph.D. in computer science; record of scholarly research; teaching experience.

Ball State University has approximately 17,500 students. The Department of Computer Science has approximately 200 undergraduate majors and 100 M.S. students. Departmental lab facilities include both Microsoft Windows-based machines and Unix-based machines. For more information, visit web pages at www.bsu.edu and www.cs.bsu.edu.

Send letter of application; vita; and the names, addresses, and telephone numbers of three references to:
Dr. Norman Gibbs
Computer Science Search Committee
Department of Computer Science
Ball State University
Muncie, IN 47306
Review of completed applications will begin immediately and will continue until the position is filled.

Ball State University is an equal opportunity, affirmative action employer and is strongly and actively committed to diversity within its community.

Clemson University
Department of Electrical and Computer Engineering
Faculty Positions
Applications are invited for faculty positions in the Computer Engineering area of the Department of Electrical and Computer Engineering. The Department has strong research programs in wireless communications and signal processing, mechatronics, computational electromagnetics, solid-state device reliability, power systems, cluster-based computing, reconfigurable computing, and computer vision.

Exceptional candidates at all levels and in all research areas related to computer engineering will be considered. However, we intend to fill at least one position in the area of computer communication networks. For the other positions, we are interested in individuals who can contribute to the Department's active research programs or who can serve as conduits for building interdisciplinary research teams in emerging areas at Clemson (e.g., bioinformatics, robotics/control, human-computer interaction, and computer simulation).

Candidates should hold a Ph.D. degree in Computer Engineering, Electrical Engineering, Computer Science, or a closely related field and should have high potential for establishing a sustained research program and quality teaching. The individual selected will be expected to contribute to both new and ongoing research programs at Clemson and to teach both undergraduate and graduate courses. A detailed description of the department is available at http://www.ece.clemson.edu. Send resume and names and addresses of five references to:
Chair
Holcombe Department of Electrical and Computer Engineering
105 Riggs Hall, Box 340915
Clemson University
Clemson, SC 29634-0915
Evaluation will begin October 1, 2001, and will continue until the positions are filled.

Clemson University is an Equal Opportunity/Affirmative Action Employer.

Florida State University
Department of Computer Science
Chair
The Florida State University invites applications for the position of Chair of the Department of Computer Science. The Florida State University is in a period of significant growth in Computer Science, having hired nine new faculty in the last three years, and is committed to additional significant growth over the next five years. We are seeking a senior faculty member to lead the Computer Science Department through this growth period to national prominence as a research institution. Already a federally recognized center of academic excellence, the Computer Science Department is well-positioned to reach this distinction, with a core of nationally and internationally distinguished researchers on faculty and an established and growing federal funding record.

The ideal candidate will have demonstrated individual research excellence and success in leading a research effort in computer science or closely related field, resulting in significant federal funding and national visibility and influence. A commitment to high quality undergraduate and graduate education and research partnership must be evident. Associated with an appointment of an outside chair would be a faculty appointment at the rank of Professor.

Florida State University (FSU) is an accredited Carnegie Research I University situated in Tallahassee, the capital city of Florida. FSU has built a reputation as a strong research institution in both the sciences and the humanities, with significant outside research funding from private foundations, industries, and government agencies.

Tallahassee, separated from the high tourist, high traffic areas of the Florida peninsula, enjoys a relaxed lifestyle that is a refreshing counterpoint to the urban bustle of south Florida. The climate is appealingly temperate, cooler in winter than points south, usually with a mild January of half a dozen frost-covered mornings. The populace is professionally oriented with outdoor activities as the family recreation attraction. The university is a significant cultural center, with opportunities ranging from nationally acclaimed theater and music to athletics. Tallahassee is served by a modern airport and four major airlines.

Interested applicants should send a curriculum vitae and three references to:
Chair Recruitment Committee
Department of Computer Science
Room 203, James Jay Love Building
FSU
Tallahassee, FL, 32306-4530
For more information about the FSU Computer Science Department see our web page at http://www.cs.fsu.edu.

Florida State University is an Equal Opportunity/Affirmative Action employer, committed to diversity in hiring, and a Public Records Agency.

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

Applicants for tenure-track faculty positions are required to have completed a PhD in computer science, computer engineering, or a closely related field. Well qualified individuals in any area of computer science are encouraged to apply. Areas of priority include the following: trustworthy systems (including such topics as safety, reliability, system security, and information assurance); operating systems and networking; databases and massive data storage, processing, and archiving; visualization; software engineering. We are also interested in individuals who could contribute to our undergraduate distance-learning degree program and our professional master's degree tracks in software engineering and computer and network system administration. Selection will be based on evidence of outstanding research accomplishments and teaching ability.

FSU's primary mission is graduate teaching and research. It is classified as a Carnegie Research I university. FSU is an Internet 2 university. It is 14th among public universities in NSF support, and awards over 300 PhD's per year. The university has about 30,000 students, representing every state and 136 foreign countries. FSU is located in the Florida capital — a city of approximately 250,000, surrounded by forests, lakes and farms, and about an hour's drive from the Gulf Coast. It has excellent public schools and affordable housing. The department offers degrees at the BS, MS, and PhD levels.

Further information about the university and the department can be found via links from http://www.cs.fsu.edu/reference/tlhinfo.html, and questions may be e-mailed to recruitment@cs.fsu.edu.

Candidates are encouraged to apply immediately. Applications will be considered as they arrive, until the available positions are filled. Please use the on-line application form at http://www.cs.fsu/positions/apply.html. In addition, please arrange for at least three letters of reference to be sent to the following address:
Faculty Search Committee
Computer Science Department
PO Box 4530
Florida State University
Tallahassee, FL 32306-4530
The Florida State University is an Equal Opportunity/Affirmative Action employer, committed to diversity in hiring, and a Public Records Agency.

Georgia State University
Department of Computer Science
Lecturer Position
Georgia State University anticipates full-time Lecturer positions (non-tenure track) in the Department of Computer Science. Applicants must possess a M.S., or higher degree, in computer science or a closely related discipline, quality teaching experience and a record of scholarly achievement commensurate with the stage of the candidate's career. The successful candidate will have instructional and departmental service responsibilities. Applicants must include a curriculum vita, evidence of teaching effectiveness and three letters of reference and be sent to:
Search Committee Chair
Department of Computer Science
Georgia State University
University Plaza
Atlanta, GA. 30303-3083
The positions will remain open until filled.
Georgia State University is an EEO/AA institution.

Georgia State University
Department of Computer Science
Tenure-Track Faculty Positions
The Department of Computer Science of Georgia State University invites applications for anticipated tenure-track faculty positions starting Fall, 2002, semester in the fields of networks, software engineering, computer architecture, graphics, databases, and operating systems. Anticipated positions are part of a strategic initiative, Project Yamacraw, by the State of Georgia to make the state a global leader in the electronic design of high bandwidth communications. Research specialties of particular interest include: optical and wireless networks, high-speed access devices, content processing, internet multimedia communications, modeling and simulation of opto-electronic devices and systems, modeling and simulation of mixed-signal ICs and boards, methodology for embedded software development, development of a middle layer for embedded software, development of an auto-coding environment for embedded software, and the design and fabrication of prototype products.

Earned Ph.D. in Computer Science, or a closely related discipline, and a commitment to excellence in teaching and research in computer science are required. Applicants at the assistant professor level will be expected to establish independent, vigorous research programs with preference for extramural funding. Applicants at more senior levels should have well-established, externally funded research programs.

The department offers programs leading to the B.S., M.S., and Ph.D. degrees in computer science. Departmental computing facilities for research and instruction include a departmental network of PCs, Unix/Linux workstations, and a 24-processor Origin 2000 high-performance computer and five laboratories, one with ATM switches and another hypermedia and visualization research. Two full-time Systems Programmers support the departmental computing facilities.

Applicants should send a letter of application that cites this ad, curriculum vitae without birth date but with citizenship status, and three letters of reference and transcripts of all graduate and undergraduate work to:
Chair, Department of Computer Science
Georgia State University
University Plaza
Atlanta, GA 30303-3083
or email to: mfraser@cs.gsu.edu
Applications will be accepted until positions are filled.
Georgia State University is an EEO/AA institution.

Massachusetts Institute of Technology
Department of Electrical Engineering & Computer Science
Faculty Positions
The Department of Electrical Engineering and Computer Science seeks candidates for faculty positions starting in September 2002. We anticipate openings for several faculty appointments for individuals who are completing, or who have recently completed, a doctorate. In special cases, a senior faculty appointment may be possible. Faculty duties include teaching at both the graduate and undergraduate levels, research, and supervision of theses.

We will consider candidates with backgrounds and interests in all areas of electrical engineering and computer science.

All candidates should write to the address below, describing their professional interests and their goals in both teaching and research. Each application should include a curriculum vitae and the names and addresses of three or more individuals who will provide letters of recommendation. Please arrange to have such letters sent directly to the address below. All candidates should indicate citizenship and, in the case of non-US citizens, describe their visa status. Please respond by January 15, 2002.

Send all applications to:
Prof. F. C. Hennie
Massachusetts Institute of Technology
77 Massachusetts Avenue, Room 38-435
Cambridge, MA 02139
M.I.T. is an equal opportunity/affirmative action employer.

Mathematical Sciences Research Institute
Membership
The Mathematical Sciences Research Institute in Berkeley, California, solicits applications for membership during the 2002-2003 year, which will feature a fall semester program on QUANTUM COMPUTATION.

Professional Opportunities

Quantum computation has drawn on a number of mathematical areas, including computational complexity theory, group representation theory, topology and information theory. The program will present an introductory workshop, aimed at a broad audience, and three advanced workshops: Quantum Algorithms and Complexity; Quantum Information Theory and Cryptography; and Quantum Information Processing. Award categories: Research Professorships (partial salary support for a minimum 3-month visit, intended for scientists with PhDs awarded 1996 or earlier), deadline 9/28/01. Postdoctoral Fellowships (support for 5 or 10 months, intended for scientists with PhDs awarded 1997 or later), deadline 11/16/01. General Memberships (partial support toward travel and living expenses for 1 to 4 months), deadline: 11/16/01. Information and application form available from http://www.msri.org or write to:

Applications, MSRI
1000 Centennial Dr.
Berkeley, CA 94720-5070
Information and application form available from http://www.msri.org or by writing to Applications, MSRI, 1000 Centennial Dr., Berkeley, CA 94720-5070.

North Carolina State University
Department Head Electrical and Computer Engineering

The College of Engineering at North Carolina State University (NCSU) invites nominations and applications for the position of Department Head in Electrical and Computer Engineering. The successful candidate will have an earned Ph.D. in a relevant discipline, exhibit strong qualities of leadership and have a distinguished record of scholarly achievement. The new Head must have the vision and skills to continue leading the Department to its goals of excellence in research, teaching, and extension. Opportunities include hiring new faculty in emerging areas and relocation in 2004 to new custom facilities on Centennial Campus, a joint University-Industry campus/research park (http://www.centennial.ncsu.edu).

The Department has 50 faculty members, 1500 undergraduates, over 400 graduate students and was ranked ≠ 2 in the Southeast in Ph.D. quality and education and 21st among all institutions in a recent National Research Council report. It offers the BS, MS, and Ph.D. degrees in both electrical engineering and computer engineering and an MS degree in Computer Networking, joint with Computer Science and Management. Current departmental research funding is over $13 million annually. Organized research activities within the department can be found at: http://www.ece.ncsu.edu

Nominations and applications should include a professional resume and at least three appropriate references. The deadline for applications is November 1, 2001. The intent is to identify and interview candidates so that an appointment can be made in early 2002. Please send nominations or letters of intent, along with the names of three references and curriculum vitae to:

Chair, Search Committee for ECE Head
Box 7904, NC State University
Raleigh, NC 27695-7904
Inquiries may be sent by e-mail to yarbroug@eos.ncsu.edu. Summary information about the department and associated centers can be found at: www.ece.ncsu.edu

North Carolina State University is an equal opportunity, affirmative action employer. Individuals with disabilities desiring accommodations in the application process should contact the committee, yarbroug@eos.ncsu.edu, 919.515.9968.

Pennsylvania State University
School of Information Sciences and Technology
Post Doctoral Fellow

The Post Doctoral position is for conducting research in the area of intelligent agents with Professor John Yen (http://www.cs.tamu.edu/faculty/yen), the holder of Penn State's University Professorship on Information Science and Technology, starting Fall 2001. The Post Doctoral is expected to play a key role in several funded research projects. Established in 1999, IST (http://www.ist.psu.edu) has been nationally recognized as the first new school focusing on developing revolutionary education and research programs meeting the needs of rapidly changing IT world. The applicant for the Post Doctoral position should have a PhD in Computer Science, Computer Engineering, or a related field and should have demonstrated research capabilities in artificial intelligence through publications. Responsibilities also include teaching one course per year. Salary range is $45,000 to $50,000, depending on the qualifications. Send curriculum vita, statement of research interests, sample publications, and three letters of recommendation by June 15, 2001 to:

Kate Itinger
School of Information Sciences and Technology
The Pennsylvania State University
504 Rider Building
120 S. Burrowes Street
University Park, PA 16801-3857
E-mail: kate@ist.psu.edu
The Pennsylvania State University is an EEO/AA institution.

Penn State University
School of Science, Engineering and Technology

Penn State University, Capital College, Harrisburg campus, School of Science, Engineering and Technology is accepting applications for multiple tenure-track faculty positions in Computer Science at the Assistant or Associate Professor level beginning Fall Semester 2001, Spring Semester 2002, and Fall Semester 2002. Individuals with experience and research interests in database, programming languages, software engineering/software design, computer architecture, operating systems, genetic algorithms, artificial intelligence, or computer graphics are particularly encouraged to apply. Ph.D. preferred, but ABD will be considered. Candidates will also be evaluated on teaching and professional experience. Salary level will be determined commensurate with qualifications and experience. Teaching responsibilities include courses for the B.S. and M.S. degrees in computer science. In addition to teaching responsibilities, tenure-track faculty are expected to pursue scholarly research and publication, participate in curricular development and University and professional service activities as well as advise undergraduate and graduate students and serve on graduate level degree committees. The Harrisburg campus of Penn State Capital College, with an enrollment of approximately 3,600 students, is the multi-disciplinary upper division and graduate center of Penn State University's 22-campus system. It is located eight miles from the state capitol at Harrisburg. This unique metropolitan campus serves the citizens of south central Pennsylvania and is easily accessible via interstate routes from Philadelphia, Baltimore, Washington D.C. and New York. The Harrisburg campus offers students the opportunity to earn baccalaureate degrees in twenty-six academic majors, seventeen master's degree programs, and two doctoral degree programs. Send letter of application, current resume, and the names, addresses and phone numbers of at least three references to:

Chair, Computer Science Search Committee
c/o Mrs. Dorothy Guy, Manager of Human Resources
Penn State Capital College
Box CRA, 777 West Harrisburg Pike
Middletown, PA 17057-4898
Applications will be accepted until the positions are filled. Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.

Purdue University
School of Electrical and Computer Engineering

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

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

Head, School of Electrical and Computer Engineering
Purdue University, 1285 EE Building
West Lafayette, IN 47907-1285
Applications will be considered as they are received. Purdue University is an Equal Opportunity/Affirmative Action employer.

Rensselaer Polytechnic Institute
Department of Computer Science

The Department of Computer Science at Rensselaer Polytechnic Institute invites candidates for a tenure-track position at the Assistant Professor level in DATA MINING, KNOWLEDGE DISCOVERY, DATA VISUALIZATION, DATA ENGINEERING, COMPUTER NETWORKS, and DISTRIBUTED SYSTEMS, starting Spring or Summer 2002.

Applicants should submit a vita with a list of publications, a statement describing current and planned research, and a statement describing teaching philosophy to:

The New Staff Committee
Department of Computer Science
Rensselaer Polytechnic Institute
Troy, NY 12180-3590
Candidates should also arrange to have at least three letters of recommendation sent to the same address.

The Department offers B.S., M.S., and Ph.D. degrees in computer science, has multi-million dollar research programs and excellent computing facilities. Rensselaer, under the leadership of its new president, plans to double its research program in the next five years. Major research initiatives in information technology and biotechnology are integral components of this plan, and the Department of Computer Science will play a leading role. Currently, there are 22 full-time faculty members in the department, and this number is expected to grow substantially.

Rensselaer Polytechnic Institute is an Affirmative Action/Equal Opportunity Employer.

Rensselaer Polytechnic Institute
Department of Computer Science

The Department of Computer Science at Rensselaer Polytechnic Institute invites candidates for a tenure-track position at the Associate or Full Professor level in DATA MINING, KNOWLEDGE DISCOVERY, DATA VISUALIZATION, DATA ENGINEERING, and compelling applications of these, starting Spring or Summer 2002.

Applicants should submit a vita with a list of publications, a statement describing current and planned research, and a statement describing teaching philosophy to:

The New Staff Committee
Department of Computer Science
Rensselaer Polytechnic Institute
Troy, NY 12180-3590
Candidates should also arrange to have at least three letters of recommendation sent to the same address.

The Department offers B.S., M.S., and Ph.D. degrees in computer science, has multi-million dollar research programs and excellent computing facilities. Rensselaer, under the leadership of its new president, plans to double its research program in the next five years. Major research initiatives in information technology and biotechnology are integral components of this plan, and the Department of Computer Science will play a leading role. Currently, there are 22 full-time faculty members in the department, and this number is expected to grow substantially.

Rensselaer Polytechnic Institute is an Affirmative Action/Equal Opportunity Employer.

Rice University
Department of Computer Science

The Department of Computer Science, in the Brown School of Engineering at Rice University, is seeking to fill the position of department chair. We are looking for a nationally and internationally recognized researcher and educator with a strategic vision of developing a dynamic department with strong interdisciplinary linkages and a strong commitment to promote the department's existing strengths in artificial intelligence and robotics, algorithms and complexity, compilers, computer graphics and geometric modeling, computer systems and networking, programming languages, and parallel computing. Candidates should have experience in strategic research planning, and have the enthusiasm and motivation to lead a first-rate academic program. The Chair will have the opportunity to lead the Department through a period of growth through initiatives in digital libraries and bioinformatics.

The Department currently consists of 19 Faculty members with an annual research budget in excess of $10M. The Brown School of Engineering is committed to three interdisciplinary initiatives in biotechnology, information technology, and nanotechnology, all of which involve computer science faculty members.

The Department of Computer Science offers six degrees: Bachelor of Arts, Bachelor of Science, Master of Computer Science, Master of Computer Science with a Concentration in Bioinformatics, Master of Science, and Doctor of Philosophy. Major grants and contracts from both industrial organizations and government agencies, have enabled the Department to build a superb research facility, including parallel and multi-processor systems, a large network of engineering workstations, an extensive local area network, a high-speed network test-bed, and access to the scientific communities via NSF, NASA, and Department of Energy electronic networks. The Center for High-Performance Software supports several major research projects and provides access to massively parallel computer systems located at several cooperating institutions. The Department is located in the new Computational Engineering Building, along with the Departments of Computational and Applied Mathematics, Statistics, and part of Electrical and Computer Engineering.

Rice is a well-endowed private university with a strong reputation for academic excellence, particularly in undergraduate teaching. It attracts outstanding students nationally and internationally and provides a stimulating environment for research, teaching and joint projects with industry. Teaching loads are low to accommodate faculty research and faculty salaries are competitive.

Applicants should submit a full resume including a list of publications, and the names and addresses of at least five references to:

The Faculty Search Committee
Department of Computer Science MS 132
Rice University
P.O. Box 1892
Houston, Texas 77251-1892
Applications will be reviewed upon receipt until the position is filled.

For more information, see http://www.cs.rice.edu/ or contact Iva Jean Jorgensen, 713-348-3818, ivajean@rice.edu. Rice University is an Equal Opportunity/Affirmative Action employer.

Southern Illinois University, Carbondale
Computer Science
Faculty Position

Applications are invited for a tenure track faculty position at the Assistant Professor level, starting January 1, 2002. Applicants should have or expect to have a Ph.D. in computer science or related field by date of hire. (If the doctorate is not completed by date of hire, a one-year term appointment will be offered at the rank of Instructor.) Applicants with a research specialty in any area of computer science will be considered. Basic requirements include evidence of ongoing and future research, and teaching competency in a reasonable number of computer science subjects. Review of completed applications will begin on October 16, 2001, and continue until the position is filled. Applicants should send a letter of interest, curriculum vita, and three current letters of recommendation to:

Faculty Search Committee
Department of Computer Science
Mail Code 4511 Faner 2125
Southern Illinois University
Carbondale IL 62901-4511
For more information about the Department of Computer Science, see our web site at http://www.cs.siu.edu. Questions may be directed to the Chair of the Faculty Search Committee, via georgia@cs.siu.edu.

SIUC is an AA/EOE. Women and minorities are encouraged to apply.

Southern Methodist University
Department of Computer Science and Engineering
Faculty Positions

The Computer Science and Engineering Department at Southern Methodist University invites applications for several faculty positions beginning Spring 2002 or Fall 2002. Individuals with experience and research interests in all areas of computing are encouraged to apply. Priority will be given to individuals with expertise in Computer Engineering or Software Engineering. Candidates at all ranks will be considered. The successful candidates must have or expect to have a Ph.D. in Computer Science, Computer Engineering, or a closely related area by date of hire, and must demonstrate a strong commitment to excellence in teaching and research. The Dallas/Fort Worth area, one of the top three high-tech industrial centers in the country, has the largest concentration of telecommunications corporations in the US, providing abundant opportunities for industrial research cooperation and consulting. Dallas/Fort Worth is a multifaceted business and engineering community, offering exceptional museums, diverse cultural attractions, and a vibrant economy.

The CSE Department resides within the School of Engineering and offers BS, MS, and Ph.D. degrees in Computer Science and in Computer Engineering, as well as MS in Software Engineering. The department currently has 11 faculty members with research concentrations in computer arithmetic, computer networks, database systems, mobile computing, parallel processing, software engineering, telecommunication software and systems, and related areas. Additional information may be found at: www.engr.smu.edu/cse.

Interested individuals should send a complete resume and names of three references, including a one-page statement of research interests and accomplishments to:

Beth Minton, Administrative Assistant
Department of Computer Science and Engineering
SMU
Dallas, TX 75275-0122
The committee will begin its review of the applications on or about November 1, 2001. To ensure full consideration, applications must be postmarked before November 1, 2001. However, the committee will continue to accept applications until all positions are filled.

SMU will not discriminate on the basis of race, color, religion, national origin, sex, age, disability, or veteran status. SMU is committed to nondiscrimination on the basis of sexual orientation.

Stanford University
Department of Computer Science

The Computer Science Department of Stanford University invites applications for a tenure-track faculty position at the assistant professor level. We are seeking applicants from all areas of Computer Science, including Foundations, Artificial Intelligence, Graphics, Databases, Systems, and Networking. The department has also interest in applicants who wish to pursue a research program at the

Professional Opportunities

frontiers of computer science, for instance quantum computing, computation and arts, or computational economics. Higher priority will be given to the overall innovation and promise of the candidate's work than to any specific area.

An earned Ph.D., evidence of the ability to pursue a research program, and a strong commitment to graduate and undergraduate teaching are required. The successful candidate will be expected to teach computer science courses at the graduate and undergraduate levels and to build and lead a team of graduate students in Ph.D. research. Further information about the Computer Science Department can be found at http://www-cs.stanford.edu.

Applications should include a curriculum vita, statements of research and teaching interests and the names of at least four references. The application should be sent to:

Search Committee
c/o Laura Kenny-Carlson
Computer Science Department
Stanford University
Gates 278
Stanford, CA 94305-9025

The review of applications will begin on January 15, 2002, but applications will be accepted until February 15, 2002. The position is available beginning Autumn 2002.

Stanford University is an equal opportunity employer and welcomes nominations of women and minority group members and applications from them.

Stanford University
Departments of Radiology and Computer Science
Faculty Opening

Stanford University's Departments of Radiology and Computer Science invite applications for a tenure-track faculty position at the Assistant Professor level from candidates with expertise in the areas of medical image understanding (including image segmentation and interpretation), image-guided surgery, and/or human-computer interactions. We are especially interested in applicants who would apply their expertise in these areas to the computer-aided detection of disease from radiological images and the planning of surgical procedures. Higher priority will be given to the overall innovation and promise of the candidate's work than to any specific area. An earned Ph.D. in Computer Science or a related field, evidence of the ability to pursue a research program, and a commitment to teaching are required. The successful candidate will be expected to teach courses in both departments, secure independent research funding, and build and lead a team of graduate students in Ph.D. research.

The appointment will be made at the level of an Assistant Professor. The position is available beginning Spring 2002. Further information about the Radiology and Computer Science Departments can be found at http://www-radiology.stanford.edu/ and http://www-cs.stanford.edu, respectively.

Applications should include a curriculum vita, statements of research and teaching interests and the names of at least four references. The application should be sent to:

Professor Oussama Khatib
Search Committee co-Chair
c/o Laura Kenny
Computer Science Department
Stanford University
Gates 2B
Stanford, CA 94305-9025

The review of applications will begin on October 15, 2001, but applications will be accepted until the position is filled. Stanford University is an equal opportunity employer and welcomes nominations of women and minority group members as well as applications from them.

Stony Brook University/SUNY
Computer Science
Lecturer

Applications are invited for the position of Lecturer in Computer Science. Lecturer candidates must hold a graduate degree in computer science or closely related field, should have a strong commitment to excellence in teaching, and must have experience teaching computer science at the university level. These are 1- to 3-year renewable positions.

Industrial Coordinator

Applications are invited for a position of Research Assistant Professor, with primary responsibilities for increasing interaction between the Stony Brook Computer Science and local industry under the Strategic Partnership for Industrial Resurgence (SPIR). Candidates should hold a Ph.D. in computer science or closely related field, and have a commitment to excellence in teaching and research at the university level. Applicants for either position must send a curriculum vita and the names of three references to:

Prof. Annie Liu, Instructor Search Committee
Department of Computer Science
Stony Brook University/SUNY
Stony Brook, NY 11794-4400, or
to liu@cs.sunysb.edu

Phone: 631-632-8463
Compensation is competitive and depends on experience and qualifications.
Stony Brook University is an EEO/AA employer.

Texas Tech University
Department of Computer Science

The Department of Computer Science invites applications for one or more tenure track positions at all levels for the academic year 2001-02. Specific areas of need include software engineering; network and distributed systems; and theory. Other areas will be considered for exceptionally strong candidates. Applicants must have a Ph.D. degree in computer science or a closely related field. Faculty are expected to teach existing graduate and undergraduate courses, develop new courses, and contribute to the research mission of the university. We offer competitive salaries, a friendly and cooperative environment, and excellent research facilities. Applicants should send a résumé, including a brief statement of research interests, and the names of at least three references to:

Professor Daniel Cooke, Chair
Department of Computer Science
Texas Tech University
Box 43104
Lubbock, TX 79409-3104
Email: dcooke@coe.ttu.edu or Website: http://www.cs.ttu.edu/

Review of applications will begin as soon as they are received. Applications will be accepted until the positions are filled. Candidates must be currently eligible to work in the United States.

Texas Tech University is an equal opportunity/affirmative action employer and actively seeks the candidacy of women and minorities.

The University of Arizona
Department of Computer Science
http://www.cs.arizona.edu

Applications are invited for the position of Lecturer or Senior Lecturer beginning August 2002. Lecturer candidates must hold a graduate degree in computer science or closely related field, have a strong commitment to excellence in teaching, and must have substantial experience teaching computer science at the university level. Compensation is competitive, with rank and salary dependent on experience and qualifications. This is a non-tenured position, with appointments for fixed terms of three years; reappointment is possible subject to review. Duties of this position include teaching undergraduate computer science courses in systems software areas, machine organization and architecture, operating systems, data structures and programming languages. Duties also include academic advising of students, service on department committees involved in undergraduate life, and development of new curriculum and new instructional laboratories. Applicants must send a curriculum vita and the names of at least three references to:

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

A majority of the references should be able to comment directly upon the candidate's teaching experience and abilities. We will start the review of applications on January 15, 2002, and will continue to consider applicants until the position is filled, subject to availability of funds.

The University of Arizona is an EEO/AA employer - M/W/D/V.

The University of Arizona
Department of Computer Science
http://www.cs.arizona.edu

Applications are invited for tenure-track faculty positions, at the rank of Assistant Professor, Associate Professor, or Professor, beginning employment August 2002. Candidates must hold a doctorate in computer science or related field, have a commitment to excellence in teaching, and a demonstrated strong potential for excellence in research. Primary consideration will be given to computer scientists who work in systems software, networks, artificial intelligence, bioinformatics and graphics.

The Department of Computer Science at the University of Arizona has a long history of research accomplishment, influential software distribution and substantial external funding to individual faculty, exceeding 2.5 million dollars last year. Major funding has included four NSF infrastructure grants, providing a broad array of equipment for computing research. Research areas include programming languages, compilers, operating systems, networks, algorithm design, database systems, and computational biology.

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

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

We will start the review of applications on October 15, 2001, and will continue to consider applicants until the positions are filled, subject to availability of funds.

The University of Arizona is an EEO/AA employer - M/W/D/V.

The University of New Mexico
Department of Computer Science
Faculty Positions at All Ranks

The Department of Computer Science at the University of New Mexico is conducting a search to fill two tenure-track faculty positions. We are interested in hiring outstanding faculty members whose research interests complement and augment existing strengths in the department. Areas of particular interest include networks, mobile and distributed computing, computational biology, software system design and analysis, and graphics and visualization, but all areas will be considered. Candidates must have completed, or be about to complete, a doctorate in CS or a relevant area by September 1, 2001. Applicants should demonstrate a strong commitment to undergraduate and graduate education and the ability to establish a nationally visible research program.

For further information about the Computer Science Department at the University of New Mexico, see: http://www.cs.unm.edu For best consideration, applications must be received by October 15, 2001, although we will re-evaluate additional applications on January 1, 2002, March 1, 2002 and thereafter until the positions are filled. Each application should include a curriculum vita, a research statement, a teaching statement, and the names of four references. A signed cover letter should summarize your experience, indicate the level of the appointment you are seeking, and refer to JR# 5108. Printed applications should be sent to:

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

The University of New Mexico is an equal opportunity/affirmative action employer and educator.

University of Maryland Baltimore County, An Honors University in Maryland
Department of Information Systems
Chair

The Department of Information Systems invites applications from experienced leaders/researchers for the position of Chair. The Chair will lead a growing faculty with diverse research interests and backgrounds and promote the Department on and off campus.

The Department has 1400 undergraduate and 150 MS and PhD students. A new, innovative online MS is offered via a partnership with Open University.

Faculty research is supported by grants and contracts from both government and industry. UMBC is a Carnegie Doctoral/Research-Extensive University with a strong arts and humanities core and an emphasis on science, engineering, and information technology. The suburban campus is located in the Baltimore-Washington corridor, minutes from I-95, BWI Airport, and Amtrak station.

For more information, visit URL http://www.ifsm.umbc.edu/. Please send a statement of interest, CV, and names of three referees to:

Dr. Robert P. Burchard
c/o Information Systems Department
UMBC, 1000 Hilltop Circle
Baltimore, MD 21250
Review will start on October 15, anticipating appointment on July 1, 2002 or earlier.
UMBC is an EO/AA Employer

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

The Department of Computer Science and Engineering (CSE) invites applications for the position of Professor and Chair of the Department. We seek a distinguished scholar with vision and leadership, and an excellent record of research, teaching, and professional service.

The CSE Department was formed in 1998 when faculty members from the former Computer Science (CS) department merged with the computer engineering faculty from the former Electrical and Computer Engineering (ECE) department. Presently the CSE Department has 24 tenured/tenure-track faculty members and is slated to grow to 30+ positions over the next few years. The faculty include fellows from AAAI, ACM, Guggenheim, and IEEE as well as NSF CAREER and ITR awardees. This year CSE faculty received a $2.2 million research infrastructure award from NSF. The average annual research expenditure of the Department over the past three years has been about $4 million.

Current faculty interests are in computational science/engineering, computer networks, intelligent systems, multimedia and databases, theory and algorithms, languages and software systems, VLSI and computer architecture. Faculty members are also affiliated with the Center for Cognitive Science, the National Center for Geographic Information and Analysis, the Center of Excellence in Document Analysis and Recognition, and the Center for Computational Research. CSE faculty are also expected to play a key role in the new New York State Center of Excellence in Bioinformatics with over $100 million in funding from the State and corporate sources.

The CSE department offers degree programs at the bachelors, masters, and doctoral level, and currently has over 200 graduate students and over 1000 undergraduate majors. The Department has seven full-time lecturers who are dedicated to undergraduate teaching and five full-time technical support staff who manage and operate extensive computing laboratories for undergraduate and graduate teaching as well as research.

Candidates are expected to have a Ph.D. in Computer Science/Engineering or related field. Applicants should include a cover letter, curriculum vitae, and names and addresses of five references. Address applications to:

CSE Chair Search Committee
201 Bell Hall, University at Buffalo
Buffalo, NY 14260
Email: cse-chair-search@cse.buffalo.edu
Deadline for all applications: December 31, 2001 or until the position is filled.

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

The University at Buffalo is an Equal Opportunity/Affirmative Action employer.

University of Florida
Department of Computer and Information Science and Engineering

The Department of Computer and Information Science and Engineering at the University of Florida invites applications for several tenure track as well as visiting positions at all ranks beginning August 2001. While applications in all areas of computer science and engineering are welcome, we are particularly interested in outstanding candidates with expertise in the following fields: software engineering, systems and architecture, computer arts, bioinformatics and biocomputing, computer graphics and visualization, and database systems. Applications for visiting positions in the areas of systems and architecture are especially encouraged.

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

The Department of CISE currently has a faculty of 35 and a student body of 240 graduate and 1500 undergraduate students. The Department encompasses a wide range of research areas including high performance computing, database systems, computer vision, visualization, and simulation, computer networks and security, distributed and real-time systems, and software engineering.

The deadline for submitting applications is May 31, 2001. If the position(s) has not been filled, a succession of application receipt deadlines will be June 30, 2001 and July 31, 2001. Please specify if you are applying for a visiting position. Applicants should send a curriculum vitae with the names of at least three references to:

Professor Paul Fishwick Chair
Faculty Search Committee
Department of Computer and Information Science and Engineering, 301 CSE
PO Box 116120
University of Florida
Gainesville, FL 32611
e-mail: fishwick@cise.ufl.edu
Tel: (352) 392-1414

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

University of Illinois at Urbana-Champaign
Department of Computer Science
http://www.cs.uiuc.edu

The Department of Computer Science, UIUC, invites applications for full-time, tenure-track and tenured professors. All areas of computer science research will be considered as well as the areas of bioinformatics, embedded systems, e-commerce, HCI, mobile and wearable systems, and security.

Tenure-track applicants must have demonstrated excellence in research; tenured applicants must have recognized national and international stature.

Professional Opportunities

Computer Science at Illinois is internationally recognized for its breadth and depth of research and has strong collaborative relations with the National Center for Supercomputing Applications (NCSA) and the Beckman Institute for Advanced Science and Technology. The department is targeted to grow aggressively to over 60 faculty and will occupy the new Thomas M. Siebel Center for Computer Science in 2003, becoming the anchor of a new IT quadrangle on the UI campus.

Successful candidates must initiate and conduct independent research and perform academic duties associated with our BS, MS, and PhD programs. Qualifications: PhD in Computer Science or a closely related field (or imminent completion of degree), outstanding academic credentials, and the ability to teach effectively at both the graduate and undergraduate levels. Starting date: August 21, 2002. The salary is open, based on qualifications.

To ensure full consideration, applications must be received by January 11, 2002. Interviews may take place during the application period, but a final decision will not be made until ad closing.

Applicants should submit an application letter, curriculum vita and statement of career objectives, and have at least three letters of recommendation sent separately. It is preferred that these materials be submitted as PDFs either via the on-line entry at http://www.cs.uiuc.edu/apply.html or emailed to facapp@cs.uiuc.edu.

Optionally, the materials can also be mailed to:

Barbara Armstrong
RE: Faculty Search
Department of Computer Science
1304 W. Springfield Avenue
Urbana, IL 61801
The UIUC is an AA-EOE

University of Nebraska – Lincoln
Computer Science and Engineering Department

The UNL CSE Department is embarking on dynamic growth and seeks applications for: endowed professorships, tenure-track faculty positions, and research faculty positions in the following areas:
Bioinformatics,
Computational sciences,
Computer engineering,
Database and information systems,
Distributed systems,
Networks,
Software engineering, or
Computer science and engineering .
Exceptional candidates in other areas will be considered.

UNL is a comprehensive research university with Carnegie I standing and membership in the elite Association of American Universities. The CSE Department offers BS, MS, and PhD degree programs in both computer science and computer engineering. Lincoln, the capital of Nebraska, is a prosperous, medium-sized city that ranks high in quality-of-life.

For complete position advertisements, visit http://cse.unl.edu/search, email search@cse.unl.edu, or phone (402) 472-2401.

University of Nevada, Reno
Department of Computer Science

Applications are invited for a tenure track *Assistant or Associate Professor* position beginning in January 2002 or August 2002. A Ph.D. in Computer Science or Computer Engineering is required by the date of appointment. Candidates should possess a demonstrated potential and strong commitment to quality research and teaching at the undergraduate and graduate levels. Candidates with expertise in one or more of the following areas may be given preference: *software engineering, database systems, computer networking and data communication*. The department is dynamic, growing and offers BS, MS and Ph.D. degrees. For complete position announcement and requirements, see http://jobs.unr.edu, visit www.cs.unr.edu or email varol@cs.unr.edu for further information. The Reno area has four mild seasons and is a scenic half-hour drive to Lake Tahoe, one of the largest and most beautiful alpine lakes on the planet. The Pacific Crest Trail is nearby for hiking and fantastic ski areas abound. San Francisco and the Silicon Valley are within a short half-day's drive. To apply, send a letter and vita, and have 3 letters of reference sent to:

Search Committee Chair
Computer Science Department/171
University of Nevada, Reno
Reno, NV 89557
Review of applications will begin November 16, 2001. EEO/AA.

University of Oregon
Computer and Information Science
Faculty Positions

The Department of Computer and Information Science has multiple tenure-track and tenured faculty positions open for Fall 2002. The department's primary recruiting focus is in the following areas: networking and parallel/distributed systems at both assistant

and associate professor levels, programming languages at the assistant professor level, and graphics at the assistant professor level. Outstanding applicants in other areas will also be seriously considered. Applicants must have a Ph.D. in computer science, a demonstrated record of excellence in research, and a strong commitment to teaching.

The CIS department has seventeen research faculty and two instructors and offers B. S., M. S., and Ph.D. degrees. We offer a stimulating and friendly environment for collaborative research both within the department and with other departments on campus. The CIS Department is associated with the Cognitive and Decision Sciences Institute, the Computational Science Institute, the Computational Intelligence Research Laboratory, and the Software Engineering Research Center. More information about the department, its programs, and faculty can be found at http://www.cs.uoregon.edu

Mail your request to: University of Oregon, Dept. of Computer and Information Science, Eugene, OR 97403-1202

The University of Oregon is an AAU research university located in Eugene and within an easy drive of both the Pacific Ocean and the snow-capped Cascade Mountains.

Applicants should send their curriculum vitae, the names of at least four references, a statement of research and teaching interests, and selected publications to:

Faculty Search Committee
Dept. of Computer and Information Science
University of Oregon
Eugene, OR 97403-1202
email: faculty.search@cs.uoregon.edu
Review of applications will begin in December 2001 and continue until the positions are filled.

The University of Oregon is an Equal Opportunity/Affirmative Action institution committed to cultural diversity and compliance with the Americans with Disabilities Act.

University of Pennsylvania
Department of Computer and Information Science
Research Faculty Positions

The Department of Computer and Information Science invites applicants for (non-tenure track) research faculty appointments in both experimental and theoretical computer sciences.

The CIS Department is looking for applicants whose research would be enhanced by the Department's existing strengths in algorithms and computational biology, computer graphics and animation, computer vision and robotics, databases, logic and computation, natural language processing, networks and distributed systems, programming languages, and real-time systems.

Candidates should demonstrate an ability to carry out high quality, independently formulated research and obtain research grants essential for the continuing support of this research position. A Ph.D. Degree in computer science or a related field with appropriate experience is required.

The University of Pennsylvania is an Ivy League University located near the center of Philadelphia - the 5th largest city in the United States. Within walking distance of each other are its Schools of Arts and Sciences, Engineering, Medicine, Nursing, Law, Business, and Fine Arts. The University campus, and its surroundings in Philadelphia, benefit from a rich diversity of cultural opportunities as well as attractive urban and suburban residential neighborhoods.

To apply, please submit an updated Curriculum Vitae, statement of research interests, copies of three most significant publications, and the names of at least six references, and record of research funding to:

Research Faculty Search Committee
Department of Computer and Information Science
University of Pennsylvania
200 South 33rd Street
556A Moore Bldg. (GRW)
Philadelphia, PA 19104-6389
Applications should be received by May 1, 2001 to be assured full consideration. Applications will be excepted until the position (s) is filled. Questions can be addressed to amyd@cis.upenn.edu

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

University of Puerto Rico at Mayaguez
Department of Electrical and Computer Engineering

The Department of Electrical and Computer Engineering invites applications for two tenure-track positions in Computer Science or Computer Engineering. Appointments will be effective on July 1, 2001. The Department plans to increase its overall strength in computing, and has particular interest in attracting faculty in the areas of networks, databases, computer architecture, and distributed systems. Nevertheless, candidates from all areas of computing are encouraged to

apply. Applicants must possess a Ph.D. degree in computer science or computer engineering, and demonstrate strong potential for excellence in research.

Currently, the Department of ECE has 48 faculty members. In the field of computing it conducts research in the areas of parallel and distributed computing, human computer interaction, remote sensing, image processing, and artificial intelligence under the sponsorship of NSF, NASA, NIH, among other agencies. In this field the department offers an undergraduate degree in CE, a master degree in CE and recently established a Ph.D. degree in Computing and Information Sciences and Engineering.

The University of Puerto Rico at Mayagüez has approximately 14,000 students. In particular, the ECE Department has 1,640 undergraduate students and 110 graduate (MS and Ph.D.) students. For further information concerning the ECE Department, please visit http://www.ece.uprm.edu/.

Applications, with curriculum vitae, three reference letters and Ph.D. transcripts should be sent to:

Prof. Baldomero Lloréns, Chairman
Department of Electrical and Computer Engineering
University of Puerto Rico-Mayagüez
P.O. Box 9042 Mayagüez
Puerto Rico 00681
UPR-Mayagüez is an equal opportunity and affirmative action employer.

University of Victoria
Department of Computer Science
Canada Research
Chair in Software Engineering

The Department of Computer Science at the University of Victoria seeks an outstanding individual to be appointed as a (full) Professor and hold a Canada Research Chair at the Tier 1 level. The University has identified Software Engineering as a major priority in its strategic plan. The successful candidate will have an excellent record of teaching and research in this field. He or she will join an existing group of highly active software engineering researchers who have built an enviable reputation for the scope and quality of their work.

The Canada Research Chairs program has been established by the Canadian Government to foster research excellence. Full details are available on the web at http://www.chairs.gc.ca.

The Department currently has 25 faculty members and approximately 90 graduate students. It offers graduate and undergraduate degrees in Computer Science as well as combined undergraduate degrees or options with Mathematics, Statistics, Physics and Business. It offers an undergraduate option in Software Engineering and has plans to expand that to a full undergraduate degree pro-gram. The Department offers highly successful co-operative education programs for students at both the graduate and undergraduate levels. Detailed information about the Department may be found on the web at http://www.csc.uvic.ca.

Located on the southern tip of Vancouver Island, the city of Victoria is renowned for its beauty. It has easy connections to Vancouver and Seattle. Recreational activities include hiking, sailing and skiing. Information about Victoria may be found on the web at http://victoriabc.com.

Applicants should send a full curriculum vitae, a statement of research objectives, a statement of teaching interests, and the names of at least three referees to:

Dr. Nigel Horspool
Chair Department of Computer Science
University of Victoria
PO Box 3055
Victoria, BC Canada V8W 3P6
Telephone: (250) 721-7227
Fax: (250) 721-7292
E-mail applications to chair@csr.uvic.ca are encouraged. E-mail attachments in any common word processing format are acceptable. Applications will be considered as they are received and the search will be continued until the position is filled. Canada Research Chairs are open to individuals of any nationality. The University of Victoria is an equity employer and encourages applications from women, persons with disabilities, visible minorities, and aboriginal peoples. The University has excellent policies which support faculty with family obligations, including paid maternity/parental leave and a generous pension plan.

The University of Western Ontario
Department of Computer Science

The University of Western Ontario, a top-tier research University in Canada, is actively expanding its activities in Computer Science. Applications are invited for tenure-track or tenured positions, at all levels.

The department currently comprises 30 faculty in teaching and research positions. Degrees at the BSc, MSc and PhD levels are offered in Computer Science, as well as degrees with specialization in Software Engineering. Research in the department spans topics in the fundamental areas of computer science, as well

as emerging subjects such as molecular computing, legal issues in computing, network quality of service, and web technologies (see www.csd.uwo.ca/research for more details).

Links with the Faculties of Law, Information and Media Studies, Ivey School of Business and with various departments allow the department to offer its students unique courses and foster interdisciplinary research opportunities for faculty and graduate students. Major research projects are funded by international, federal, provincial and private sector sources. New faculty are invited to participate in existing research projects, and to initiate projects of their own.

With a full-time enrollment of about 25,000, The University of Western Ontario graduates students from a full range of academic and professional programs. The university campus is located in London, a city of 340,000, located midway between Toronto and Detroit. With parks, tree-lined streets and bicycle trails, London is known as the "Forest City". An international airport, galleries, theatre, music and sporting events are to be found, as would be expected of a larger center (see www.city.london.on.ca).

The closing dates for applications are the second Friday of each month until August 9, 2002. Candidates should have a PhD in Computer Science or Software Engineering and must show evidence of a strong research program and commitment to teaching. Priority will be given to candidates who build on existing strengths of the department, or who can establish leading projects in new areas. Successful candidates will teach in both the graduate and undergraduate programs of the department and pursue a strong, individually-defined research program.

To apply, please send a CV, a statement of your teaching philosophy and three representative publications to:

Prof Stephen M. Watt, Chair
Department of Computer Science, MC355
The University of Western Ontario
London, Ontario, CANADA N6A 5B7
Positions are subject to budget approval. The University of Western Ontario is committed to employment equity, welcomes applications from all qualified women and men including visible minorities, aboriginal people and persons with disabilities. Canadian Citizens and Permanent Residents will be considered first for this position.

Wayne State University
Department of Computer Science
Faculty Positions

The Department of Computer Science of Wayne State University invites applications for several tenure-track faculty positions at all levels to start in January 2002 or August 2002. All areas of computer science will be considered.

Candidates should have a Ph.D. in computer science, engineering or a closely related field, a strong interest in and commitment to both research and teaching, a publication record in their area and show potential for obtaining external research funding. Applicants for a senior position should demonstrate a strong record of external funding and significant impact in their field.

Wayne State University, located in Detroit's Cultural Center, is a comprehensive (Carnegie I) urban research university serving 33,000 students. The University has made a strong commitment to information technology and academic computing.

The Department of Computer Science offers B.S., M.S. and Ph.D. degrees. Federal agencies as well as industries support a variety of research programs within the Department. The Department maintains active collaborative relationships with the Institute for Scientific Computing, Institute for Manufacturing Research, Smart Sensor Program, Life Science Corridor initiative and many other centers and departments within the university, which provide research opportunities in computer science.

Applicants should send a letter of intent, a statement of research and teaching interests, a resume and the names of at least three references including the reference's address, email, telephone and fax number. Please send this information to:

Dr. Farshad Fotouhi, Chair
Faculty Search Committee
Wayne State University
Department of Computer Science
5143 Cass Avenue, Room 431 State Hall
Detroit, MI 48202
313-577-3107 (voice)
313-577-6868 (fax)
fotouhi@cs.wayne.edu
Applications will be accepted until the positions are filled.

Wayne State University is an equal opportunity/affirmative action employer Wayne State University - People working together to provide quality service All buildings, structures and vehicles at WSU are smoke-free.