

## Dan Reed succeeds Duncan Lawrie as head

**W**e are very fortunate that after an extensive search, Professor Dan Reed has been appointed by the Dean of Engineering as Department Head beginning May 21. Dan got his PhD from Purdue University and joined this department in 1984 after brief stays at the University of North Carolina-Chapel Hill, and IBM Watson Research Laboratory. Dan's research activities revolve around massively parallel systems.

Looking back over my six years as head, I think the activity that I will always remember is the involvement of our alumni. As a relatively young department, we didn't interact much with our alumni before I became head—there simply weren't that many, and we were busy growing, changing, and building. Once we got our alumni group organized, things really started moving. Many people think our primary interest in alumni is in their monetary contributions. In fact, the more valuable contribution is in the form of advice and feedback. For example, the extensive survey our alumni group did of our graduates has had a significant impact on our undergraduate programs. The results of this survey were covered in a previous newsletter, but suffice to say, the results have had and will continue to have a positive impact on our curriculum for a long time to come. As I

write this, another survey is under way, this time of our MS and PhD graduates, and we have an ongoing mentoring program that links our undergraduates with alumni, helping present students understand more about the world beyond academia. It is alumni activities like this that will help us to maintain our standards of excel-

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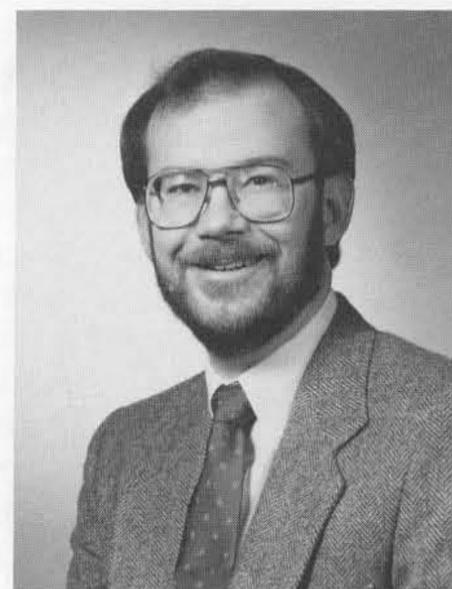
**I**f you are reading this, then you are part of the Illinois computer science family of alumni, students, faculty, and staff. Just as importantly, you are the reason this is a great department with a rich history of excellence and accomplishments. For that reason, as the new head I very much need all of your the help and support. I would be remiss if I did not ask all

of you to join me in sharing my heartfelt thanks to Duncan Lawrie for his long, hard and extremely valuable work on the department's behalf over the past five plus years. We all owe him a great deal. As a teacher and researcher, I've always considered myself extremely lucky—I actually get paid to do something I love. Teaching is more than imparting knowledge; it is sharing the joy of exploration and seeing a lecture or a discussion create understanding in a student's eyes. Research carries that same joy to the cutting edge, where one can first see a group of new facts and ideas snap into focus. I want all of us in the Illinois computer science family to share the sense of love and excitement for education. The world is changing rapidly, and with change come both challenges and opportunities, both on campus, in the state, nationally, and internationally. I am confident that working together we can capitalize on these opportunities to make this the very best department in the world. Excitement is infectious, and wondrous things are possible.

—Dan Reed

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<http://www-pablo.cs.uiuc.edu/People/reed>



Dan Reed



Thompson-McClellan

Duncan Lawrie

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# Gifts that will make a difference

Recognition and assistance are heading the way of outstanding computer science students, thanks to the generosity and success of our alumni. Not only do our alumni bring pride and prestige to the department and university by their accomplishments, but many are also able to reap the financial rewards of their hard work. Some of these alumni have chosen to express their support for computer science education at Illinois by making generous financial contributions in the form of endowed scholarships—gifts that will benefit students in perpetuity. We are happy to announce these three important, newly established scholarship funds.



THE COLBETH SPYGLASS SCHOLARSHIP FUND was established by Douglas P. and Margaret R. Colbeth. Although neither are alums of Illinois, the Colbeths have a deep appreciation for the computer science department and how its alumni have shaped the company Doug how heads, Spyglass, Inc. Spyglass co-founders, Tim Krauskopf and Brand Fortner, are both University of Illinois

alumni, as are a number of other Spyglass employees. One goal of this fund is to increase the number of women in computer science. Spyglass is in Naperville, Illinois. ■

<http://www.spyglass.com>



THE DUNN SYSTEMS SCHOLARSHIP, given by alumnus William M. Dunn, in honor of his father Arthur R. Dunn, will recognize outstanding juniors in computer science.

William Dunn graduated from the University of Illinois with a BS in 1985 and an MS in 1987, both in computer science. Dunn gained a great appreciation for the university and for the

opportunities it presented to him both in his undergraduate work and in his graduate work at NCSA.

THE COHEN SCHOLARSHIP is given by Ira and Debra Jo Cohen in honor of Ira's grandparents, Sara and Louis Cohen. This scholarship will be used to help increase the number of underrepresented minority undergraduate students in computer science. Ira Cohen graduated with a BS in computer science from University of Illinois in 1981. The Cohens are long-time department benefactors, and Ira is a current Computer Science Alumni Association board member. He is also vice president of Advanced Systems Concepts, a provider of productivity tools for midrange IBM systems. The company is in Schaumburg, Illinois. ■



<http://www.asc-as400.com>

After graduation Dunn spent a brief time working for AT&T Bell Laboratories in Naperville, Illinois, before leaving to form Dunn Systems, Inc. (DSI) in 1988. DSI is a consulting firm focusing on developing applications for the "intelligent workstation" in a networked environment. DSI has achieved extraordinary growth and currently employs over 50 consultants and staff, including Peter Tannenwald, a Math/CS alum who is Director of Consulting, and other Illinois alumni. By focusing on current technologies such as client/server computing, networking, multimedia, and the Internet, DSI hopes to double in size again within the next two years.

Through this scholarship DSI hopes to maintain its strong ties to the University of Illinois, its talented staff, and its bright students. DSI is in Lincolnwood, Illinois. ■

<http://www.dunnsys.com>

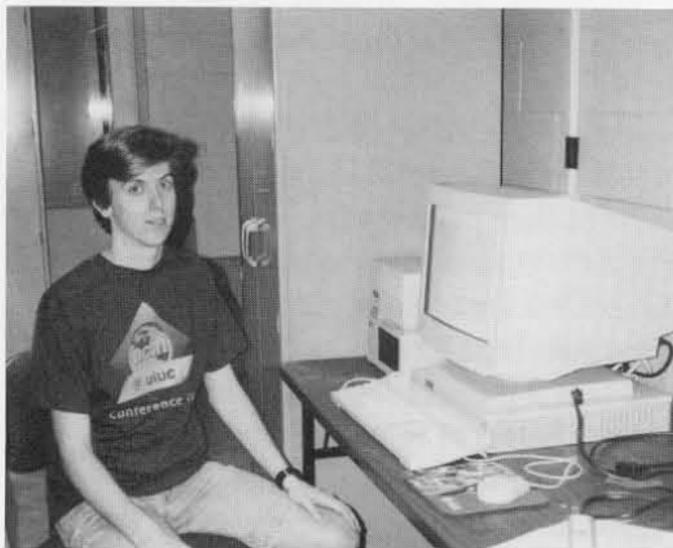
# Here comes the Sun

## A new SPARC for ACM

ACM had plenty of reasons to celebrate the holidays last year. One of them was a generous gift of a SPARC 20 workstation from Sun Microsystems. The SPARC was badly needed to replace the overly taxed and exhausted IBM RS 6000 that was being used as ACM's Web server. Pumelled by up to 5 GB of data transferred daily, the RS 6000, nicknamed Sleepless, was feeling the strain. ACM members approached the department for help in getting a new server. That's when we called upon an old friend, Mark Tolliver, BS EE'73, now a VP at Sun. Tolliver brought ACM's need to Sun's attention, and the result was Wilbur, as the new SPARC is now known. (Wilbur is the beloved pig from *Charlotte's Web*.) Wilbur has taken the task very handily and has freed up Sleepless for its original purpose, which was graphics development work. Sleepless was inadequate as a Web server because, as ACM president



*Sophomore Brian Swetland with Sleepless.*



*Stark with SPARC—a happy camper.*

Jonathan Stark put it, "It's basically not a server. It was meant to be a client." ACM members are excited about Wilbur. When it arrived, they set about transferring the contents

of Sleepless to Wilbur, and now, in the words of Hal, Wilbur is completely operational and all his circuits are functioning perfectly.

Sun sales rep Tom Lockman, who helped get the SPARC here, and Joe Godsil, a Java developer from Sun, spoke to a packed house at the March ACM general meeting about the history and development of Java. ■

# Women in Computer Science Graduate Student Peer Mentor Program: A grass roots effort

by Vicki Jones, graduate student

Here in the Computer Science Department at the University of Illinois in Urbana-Champaign the graduate student population in spring 1996 is 367; 18 percent of those (66) are women. This includes women in all programs—MS/PhD, MCS, and MSTCS. In the past the department has not distinguished between MS and PhD students so there is no way to tell how many of these students intended to stay for doctorate when they arrive.

In spite of the large average of women graduate students (the national average is lower than 15 percent), it has been observed over the years that many women leave the department before reaching their educational goals. They do this for many reasons; some cite familial obligations (their husbands and children or their parents and siblings) while others indicate that "they don't want to become a man." In order to provide an environment supportive of women in this male dominated field, several of the senior graduate student women founded the WICS (Women in Computer Science) Graduate Student Peer Mentor Program in the fall of 1993. This program, supported by the department in word and deed, is outlined below. In November of 1991 several female graduate students met and discussed various problems they were encountering due to the lack of other women in the CS graduate program. We decided that a forum for meeting the other women in the department would be a good start.

We discussed our thoughts with professors Caroline Hayes and Marianne Winslett, and they helped get the ball rolling—in January of 1992 we had our first women

*continued on page 11*



*Professor Marianne Winslett, with daughter Natalie, Ulrike Axen, Vicki Jones, and Professor Caroline Hayes.*

# Tim Krauskopf and Spyglass keep local ties



*Tim Krauskopf, MS'87, co-wrote NCSA Telnet while he was a graduate student. He went on to co-found Spyglass, one of the leading companies that develops software for the Internet.*

Tim Krauskopf is co-founder of Spyglass, a home-grown company that develops commercial software for the Internet, and he is now Vice President of Research and Development. When Spyglass went public, in June 1995, it catapulted Krauskopf into the limelight. Although he works at Spyglass headquarters in Naperville, Illinois, Krauskopf maintains his strong ties to the Champaign-Urbana community and even commutes

back and forth to its software development facility in Champaign.

Spyglass owns the commercial license for NCSA Mosaic. The company has often been compared to Netscape Communications, another Internet company founded by Illinois CS alumni. However, their two product lines and corporate strategies differ. Spyglass is posturing itself more as a component supplier rather than a complete solution supplier. In other words, the software it develops is incorporated into products sold by other companies.

Originally from Columbia, Missouri, Krauskopf earned his BS in 1984, from Northwestern University's Integrated Science Program, a degree that combined chemistry, math, physics, biology, geology, and some computing. Before that, his computer experience was limited to a little time spent with an Apple II. While at Northwestern, he plunged headlong into computing. Teaching must have come naturally for the son of two university professors; Krauskopf went from helping people on campus with card batch jobs to teaching beginning Basic to Evanston high school students. "I did about all I could with computers without actually getting a degree in CS," he said. After graduation, Krauskopf got married and returned to Missouri where he taught programming.

When Krauskopf came to Illinois for graduate school, he continued to teach as a

TA, quickly learning new programming languages before classes started. He had only taken two CS courses at Northwestern, so he took on a tremendous amount of coursework. A colleague at Northwestern referred him to NCSA, which was just forming its software group. So he joined the group and set about writing NCSA Telnet as his master's thesis. His adviser was Professor Jane Liu.

"Our mission was so broad," he explained. "We could always go further than we were. There were thousands of scientific researchers out there. If we could help the five who sat in our building, then if we could help out a couple thousand, and if we could do that at no cost to them [by distributing the software for free], we'd be providing a service to the entire constituency. That's where NCSA Telnet came from." Telnet allows users to log on to remote hosts. Based on the client-server model, it provides a local client that contacts a remote server. NCSA housed many PCs and Macintoshes that used the building network to get to the fileserver and used 2400-baud modems to access the Cray supercomputer. "The raw materials were there," he said, "but they weren't put together." Krauskopf wrote NCSA Telnet for DOS PC, and Gaige Paulsen, BS'89, wrote the Mac version. After Krauskopf got his MS in 1987, he went to work full-time for NCSA.

In addition to NCSA Telnet, the software group, which had about 15 people in it, worked on other projects including the display of scientific data as images on PC and Mac screens. NCSA Image and DataScope were two programs that Krauskopf was involved with. "It was a perfect fit," he said, "because it blended my interest in science with my interest in computers."

To commercialize NCSA programs, such as Image and Datascope, Krauskopf, physics graduate Brand Fortner, and Tony Cain from Apple launched Spyglass in January 1990. (Gaige Paulsen had already started InterCon, the company which commercialized NCSA Telnet.) Fortner's wife, Monica, MCS'87, decided to stay with her job with NovaNET so that she and Brand wouldn't have all their financial eggs in one risky basket (see box). Spyglass shipped their first product, Spyglass

<http://www.spyglass.com>

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Transform, four months later. This program transformed numbers into images and was used mostly by research scientists and engineers. Susan Tharp, MBA'88, who came aboard early on is credited with aptly naming the company after "an instrument that helps you see things."

The early days were a struggle without venture capital. Spyglass employed less than a dozen people, including CS alum Eric Sink, BS'90, Scott Piette, BS CompE'85, and Jeanne Balbach, MS EE'91. Then the Mosaic project started, and things were about to take a major turn in a big way. Mosaic was the popular Web browser developed at NCSA by Marc Andreessen, BS'93, Eric Bina, BS'86, MS'88, and other CS alumni. Originally, Spyglass did not want to become involved with Mosaic because it was felt that networking software was too hard to support. "But," as Krauskopf said, "Mosaic has a way of never going away, so we decided to look at it. When we did, we felt it could leverage our current technology, not to mention that it was cool and addictive." The fact that Mosaic was a cross-platform product was also a plus in terms of the expertise necessary to develop it. "It was an all-out scramble at that point. We had about 20 people, and that tripled in the next 12 months," said Krauskopf. Doug Colbeth, hired as CEO of Spyglass in 1991, had approached the university with a business plan to commercialize Mosaic, and the university granted Spyglass an exclusive right to license it. (This happened at around the same time that Mosaic Communications, now Netscape, was just starting out.)

Spyglass quickly outgrew its facility in Savoy and moved last April to the Interstate Research Park in Champaign, where all the development work currently takes place. It opened its Naperville headquarters in November 1994. Until January 1994, Krauskopf was still writing code, but from then on it has been management, and "travel, travel, and more travel." Spyglass is currently expanding its development sites to Naperville and Cambridge, Massachusetts.

"From an operational point of view," said Krauskopf, "the challenge is still there. I have no time for anything but work these days." In spite of the commute from Naperville, he somehow manages to continue singing in the Unitarian church choir in Urbana and catching performances at Krannert. ■

## Monica Fortner, also keeping a foot in CU

Monica Fortner, MCS'87, and her husband, Brand, BS'77, MS'82, PhD'93 (all in Physics), had a "PLATonic" relationship at first. Brand was a PLATO programmer at the University of Delaware, and Monica was an anthropology student at the same university. On PLATO, she wrote lessons for the nursing college, and he wrote the popular game "Airfight." In 1980, they moved to Illinois so that he could do graduate studies in physics at U of I and she could work as a programmer at CERL (Computer-Based Education Research Laboratory). In 1990, Brand and Tim Krauskopf started Spyglass. When Brand left Spyglass in 1993 to work for a NASA contractor in Maryland, Monica was able to continue her PLATO work (now called NovaNET and run by University Communications Inc.). Monica is currently involved with the computer managed instruction project (CMI). Her part, called C-Router, allows instructors to choose from the 10,000 hours of instruction available on NovaNET and to manage student progress through the various lessons chosen. This project is really an extension of her MCS thesis.

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www.novanet.com](http://www.novanet.com)

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## *Lawrie, continued from page 1*

lence in the future. We were recently ranked by U.S. News as third in the country among undergraduate computer science programs, and I expect that with continued help from our alumni and faculty, we will improve our program even more.

The extent of the loyalty and enthusiasm of our alumni came as a surprise to me, and I shall always remember this as the high point of my term as head. I know Dan can continue to count on you to help maintain and improve the excellence of our programs. If you haven't already been involved in one of our alumni programs, such as our undergraduate mentoring program, why not get involved?

—Duncan Lawrie

# Gaige Paulsen and InterCon

*Gaige Paulsen, BS'89, is co-founder of InterCon, a company which commercialized NCSA Telnet, the program he co-wrote while he was a student. Now InterCon is a market leader in cross-platform solutions for TCP/IP networking.*



Gaige Paulsen has several claims to fame: among them, NCSA Telnet. He is Chief Technology Officer of InterCon, the company he helped found over seven years ago. In addition to the first commercial version of NCSA Telnet, InterCon also developed the first commercial TCP/IP products for Macintosh users.

Though he lived some of his life in Connecticut and Kentucky, Paulsen considers himself an Illinois native. He had an early exposure to computing technology through his father, a longtime IBM employee. As a high school student in Barrington, Illinois, Paulsen developed his programming skills on a Radio Shack TRS 80 Model 1 that he bought with lawn mowing money. From lawn mowing, Paulsen moved to database programming for a local insurance agent, and when his parents moved to Lexington, Kentucky, he wrote accounting software for another company. Paulsen worried a little about overdosing on computers, but it never happened. When it was time to go to college, he chose to study computer science at Illinois, even if this meant paying out-of-state tuition.

Looking back, Paulsen appreciates the goal-directed sequence requirement of the undergraduate curriculum. He cited his novel combination of finance, accounting, and agricultural economics courses that

made up his goal-directed sequence as a real help to him later in the business world. Like many others, he credited Professor Dave Liu as having had a tremendous positive influence on his Illinois experience.

In 1985, Paulsen became one of the first students on the staff at the National Center for Supercomputing Applications (NCSA). Larry White, (Math/CS'75, MS'76), then NCSA supervisor, recalled his first contact with Paulsen. "I hired Gaige when he was an entering freshman. I spoke to some beginning CS class about the neat things we were doing at NCSA. Gaige asked the brash question, 'Do you hire undergrad students?' I was kinda leery, but said, 'Sure, why not?' When he applied and showed me his resume as an entering student, I observed that it was 'better' than mine had been when I'd graduated with a Master's in CS. Gaige was awesome!"

Four undergraduate students, including Aaron Contorer, BS'90, and two graduate students joined a dozen or so other NCSA staff members. (NCSA now employs around 250.) These were the early days of NCSA, before it acquired its first Cray supercomputer, which became operational in 1986. The jobs of the undergraduates were to maintain the computers and to make sure the workstations were working when scientists came to visit. In early spring 1986, graduate student employee Tim Krauskopf started working on NCSA Telnet for the PC. (Telnet allows users to log on to remote hosts, based on the client-server concept.) Together they decided to do a Macintosh version, and Paulsen's extended foray into networking began.

Paulsen and Krauskopf also began to work on a plan by Brand Fortner (BS Engr Physics'77, PhD Physics'93) called the Cray Finder, a point-and-click program that would allow scientists to



*Larry White at Microsoft, in his EOH'95 shirt.*

<http://www.intercon.com>

access the Cray from their desktops.

At about this time, in 1986, Apple Computer was wondering whether TCP/IP was an important thing. The company approached NCSA, and a group of universities, including Illinois, were abuzz with linking Macs to networks. Apple eventually offered MacTCP in 1987.

Graduation was nearing, NCSA Telnet had become universally known and used, and Paulsen had all sorts of companies knocking on his door. His father had had a successful career with IBM before going to Motorola and eventually becoming an executive with Ashland Oil, so Paulsen knew how comfortable life with an established company could be. But somehow he decided to go with the job that offered the highest risk and the lowest pay by becoming a third equity partner at a start-up in Washington, DC. "Part of it," he reflected, "was because I knew my father always wanted to start his own business." He began work that summer, about four months after the company opened its doors. The company was InterCon, and their mission was to market a commercial version of NCSA Telnet, which they did. InterCon also developed the first commercial TCP/IP, UNIX printing, and PPP products for the Macintosh.

InterCon grew tremendously during its first few years, and it expanded its product line to include a wide range of standards-based connectivity and Internet access software for Macintosh and Windows platforms. Its flagship products, NSF/Share and TCP/Connect II, are both top-sellers. NSF/Share is a file sharing client product which allows a Macintosh to access UNIX files in a manner similar to AppleShare. TCP/Connect II is an Internet suite product that contains terminal emulators, multimedia e-mail, a Web browser, and file transfer capabilities. And InterCon's WebShark was recently licensed to America On-Line as its Macintosh Web browser. Last June, InterCon

was purchased by PSINet and functions as a wholly-owned subsidiary. Paulsen continues to lead the technical side of InterCon as Chief Technical Officer. No longer a three-person company, InterCon now employs about 80.

In off-hours, Paulsen visits museums, goes to lots of movies, and is a Star Trek devotee. He and his cohorts at InterCon go out of their way to maintain a casual working environment with unexpected hijinks (e.g., taking all 80 InterCon employees to a movie during work, unannounced of course). "Legos, floam, all the good geek stuff!" ■

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## ILLIAC not quite the first

Dr. Joyce M. Wheeler wrote to tell us of an error in the Cyberfest proposal which appeared in the last issue of this newsletter. We stand corrected: ILLIAC I was *not* the first computer built and owned by an educational institution. It was *one* of the first. "It may have been in the U.S.," she pointed out, "but the University of Cambridge in the U.K. had the EDSAC I built and running in May 1949. There was also a mini-machine to test the Williams Tube in Manchester in 1948 (also used for the ILLIAC). My husband, David Wheeler, was an assistant professor at Illinois from 1951-53 and was very much involved with the programming system for ILLIAC, having been the first programmer for the EDSAC." David Wheeler said that the ORDVAC was completed and tested at Illinois before being shipped to Aberdeen where it worked at once after being reassembled. He has retired as Professor of Computer Science at Cambridge but is still very active in the research group on computer security and data compression. He was last in Urbana in 1985 after attending the Pioneer session at the ACM meeting in Chicago. ■

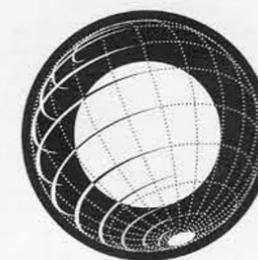
## Multimedia Lab all set



Alumnus Tom Burke, MCS'86, undeniably the Computer Science Alumni Association's most active board member, has chosen to help students by making a generous donation that will allow the department to complete its new multimedia lab with a video editing station.

As co-chair of the CSAA advisory committee, Burke spearheaded the alumni undergraduate curriculum survey. Based on its tremendous success, he is now working on the results of the recent graduate student curriculum survey which was just completed.

Burke is a member of the Presidents Council and began recently as a programmer with SPS Payment Systems in Riverwoods, Illinois, after working for IBM in Rochester, Minnesota. ■



1997  
CYBERFEST

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# A conversation with Mark Tolliver of Sun

*Mark Tolliver, EE'73, is Vice President of Market Development for Sun Microsystems in Mountain View, California. He was interviewed during a visit to his hometown of Morton, Illinois, in September 1995. Tolliver was instrumental in Sun's gift of a new server, a SPARC 20, to the student chapter of ACM at Illinois.*

## What do you do at Sun?

My job is to work with software developers to make sure that software runs first and best on Sun machines and then to help them work with us to sell their products on Sun systems.

## How did you wind up at Sun?

After graduating with a BS in EE in 1973, I joined Hewlett-Packard as a systems engineer and picked up an MBA from U Chicago. I spent 18 years at HP in various assignments in Chicago, Colorado, and California. In 1991, I joined MasPar, a massively parallel processing startup, as VP of marketing, and two years later I joined Sun.

## What is Sun up to these days?

By far the most visible is Java—the Internet application language. But in addition, we announced NEO, a distributed object environment, and we introduced systems based on UltraSPARC which are the first of a

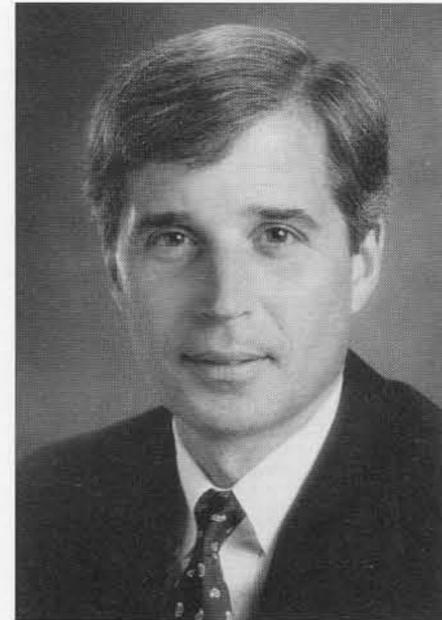
new generation of high performance systems for network computing.

## What is Java?

Java is a small, secure, object-oriented programming language for writing distributed, dynamically extensible programs. The basic idea is that the combination of a standardized HTML browser with Java will let you redefine the way people will interact with their computers over the network. Today, for example, most Web pages are static. What you'd like to have is Web pages that are animated and interactive. That's what you can do with Java. By downloading a small Java application (applet) as well as the data, you can make a Web page come alive with animation and much higher levels of interactivity. So what we see is hundreds or thousands of Java applets which are small, secure application programs designed to be downloaded via the network whenever you need them. If I were to start a new company, I'd get busy writing Java applets.

## Now that the days of working at one company for 20+ years are over how should new CS graduates be looking at their futures?

The real bottom line is, you can never stop learning because the rate of change in our industry is so great. Go to conferences, read journals, take on



projects in different areas. Talk to people in the industry. You need to develop a good set of relationships not only within your own company but also outside. During the first part of your career, it's good to specialize. Then move toward the business side if you want to be broad. If you want to be a technical person, specialize, and be the best at what you do.

Also, you don't need to move to be happy if you're continuing to learn, you're satisfied, and your network of people is expanding where you are. I particularly think that for people early on in their careers, they should stick with a project or assignment long enough to become acknowledged as a real contributor.

## What impact does all this moving around have on management?

The nature of work in our industry will dramatically change. In fact, it's already changing. Companies will focus on the core things that they're good at and become involved with other companies to fill in the gaps. You'll see a growing pool of people working as independent contractors and telecommuters. For instance, Sun recently had a big meeting in the Asian Pacific area. It was a combina-



*The mouse and mousepad that came with ACM's new Sun server.*

tion of resellers of Sun products, third-party software companies, and people from Sun. Together, this combination of people formed a "virtual corporation" for that area. This was much more effective than one with only Sun employees. More and more companies will move toward this model. You know the saying, "You can be competitors in the morning and partners in the afternoon?" Well, we try to form partnerships and alliances to take advantage of opportunities in the marketplace.

### How do you account for to Silicon Valley's current boom?

The current vitality is a result of several factors coming together. One is the convergence phenomenon: computing, communications, and entertainment. Just look at all the new video servers, animation, new games and entertainment software out there. Another is the phenomenal growth of the Internet and network computing.

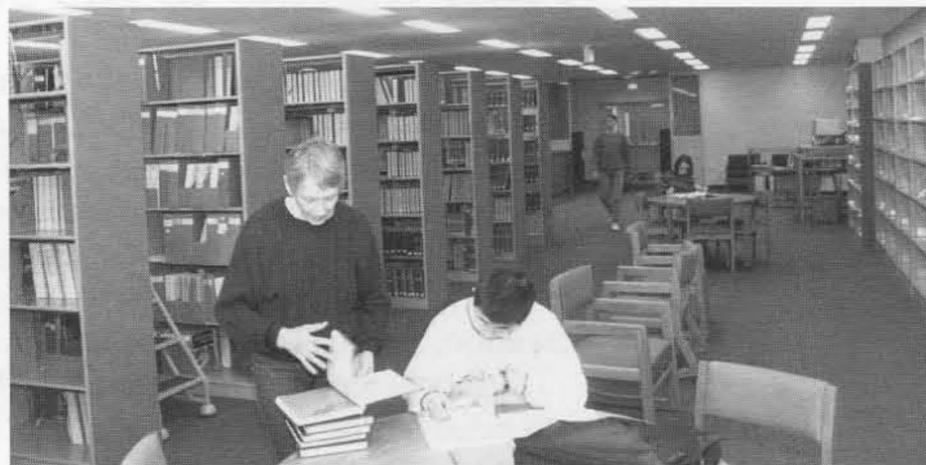
### What can we look forward to?

We're in for huge changes over the next five years as corporations and then the world take advantage of network computing. What's going to change so dramatically is that when "the network is the computer" [Sun's tagline] really happens, the way people interact with their machines will significantly change. Right now, we buy, install, and administer. When the world is networked with high bandwidth connections, the model will move to one in which administration and installation will be done by service providers, and your job is to use. This is not unlike telephones today. We don't have to know about switching systems to use them. That's why at Sun we've made Java available free on the Internet. We think that's one of the fundamental technologies that will drive network computing. ■

## DCL Library moves to Grainger

by Bill Kubitz, associate head

At the end of the spring semester the department is merging the DCL library collection with that of the college's Grainger Library and Information Center. We do this with considerable sadness, some misgivings, and a great deal of sentimentality. The move is motivated by our inability to maintain the kind of collection we have been accustomed to and by the convenience offered by the longer hours and close proximity of Grainger. Grainger is across Springfield Avenue from DCL, and if you haven't visited campus lately, it is a magnificent facility. Grainger can offer extensive access and far more information than we can in our own facility. We have worked with the Grainger staff to ensure good care of the few items unique to our library. In addition, the staff at Grainger, NCSA, and the Graduate School of Library and Information Science hold one of several national grants to



*The Digital Computer Laboratory library*

develop digital library technology, and they are well on the way to providing access to many journals and other materials in electronic form. We expect that Grainger will be on our desktop, not just across the street, and its information will be at our fingertips. If we can find the funds, we will likely convert our library space to a reading room where students and faculty can browse donated journals and trade publications. Exact plans have yet to be made.

So we all say goodbye to a part of DCL that started back in the late 1940s with the creation of the laboratory. ■

## Marc Andreessen and Eric Bina win ACM Software System Award

Marc Andreessen, BS'94, and Eric Bina, BS'86, MS'88, were recipients of the 1995 ACM Software System Award for their roles in developing NCSA Mosaic. This award recognizes an institution or individual(s) for developing a software system that has had a lasting influence, reflected in contributions to concepts, in commercial acceptance, or both.

Andreessen and Bina were recognized "for developing a multi-platform browsing tool for the World-Wide Web." Andreessen is vice president of technology and Bina is a software engineer, at Netscape Communications Corp., in Mountain View, California. Together, they developed Mosaic while they were student employees of NCSA. ■

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# Bruce Artwick is still flying

## And thanks to his software, many of us can too

*Bruce Artwick, BS EE'75, MS EE'76 is best known as the author of the landmark program Flight Simulator, now in its fifth version, sold by Microsoft. He is also founder of two successful companies: SubLOGIC and BAO.*

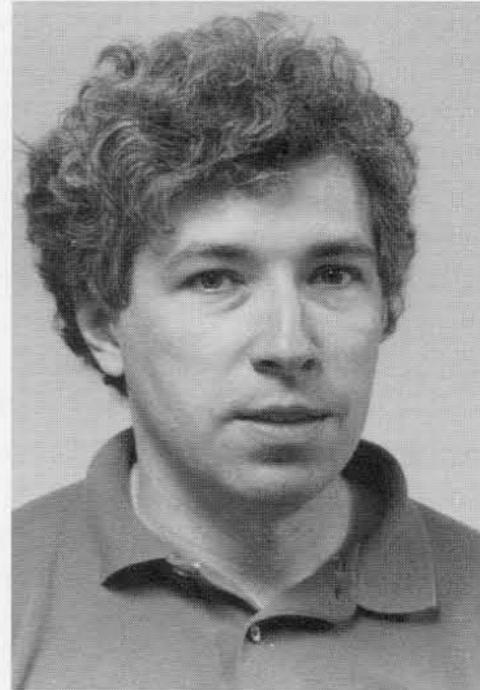
Before writing Flight Simulator, Bruce Artwick was deep into computer hardware, honing his skills in the basement of DCL. From those depths, he rose from the earth to the sky with Flight Simulator and, most recently, to faraway galaxies with his latest creation, Space Simulator.

Artwick, a native of Norridge, Illinois, attended Triton Junior College in River Grove before coming to U of I to study computer engineering in 1973. He switched to electrical engineering because he thought that in those early days of computing, the EE degree would be better understood by most people.

While he was a student, Artwick applied his interest in aviation and did research at the Aviation Research Lab while working as a technician in DCL. In 1975-76, as a member of the graphics group headed by Professor Bill Gear, Artwick designed graphics terminals in DCL. His thesis work was on 3-D graphics for flight simulation, and during the course of this work, he became a pilot.

Artwick recalls the many hours spent on the graphics terminals which he designed for the UNIX system in DCL. "We had one of the first UNIX systems in the country," said Artwick. "I worked with Al Whaley [BS'74, PhD'84] and Greg Chesson [MS'75, PhD'77] setting it up on the PDP 11, and I designed a lot of the multiplexor plug-ins. Ken Thompson [original developer of UNIX, from Bell Labs] was there." The multiplexors allowed terminals to be directly hooked up to the PDP 11, an early client-server system. Later on, Artwick designed parts of the dial-in system that allowed remote users to connect to the machine by 300-baud modem. "I learned more working in the basement of DCL than in classes," he said.

After graduation in 1976, at the beginning of the microcomputer revolution, Artwick went to work for Hughes Aircraft in Culver City, California. Because Artwick understood how to write graphics routines for microcomputers, and he knew the capabilities of their microprocessors from his PDP 11 work, he figured that he could do 3-D dynamic



graphics on 6800-based machines as well. Artwick wrote a program and a few magazine articles about this idea. One of the magazine editors called Artwick and asked him if he sold the program because some of the readers wanted to buy

it. So, Artwick founded his first company, in Los Angeles in 1977, and called he it SubLOGIC. The name was a reference to the logic circuits he had built for the PDP 11 in DCL.

SubLOGIC's business strategy was to sell their software by mail. In two years, the business had grown substantially and Artwick was finding Los Angeles to be too crowded for his liking. So he moved part of the operation back to Champaign-Urbana with the assistance of his flight instructor, Stu Moment, BS BusAdmin, MBA'80. At that time, SubLOGIC was selling graphics packages to run on machines like the Altair 8800 and Imsai 8080. Customers were mostly computer hobbyists and scientific people.

In January 1979, Flight Simulator (FS) was launched for the Apple II. Then, as now, most of the users of FS were not pilots themselves. SubLOGIC continued to grow and came out with a number of different versions of FS and other entertainment programs. Their products were extremely popular on the Apple II, Commodore 64, and Atari 800, the home computers of the day. Early in 1982, FS became the top-selling software for Apple.

Artwick then got a call from Microsoft. Microsoft was working with another company that was coming out with a new computer that they predicted would revolutionize the

<http://www.bao.com>

industry, and they wanted to put FS on it to show off the machine's graphics capabilities. At the same time, Artwick received a similar call from IBM. He opted to work with Microsoft, and the new, revolutionary computer turned out to be the IBM PC. Artwick figures he had the first IBM PC in Champaign-Urbana.

In November 1982, FS became the first entertainment program available for the IBM PC, and naturally it became a bestseller as well.

"Flight Simulator pushed hardware to the limit," Artwick explained. "PC designers used Flight Simulator as a benchmark for PC compatibility." Artwick worked with Compaq on the first PC clones, and in the process, actually found a bunch of bugs in the IBM machines.

In the late 1980s, SubLOGIC ran into hard times because the 8-bit market had shifted to 16-bit, so Artwick left SubLOGIC and formed BAO (Bruce Artwick Organization) to continue his FS work. The market for FS had expanded to include products for the Federal Aviation Administration, and BAO was producing other aviation-related software for things like tower control simulation for training air traffic controllers. BAO employed about 35 people.

In addition to software and technical papers, Artwick wrote several books, including *Microcomputer Displays, Graphics, and Animation* (Prentice-Hall, 1985), and *Microcomputer Interfacing* (Prentice-Hall, 1980).

BAO's latest creation is Space Simulator. It is reportedly the most advanced and complex simulation program ever created for the PC, and with it, the user pilots a spacecraft through the heavens.

Microsoft has been marketing BAO products all these years, but in November 1995, Artwick sold the assets of BAO to Microsoft, and most of the BAO staff moved to Seattle. SubLOGIC was purchased by Sierra. Artwick and five employees remain at BAO in Champaign, and Artwick plans to continue his simulator and graphics work. He also enjoys flying real planes as well! ■

## *Women, continued from page 3*

in CS get-together. We have continued the social gatherings with financial support from the department with at least one, and often two per semester.

All the graduate women in CS, women faculty, CS department administrators, various role models from the College, and their guests (male and female) are invited to attend. The first several were held in the department, but we now opt for the house of a faculty member or graduate student. We serve dinner, encourage students to get to know each other, and now and then discuss upcoming events relevant to women (the mentor program, panel discussions about graduate school, the College of Engineering women's programs, etc.).

In the fall of 1993 graduate students Ulrike Axen and Vicki Jones began a grass roots effort to extend this support group by providing a peer mentor for each new female graduate student during her first semester in the department. They solicit volunteers from the continuing students and pair them up with the incoming students in an effort to ease the new student's transition into life in the CS department, the university, and Champaign-Urbana. The women's get-togethers have been incorporated into the mentor program, organized (with much help) by the mentor program administrator, and used to introduce the new students to each other and to the volunteer peer mentors.

The Women in Computer Science Peer Mentor Program is currently run by Ulrike Axen and Cinda Heeren. Feedback has been very positive. At least one student stated after she arrived on campus that knowledge about the women's mentor program influenced her decision to attend the University of Illinois instead of other schools to which she was accepted. ■

## The CS Alumni Directory is up!

Find your Illinois CS friends, and let them find you!

Link from <http://www.cs.uiuc.edu>

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## Joe Hoane: Deep Blue (with a touch of orange!)

*A. Joseph Hoane, Jr., BS'84, is one of the five members of IBM's Deep Blue team who programmed the world's most advanced chess-playing computer. This machine was recently put to the test in a phenomenal match with world chess champion Garry Kasparov.*

A. Joseph Hoane, Jr., is one of the five members of IBM's Deep Blue team, the group that recently challenged world chess champion Garry Kasparov in a match that caught the entire world's attention. Seen by many as a modern dramatization of machine versus man, IBM has responded by saying, "This match is not about competition between people and machines. It is a demonstration of what makes us human beings so different from computers." And far beyond simply creating a machine that could play chess—and play it quite well—the Deep Blue effort has made great strides in basic computer research in the area of computational capabilities of scalable, parallel computing systems. The object of the research that went into Deep Blue was to learn, from the complexity of a "clean" problem like chess, how to develop computer architectures, algorithms, and programming techniques to solve other complex practical problems, with applications in such fields as pharmacology, data mining, finance, and air traffic control.

Hoane, Feng-Hsuing Hsu, Murray S. Campbell, Gershon Brody, and Chung-Jen Tan made up the Deep Blue team, and together they worked for five years on the technology that was used to arm Deep Blue in its match against Kasparov at the ACM Chess Challenge, held in Philadelphia from February 10-17, 1996. Kasparov won the match with 3 wins, 2 draws, and 1 loss, but Deep Blue won the day when it beat Kasparov in Game 1. The machine also proved to be a formidable foe throughout.

Joe Hoane, a native of Normal, Illinois, described his undergraduate experience at Illinois as "conventional." After graduation in 1984, he went to work for IBM in East Fishkill, New York, in the design automation area, where his goal-directed sequence in electrical engineering was to serve him well. He also completed an MS in computer science from Columbia University in 1994. Before joining the Deep Blue team, he was doing a considerable amount of work with printed circuit board wiring programs and simulations for computer networks and

parallel machines. There he developed his expertise in search algorithms, and this was precisely what the Deep Blue project needed. Simply put, Deep Blue required the ability to search *really* fast. Hoane's forte became problems involving compute-intensive searches, big machines, and algorithms that require efficient computation. Hoane fit perfectly on the Deep Blue team.

While at Illinois, Hoane never did take an artificial intelligence course, and he pointed out that creating a machine to play chess was really not an AI problem. Hoane referred to Claude Shannon, recognized as the father of information theory, as believing that to play chess "you could have a computer could go through all the moves and search and see what you find by brute force." In the 1950s, this idea was discounted because the billions of positions the computer would have to interpret were too complex, Hoane explained. "The other type of search is more like a human, in which you choose interesting moves to look at. Chess knowledge is a very important part of the Big Blue effort, but there wasn't enough time to incorporate the appropriate chess knowledge into the program." Because of the remarkable advances in computing technology, Deep Blue was able to utilize the brute force approach. According to Hoane, it is inevitable that computers will eventually be able to routinely beat humans at chess. "We will simply ride the wave of technology in terms of search algorithms and computer architecture."

Special hardware was developed for Deep Blue, though Hoane's involvement was with the software. The system was a 32-node, IBM PowerParallel SP2 computer. Each node of the SP2 employed a single microchannel card containing 8 dedicated VLSI chess processors, for a total of 256 processors working in tandem. The code was developed in C and ran under the AIX operating system. "This gave quite a high computation rate," said Hoane, "and my software was like a customer." There were about half a million lines of code: some was used to control the hardware, but the bulk was written for the search algorithms on the SP2. The net result was a scalable, highly parallel system capable of calculating 50 to 100 billion moves within 3 minutes, which is the time allotted to each player's move in classical chess.

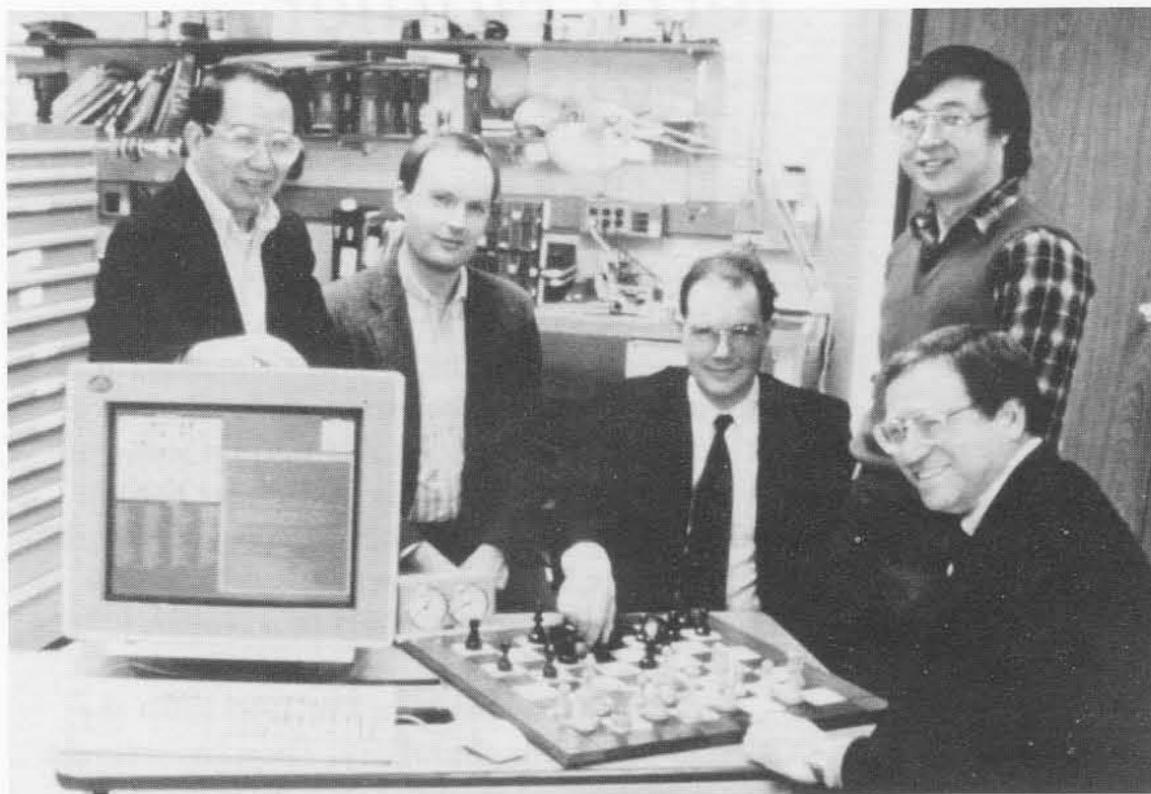
When asked about the atmosphere in the Deep Blue control room during the match, Hoane said that it wasn't all that tense. "The intensity was all before. All the work was done by the time the tournament started." The difference between what Kasparov and the Blue Team did was immense. "Kasparov does this incredible performance when he plays chess. The work I do [writing software] keeps building and building on past work, so it gets better and better. You've got to know your problem, and know it in a weird way. Unlike Kasparov, I have time to craft my tool. That's why it's inevitable that someday a computer will be able to beat any human chess player." Hoane paraphrased game show host Pat Sajak's phrase and applied it to Deep Blue: "Once you buy a project, it's yours to keep." Hoane will be able to build from this experience and further craft his software.

Hoane was extremely impressed with Kasparov. "Machines are just tools, with strengths and weaknesses" Hoane said. "Kasparov's human strength was his adaptability, being able to figure out the machine's strengths and weaknesses. The competition is really between tool making and performing."

And how might this experience change Kasparov? Hoane said that during the match, Kasparov was forced to completely adapt his style and play "honest chess, where you can't bluff and can't go into unsound positions just because they're complicated. This will probably change his thinking about chess. He was amazing."

Most of the Deep Blue team members are not chess players, including Hoane. "Though no one knows more than me how difficult it is to play chess! One of the most interesting pieces of it all is that, as a programmer, you only need to know one thing at a time about chess, to algorithmatize the essence of some chess feature."

Hoane is pleased with the performance of Deep Blue. From a practical standpoint, he said, "Any time you can do something ten times faster than anything else is quite an achievement. Here we're looking at a third of a terop (1 trillion operations). Eventually, we'll get to one teraop." Deep Blue was 1,000 times faster than its predecessor, Deep



Thought, which lost in a two-game match to Kasparov in 1989. On a more philosophical note, Hoane felt that his "faith was fulfilled. We saw that the things that happened *could* happen. A vision was made real." Were there any surprises? "Not really, except for all the attention." Indeed, the Blue Team members became celebrities. Hoane pointed out that chess is well-loved in Europe but hasn't received similar attention in the U.S. until now.

At least for another year, Hoane plans to stay with the Deep Blue team. "The dynamic is good because it's productive, there's a good hardware and software balance, and the different roles that we each play are good for a hard problem." Will he continue with the chess problem? "What you're really asking," replied Hoane, "is, Are we going to fill a bunch of potholes and have a rematch in a year? The answer is, *I think*, to kill two birds with one stone. One possibility is to work on data mining and use data mining to fix the potholes in the chess program. This is just a dream for the moment. Do we fill them one by one, or do we repave the whole road? By figuring out how to repave the road, we can apply parallel processing know-how to other fields."

Though he would like to have gone to the beach after the tournament, he returned to his home in New York to relax with his wife and 18-month old son. ■

*The IBM Deep Blue research team (from left to right): C. J. Tan, Murray Campbell, Joe Hoane, Feng-Hsuing Hsu, and Gershon Brody.*

<http://www.chess.ibm.park.org>

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# Jerry Fiddler

## Having a real time at Wind River

*Jerry Fiddler, AB'74, MS'77, is founder and Chairman of the Board of Wind River Systems, a leading embedded systems company. He is also a professional musician.*

Jerry Fiddler is an active musician and expert in the design and implementation of real-time systems. His broad range of interests and talents led him to follow an unconventional and sometimes serendipitous path to where he is now, Chairman of the Board of Wind River Systems, in Alameda, California.

"I started life as a child," Fiddler began. He grew up in the northern Chicago suburb of Wilmette, and he developed a liking for the university during visits to a cousin who was a student there.

Fiddler started at U of I in 1969 with the idea of studying chemistry. Then his interest in art and photography led him to major in graphic design. After a year, he left the university and went to the Art Institute of Chicago to study photography. Another year later, he became a professional photographer, doing catalog and studio work. Restless once again, he turned to oceanography. Money prevented him from attending some of the west coast's oceanography schools, so he returned once more to U of I, this time in geology. After a semester, it was music.

Fiddler was working as a musician at the time, so studying music made sense. He played guitar in a band called Afterbirth (later known as Mosaic) and composed and played for the dance department and a local dance troupe. Fiddler eventually went to the Individual Plans of Study (IPS) office and asked, "How do I put this all together and graduate someday?"

Fiddler had been reading the work of Henri Cartier Bresson, a photographer and artist concerned with what is known as the decisive moment. Fiddler proposed to explore this concept as approached by both the arts and the sciences. This also tied in with his interest in photography, something which records a moment, and in jazz improvisation, something which occurs in a moment. Fiddler's proposed plan of study was approved, and he plunged into coursework, taking guitar and studying composition with Professor Herbert Brun, who recalled Fiddler as "cheerful, always floating away, very bright and enterprising."

Fiddler also spent a lot of time in the electronic music studio and doing studio work as a guitarist. Even as a music and arts student, Fiddler took hard-core science courses, like the physics and math sequences for majors. "My brain seemed to need that kind of thing," he explained. After graduating, Fiddler continued to hang out in Urbana. An RA position as a resident composer for the dance department caught his eye, but it required that he be a registered student. Following yet another path, Fiddler poked around the course catalog and thought CS looked interesting.

During this period, Fiddler was listening to computer music, reading Stewart Brand's *Whole Earth Catalog*, and *Computer Lib-Dream Machines* by Theodor Nelson. Fiddler felt his life transform. He started doing computer graphics, producing wall-sized posters on the plotter in CSL, and burning up unused computer accounts for fun. He began to sense that computers represented "the next stage of how humans were going to evolve. I certainly didn't think it'd be my life's work, though!" Fiddler never got that dance RA, but he did get into the CS graduate program. The professor in charge of admissions, Bill Kubitz, was very impressed with his background and recognized his talent. "It was a very, very spur of the moment thing," said Fiddler.

When Fiddler started grad school, he had to take a lot of CS courses to catch up so that he could take upper-level classes. Because he had been working part-time at Hal Communications, he did have a strong background in logic design. (His Hal job was just one of a number of assorted jobs Fiddler held as a student, including mopping the floors at Ruby Gulch, a Green Street watering hole.) Fiddler landed an RA on the Illiac III project. Professor Sylvian Ray was Fiddler's adviser. "I remember Jerry as the very independent personality you associate with creative, inventive people," said Ray. "I remember that his MS project was self-selected, and it included hardware and software items, which correlated with his desire to learn a wide range of concepts and techniques." Fiddler explained: "I wrote my MS thesis on the Text

<http://www.wrs.com>

Wizard Electronic Device—the TWEED. I bought a tweed suitcase from the Salvation Army for a dollar and was going to build a portable terminal in it. It had an 8008 microprocessor and 4K ROM, and I programmed it using an assembler. Then I printed it out in hex code, walked it to a building with a PROM programmer and keyed in the hex by hand. Then I took it back and plugged it into the board. I got it working, actually.” This project would portend Fiddler’s eventual forte; the terminal he created was really a real-time, embedded problem.

Fiddler spent the summer working on PLATO and wrote a lesson called “photolens,” which taught photography students how to use camera lenses. When he finished the MS, in 1977, he still did not expect to get a job working with computers. He hung around town, once again, and once again, decided to leave: “It was time.”

Fiddler left town in a colorful way. He bought an old pop-top Dodge van, and with a friend, decided to embark on a cross-country journey. During this trip, he read the book *Voluntary Simplicity* by Duane Elgin and got the urge to go to California. Finding he liked the California environment, he picked up an employment ad for Lawrence Berkeley Laboratories. They were looking for someone with a humanities and computer background for some human interface work with the real-time systems group. This group was doing things like writing interfaces for scientists to talk to linear accelerators. Fiddler applied, they wanted him, but the job started in a week. This unexpected news caught Fiddler off guard. Here he was in the middle of a cross-country adventure, no proper clothes, not in a work frame of mind, totally unprepared to start work so soon. So, he turned the offer down and continued with his travels. When he returned to his home in Chicago, there was letter waiting for him with another job offer from LBL.

Fiddler borrowed \$1,000, went to Europe for a month for one last vacation, and then took off from Chicago in his van for LBL in the dead of winter. The van blew up (it ran out of oil) 75 miles shy of Berkeley, but he made it. It was 1978, and he worked for LBL for three years. He gave two reasons for giving up on government work. The first was



the frustration. “I worked really hard on some really interesting problems. It was a productive time. We got great results and made great systems. But they were only used by three scientists who really wanted a knob instead of a computer.” Fiddler, on the other hand, was a composer. “I wanted to work for a big audience,” he said. The second was the election of Reagan. Fiddler had no interest in working on defense and weapons projects, and it turned out that half of LBL was laid off within a year. He finished his project and left.

Fiddler started his own thing, which grew to become Wind River Systems. As a consultant, he started by developing a software architecture for use with touch panels. He helped Lucasfilm build video editors and wrote scientific papers. He worked literally out of his garage. In so doing, he became something of carpenter, from hanging sheet rock to electrical wiring. Tom Noggle, BS EE/CS’71, joined him in the venture. Noggle had an old PDP 11 and a synthesizer, and he and Fiddler decided to do computer music. Noggle provided the equipment, and Fiddler provided the space and wrote an interface for the synthesizer and computer. “You could still do software as a cottage industry at that time,” said Fiddler, “and there was no competition. Now, with venture capitalists running around, it’s almost harder to start something now than it was then.”

*continued on p. 17*

# Rob Kolstad: Corporate president and coach

Rob Kolstad, PhD'82, is president of Berkeley Software Design, Inc. (BSDI), a supplier of operating system networking and Internet technologies originally developed at University of California-Berkeley.

Kolstad got his BAsC from Southern Methodist University and his MSEE from Notre Dame. He decided abandon electrical engineering and complete his PhD in computer science at Illinois under the advice of fellow Oklahoma native Steve Bunch, MS'77. Bunch was working in the Center for Advanced Computation (CAC) with Professor Dan Slotnick.

Bunch was an undergraduate University of Oklahoma in Norman and was working at the computer center when he first met Kolstad. "Rob was a smart, obnoxious high school student who was always hanging around the computing center," Bunch recalled. Kolstad became the protoge of Dr. Richard Andree, chair of the math department. Andree ran a summer math program for kids and found that Rob was very interested in, and very good at, math. So, he nurtured Kolstad by giving him computer time and access. "Rob became quite an accomplished Fortran programmer," said Bunch. "People should ask him about this huge program he wrote that became a major part of someone's MS thesis."

Kolstad started working at CAC writing a program for Landsat, the satellite program which acquires images of the earth from space. Kolstad's program used a parallel computer to examine the pixels the satellite was delivering and join them with similar pixels to create a clearer image. Professor Roy Campbell eventually became Kolstad's adviser, and together they worked on PATH Pascal. This version of Pascal contained a few extra primitives, could do concurrent execution, fork,



sequencing, and had a high level synchronization technique and a notion of limits.

During his grad school days, Kolstad was president of the Computer Science Graduate Student Organization and was thus responsible for a large number of donuts. His days at Illinois were good ones, thanks to "lots of resources and to people who could get things done."

Kolstad had many humorous recollections of his time at Illinois. One involved another graduate student who had stormed into the CS department office one day, furious because he was enrolled in an AI course that he had not signed up for. In what could be called "The Case of the Wrong AI," Gayanne Carpenter, department secretary, calmed him by saying that all these problems were solvable. It turns out that CS 431, the artificial intelligence course the student intended to sign up for, was mistakenly (or not?) listed on the student's registration form as DS 431, a dairy science course in Artificial Insemination!

After six years and "at least 2,500 hours on PLATO as a loyal Klingon," Kolstad joined the founding team of Convex Computer Corporation, in Richardson, Texas. There he joined 29 people to produce a 40 megaflop vector supercomputer, from scratch, in 18 months. The machine included then-revolutionary 10,000 gate gate-arrays. After six years and three

products, and serving in a variety of positions including manager of operating systems, Kolstad migrated to Colorado to join a start-up called Prisma Technica. It was this company's goal to build a GaAs SPARC-compatible processor. "We found out that GaAs was tricky to work with," explained Kolstad. Problems with heat dissipation, yield, and connectivity forced the company to give up on the idea. Fortunately, thanks to Kolstad, Sun Microsystems hired a majority of Prisma Technica's engineers to form its Rocky Mountain Technology Center in Colorado Springs, a facility devoted to developing software for Sun's large servers. One thing Kolstad did, he said with a chuckle, was to develop "a better way to take dumps." This was the Back Up Co-Pilot project, a high-speed and reliable way to backup disk files and live file systems onto other media.

Two years later, in what appears to be a trend of being in on the ground floor of things, Kolstad became employee Number 4 at Berkeley Systems Development, Inc. At BSDI, Kolstad joined co-founders Mike Karels, Keith Bostic, Kirk McKusick, and Rick Adams (who later became founder and CEO of UUNet). The initial purpose of the BSDI was to build commercial releases of Berkeley operating systems technology. The company is still small, with 35 employees across the country. "We're are truly a distributed company," said Kolstad. "People work over the Internet, telephone, and Fax machine at 20 locations. Other than a centralized order processing and operations facility, everything else is decentralized. We have employees I haven't even met in person, but it all works beautifully."

In addition to racquetball and whitewater rafting, Kolstad is coach

of the U.S. Programming Team. After training camp at University of Wisconsin-Parkside, pre-college students compete in an international tournament. As coach, Kolstad is in charge of the camp's curriculum and helps make up the problems the kids solve. This year's tournament will be held in Hungary. ■

<http://www.bsdi.com>

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### *Fiddler, continued from page 15*

Sometime that summer, two big things happened. Fiddler was evicted from his house, and hence the garage, and his girlfriend, Melissa Alden (now Fiddler's wife), was laid off. Having no ties, he and Alden decided to travel around the world on a shoestring. There was just one consulting contract that Fiddler did not want to give up, so he managed to get David Wilner of LBL to take over for the ten months he was gone. When Fiddler returned, this turned into a partnership, and he and Wilner incorporated the company. Fiddler was its president.

The first document ever created at Wind River Systems, named after the Wyoming mountain range that Fiddler had spent time in, was a coding conventions document. "Even though I was the only person there, I wanted it written down. I wanted to build systems, figure out how to reuse them, and build a tool kit. So we would think of abstract pieces that could be reusable and built up a bunch of pieces into a product. And it turned out to be a pretty good product." Soon, they were producing real-time and video-related projects for the NFL and people like Francis Ford Coppola. Soon, Fiddler abandoned his consulting work and devoted himself to real-time systems, and things rocketed skyward from there. Sales increased exponentially from \$300K in 1981 to \$44 M this year—quite a feat for a private

company with no venture capital. In April 1993, Wind River went public, and growth shows no signs of slowing down.

Wind River now provides software tools for people to make embedded systems. This includes the operating system inside printers and engines, a set of highly specialized development tools to put together an application, and consulting and service. Wind River's customers include Hewlett Packard, Siemens, Hitachi, AT&T, and just about every company in telecommunications. They also include automotive companies like Toyota, General Motors, and Sony Car Navigation Systems. They will make GM's engine controllers starting with model year 1998. One can find Wind River technology in HP printers and in network products from Newbridge, Cisco, and PBX. Wind River technology is in the robot that went into a volcano in Alaska, the smart, robotic vehicle scheduled to land on Mars on July 4, 1997, and the Keck telescope in Hawaii.

Any advice for current CS students? "The skill most important in business," Fiddler said, "is being a good writer and clear communicator. The ability to write well and communicate clearly is more important than computer training. In fact, I learned more about computer science in Herbert Brun's [music] composition classes than in any other. He really

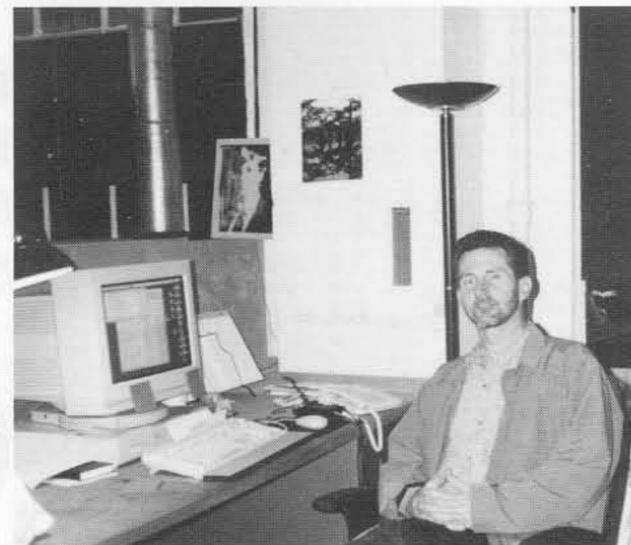
taught me to think. People have been composing music for thousands of years. *There* are the real abstract problems that are extraordinarily useful. Music is the best mental training there is. It involves discipline, concentration, spatial reasoning, linear thinking, so many different things. Plus it's fun and enriches lives. You shouldn't be one-sided; everyone should be multidimensional."

In March 1994, a new CEO, Ronald Abelmann, was brought on board and Fiddler is now Chairman of the Board, which allows him to spend more time with his music and his family. His band, the Jazzamaticians, is releasing a CD later this year, described by Fiddler as "jazz with influence from everywhere." On it, Fiddler plays with Rich Nosek, BS Math'71, MS Math'73, and Joe Pinzarrone, BM'70, MMusic'72. Fiddler's wife, Melissa Alden, with whom he traveled around the world, teaches technology and runs a computer lab for Title 1 children in a middle school. She also runs a statewide computer teachers conference for CUE (Computer-Using Educators, the oldest and largest organization in the U.S. dedicated to learning, teaching, and technology, and an affiliate of the International Society for Technology in Education). Jerry and Melissa have three children, ages 8, 6, and 2. ■

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### An Illinois alum who is truly *Wired*

Russ Mitchell, BA Journalism'77, has his finger smack dab on the pulse of the computing world as managing editor of *Wired* magazine. Before that, he was editor of science and technology for *Business Week*. This photo was taken at his office in the magazine's San Francisco headquarters last November. ■



# WIN WITH THE WORLD-WIDE WEB

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# A look at the colorful history of ACM at Illinois

Some of the current activities of the Illinois chapter of the Association for Computing Machinery (ACM) were described in the last issue of this newsletter. But how did our ACM evolve into the vibrant organization that it is today? ACM was the first (1947) and is the largest international scientific and educational computer society in the world. Today, it boasts over 80,000 members, all with interest in information technologies, and it is represented by local chapters and special interest groups (SIGs) all over the world. ACM at the University of Illinois is one of about 430 Student Chapters. Their office, on the first floor of DCL, is inhabited by dedicated students, most of whom are undergraduates majoring in computer science. It's hard to say exactly how old the Illinois chapter is, as you will see, because it has been through many incarnations over the years since gathering began in 1965.

While thinking about how best, and how easiest, to come up with a brief history of the student chapter of ACM at Illinois, I thought that if I contacted all the past presidents and chairs, the story would write itself. I dug through old meeting minutes and newsletters, found names, and got on the telephone and contacted as many as I could find. I asked two questions: What are you doing now? Do you have any recollections of your ACM days? I got some great responses. Here are parts of some of them, in chronological order.—*Judy Tolliver, editor*

**Lars Greninger**, MS Math'66, does systems programming for Texas Instruments in Dallas. A native of Colorado, he described his years in Illinois as "purgatory." He fondly recalled taking classes with Nicholas Wirth, and being an RA with Harry Jordan, PhD Physics'67. He recalled working with J. Pierre Blondeau on ILLIAC II and said that Blondeau was a Libertarian presidential candidate in Texas. He also worked on ILLIAC IV with Robert O. Fisher before going to Texas Instruments in Dallas. He remembered when Dave Gold, PhD'72, and someone else put together a research paper for Professor Dave Kuck that contained pure gibberish in the middle, which went unnoticed. Another Kuck incident involved a guy who wrote in assembly language for Illiac IV, a no-no. The language was called Glypnar, a reference to a rope, in Norse mythology, made to contain a vicious monster.

**Leland K. McDowell**, PhD Math'67, worked as a software engineer for Computer Sciences Corporation, Lockheed, and Raytheon Co. before his retirement. He barely recalls being president of ACM!

**Bruce Leasure**, BS Math/CS'70, MS'76, works for Kuck and Associ-

ates (KAI) in Champaign, a software company he helped found with Professor Dave Kuck. He remembers how ACM managed to get students to attend meetings: "Just advertise that donuts would be served *after* the meeting to all that came. Nothing like a little food to attract starving graduate students!"

**Dan Hyde**, PhD'75, is an associate professor of computer science at Bucknell University, Lewisburg, Pennsylvania. During his ACM presidency, he initiated a popular grad student study group for the qualifying exam. ACM also established a Gripe Center. If a student thought a professor was being particularly unfair, the Gripe Center would anonymously pass this sentiment on to the department.

Hyde has the distinction of being one of the department's first TAs. He underwent TA training in summer of 1969 with Professor Tom Murrell. Hyde recalled that the first year Professor Jim Snyder was department head was also the first year graduate students were represented on departmental committees. "It was a real eye-opener for what faculty members did."

Hyde remembered a program Bruce Leasure wrote called See-All-Do-All that gave Leasure superior

privilege on the mainframe. One time, while Leasure was working in the TA's room, a student came in crying because her run had cost \$65,000 due to an accounting error. Leasure fixed that problem with See-All-Do-All.

Hyde used to be an avid punch card collector, collecting hundreds of cards from various computer sites around the country. He still uses a 2,000-card box. Taking it to class, he has his students compute how many of these boxes of punch cards are necessary to hold the same information as one 1.44 MB floppy disk (answer about 9 boxes).

**Alf Weaver**, PhD'75, is professor of computer science at the University of Virginia at Charlottesville. He recalled when he and fellow TAs Will Gillet, PhD'77, and Ron Danielson, PhD'75, *aka* The Three Musketeers, used to play pranks on fellow graduate students, including a jello-in-the-desk-drawer birthday surprise for Mary Jane Irwin, and a glue-the-phone-to-the-desk for Heidi (Neubauer) Jacobus, MS TCS'77. Jacobus remembers that incident as well as the Friday afternoon get-togethers and ACM-sponsored holiday parties. Last year, as founder and president of Cybernet Systems Corp., Jacobus gave a talk to CS 100 students.



*This was etched in the sand by a group of ten ACMers who were in California in 1994 for Spring Break.*

**Mary Jane Irwin, PhD'77**  
(see next page)

**Rich Miller, MS'78**, is a systems engineer with Sun Microsystems in Chicago. Miller, who is also a computer historian, was responsible for Grace Hopper's visit to campus in 1978, where she was the keynote speaker for the first History of Programming Languages Conference. Miller was on campus last fall to speak about computer history to CS 100 students, and he recommends <http://ei.cs.vt.edu/~history> as a great source of historical information on computing.

**Mark Greiner, BS'77, MS'79**, tests and debugs mainframe prototypes for Amdahl Corp. in Sunnyvale. He remembers the installation of a wooden bulletin board outside the DCL library for posting conference notices or job interview listings. In contrast with the electronic ones we have now, "it certainly demonstrates how far technology has progressed from the days of punch cards and batch." He also remembers Grace Hopper's visit, but not because he was there. "We were in the winter of 1979 and I (for shame) missed the lecture, having gone across the state doing thesis research and getting stuck in a blizzard! Boy was I thankful that Rich Miller and Tom Morrissey were such able hosts!"

**Bob Cutler, BS'73, MS'75, PhD'80**, works in the microprocessor design group for Lucent Technologies in Allentown, Pennsylvania. The ACM memory that immediately came to mind was remembering Grace Hopper and how she brought her nanoseconds with her for her talk. This was a wire about a foot long, and it represented the distance an electromagnetic signal travels in one nanosecond. "She commanded great respect from the students, even when discussing COBOL," he said. He mentioned, as others have, the direct correlation between ACM meeting attendance and food served at the meeting. He reminisced about Midnight Express in DCL, the only time the machines were freely available. Another recollection involved Professor Poppelbaum. "He was great for demonstrations," said Cutler. "He had an elaborate setup of mousetraps and ping-pong balls in which one ping-pong ball would set off a chain reaction involving the other mousetraps and balls. This dramatically showed the avalanche effect in avalanche diodes." He also had another Bruce Leasure story, this one involving a program Leasure wrote called The Rabbit Program. It would duplicate itself twice every time it was run. "Ah, yes. I recall that one. Guilty as charged," Leasure responded when asked about it. "Not

a contagious virus, but certainly painful to the host computer."

**Tom Morrissey, BS'80**, has been with Hewlett Packard in graphics software development since graduation. "This paid employment," he said, "is currently financing my passions in the area of sustainable living: sustainable food production, sustainable building technologies, and community." Morrissey felt that his work with ACM turned out to be "a pretty good springboard for other activities later in life. The presidency of the U of I chapter challenged me to hone my organizational and leadership skills and to work on my interpersonal skills. Active participation in ACM helped open some doors in interviewing and got me even more tied to the department." He is in touch with Bob Bury, BS'79, who worked in the operating systems group at the same HP-Fort Collins facility. (Bury stopped by the CS department this spring, recruiting for HP and visiting the student that he's mentoring.)

**Thomas R. Kelly, BS'81**, went from Illinois to Northwestern, where he got an MBA and switched his career sights to finance. Though his life is still tied to computers, he's assistant controller for Kraft General Foods in Glenview, Illinois. Kelly recalled that membership was lean, though some

*continued on page 22*

# Mary Jane Irwin

## From ACM student to ACM Fellow

Mary Jane Irwin, MS'75, PhD'77, is professor of computer science and engineering at the Pennsylvania State University, and she is recognized as one of the country's leading computer scientists in the areas of computer architecture, computer arithmetic, VLSI system design, and CAD tools. She is a Fellow of the IEEE, a member of the CRA Board, and was just named a Fellow of the ACM. She serves on the ACM Council, the DAC Executive Committee, is conference chair of the Federated Computing Research Conference (FCRC'96), and is on the editorial board of the *Journal of VLSI Signal Processing*. She has published more than one hundred technical papers.

Janie Irwin, as she is known to many, married her sweetheart right out of high school and went to Memphis State University in 1966, with her husband, where she earned a BS in mathematics and took all the computer-related courses she could find. When her husband graduated and got a job with Du Pont in Indiana, Irwin looked at graduate schools nearby and eventually chose Illinois.

Irwin recalled the tremendous support she received from Professor Jim Robertson. She TA'ed for Professor Mike Faiman in the logic design lab where students built traffic light controllers and other devices on the department's home-brewed Excel boxes. Her grad student comrades, all of whom are now professors in computer science, were Al Davis, MS'73, PhD'75 (U Colorado-Colorado Springs), Alf Weaver, MS'73, PhD'76 (U Virginia-Charlottesville), Ron Danielson, PhD'75 (Santa Clara U), Will Gillet, PhD'77 (Washington U), Jim Smith, BS' CompE'72, MS'74, PhD'76 (U Wisconsin-Madison), Wayne Smith,



PhD'76 (Mississippi State) and Trevor Mudge, MS'73, PhD'77 (U Michigan-Ann Arbor). Irwin happily reports that everyone is still in touch.

During her tenure at the helm of ACM, Irwin helped establish a student peer advising program for graduate students. Irwin also ran an ACM regional conference at the Illini Union. This was a forum for graduate students from schools in the midwest, including some of the smaller schools in Illinois, to present their research. This marked Irwin's first involvement with an ACM activity beyond the boundaries of the CS department. Irwin went straight to Penn State after completing her PhD in 1977.

One of Irwin's current research areas is the MGAP (micrograin array processor) family of processors. The design is a massively parallel SIMD processor on one printed circuit board. The first generation had 16K processors, and the second, now being built, has 64K. The next

generation will quadruple this number. "It's exciting," she said, "because it involves VLSI design of custom chips and requires a lot of effort in board-level design and systems software development. A C++ compiler was developed in the group for this beast. We're also doing applications mapping work so that they run efficiently on the MGAP board, with vision processing applications being of primary interest right now."

A completely different research area is low power computers (i.e. computers that consume less power), much in demand by the mobile computing market. No one likes lugging a huge battery pack with their laptop computer. "Here we're looking at CAD applications like automatic transistor sizing, and lower level architecture issues like power, speed, and area tradeoffs." This ties in well with Irwin's arithmetic background. Another area of exploration is general data path processors—building compilers which produce code that consume less power. "This is a different twist on optimizing compilers," she explained. "Instead of faster code, we want to generate code that uses less power on a given architecture."

Irwin's early ACM work was just the beginning of her involvement with that organization. She is currently running for vice president of ACM.

Irwin and her husband, Vern, EDM'76, recently celebrated their 30th anniversary. Their son works for Xerox Park in Berkeley while doing graduate work in CS at Stanford University. For vacation, she enjoys warm weather and sailing. ■

<http://www.cse.psu.edu/~mji>

## ACM alums, *continued from page 20*

activities such as volleyball games, pizza parties, and meet-the-professor events took place.

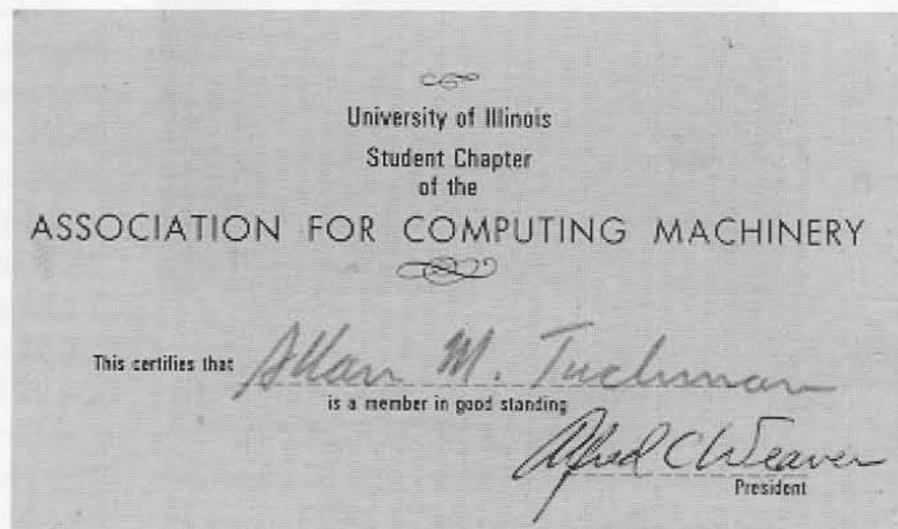
**David A. McNabb**, BS Physics '75, is manager of the Advanced Visualization Laboratory at University of Maryland in College Park.

**Andy Wise**, BS '83, has worked in information-intensive industries and is currently looking for the next turnaround or growth company in the San Francisco Bay area. In 1980, he felt that the department ("in one small building, with no undergraduate classrooms, can you believe it?!") did not offer a strong sense of community for undergraduates, and he saw ACM as an opportunity to bring graduate *and* undergraduate students together. As president, Wise had three goals: "One was to build a departmental and student reputation, like the student chapter of IEEE, perhaps with a little rivalry with the electrical engineering department. The second was to provide a forum for interesting academic pursuits, such as having demonstrations at meetings. The third was to serve as a social organization and build camaraderie." The chapter produced t-shirts, demonstrations, EOH entries, and many good parties. "Through the dedication of many classmates, a core of then-students, and present-day business leaders began the rejuvenation of a growing student organization," he said.

Newenka Du Mont, BS '83 agreed. "ACM was mostly grad students," she said. "Andy Wise stood up during a Dave Liu class and implored undergrad students to show up for the ACM officer election. About 20 of us turned up, paid the \$3

to become members, and elected Andy as president. We essentially took it over. In a year, it became *the* undergraduate society for CS students." Du Mont married fellow ACM member Yannis Arvanitis, BS CompE '83.

**Larry Newman**, BS '84, works on switching systems as a member of the technical staff at Lucent Technologies in Naperville. He recalled the programming contest that ACM sponsored. "We sent out mail to every high school and elementary school in the state. Kids would send in programs in any language on anything they wanted. We had a



*Allan Tuchmann, BS '76, MS '91, is now senior research programmer for CCSO and president of the Champaign Stamp Society. His wife, Patricia (Gross) Tuchman, BS Math/CS '75, MS '78, is an analyst for AISS. CCSO is Computing and Communications Services Office, and AISS is Administrative Systems and Services, both on campus.*

committee that chose the winners and the department treated them all to a campus visit with a banquet and prizes." ACM was more of a service organization in those days, he noted. Newman keeps in touch with fellow classmates Jim O'Grady, BS '84, and Steve Coffman, BS '84.

**John Tullis**, BA IPS '86, MS '88, is director of the Chicago SAP Solution Center for Anderson Consulting. Tullis was the person who came up with the name *Banks of the Boneyard* for the ACM newsletter. (If you don't remember the Boneyard creek, you've been away from campus for

too long!) During his chairmanship, ACM made its first video. "We even shot a couple of TV commercials for the local station cable feed to ESPN and CNN." There were two 30-second commercials that Tullis remembered. One had a "Come party with ACM" theme, and the other was done in *Miami Vice* style and featured ACM treasurer Tony Alonzo demanding ACM membership money from viewers. During this time, there was a big push to expand the organization. Circulation of the newsletter went from twice a year to six times a year. Pizza became a regular feature of the ACM monthly meetings, and attendance quickly increased.

Tullis described the expansion of ACM's meeting space, which at that time was a tiny office in a rickety old house on Stoughton street. He and Jim Dobyms, BS '90, entered a locked stairwell in the house to discover an empty, dust-filled attic. Possessed, they vacuumed, mopped, and painted, and then drove around the neighborhood and scoured the back alleys for discarded couches and chairs. They even scrounged a refrigerator. The new meeting place gave ACM room for special interest groups to meet. The first local SIG was for Unix Users and C Programmers (UUCP), and soon there were six SIGs. The ACM career fair and resume book were also born at that time.

**Chris Ravencroft**, BS Math/CS '87, is senior systems engineer for Parian Development Group, a Chicago consulting firm which specializes in Windows development. John had several favorite ACM memories. One involved a 7th grader who won the ACM Programming Contest for a program he wrote that analyzed and graphed data from cookware testing



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instruments (the boy's father was an engineer for Revere Ware). During the awards dinner, the boy had become so engrossed in a discussion with Professor Sylvian Ray about chip design, that they could barely get his attention.

Ravencroft recalled an EOH project that Larry Newman, BS'84, and Phil Goldberg, BS Math/CS'88, worked on involving an interface between a Juno synthesizer and a Radio Shack TRS-80. Goldberg had written a program on the VAX in C that, given a random seed, determined the next logical note to play. This was an attempt at a sort of inference engine/AI program that wrote its own music. Everything went fine until the day of EOH judging. The music was shockingly horrible, to the dismay and puzzlement of the EOH team. Apparently, a chip had been installed backwards so that the TRS-80 didn't even come close to playing the notes it was supposed to!

Ravencroft's tenure represented another growth surge for ACM. "We increased membership from under 300 to over 600 from August 1984 to June 1986 and spent our money wisely on beer, pizza, donuts for ACM meetings, and job fairs. We also showed countless movies and earned extra cash for ACM that way too."

**Jim Dobyms**, BS'90, is a network architect for Andersen Consulting in St. Petersburg, Florida. Like John Tullis, he vividly remembers renovating the ACM attic space: "Eighty or 90 hours and 20 bags of soot and trash." When Tullis went from being *Banks* editor to president, Dobyms took over *Banks*. He expanded it to 16 pages and increased distribution by setting up stands all over the engi-

neering campus to distribute over 1,500 copies per issue, twice a month. In the mid-1980s the department underwent explosive growth. Undergraduate enrollment spiraled from 600 to 1,500, and demand for the *Banks* increased. Dobyms switched *Banks* production from troff on a VAX to PageMaker on a Mac, which is how *Banks* is produced today.

**Bob Camp**, BS'88, MS'89, is with Lucent Technologies in Naperville,

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and recalled good times in the falling-apart, old house. That house, next to Uni High, has since been replaced by a parking lot.

**Rich Bloch**, AB Rhetoric'89, despite the degree name is really a CS guy. His degree, he explained, is basically a Math/CS degree without the math. After five years with Microsoft, working on Windows and PC versions of Word, he started his own consulting company called Business Learning and Development, in

Bellevue, Washington. (Incidentally, Bloch is temporarily back at Microsoft working on a contract for Flight Simulator, written by ECE graduate Bruce Artwick, BS'75, MS'76.) During his ACM days at Illinois, Bloch remembers putting together a Macintosh lab for ACM use. This was during the time when there was only one other open Mac lab on campus. They were able to do this thanks to the hotly debated and newly implemented student computer fee. Bloch clearly recalls the destruction of the old house where ACM held its attic meetings. In fact, Bloch rescued one of the upstairs tables from the wreckage, refinished it, and it's now the coffee table in his family room.

**Heeren Pathak**, BS'90, is on the development staff of Workgroup Technology Corp. in Lexington, Massachusetts, a product data management software company that recently went public. He was responsible for development of their Macintosh client. During his ACM tenure, "change" was the theme. Not only was the group in a transitional office space during DCL construction, but ACM also restructured its operations and cash flow, and its

annual Career Fair was taken over by the College of Engineering. "Probably the most satisfying part of ACM," said Pathak, "was the diversity of our membership. Our membership and the executive council literally represented every college in the university. This diversity was wonderful since it made me feel that we were not only meeting the needs of the computer literate, but we were also providing something useful for the larger segment of computer users."

**John Quinn**, BS'91, is a software engineer working on a digital cross connect system for Tellabs in Lisle, Illinois. What he remembers most about ACM was the move to the new DCL addition. "We had more visitors on the first day of the semester in DCL than we had the whole previous year! It was great being closer to the facility and other resources as well as being able to move general meetings from Altgeld to DCL."

**Alex Bratton**, BS ECE'93, is technical manager with BALR Corp., an open systems consulting firm in Oakbrook, Illinois. Bratton has fond memories of ACM canoe trips to Turkey Run State Park. He also has some rather unpleasant recollections. One involved a falling out with the SORF (Student Organization Resource Fee) organization when they cut ACM's allotment of funds, which resulted in an ACM t-shirt saying "Not Paid for by SORF." Under Bratton's leadership, ACM became more involved in campus politics with representation on the SORF board and on the Vice Chancellor's Computer Fund Advisory Committee. ACM members wanted a say in the direction computing was taking on campus. Michelle Culp, BS Finance'93, was chair of SigBiz, one of the four new SIGs that were formed during that time, and she and Bratton were eventually married. ACM started asking around for funding and new hardware, starting with a donation from the CS department of a MacIIsi and laser printer, and later two 486 PCs. Bratton put his heart into his SigSoft project, an ambitious computer gaming environment he worked on with Eric Johnson, BS'93, called Realms of Darkness—an effort he continues to this day.

**Mike Stangel**, BS ECE'93, is a systems analyst in the Internet

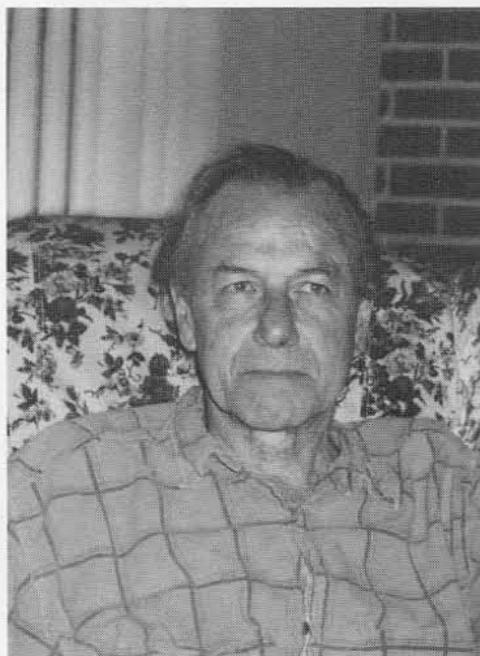
Services Group of Eli Lilly and Company in Indianapolis. He recalls the inception of the koosh mascot, and the koosh ball attacks that followed—a tradition started by Todd Biske, BS'91, MS'94, and Jeff Autor, BS ECE'91, in SigMicro. Stangel also recounted the dedication of the ACM team members for EOH'93. "There were a number of big projects in the works, and the setup was enormous—I believe a total of over 20 micros were involved, graciously lent to us by CCSO. A team of about fifteen of us picked up the machines, transported them to DCL, got everything set up, and then spent the night decorating DCL, plugging in IP addresses, installing software, even playing a few games. I'm not at liberty to say how it was done, but I tip my hat to the brave individual who got the big ACM banner strung across an I-beam 20 feet high! Not only did the team spend the whole night, but they were cleaned up and ready to present by 9 am the next morning."

**Mike Duff**, BS'94, is a consultant with BALR Corp., and works with Windows and Delphi. "What I tell

people," he said, "is that the most useful knowledge I've taken to the workplace is my work on ACM projects and in the senior projects course." Both gave him the opportunity to work in teams, schedule time appropriately, and speak to groups, things which he now does routinely. Duff currently assists Ralph Johnson, who teaches the senior projects course, by coming to campus and speaking to students about his own project and work experiences.

**Alan Braverman**, BS'95, is a member of the technical staff at Silicon Graphics Inc. When he joined ACM in 1992, he said, there was a movement among Mac programmers to get PC programmers to "convert." People like Jon Mittelhauser, BS'92, MS'94, and Chris Wilson, BS'92, were in the PC camp, and Alex Bratton and Eric Johnson, BS'93, were in the Macintosh camp. When Braverman left campus, in 1995, the war had shifted to become the UNIX/X camp versus the PC/Mac camp.

Braverman credits his involvement with ACM and Eric Johnson for helping him land a student job at NCSA. Braverman then encouraged



Professor Sylvian Ray stepped into the role of faculty adviser for ACM in the early 1980s. Enrollment was dizzyingly high in those days with about 1,500 CS undergrads, so there was a lot of raw material to tap. "My purpose," Ray explained, "was merely to try to guarantee that they got good interaction with the department administration. I tried to facilitate continuity from one year to the next and to keep the momentum going, with each 'administration' building on the previous one." Mark Tebbe, BS'83, credits Ray for ACM's success. "We gave Ray our first EOH plaque [for CS's first EOH award, for the "History of Computers at U of I" exhibit] because he was such an inspiration for us,"

Tebbe said. "He was insightful. He was the one who gave us the framework. We wouldn't have had that exhibit if it wasn't for Dr. Ray." Ray serves as faculty adviser to ACM to this day.

fellow student Ed Burns, BS'95, to join him there. Later on, Burns was to encourage Braverman to join him at SGI. Burns said, "The synergistic hacker culture in the ACM office was a hotbed of innovation and experimentation. Everyone was always on the bleeding edge, installing the latest Linux, tweaking shell scripts, twiddling config files. There's a direct line from my involvement in ACM to my current job at SGI." This is just one of the many examples of the power of the Illinois ACM network!

**Jonathan Stark**, BS'96, is the current ACM president, a CS major who will soon be graduating and moving on to the dreaded real world. "I've really been amazed with the growth of ACM in the few years that I've been here," he said. "In the past four years, ACM's computing power has grown from a couple Mac Pluses and a couple of PCs to a room full of powerful workstations. I've seen entire CS departments at other schools with less computing power than we have in our ACM office alone. (Someday someone will read this and laugh at the insignificant resources that I'm so impressed by today.) Our ties with the CS department and with the corporate world have grown as well. But growth hasn't been limited to resources. The number of SIGs has grown from 12 to 15, the number of active members has dramatically increased, and the total number of members in ACM has grown by at least ten percent in the last four years. It's been exciting to be a part of these changes." ■

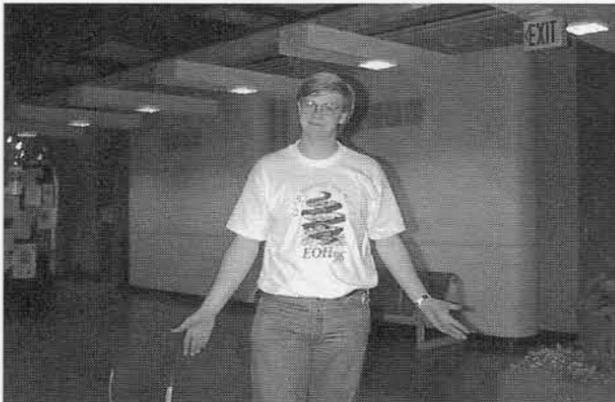
We were unable to track down Terry Shepherd, late 1960s, and Stephen Chase, BS Math'65, MS Math'67, PhD'70, both past presidents of ACM. If anyone knows where these people are, please let us know. We are sad to note that Marty Kaplan, BS Math'69, died in 1992.

<http://www.acm.uiuc.edu>



Former ACM prez Andy Wise gives some advice to Mark Hermsen, BS'91, now product marketing engineer for Integrated Device Technology, in Santa Clara, California. Wise and Hermsen attended the annual Illini Reception for CS and ECE grads, on November 8 in San Jose. This was the third such gathering held during the ICCAD conference in Silicon Valley every November.

## A glimpse at ACM today at Conference'95 and EOH'96



EOH Chair and Midwest ACM Chapter Conference Chair David Morgan, sporting this year's EOH t-shirt. The conference, nicknamed Conference'95, was held on campus in November and included keynote speaker Steve Wozniak, talks and panel discussions by industry and local personalities, and a programming contest. Over 150 attended.



Greg Brauer with his 3rd place winning entry in the Jerry Sanders Design Contest, held during EOH'96. The finale was a melee of robots until one was left standing. The contest is named after Jerry Sanders, BS EE'58, founder of Advanced Micro Devices.



Steve Wozniak, keynote speaker for Conference'95, with an ACM@UIUC coffee mug: "The mug will get used. It will be put around the office or around the house, and each time I use it I'll remember where it came from and the great people I met there."



David Pankros demonstrates Sounds and Visions, the CS central exhibit for EOH'96—a multimedia concert.

# ACM instigator Mark Tebbe heads Lante Corp.



Mark Tebbe, BS'83, led one of ACM's historical renaissances and continues to play a big role in it today. As president of Lante Corporation, he is one of the chapter's most generous contributors and popular speakers.

Alan Braverman, BS'95, remembered one time when Tebbe came back to give a presentation at an

ACM general meeting. According to Braverman, when Tebbe came into the packed house, he asked the audience, "What do you want to talk about?" To match student interest, Tebbe asked his audience to come up with any questions—of any kind—that they might have, which he wrote as list on the white board behind him. Then, one by one he eloquently addressed each topic, some as loaded as "workstations versus PCs in industry." Though the meeting was scheduled to be an hour long, Braverman and others inspired Tebbe to continue for another two, until every topic on the white board was addressed. "It was the best ACM presentation I've ever seen," exclaimed Braverman.

Tebbe, a native of Sawyerville, Illinois, knew what he liked: computers and interacting with people. He was a computer hobbyist for about five years prior to college, so he already knew "computers were cool." But he oscillated between electrical engineering and CS both before and after arriving on campus in 1979.

A friend introduced Tebbe early on to PLATO creator Don Bitzer who referred him to Bruce Sherwood, assistant director of the Computer-Based Education Research Lab (CERL). Sherwood, a linguist, was conducting research on computers and speech, and under his guidance, Tebbe got the opportunity to put together an interface between PLATO and the Votrex chip, which had just come out. He became "a PLATO junkie with a mission." Tebbe wrote the software for the project and a graduate student did the hardware. The project goal was to get the computer to speak whatever was written on the PLATO screen. The program incorporated phonetic assumptions built upon linguistic theory and the generation of a look-up dictionary. The project became an EOH exhibit for the electrical engineering department. Tebbe became entrenched in software and converted to a CS major again, this time for good.

After his PLATO EOH project, Tebbe started thinking of the next one. "But CS was *not* allowed to compete in EOH at that time," Tebbe said. At this time, Larry Zirbel, BS'83, Tebbe's roommate, Patty Harris, BS Math/CS'82, Zirbel's girlfriend, and Patti Roberts, BS'83, who is now Tebbe's wife, joined Tebbe in his quest for CS participation in EOH. The project he had in mind was called "History of Computers at U of I." The dean of engineering told them that they could be in EOH if they could get sponsorship from three professors. Tebbe enlisted the sponsorship Dave Liu (Mark's adviser), Professor Sylvian Ray (Patti's adviser), and Mike Faiman (their then instructor). The EOH project team was a rudimentary form of what ACM was to soon become. To pull this off, they needed more people and some old computer stuff. They rooted around the basement storerooms of DCL and even Sylvian Ray's home basement, and they enlisted the help of other professors who had been around for a while. Years later, during a visit to the Computer Museum in Boston, Mark and Patti recognized some of the pieces from that EOH exhibit, including one piece (a board of some sort, Patti recalls) that was taped together because it was dropped during EOH. Apparently, the museum used this taped piece to illustrate the ingenuity and resourcefulness of the early computer pioneers.

To get the ball rolling, and to be able to officially reserve university rooms for meetings, Professor Ray suggested that perhaps they could do something under the guise of the existing ACM charter. "Elections would be dumb with just the few of us," explained Tebbe. "We wanted more people to come play with us." So, they recruited friends, and attracted new members by holding parties (like renting out T-Bird's for buckets of beer) and coed hayrides. In addition to providing opportunities for social interaction and rekindling department spirit, the group started a homework club. Their EOH project took second place, and there were now 40 people involved. "All of a sudden, however," Tebbe said, "the national ACM found out about our chapter through EOH and discovered that we were not listed in the national ACM list. We were a rogue chapter!" They registered as an official chapter of ACM, and the group began to devote itself to more serious matters like internships, jobs, and guest speakers.

The guest speaker list of the ACM expanded to bring more interesting speakers to campus. "The running joke was that when you went to a department sponsored talk, the first thing they did was put up an integral sign," said Tebbe. "My reaction was, 'My mind is deviating; I'm outta here!' We sat in the back row and knew every back door out of 115 DCL and 100 Met & Mining." Tebbe held all kinds of computer jobs on campus which sometimes

forced him to miss classes as well. Patti Tebbe recalls constantly having to lend him her notes.

ACM's next goal was to attend the ACM programming contest and job fair in Indianapolis. This would require 100 paid members, however, and the student chapter was not collecting dues at that point. To make things simple, they decided to offer life memberships for \$3. The membership campaign worked, and the Indianapolis trip was a great success. As a direct result of the Indianapolis job fair, Tebbe landed a position at Anderson Consulting, Roberts went to Bell Labs, and Zirbel and Harris went to IBM.

ACM had conducted several covert operations. Among them was the recharger, a computer program which would replenish Cyber accounts that were running low. There was also a group of people within ACM called the Survivor's Club. In the spirit of friendly competition and bragging rights, the goal was to be the one who could wait until the longest to complete a machine problem. The rule was that the MP had to be done before the deadline, but whoever's start time was latest won. Everyone would put up a dollar and the winner would collect and take everyone out for beer.

In spring of 1982, there was a huge thrust to get people to see the EOH exhibits in DCL, which at the time was slightly off the beaten track of most of the EOH exhibits. The brightest, gaudiest colored paper was

found, along with a key to reset the copy machine, and ACM members plastered North of Green with more than 2,500 fliers advertising its EOH exhibits. The effort resulted in the best attendance yet, as well as a visit to the University Disciplinary Board.

In 1982, ACM was really getting organized. Elections were held, Andrew Wise became president, committees were formed, the newsletter got going, and the entire group became more structured and focused. A program was started to allow high school seniors to sit in a sample class and to get them to think about attending the university.

Tebbe kept his job at Andersen for several years in the mini/micro group. When Andersen tried to steer him toward a mini or mainframe project, Tebbe left. "I was way into microcomputers by that time." Lante, where he is now, was originally Tebbe and Associates. The "un-PCness" of that acronym forced him to rename it. Partnering up with a former colleague at Andersen, Andy Langer, Tebbe's firm became Langer, Tebbe and Associates. When Langer returned to the Big 8, it became Lante. Patti Tebbe went to work for Commonwealth Edison after graduation, after having held internships at IBM-Rochester and Bell Labs-Naperville. Now she is home with two young children and is president of the American Hyperlexia Association. ■

<http://www.lante.com>

<http://www.hyperlexia.org>

## Faculty notes

**Edward M. Reingold** was named ACM Fellow. The ACM Fellows program was established in 1993 to recognize and honor outstanding ACM members for their achievements in computer science and information technology and for their significant contributions to the mission of the ACM. For the last few years Reingold's research has focused on the use of Kraft's inequality to obtain algorithms and lower bounds for various search problems. He has just written, together with **Sam Kamin**, an introductory C++ text called *Programming with class: A C++ Introduction to Computer Science* (McGraw-Hill, 1996), which Kamin, **Denny Mickunas**, and he are translating into an introductory Java text. Reingold and **Nachum Dershowitz** are just completing a book *Calendrical Calculations* (Cambridge University Press, 1997).

**Sharad Mehrotra**, **Caroline Hayes** and **Jerry DeJong** are part of a team which was awarded a grant, in January 1996, from the Army Research Laboratory for \$25 M over the next five years. This grant is a multi-disciplinary, multi-university, multi-industry endeavor involving industrial labs at Syntronics, Rockwell and the Microelectronics Center of North Carolina, North Carolina Agricultural and Technical State University, and UIUC. These organizations form the Advanced Displays & Interactive Displays Consortium. This effort will explore both technical and psychological issues in human-computer interaction. The specific goal of the work is to develop ways to filter immense amounts of detailed, dynamic information and to present it on appropriate portable display equipment so that decision-makers can

*continued on p. 30*

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# Classnotes

**Don Bourdage**, PhD'73, works for IBM in Vienna, Austria, and is currently involved with a large insurance industry reengineering project with a European customer, working with workflow and Smalltalk. Don is interested in hearing from other alums in his neck of the woods. [bourdage@vnet.ibm.com](mailto:bourdage@vnet.ibm.com)

**Steve Chen**, PhD'75, is using Intel Pentium chips in a high-performance server sold by Chen Systems Corp., a privately held company set up in 1993.

**Jeff Glickman**, BS'82, is president of a forensic imaging company he founded called Photek, in Champaign, IL. Using proprietary software with advanced image enhancement and recognition capabilities, the company is involved in projects ranging from solving criminal cases to the mystery of Amelia Earhart's disappearance. <http://prairienet/business/glickman>

**Ken Gaebler**, BS'85, is VP of Marketing and Sales for VREAM Inc. in Chicago. VREAM stands for Virtual Reality Dream, and the company produces state-of-the-art virtual reality software, including WIRL VR Browser for the Web and VRCreator. Ken was on campus last fall to speak to CS 100 students. <http://www.vream.com>

**Rob Ekblaw**, BS'86, is head of Breakthrough Consulting Services, in Poughkeepsie, NY, a small company specializing in customized business software applications. He was on campus for Homecoming last November.

**Kimberly A. Griffen**, BS'87, was married in June to William L. Binegar. She is product manager for Rockwell in Anaheim, CA.

**Doreen Schoeder**, BS'87, was married in September to Scott Damge. She is a systems engineer for Tellabs in Lisle.

**Steven Ashby**, PhD'88, and Maria Elizabeth Ong are pleased to announce the birth of their son, Michael Hunter Ong Ashby, on December 21, 1995. Steven was recently named Director of the Center for Applied Scientific Computing at Lawrence Livermore National Laboratory.

**Kenneth G. Beck II**, BS'89, is a Navy Lieutenant in Norfolk, VA. Last November, he completed a six-month deployment aboard the guided missile destroyer USS Arleigh Burke, which included duty in the Adriatic Sea near Bosnia.

**Paul D'Amato**, BS'92, owns nine Supercuts franchises in western Michigan. He is married to **Sheryl (Rak) D'Amato**, BS Math/CS'90, who is a software engineer at Motorola in Schaumburg. They live in Chicago.

**Christopher Jasek**, BS'92, MS IE'95, was married in July to Denise M. Berch, AM EdPsych'94. He works for IBM in Charlotte, NC.

**Erik Wesselak**, BS'92, was technical director for an IMAX film called *Cosmic Voyage* which will premier at the Smithsonian in April. He did this work while working for NCSA, using a tool called Virtual Director, a program for recording camera motion in 3-D space. The program is used in a virtual environment, in this case the CAVE at the Beckman Institute, and was developed by NCSA research programmer Robert Patterson, brother of the computer science department's new Director of Budget and Resource Planning, Pat

Patterson, BS Accounting'80. Pat replaced Dick Canaday in January.

**Nayeem Islam**, PhD'94, has a new book out called *Distributed Objects: Methodologies for Customizing Operating Systems* (IEEE Computer Society, 1996).

**Karen Kay Moore**, BS Stat/CS'94, was married in November to Gene McCall Palagi, BS ME'93. She is a computer analyst for Andersen Consulting in Chicago.

**Ronald P. Smith**, BS'94, and **Caroline J. Scott**, BS'95, were married in September. Both are software engineers at Motorola and live in Arlington Heights, IL. ■

## *Got any news? Let us know!*

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## Faculty notes, *continued from page 28*

understand and use the information quickly, comfortably, and effectively.

**Simon Kaplan** left the university in July 1995 to accept an appointment on the faculty of the computer science department at the University of Queensland, in Brisbane, Australia.

**Andrew Chien** was a recipient of the 1996 Senior Xerox Award for Faculty Research. He is currently developing high performance networks which will enable collections of high performance workstations and even personal computers to function as a supercomputer. ■

University of Illinois  
Computer Science  
Alumni News

Editor: Judy Tolliver

Computer Science Alumni News deadlines for submissions: March 1 for the spring issue, October 1 for the winter issue. Your input is needed and welcome!

All ideas expressed in the CS Alumni News are those of the authors or editor and do not necessarily reflect the official position of either the alumni or the Department of Computer Science.

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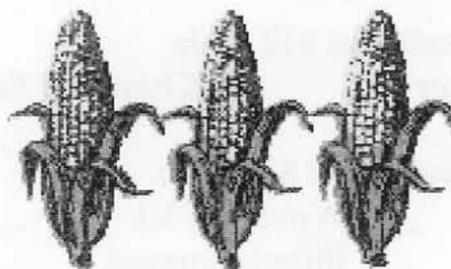
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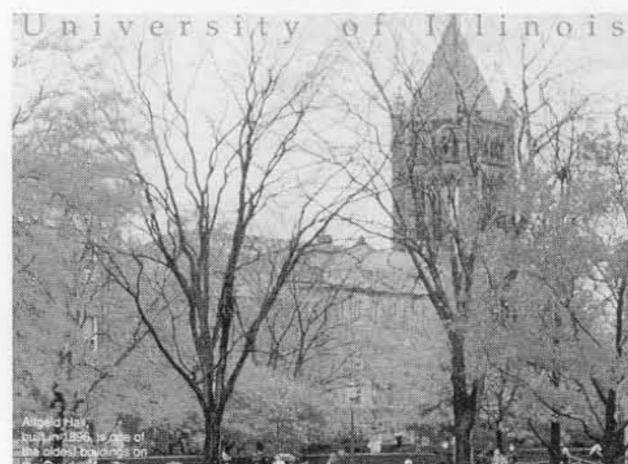
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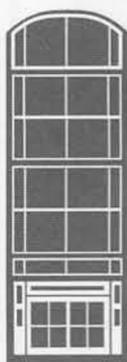
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