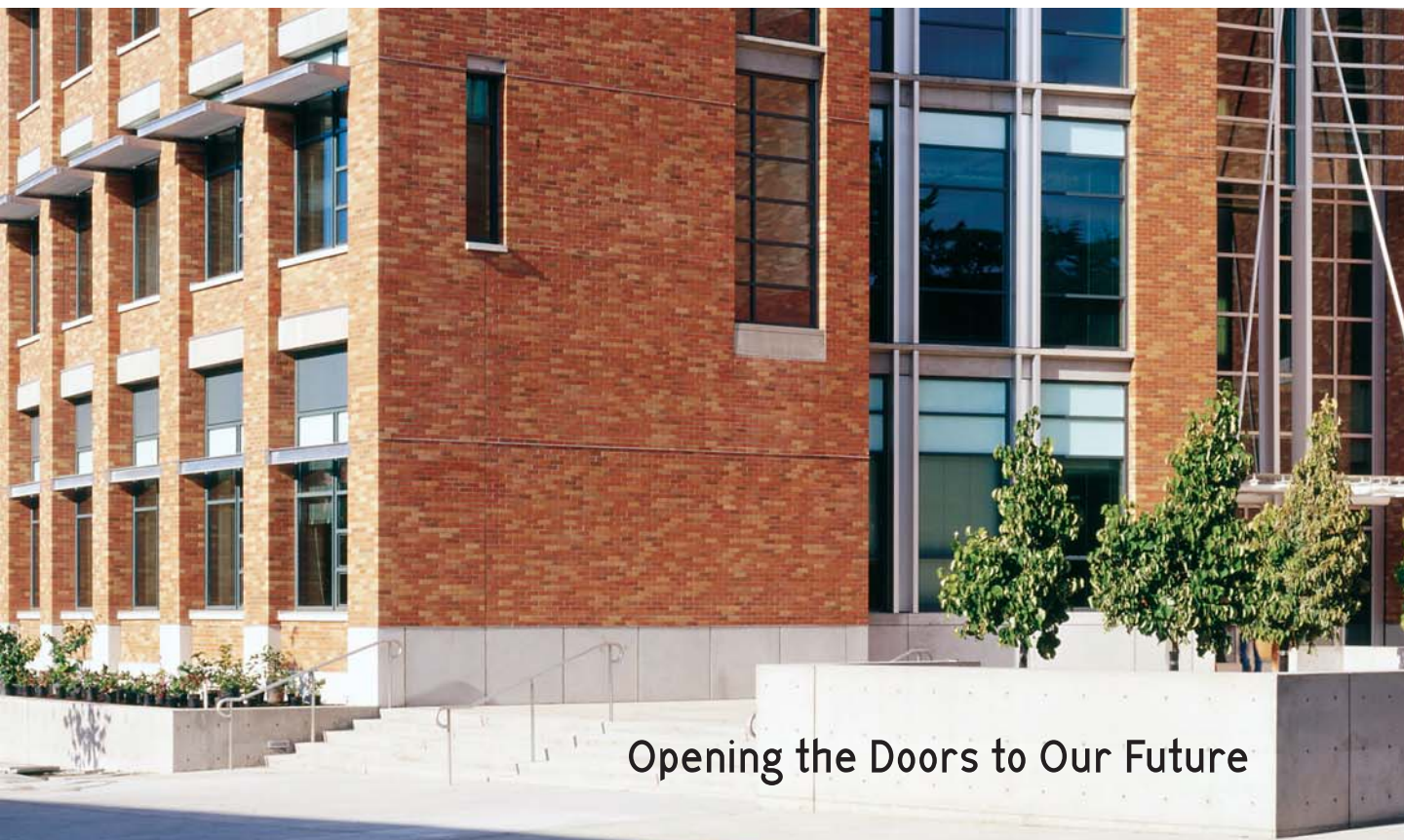




## **PAUL G. ALLEN CENTER** for Computer Science & Engineering

UNIVERSITY OF WASHINGTON



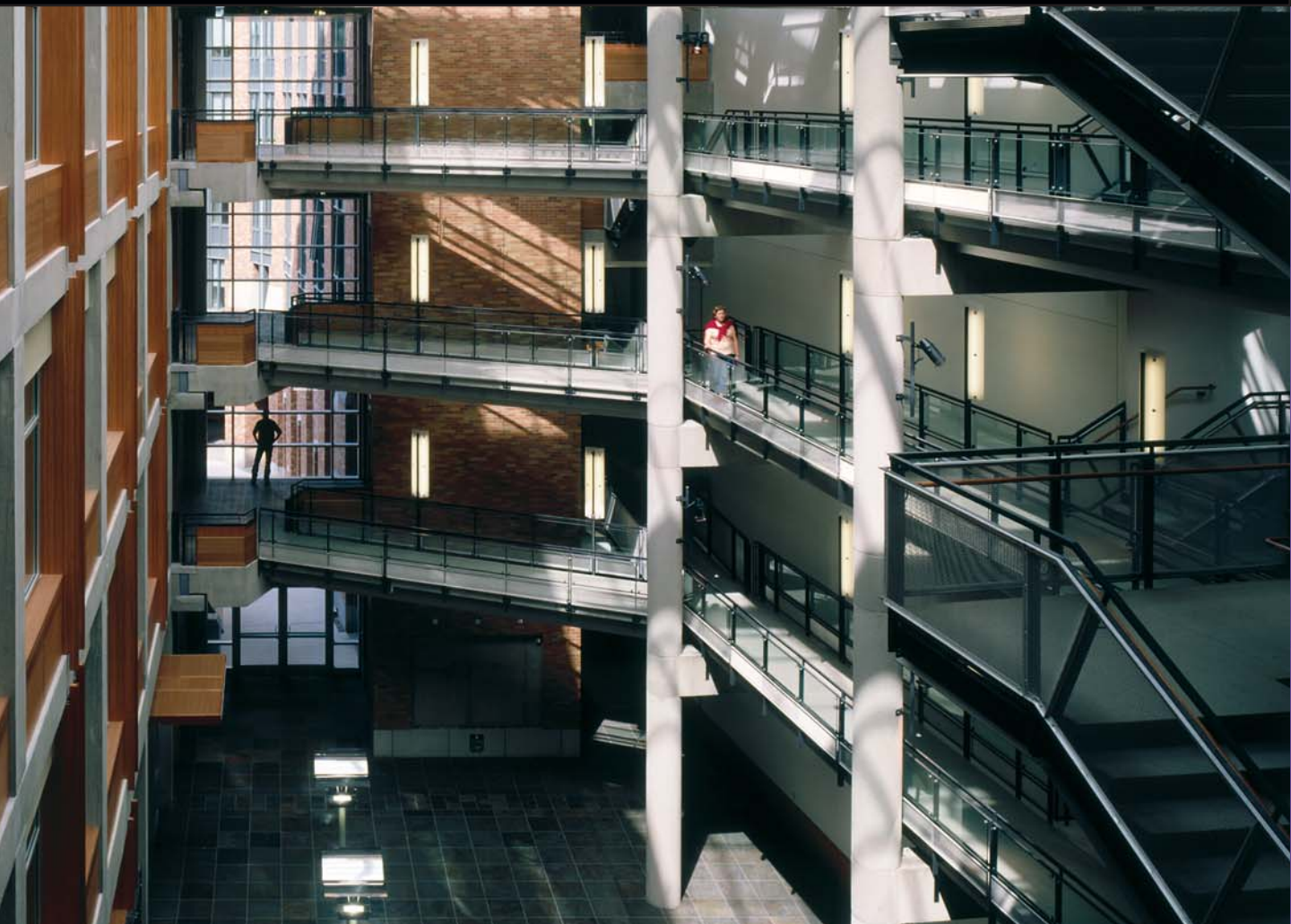
Opening the Doors to Our Future





**“Computer Science & Engineering at the University of Washington  
is an engine of opportunity and I want to ensure it’s an even more  
cutting-edge resource for the coming generation.”**

**PAUL G. ALLEN**





## The Doors Open!

When the doors to the Paul G. Allen Center for Computer Science & Engineering opened in autumn 2003, the event signaled the beginning of a new era for this extraordinary University of Washington program.

With outstanding bachelors degree tracks in computer science and computer engineering, a part-time masters program serving the region's computing professionals, and a full-time graduate program offering diverse areas of research specialization, UW Computer Science & Engineering has consistently ranked among the top ten in its field at both the undergraduate and graduate levels. Now, the Allen Center provides dramatic opportunities that will launch CSE on an even higher trajectory.

Although a high-tech building, the Allen Center was from its inception conceived as a “people place” for a unit that knows its central mission is to produce superbly educated graduates. Every element of the building was designed to stimulate interaction among students, faculty, staff, and visitors. Interaction among creative people is the catalyst for great ideas.

The Allen Center is situated at the heart of one of the nation's leading research universities. For more than 25 years, the University of Washington has annually ranked among the top five institutions in federal research funding and it ranks among the top ten in measures related to technology transfer. The UW is the premier institution of higher education in the Pacific Northwest. Beyond its famed natural beauty, the region is recognized worldwide as a technology center. Washington is home to more than 6,000 software and software-related businesses with a combined \$35 billion in annual revenues. Other regional strengths include biotechnology, biomedical electronics, and aerospace.

CSE at the University of Washington is a key source of the people and ideas that are fueling technological innovation and economic growth. Education, research, outreach, and entrepreneurship are interconnected aspects of the CSE mission, and all are converging in exciting ways in the stimulating environment of the Allen Center.







## A Remarkable Public-Private Partnership

The Paul G. Allen Center for Computer Science & Engineering is the new home for a unit that recently celebrated its thirty-fifth anniversary. Visionary leadership, past and present, has built a program with a constellation of honors and awards that can only be described as stellar, with a tremendous reputation for graduating top students at all degree levels, and with a dizzying track record of spinning out companies and technologies into practice.

Planning for the Allen Center began in 1999 with the goal of creating a facility to meet faculty and student needs for twenty-first century teaching and research. The capital campaign, launched in spring 2000, culminated in summer 2003 with completion of the \$72-million building on time and on budget.

“The Allen Center is the result of a remarkable public-private partnership,” notes David Notkin, Bradley Professor and chair of UW Computer Science &

Engineering. University and state funding provided a base of \$30 million toward the new facility. The balance — \$42 million — was private funding: leadership gifts from Microsoft co-founder Paul G. Allen, from the Bill & Melinda Gates Foundation, and from the Microsoft Corporation, joined by 250 other donors.

“How gratifying it is to have received this support from alumni, the venture community, companies, and people in the region’s technology sector who want to invest in us,” says Ed Lazowska, Bill & Melinda Gates Chair and faculty spearhead for the fundraising campaign. “This project captured their imaginations.”

“The technology community stepped up and said, ‘This project is important. We understand it the best, we have the most at stake, and we feel we ought to support it.’ It’s wonderful to see the private community working with a great public institution to accomplish an important goal.”

TOM ALBERG, CSE CAMPAIGN CO-CHAIR  
MADRONA VENTURE GROUP



JEREMY JAECH



TOM ALBERG



DAVID NOTKIN

“UW CSE is a world-class program and now we have a facility to match its quality. I’m an alumnus of the department, and I’ve built two Seattle software companies that are based in part on the education I received there, so part of my involvement had to do with giving back to the University.”

JEREMY JAECH, CSE CAMPAIGN CO-CHAIR  
CSE ALUMNUS AND CO-FOUNDER OF ALDUS AND VISIO



“CSE is a tremendous asset to the College of Engineering and the UW. Information technology is central to advancing knowledge in all engineering disciplines, and the entire College will benefit from the exciting collaborations that will occur in the Allen Center.”

DENICE D. DENTON, DEAN, UW COLLEGE OF ENGINEERING



## Inside the Allen Center

A soaring, light-infused, six-story atrium welcomes you to the Allen Center. With 85,000 square feet, the building nearly triples UW CSE's space and will accommodate expansions in faculty, students, and staff. It is truly a special space.

The Allen Center was designed from the outset to be a “people place.” “Our primary goal was to create a warm and welcoming work environment to facilitate teaching, research, and collaboration between faculty, students, staff, and visitors,” says Hank Levy, Microsoft Professor and faculty coordinator of the design and construction. “You can see the result in the building materials, the natural daylight provided by the atrium and the interior windows, and the open collaboration spaces scattered throughout the building.”

The building adds important new capabilities to CSE, particularly in expanding laboratory space. Faculty members in the Allen Center are intermixed — not clustered into subdisciplines — a tradition that has its roots in the earliest days of the program. Over the years

this approach has helped to foster cross-fertilization of ideas, nimbleness in moving into new areas of inquiry, and departmental camaraderie.

People interact at the many informal gathering spaces throughout the Allen Center. The building's main “cross-roads,” the 5,000-square-foot Microsoft Atrium, is a key architectural amenity, with a dramatic cantilevered grand stair. This versatile space is designed to accommodate large gatherings including conferences, receptions, and dinners.

An airy corner room on the top floor, the Bill & Melinda Gates Commons, features state-of-the-art audio-visual capabilities and is the site for faculty meetings, technical programs, and social events. The adjacent Alberg Terrace connects various meeting rooms on the east side of the building and provides sweeping views of Lake Washington and Mount Rainier.

The Allen Center is integrated with a recently completed building for the Department of Electrical Engineering through open sky bridges on four levels of the Microsoft Atrium. “This is one of the few places in the country where you'll find electrical engineering, computer science, and computer engineering in a single facility,” says Ed Lazowska. “It should prove to be a real competitive advantage.”

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ED LAZOWSKA



HANK LEVY

# Pillars of CSE

Five retired faculty members are among those who stand out for their roles in guiding UW Computer Science & Engineering.

In the mid 1960s, Hellmut Golde, who joined the electrical engineering faculty in 1959, and Bob Ritchie, who arrived in 1962 as an assistant professor of mathematics, joined together to lead the creation of the graduate Computer Science Group — precursor of today's UW CSE. Golde spent his entire career at UW, retiring as professor emeritus in 1992. After 21 years at the UW, including chairing CSE through a period of dramatic growth in activity and visibility, Ritchie left the University to embark on a second career.

Jerre D. Noe was recruited to the UW from Stanford Research Institute in 1968 to serve as the first chair of the Computer Science Group. At SRI Noe had led the ERMA Project, which pioneered electronic banking. At the UW, he guided the Computer Science Group to departmental status, to the introduction of an undergraduate program, and to Sieg Hall — CSE's home for nearly 30 years prior to the move to the Allen Center. Noe retired as professor emeritus in 1989.

Jean-Loup Baer, newly-minted UCLA doctorate in hand, became CSE's first junior faculty member in 1969. Baer began his UW career in Roberts Hall, the former Mining Building and CSE's home prior to Sieg Hall. In a 1970 letter to the dean of the Graduate School, Baer described his Roberts Hall office as "a passageway between two doors, without windows, with a transparent pipe flushing water in front of my desk." Even today, each incoming graduate student class is welcomed to UW CSE at the "Pit Party" — a name carried forward from the days when the party was held in a facsimile mine pit in the basement of Roberts. Baer, a leading computer architect and chair of CSE from 1988 to 1993, retired as professor emeritus in 2003.

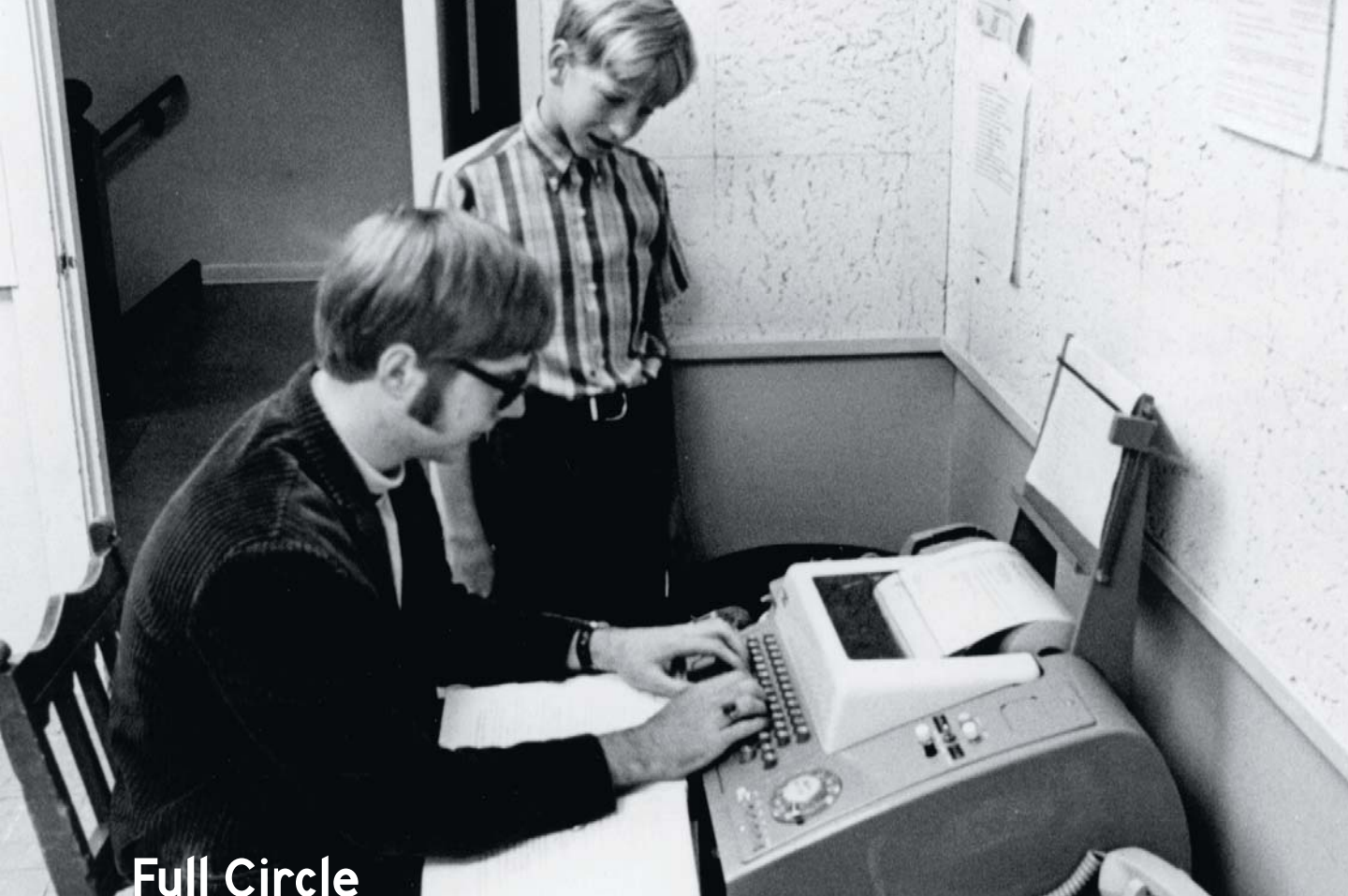
Alan Shaw joined UW's Computer Science Group in 1971 after earning his doctorate at Stanford and spending three years on the Cornell faculty. Shaw won national regard as a leader in computer graphics, operating systems, document systems, and real-time systems, retiring as professor emeritus in 2000.

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HELLMUT GOLDE, JEAN-LOUP BAER, ALAN SHAW, JERRE NOE; NOT PICTURED, BOB RITCHIE.





## Full Circle

PAUL ALLEN AND BILL GATES, LAKESIDE SCHOOL 1968

In announcing his \$14 million commitment to UW Computer Science & Engineering, Paul Allen referred to his friend and colleague Bill Gates and remarked that “We got a big part of our start in computer science through the University of Washington when we were still students at Lakeside School.”

In the late 1960s, the Lakeside School Mothers’ Club acquired a teletype terminal that Allen and Gates used to access computers at the Computer Center Corporation, a timesharing startup founded by University of Washington faculty and staff. Not content with mere teletype access, the two prodigies frequently gravitated to campus to “tinker around” on a PDP-10, a B5500, a CDC 6400, and an SDS Sigma 5. One day a professor came across the two youngsters working on a computer and asked, “What are you doing here?” When they explained, he said they could stay, “as long as you agree to help others.”

Allen and Gates could hardly have dreamed that their promise would manifest in a company that revolutionized the computer industry and in a superlative twenty-first century building for UW Computer Science & Engineering.

Gates and Allen co-founded Microsoft in 1975, and Allen served as the company’s chief technologist until leaving the company in 1983. He remains the company’s second largest shareholder and has gone on to create a wide range of business, technology, sports, entertainment, and telecommunications initiatives that change and improve the way that people live, learn, do business, and experience the world. Allen’s holdings span more than 50 companies ranging from Charter Communications, Digeo, and Vulcan Inc. to DreamWorks SKG, Oxygen, and the Seattle Seahawks. Named one of America’s top 15 philanthropists, Allen gives back to the community through the six Paul G. Allen Foundations, which provide millions of dollars of support to nonprofit organizations in the arts, health and human services, medical research, and technology in education.



PAUL G. ALLEN



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# In Motion

“Anytime you allow people to create in a particular medium rather than just observe, they get more involved,” says Professor Zoran Popović. Kids will create cartoons instead of just watching them, students will enliven their school reports, and animation will have untold applications in science, business, and higher education

In the Allen Center’s dedicated laboratory for motion capture studies, Popović and colleagues are working to bring this exciting medium to even novice computer users. One of the largest labs of its kind in the country, the MoCap lab will help accelerate progress in next-generation computer graphics, digital animation, and real-time motion capture.

For example, CSE research teams are creating motion libraries that can be mapped onto different characters or modified to fit the needs of a specific animation. They are also developing methods to model and control complex dynamic phenomena such as the movement of smoke, water, and cloth, and to represent the behavior of humans, animals, and birds. Popović, colleague Brian Curless and their students are collecting data on the

variability of human shape and motion to produce a high-fidelity representation of the human shape so as to create “synthetic” humans that look and move realistically.

The motion capture process extracts full three-dimensional character poses from a video stream from eight cameras in real time. With such systems, animators can use the entire body as a natural interface for describing motion for computer animation.

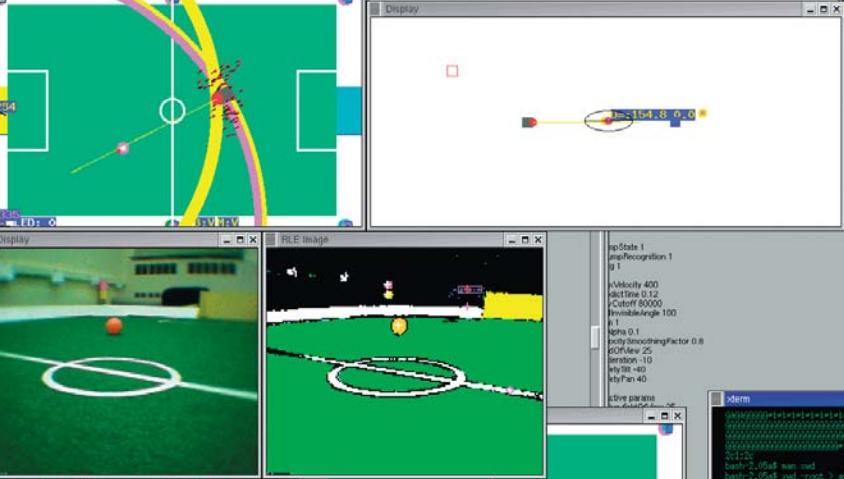
Popović, Curless, and colleagues Barbara Mones, David Salesin, Steve Seitz, and Linda Shapiro recently received a research instrumentation grant from the National Science Foundation to support graphics, vision, and animation research. The “Digital Eye” grant provides an array of high-speed motion capture equipment, laser scanning equipment for capturing three-dimensional shapes, a wide variety of digital cameras for capturing shape and conducting appearance analysis, a lighting control facility, and digital light projectors — exciting new work made possible by the Paul G. Allen Center for Computer Science & Engineering.

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**“Everyone with a PC should be able to use animation as a medium of expression to tell their stories, as easily and effectively as people now use text and static images.”**

PROFESSOR ZORAN POPOVIĆ





## The Dawgs Score!

If you visit the Paul G. Allen Center for Computer Science & Engineering, watch your step: you just may meet a fleet of Professor Dieter Fox's robots marching through the building. It's all part of Fox's goal to build intelligent systems in the form of autonomous mobile robots that make decisions on their own and that can interact with the environment, even in the face of uncertain or noisy sensor input.

An Allen Center lab houses a capstone design course in which Fox and his students have programmed a set of

Sony AIBO robot dogs to play soccer. The team competes in RoboCup, an international robotic soccer tournament that provides a research challenge in multi-robot coordination, dealing with dynamic, adversarial environments, and real-time decision making.

Fox and a team of four undergraduates and one graduate student finished in third place at the American Open 2003 and won three of five matches during RoboCup 2003 in Padova, Italy. Competing in the Four-Legged League, the UW Huskies lost only to host team Italy and





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to the eventual championship team from the University of New South Wales, Australia.

On another front, Fox's research group is developing large teams of robots capable of exploring, mapping, and monitoring their environment. The "Centibots Project" uses 80 ActivMedia Amigobot and 20 ActivMedia Pioneer 2 AT robots. The robots apply probabilistic techniques to combine their information and coordinate their activities.

"The Allen Center gives me a new testbed to install and evaluate novel technologies and will support my collabo-

rations with Intel Research Seattle on pervasive computing and intelligent systems," Fox says. "It's an exciting time to be here and to see how CSE will grow, not just in size and space, but in interactions with the community, in attracting even better students and faculty, and in accelerating our teaching and research. The Allen Center will make a huge difference."

# Probing the Neuron

Can a computer mimic Mother Nature? Professor Chris Diorio thinks so, but first scientists must discover the fundamental, still mysterious principles that govern how living organisms process information.

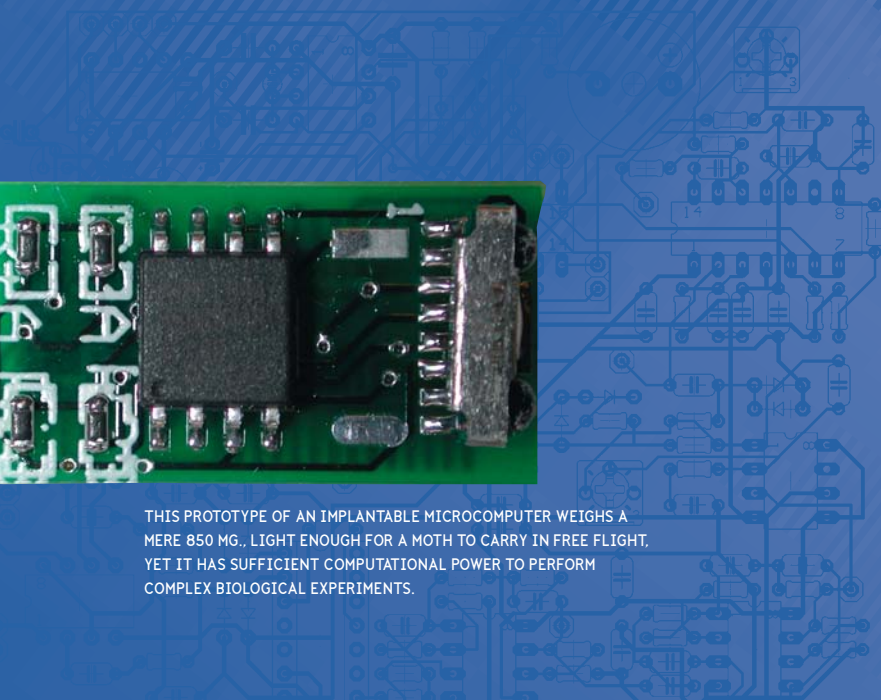
"We'd like to build learning chips modeled after biology — that's the ultimate goal," Diorio says. Today, Diorio is building tiny integrated circuits and printed circuit boards complete with microcontroller and all the components required to run algorithms — on a board only 1 cm square. Working with biologist Tom Daniel and other UW colleagues in the biological sciences and electrical engineering, he is interfacing these systems with two organisms, the hawk moth and the sea slug, to learn how their nerve cells function during activities such as flying or swimming. The idea is to implant these systems into or onto animals without hurting either the animal or the electronics. The moth is free to fly around a lab room or the sea slug to roam a watery environment while the systems record stimulus and response data.

"You can think of it as a miniaturized biology experiment tailored to understanding attributes of nerve tissue," says Diorio. "Biologists can conceive an experiment, write it in code, download it to the miniature computer, implant the computer on the animal, and have the computer run the experiment in real time while the animal is in its natural environment. These are the first steps to probe the behavior of a neuron."

Neurobiologists stand to gain a wealth of information about nervous system function that could have far-reaching implications for understanding behavior and learning, and in the medical arena, nervous system disorders. As a computer scientist, Diorio's vision is to build circuits that process information as might a human brain — "smart" machines that could revolutionize how we learn, work, conduct research, and manage all kinds of activities. "I believe there is nothing that is done in the nervous system that we cannot emulate with electronics, once we understand the basic processing principles," Diorio says.

In the Allen Center, the hardware laboratory is five times bigger than previously. Such expanded space, along with better equipment, opens new dimensions for probing the inner workings of the neuron and for building smart chips.

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THIS PROTOTYPE OF AN IMPLANTABLE MICROCOMPUTER WEIGHS A MERE 850 MG., LIGHT ENOUGH FOR A MOTH TO CARRY IN FREE FLIGHT, YET IT HAS SUFFICIENT COMPUTATIONAL POWER TO PERFORM COMPLEX BIOLOGICAL EXPERIMENTS.





(RIGHT) THE NUDIBRANCH *TRITONIA*  
*DIOMEDIA* STALKS ONE OF ITS  
FAVORITE MEALS, A SEA PEN.

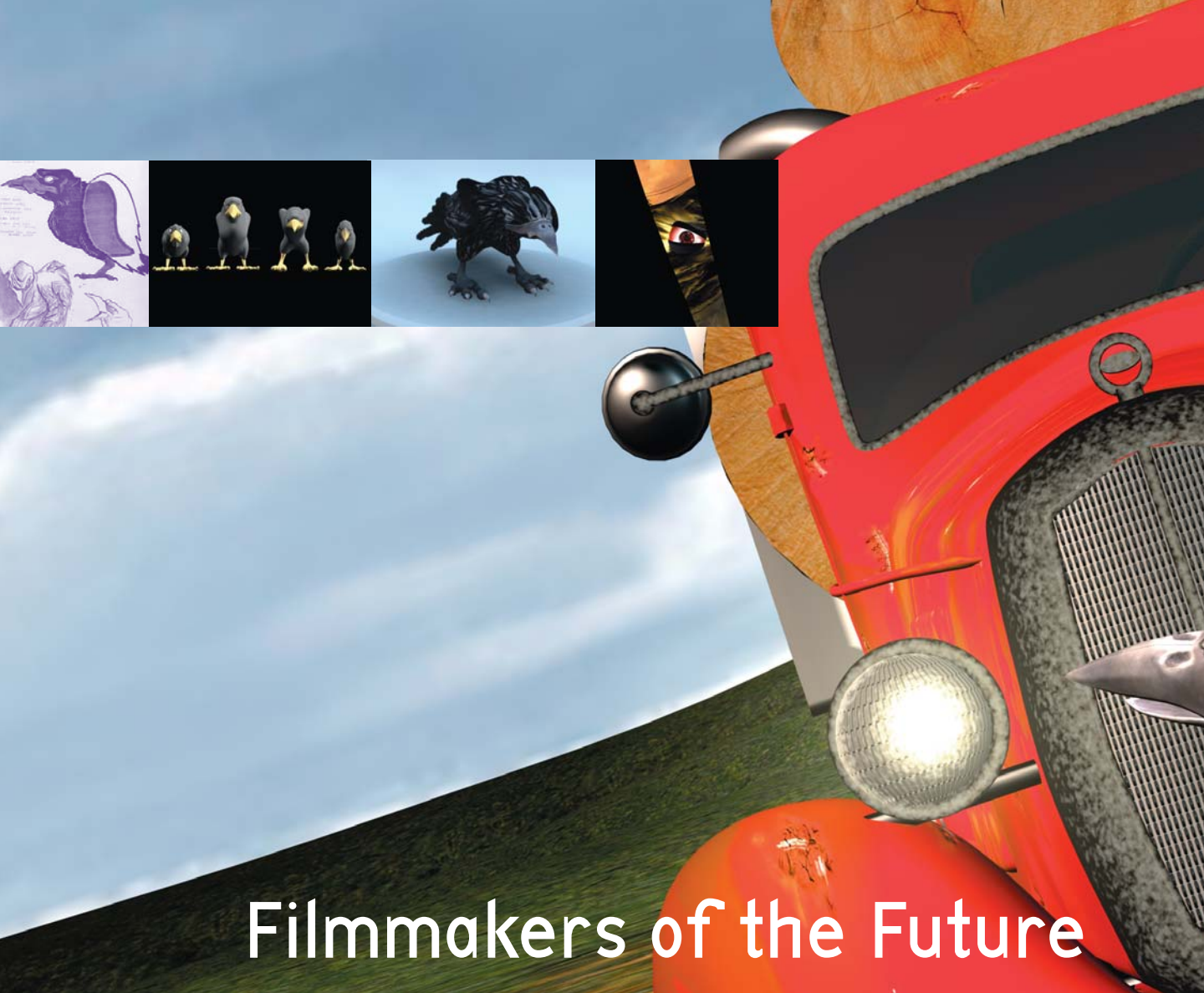
(BOTTOM) RESEARCHERS RECORD  
THE INTERNAL ELECTRICAL  
SIGNALS OF EASILY IDENTIFIABLE  
NEURONS (INDICATED BY ARROWS)  
IN *TRITONIA*'S BRAIN



“We’d like to build learning chips modeled after biology —  
that’s the ultimate goal”

CHRIS DIORIO, PROFESSOR





# Filmmakers of the Future



*Caw, caw, caw* fills the air. Crows swirl and dive as the skies darken and wind builds over the corn field. *Vrrrooom!* A vehicle speeds down the lonely road. From an electric wire, a hulking crow with a menacing glare rivets his gaze to the edge of the road...a mouse. How will fate intervene in this film noir animation of life and death on a bucolic farm?

Students drawn to the interdisciplinary digital animation program from computer science, art, music, architecture, and other fields gain an experience akin to working in the animation industry. Students learn new technologies, develop narratives for movies, collaborate to produce short films, and integrate research breakthroughs developed by CSE colleagues. Throughout the process, they are exposed to visitors from industry including film directors, actors, lighting specialists, story specialists, dancers, and puppeteers.





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"I am completely convinced that the quality of student work can be as good — if not better in some aspects — as that produced in industry," says Barbara Mones, CSE's creative director for digital animation. "The students develop refreshing and sophisticated stories with truly unique and creative approaches. They can be exploratory and showcase research. The most exciting thing about this program is giving the students the experience of working in a close community of people who depend on each other to succeed."

Professor David Salesin launched the first class in digital animation at the University of Washington in 1996. Salesin had worked at Lucasfilm and Pixar Animation Studios. Mones was recruited from Industrial Light & Magic for her experience in industry and interdisciplinary strengths in art, graphics, and computing.

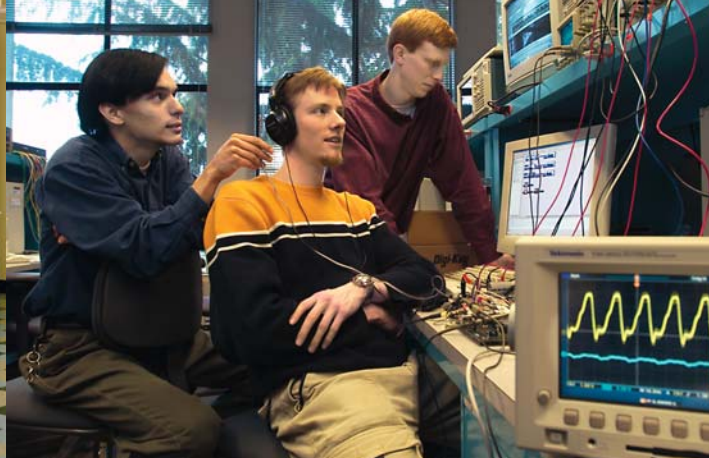
Fast forward to the present and the UW program has grown into one of the country's top centers for animation research and education. CSE has well-established relationships with the animation industry and companies such as Dreamworks, Disney, Industrial Light & Magic, and Pixar. The UW animation program is a rich source of interns and employees for Pixar, and the company has donated software for the program. CSE alumnus Loren Carpenter, who pioneered key innovations in computer animation, is senior scientist at Pixar. He and two colleagues received an Academy Award in 2001 for significant advancements in motion picture rendering.

Creative student minds working in the Allen Center are sure to produce more magic.









# Hands-on Team Learning

“Capstone design courses” in UW Computer Science & Engineering give students experience working in teams to solve substantial problems using concepts that span several topic areas in the field. Student teams define the problem, plan a solution, develop and demonstrate an approach that solves the problem, and present their work in written and oral reports.

“In the Allen Center we can think bigger,” says Professor Carl Ebeling of his capstone course in digital design. “There is more space for collaboration and interaction. It’s an immense improvement for undergraduate education.”

Recent student projects in Ebeling’s course have included an experimental iris recognition system and noise-cancellation technology. In the iris recognition project, students set up an interface to a camera so they could take a picture of a human iris and develop algorithms for compressing this image data to a key that could be used for identification. “There are commercial products like this; the students were interested in how it’s done, and how to make a small hardware device to do the same

thing,” says Ebeling. In the noise-cancellation project, students built a hardware platform involving headphones that could cancel out noise. The platform allowed them to experiment with variables such as the effectiveness of speakers versus headphones, effectiveness of noise cancellation as a function of the position of microphone, and how well the system could cancel different kinds of noise.

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“In the Allen Center we can think bigger.”

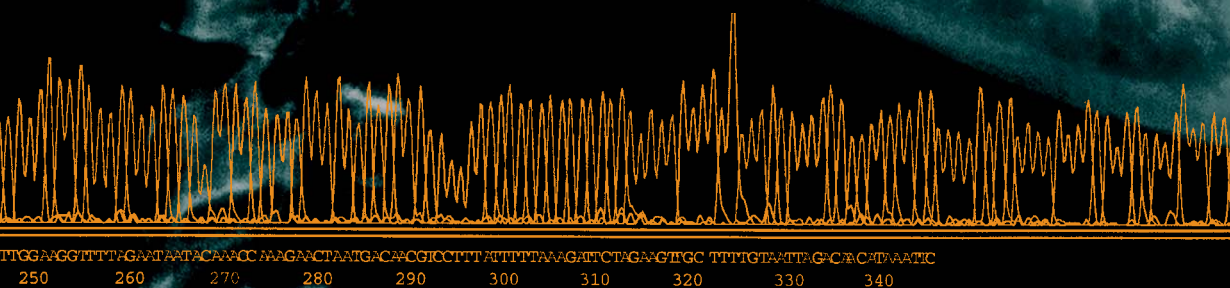
PROFESSOR CARL EBELING

**ROB SHORT**, corporate vice president at Microsoft, is a UW CSE alumnus who has stayed in close contact with the program over the years. “I love the capstone design courses, and have provided challenge money to support these courses,” he notes. When the building campaign came along, Short and his wife **EMER DOOLEY**, a computer engineer with an M.B.A. and a Ph.D. from the UW Business School, decided to support it with the largest donation they’ve given to any cause. “I think the best computer science and computer engineering program in the world should be right in our own backyard,” Short says.





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# How the Brain Works

How does a baby learn to recognize a face? How does she learn to follow her mother's gaze and connect the appearance of an object to the sound of the word for it? How does a toddler learn to control her own body movements and imitate the actions of others?

These are a few of the questions that intrigue Professor Rajesh Rao. Rao is conducting basic research on how the brain works to gain understanding of its computational principles. He is using tools from the disciplines of artificial intelligence, machine learning, and statistics to derive data-driven algorithms and learning procedures. The research ultimately may lead to computer systems that can interact with the world in an adaptive and intelligent way.

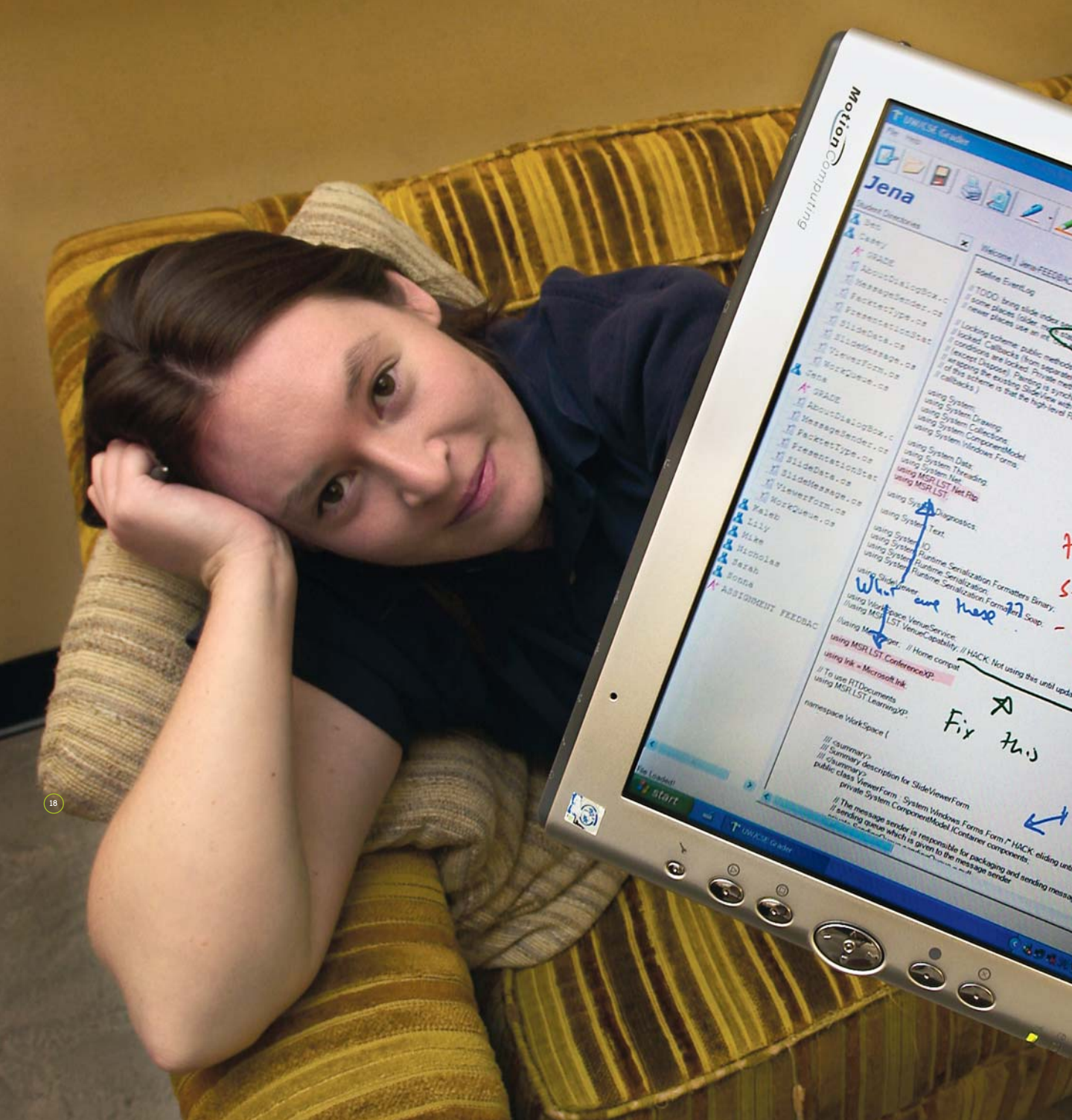
In collaboration with UW psychology professor Andy Meltzoff, Rao and colleagues are studying how infants learn, as a way to advance the field of biologically inspired robotics. Rao's team is programming a robotic head to follow the gaze of humans. This task is an initial step toward building robots that can learn to imitate the actions of humans and other robots directly through observation. Future plans call for the acquisition of humanoid robots being developed by companies such as Sony and Fujitsu.

The laboratory for Rao's work on biologically inspired robots is on the second floor of the Allen Center adjacent to his laboratory devoted to brain-computer interfaces. Both labs create new opportunities for visiting scientists to collaborate with a research group that includes CSE graduate students and undergraduates, plus UW medical students.

The brain-computer interface project truly sounds like science fiction. The brain generates electrical signals that can be routinely detected by an electroencephalograph (EEG); so, reasons Rao, why not use the brain's signals to control external devices? Rao and colleagues are working in collaboration with George Ojemann, UW professor of neurological surgery, to conduct brain-computer interface experiments with patients who have electrodes implanted in the brain. The research draws upon Ojemann's path-breaking work to map vital areas of the brain, originally developed for epilepsy surgery and later applied to brain tumor surgery.

The experimental challenges are formidable, as the EEG signal represents an average, coming from many parts of the brain. The team has shown that brain signals, despite the diffuseness, can control a cursor on a computer screen. Although much more research is needed to develop new sensing approaches, the work may lead to technologies that could, for example, transform the lives of people with disabilities.





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# Portable Solutions

"With a pen-based interface, the Tablet PC technology is mobile and adaptable to the problem."

PROFESSOR RICHARD ANDERSON

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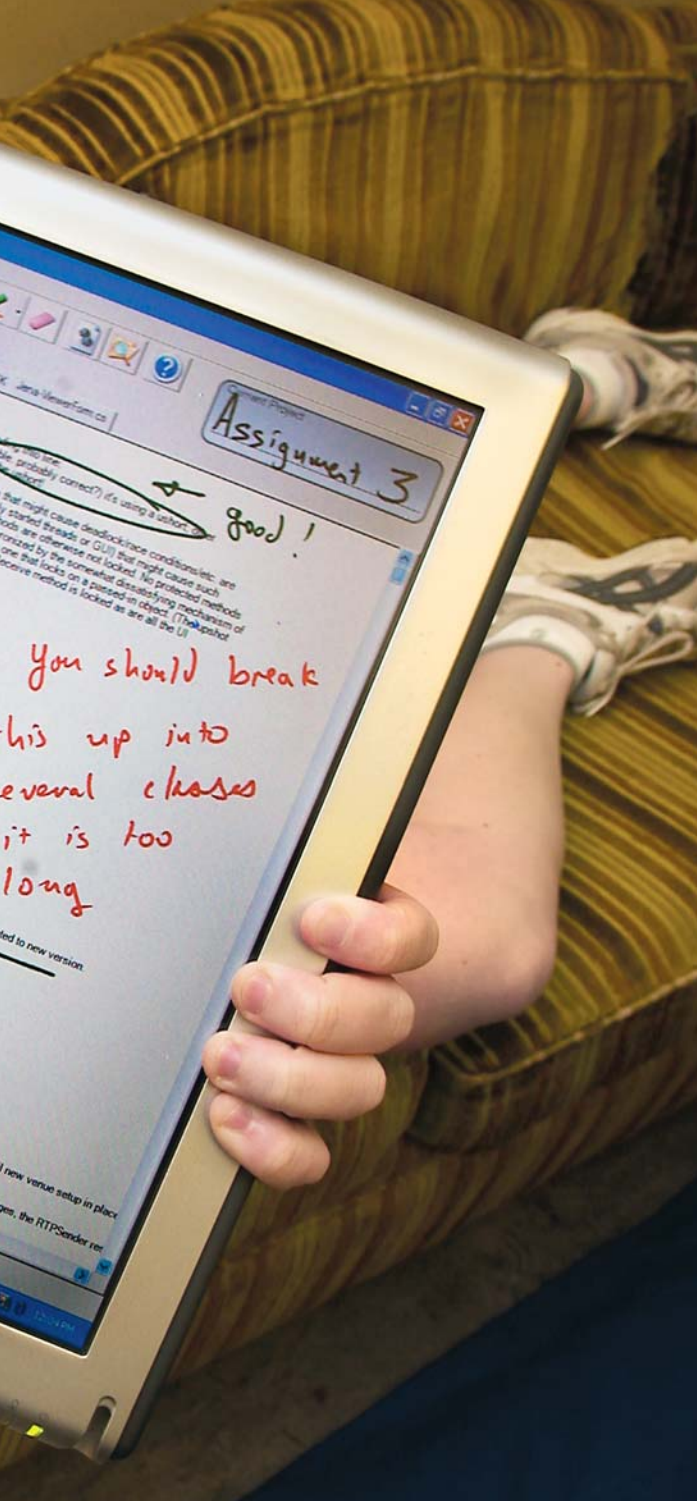
Where  
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```
private void RemoveMenuItem()  
// Copy the MenuItem[]  
for (int i = 0; i < menuItems.Count; i++)  
    menuItems.RemoveAt(i);  
  
connectMenuItems();  
  
// Now put the MenuItem[] back into the menu  
for (int i = 0; i < menuItems.Count; i++)  
    connectMenuItems(i);  
  
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use of Set Role

```
private void OnSetRole()  
    this.SetRole(role);
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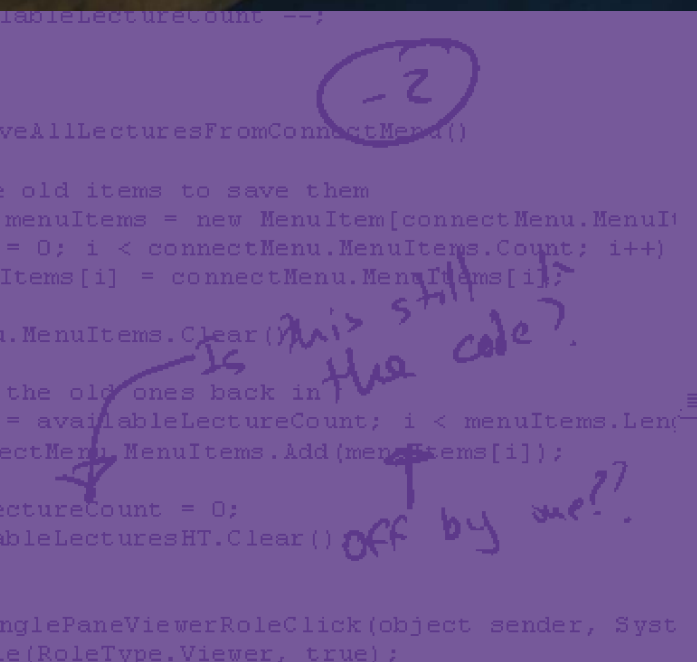
What would draw CSE students to the roof of the 41-story Union Bank of California Center? Schindler Elevator Corporation was seeking a computer-based tool that would be more convenient than a laptop for diagnosing problems such as malfunctioning door controls and misalignment of elevator doors with the floor.

Students in Professor Richard Anderson's independent study course developed applications on the Tablet PC to address such real-world problems. With a pen-based interface, the Tablet PC technology is mobile and adaptable to the problem. At the downtown Seattle office building, students went to the top floor to see the machinery that operated the elevators and to talk to technicians. The view from the roof was an added attraction.

"I doubt any of the students thought that as part of their CSE education they'd walk on the roof of the Bank of California building," Anderson laughs. "This was a real client-centered project. The students succeeded at the proof-of-concept level to develop a visual tool that's easy for a service technician to navigate and to understand. And elevators were far more interesting than initially expected."

With 60 Tablet PCs acquired through an industry grant, Anderson is offering one of the first Tablet PC courses in the country in which students develop applications such as a shared whiteboard for remote tutoring and a pen-based system to support storyboard development for animators. Students and faculty also are using the Tablet PCs in a research project exploring the use of mobile devices in the classroom to support interaction between students and instructors.

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INTEL RESEARCH SEATTLE

TOP GRADUATES

“As one of the top computer science programs in the country, CSE is tremendously important to the economic and entrepreneurial health of our region. When my partners and I were founding Voyager Capital, we understood the role of research universities in supplying the ideas and people that fuel innovation.”

TONY AUDINO, MANAGING DIRECTOR, VOYAGER CAPITAL

INTERDISCIPLINARY RESEARCH



# Connectivity

ALDUS

## TECHNOLOGY TRANSFER

CSE has transferred many technologies to existing companies. Examples are: WebCrawler, the first successful full-text web search engine; MetaCrawler, the first successful web meta-search engine; and simultaneous multithreading (SMT), a processor architecture that can achieve a huge performance boost for commercial databases, web servers, and scientific applications at little additional hardware cost. Professor Susan Eggers, who works in processor and memory subsystem design on uniprocessors and multiprocessors, invented simultaneous multithreading in collaboration with Professor Hank Levy and their student, Dean Tullsen. “We took our concept to industry and over several years worked directly with researchers and process engineers at what was then Digital Equipment to develop the design and build the prototype,” Eggers says.

Intel recently commercialized SMT as HyperThreading; AMD and Sun Microsystems also have built processors based upon the UW CSE concept. PHOTO: PROFESSOR SUSAN EGGERS



METACRAWLER

DIGITAL RESEARCH

WEBCRAWLER

SIMULTANEOUS MULTITHREADING



EDUCATION

TERA/CRAY

The facilities offered by the Allen Center promise an exciting expansion in already extensive community connections. Ample space is available to host visiting industry scientists and engineers and to organize seminars and conferences. “Students benefit greatly from these interactions with outside professionals, who provide important perspectives and insights,” says Professor Brian Bershad.

CSE also connects to the community through its Professional Masters Program, a part-time course of study with evening and distance learning options. Students are all computer industry professionals, most with at least five years of experience, who want to bring their knowledge

up to the state of the art. Roughly 40 percent of the 120 students in this program are Microsoft engineers, with the remainder coming from nearly 40 other companies such as Amazon.com, Boeing, Intel, Hewlett-Packard, Adobe, and various smaller companies. The Allen Center will provide dedicated space for the distance learning component. PHOTO: PROFESSOR BRIAN BERSHAD



K-12 OUTREACH

COMPANY ATTRACTION AND CREATION

DIALOGIC

VISIO

Over the years, CSE has played a pivotal role in the evolution of the information technology industry. Many companies are drawn to the Pacific Northwest by the opportunity for collaborations with CSE and by the talented graduates who stream into the workforce. The department helped attract to the area companies such as DECwest Engineering, Tera/Cray, and Intel Research.

Early alumni of CSE founded companies such as Aldus, Visio, IC Designs, Digital Research, and Dialogic. Linden Rhoads Amadon partnered with CSE faculty and graduates in launching several successful software companies. “As someone with a family and business in Seattle, I was fortunate to receive a first-rate legal education at the University of Washington, and I also benefited from the UW’s top-ranked computer science and engineering program,” Amadon says. “My husband Greg and I have invested in the future of CSE because we understand the importance to the community and local economy of a world-class university.”

The latest tally of startups includes some ten new companies formed over the past five years. Professor Chris Diorio exemplifies the view that research, education, outreach, and entrepreneurship are interconnected parts of the CSE mission. Diorio and chip expert Carver Mead, his doctoral thesis advisor at the California Institute of Technology, founded Impinj in 2000. The Seattle-based company is developing self-adaptive silicon chips that promise to make communications products faster, smaller, and less power hungry. The chips include a small amount of permanent memory that allows tuning the performance of individual circuits after fabrication. MIT Technology Review (September 2001) named Impinj one of “the most original and promising companies formed in the last few years.” PHOTO: LINDEN RHOADS AMADON, GREG AMADON

IC DESIGNS



IMPINJ

## MELISSA AND KIRK GLERUM

Kirk Glerum joined Microsoft in 1987 as a developer on the Office team after graduating from the UW in 1983 with a double major in computer science and mathematics. Kirk and his wife Melissa (a computer science graduate of Brown University and an eight-year Microsoft employee) were early supporters of the Allen Center campaign.

“I wanted to help ensure that that UW has a computer science and computer engineering program that stands out to any student,” says Kirk. “I want any sharp, motivated kid coming into the UW to see that CSE is a central part of the university, so that student realizes: ‘This is good stuff, this is cool stuff, I’m going to try this out — computer science is right up there at the top.’ This self-discovery is what universities are all about.”



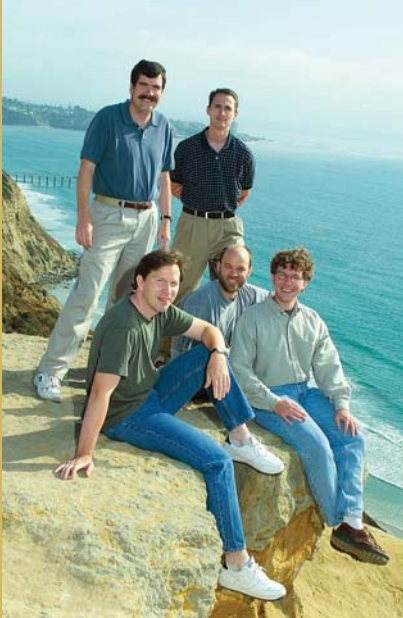
## GRADS AT GOOGLE

More than a dozen UW CSE alumni work at Google, the Internet’s premier search company. Among them is Jeff Dean, who earned his doctorate from CSE in 1996. Computer scientists at Google deal with a wide range of problems from hardware design and operating systems to machine learning and user interfaces. Finding enough great technical people to solve those challenges is one of the serious impediments to Google’s growth.

“It’s really important that CSE continue to turn out top-quality students. We have a list of ideas a mile long and we need lots more great UW grads to work on them,” Dean asserts. Memories of his own grad student days working in a cramped office in a trailer outside Sieg Hall magnify his enthusiasm for the promise of the Allen Center. “A building with more lab space, office space, and places for people to congregate will be a huge plus,” says Dean. “What makes the department special is the collaborative environment.”







## UW CSE @ UCSD CSE

Six UW CSE alumni are faculty members in the Computer Science & Engineering Department at the University of California, San Diego. Standing (L to R): Dean Tullsen (Ph.D., 1996), Brad Calder (B.S., 1991). Sitting (L to R): Stefan Savage (Ph.D., 2002), Bill Griswold (Ph.D., 1991), Geoff Voelker (Ph.D., 2000). Missing from the photo is Fran Berman (Ph.D., 1979).

*“UW CSE gave me the opportunity to learn how to perform world-class research, and provided experience and practice in excellent teaching. I greatly valued the environment at UW CSE — the department emphasizes strong, frequent, and creative interaction among students, faculty, and staff.”*

GEOFF VOELKER (PH.D., 2000)

*“The Allen Center will be unmatched among computer science buildings of its generation. The attention to detail is spectacular.”*

STEFAN SAVAGE (PH.D., 2002).

## CATHY AND DAVID HABIB

Cathy and David Habib both graduated in 1986 from UW Computer Science & Engineering and pursued careers at Hewlett-Packard and Microsoft.

“We’re both strong supporters of public education,” says Cathy, explaining the couple’s support for the Allen Center campaign. “Our parents and siblings went to the University of Washington, so we have strong ties to the UW. We also feel that it’s good for the local economy to have a strong university in Seattle — it helps create and bring jobs to the area. It was through our UW CSE education that we were fortunate enough to be where we are, and so we wanted to give something back to the institution that helped us get there.”



# Thank You!

Recognizing the extraordinary commitment of our friends and alumni whose generosity helped make this building a reality.

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