

CCIS network

Fall 2005

*The newsletter for the
College of Computer and
Information Science at
Northeastern University*

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Northeastern

U N I V E R S I T Y

Higher Learning. Richer Experience.



By reaching out to middle school students, CCIS hopes to expand the pipeline of young people striving to become tomorrow's leaders in computer and information science.

FILLING THE PIPELINE: EDUCATING THE NEXT GENERATION OF COMPUTER SCIENTISTS

Career opportunities for computer and information scientists could significantly exceed demand in the coming years, according to a number of recent reports.

"The best computing jobs, the jobs that demand strong analytical and creative skills, are in higher demand than ever," says CCIS Dean Larry Finkelstein. "The challenge, from an educational perspective, is how to continue to attract qualified students to the field."

A U.S. Commerce Department study predicts that seven of the thirty fastest growing occupations through 2012 will be computer-related, and that all seven will be in the top salary category. In addition, computer and mathematical occupations will add 1.1 million jobs over the period.

Many industry leaders are concerned that enrollment in computing disciplines is actually declining. If this decline

continues, workforce shortages in critical areas such as information security could eventually result.

A wide range of solutions, from innovative classroom programs to minority recruitment efforts, have been proposed. At Northeastern, CCIS recently began a collaboration with Citizen Schools, a national network of out-of-school learning programs for urban middle school students. Northeastern is supporting a Citizen Schools teaching fellow who is working with CCIS faculty to design a programming curriculum for middle school teachers and students.

The Citizen Schools curriculum will be based on TeachScheme!, a programming curriculum developed by Trustee Professor Matthias Felleisen and used in high schools and colleges around the world. TeachScheme! helps students

[continued on page 5]

LETTER FROM THE DEAN



These are extraordinary times for the computing field. As the reach of our discipline permeates every aspect of our lives, career opportunities for computer and information scientists become more intriguing and more numerous than ever before.

In this dynamic environment, the issue of expanding the pipeline of high school students entering the profession is of critical importance to

the economic well being of our country. Similar concerns exist for every technical discipline. At the College of Computer and Information Science, we are faced with a dual challenge: How do we continue to attract top students, and how do we best prepare them for the opportunities they will encounter? In this issue of the CCIS Network, we introduce you to some of the key programs we have implemented to address these issues.

At the undergraduate level, we recognize that students' interest in computing usually develops well before high school, often during the middle school years. To capture their attention during this pivotal phase of intellectual development, we have launched a collaboration with Citizen Schools, a network of urban after-school enrichment programs. With Citizen Schools, we are developing a middle school computer science curriculum based on Trustee Professor Matthias Felleisen's popular TeachScheme! curriculum for high school and college students. The program, designed to excite young people about the possibilities of computing, is featured on page 1 of this newsletter.

At the graduate level, we are promoting our strong research focus and outstanding faculty. Alumnus Madhav Anand, MS '89, provided crucial funding for an outreach program that brought three Indian Institute of Technology undergraduates to campus for a two-month research internship. The goal of the program, which we hope to expand in future years, is to create a pipeline to our PhD programs for students from the top Indian universities while simultaneously generating goodwill. Read more about it on page 6.

Here on campus, we are increasing students' options through offerings like our expanded dual major programs, which enable motivated students to graduate with a deep knowledge of computing as well as content expertise in fields such as business, the sciences (biology, mathematics, and physics), cognitive psychology and the digital arts (multimedia and music technology). CCIS now offers nine dual majors. Some 59 upperclass students have enrolled in existing dual majors, and more are expected to take advantage of the new offerings.

The college also offers a wealth of undergraduate research opportunities through an array of research laboratories. On page 3 of this issue, we feature the Human-Computer Interaction Lab, which recently attracted several significant grants and moved into larger facilities this fall.

Opportunities in computing have never been more interesting or more diverse. With strong recruitment programs and outstanding academic options, CCIS is poised to educate the next generation of leaders in our expanding field.

Lay Johnston

NOUBIR WINS PRESTIGIOUS CAREER AWARD

Assistant Professor Guevara Noubir has received the National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award, the foundation's most prestigious award for early career development activities.

The CAREER Award is given to teacher-scholars who most effectively integrate research and education in their institutions, building a foundation for future contributions to research and education. Noubir received the five-year, \$400,000 grant for his proposal, "Cross-layer protocols for robust and scalable heterogeneous wireless networks."

"The future of wireless networking will be heterogeneous, making use of various air interfaces with a wide variety of capabilities and constraints," Noubir wrote in the proposal. "It will empower people through a digital environment



Assistant Professor Guevara Noubir

that is aware of their presence and context and sensitive to their needs."

There are two primary roadblocks to making this vision a reality: limited resources and concerns about security among heterogeneous devices. The complexity of these issues increases with the

size of the network and the variety of devices that compose it.

Existing air interfaces merely co-exist, but little has been achieved in making them co-operate with one another, Noubir says. Through the CAREER award, he is working to develop cross-layer communication protocols and resource-management strategies that accommodate variations in network environments and enable robust, scalable, and secure communication.

Noubir came to Northeastern in 2001 after serving as a senior research scientist at the Real-Time Software and Networking Group at the Swiss Center for Electronics and Micro-technology. His research centers on designing and prototyping secure and resource-aware network protocols and applications for wireless networks. +

HUMAN-COMPUTER INTERACTION: IMPROVING OUR RELATIONSHIPS WITH MACHINES

From electronic coaches who remind you to exercise, to sound recognition programs that teach your baby to speak, to mobile devices that respond to your voice, computers are doing things they've never done before. Researchers in the Human-Computer Interaction (HCI) Laboratory are working to make these new devices fit into our lives as seamlessly and effectively as possible.

The HCI Lab is adding its fourth researcher and moving to a larger facility this fall, thanks to a series of grants and growing interest in how computers and people work together.

"No matter where you are, there are interfaces," says Professor Harriet Fell, a member of the lab. "The principles we work on can apply to desktops, PDAs, GPS systems, even cars."

Assistant Professor Peter Tarasewich and Associate Professor Carole Hafner are working together to understand what happens when a mobile device user tries to perform multiple tasks, and what might make multitasking easier.

Beyond making interfaces easier to use, some HCI researchers are looking at how computers can play a more active role in our lives.

"Usability is something companies are realizing they need to pay attention to," says Assistant Professor Peter Tarasewich, a researcher in the lab. "They've seen that even a little usability testing can improve customer satisfaction and save a lot of money in manufacturing."

"We're looking at making the interface better," he says. "If you're walking around and using a PDA, would a touch-activated interface be better? Or voice-activated? Is a display the best solution, or is it a problem if others can read your screen?"

Beyond making interfaces easier to use, some HCI researchers are looking at how computers can play a more active



Animated agents like this fitness coach build social rapport with their users. They have been demonstrated to increase the time people spend exercising by providing feedback and motivation.



role in our lives. Fell is using a National Institutes of Health (NIH) grant to develop visiBabble, sound recognition software that provides visual reinforcement of sounds produced by infants or preschool children, particularly those with learning or physical disabilities.

"The software will recognize syllables or consonant-like utterances in an infant's babble," Fell explains. Through lights, images, or other mechanisms, the device rewards the baby for distinct, word-like utterances over non-distinct gurgling.

Timothy Bickmore, the newest member of the HCI Lab, is using an NIH grant to develop an animated agent that motivates users to stick to an exercise program. He began the work as a research assistant in the MIT Media Lab, where he tested a prototype with one hundred MIT students. Later, at Boston University School of Medicine, he tested a similar agent with geriatric patients. In

both groups, the animated agent had a significant impact on time spent exercising and steps walked in a walking regimen.

"The agent has users set long- and short-term goals, helps them work through obstacles, and provides appropriate empathy, for instance when they get sick," Bickmore says. "It builds a social rapport."

While the agent has been successful, it hasn't been perfected quite yet. Bickmore has found that people get bored and lose motivation over time, even if the agent's dialog changes. He is now looking at ways to make other subtle changes in appearance or action to maintain interest.

"Human-computer interaction brings together disciplines such as behavioral science and visual design in addition to computer science," he says. "We need to look at all the components of social interaction." +

TWO RESEARCHERS JOIN CCIS FACULTY

CCIS welcomed two new faculty members this fall, enhancing its strengths in the areas of security and human-computer interaction.

Riccardo Pucella comes to Northeastern from Cornell University, where he had been a postdoctoral fellow since earning his PhD in computer science in 2004. His current research focuses on the theoretical and logical foundations of security.

One goal of his work is to understand what people mean by security, and to develop methods to verify whether a system is achieving the desired functionality. He is working on methods that can be used both for discovery—to determine what security features a system should have—and for verification—to determine whether a system meets security specifications.

Pucella's research at CCIS will relate to both the programming languages group and the networking group. At Cornell and at McGill University, where he received his master's and bachelor's degrees, Pucella studied the work of Trustee Professor Matthias Felleisen and Professor Mitchell Wand.

"I'm very happy to be at Northeastern and to be working with both of them," he says. "And I'm happy to be in Boston, with its great density of intellectuals."

The second new member of the faculty, Timothy Bickmore, was an assistant professor of medicine at Boston University School of Medicine and a research assistant in the MIT Media Lab before coming to Northeastern this year.

With a PhD in media arts and sciences from MIT, Bickmore focuses on using animated agents to maintain social and emotional relationships with



Assistant Professor Riccardo Pucella



Assistant Professor Timothy Bickmore

The two newest recruits to the CCIS faculty are a tribute to the ever-increasing prestige of the college.

users and influence behavior. At the MIT Media Lab, he studied the role of nonverbal behavior in conversation, and the role of social dialogue in building trust between a user and a conversational agent. This work led to the development of a life-sized, animated real-estate agent who builds rapport with users using speech, gestures, gaze, intonation, and other nonverbal modalities.

Later, he used animated agents to motivate students to stick with exercise programs. This successful work led to the BU School of Medicine appointment, where he did similar work involving geriatric patients. Also at BU, he had the opportunity to study doctor-patient

relationship building more closely and learned about ways to align his work with other medical interventions.

At Northeastern, Bickmore has joined the human-computer interaction group, where he is continuing his work on animated agents, with an emphasis on long-term interactions and increasingly complex social interaction and natural language dialog (see related story, page 3).

"I'm very pleased that we were able to recruit such talented researchers," says CCIS Dean Larry Finkelstein. "It is a tribute to the ever-increasing prestige of the college and the excellent work that is done here." +

Associate Professor Javed Aslam's research on information retrieval and search techniques has been generating outstanding results in recent months.

With three papers presented at the premier international conference sponsored by the Association for Computing Machinery's Special Interest Group on Information Retrieval (ACM SIGIR) in August and two in other conferences this year, Aslam is attracting attention for his work on evaluating and improving the quality of search engines.

Aslam has developed a system based on machine learning techniques to re-rank the documents returned by search engines in real time...

"A lot of work has gone on to capture user feedback in the search process," he says. "What I've tried to do is think about whether it's possible to make use of that feedback. Ideally, as soon as you start getting feedback, you should use it."

Aslam has developed a system based on machine learning techniques to re-rank the documents returned by search engines in real time, so that the results of a query are refined every time a user selects a document from the list.

In a related project, he is working on improving performance testing of search engines. There are several dozen measurements that are used to evaluate search performance, he says, but one tends to dominate most analyses: average precision. "People intuitively believe that average precision is the best measure," he says.

The precision at any point in a search engine's list is measured by dividing the number of relevant hits by the total



Associate Professor Javed Aslam

number of hits up to that point. Average precision takes this measure at every relevant hit in a list and averages the results.

Aslam has proven that a much simpler equation, R-precision, should produce virtually identical results. R-precision measures precision just once, using the total number of relevant results. "R-precision is incredibly simple compared to average precision," he says. "And now, we've provided the first theoretical reason for why average precision and R-precision are almost always the same."

Based on his recent papers, Aslam recently submitted a grant proposal, "Analysis and Evaluation of Measures of Retrieval Performance," to the National Science Foundation. Funding would be used to support graduate students working on these projects. +

[Filling the Pipeline continued from page 1]

develop logic and reasoning skills while they solve practical computing problems. It also introduces them to computing at a critical stage in their intellectual development, perhaps inspiring greater interest in computing at the high school and college levels.

Emmanuel Schanzer, a Cornell graduate who has been appointed to the Citizen Schools fellowship, is currently

developing the modified TeachScheme! curriculum. He has tested it at CCIS's Compass Computer Camps, where undergraduates assisted in teaching middle school students last summer. The curriculum will be pilot-tested and further refined at Citizen Schools' Dorchester site in the coming year, and ultimately rolled out to the full 24-school network.

"Computer science could be a silver bullet for secondary school education, yet it's routinely overlooked," Schanzer says. "This program will help urban students develop their thinking skills. It could become an important model for computer science teaching—and for middle school education." +

RESEARCH INTERNSHIP SUPPORTS TOP INTERNATIONAL STUDENTS

An innovative gift from an alumnus supported research at CCIS this spring while boosting awareness of the college internationally.

The alumnus, entrepreneur Madhav Anand, MS '89, sponsored three students from the prestigious Indian Institute of Technology (IIT) on a research internship to CCIS, where they collaborated with faculty and prepared papers for submission to competitive conferences. They returned home two months later with a new appreciation for the college which, supporters hope, will generate increased interest in CCIS graduate programs among IIT students.

"These students are the best of the brightest from India," says Associate Professor Ravi Sundaram, who hosted the visit and supervised the students' research. IIT has one of the most rigorous entrance examinations in the world. It is widely held that it is harder to get into IIT than it is to get into Harvard or Princeton.

At Northeastern, the students—Abishek Kumarasubramanian, Rajsekar Manokaran, and Ravichandra Chakinala—found a way to embed information in computer communications. The discovery can be applied to increasing effective bandwidth as well as circumventing censorship, such as restrictions on communication by certain foreign governments, Sundaram says. They have submitted a paper titled "Steganographic communication in ordered channels" to Infocom, a premier communications conference.

Another paper that resulted from their work, "Near-optimal push and pull strategies for information dissemination and gathering," is being submitted to the Association for Computing Machinery Symposium on Theory of Computing (STOC), a leading conference in computer science.

Faculty members Guevara Noubir and Rajmohan Rajaraman also contributed to the students' research.



Indian Institute of Technology students (top, l-r) Rajsekar Manokaran, Ravichandra Chakinala, and Abishek Kumarasubramanian visited Northeastern this spring on a research internship. (bottom, l-r) Visiting Professor Mayur Thakur and Associate Professor Ravi Sundaram were among the faculty who worked with them.

"We got some important research done, the students got valuable experience, and we got good exposure for our program."

"This collaboration came about because Madhav Anand was looking to fund a project that would benefit both Northeastern and India, and I was looking to improve the quality of graduate school applications," Sundaram says. "Dean Finkelstein brought us together."

Anand co-founded International Integration, Inc. (iCube) with fellow alumnus Yannis Doganis, MS '89. The company merged with Razorfish in 1999.

Anand plans to sponsor additional IIT students in the future, and hopes

to inspire other alumni to support the fledgling program as well. "This was a relatively low-cost program that offered a huge return," Sundaram says. "We got some important research done, the students got valuable experience, and we got good exposure for our program."

For more information on how you can support this program with a tax-deductible gift, please contact Diann Siegel, senior development officer, at 617-373-2190 or d.siegel@neu.edu. +

ACM LAUNCHES NEW STUDENT LIBRARY

The Northeastern Chapter of the Association of Computing Machinery (ACM) unveiled a new technical lending library this semester to satisfy students' intellectual curiosity beyond the classroom.

"We decided a year ago that we wanted to start a library for students," says Chris Lambert, '07, former president and current special project manager of the University ACM. "We wanted a small collection of technical books that we could lend out."

The group started small, contacting individual publishers and requesting review copies of new titles. As a user group within a non-profit institution, they were eligible to receive these books at no charge.



Chris Lambert, '07, headed the successful effort to establish a student lending library at CCIS. The new resource is stocked with books donated by major academic publishers.

"The group has won more than its share of national awards over the years, and their recent work with the library is one more example of their ingenuity."

But the group's first windfall came with a call from O'Reilly Media, a leading technical book publisher that was exhibiting at the Linux World Expo in Boston. When the show ended, O'Reilly wanted to donate about 300 leftover books to the Northeastern ACM chapter.

"That was the first real start of the library," Lambert remembers.

One of the reasons for O'Reilly's generosity was that it was able to use the donation for a tax break while saving on the hefty return shipping costs—all while supporting a local student group.

When Lambert attended OSCON, an open source software conference held in Oregon last July, he remembered his discussions with O'Reilly. He requested and received book donations from O'Reilly, Apress, Pearson Education, and others. A quick call to CCIS Dean Larry Finkelstein secured

the funds needed to ship the donated books to Northeastern.

Although the ACM library currently consists of physical books, ACM is working to acquire electronic copies of some titles, particularly those that will be used by participants in ACM workshops on subjects such as Unix, Perl, and Ruby.

"ACM members continue to impress me with their resourcefulness and creativity," Finkelstein says. "The group has won more than its share of national awards over the years, and their recent work with the library is one more example of their ingenuity." +

CO-OP ATTRACTS INTERNATIONAL GRAD STUDENTS

International graduate student enrollment in U.S. universities dropped last year for the first time since 1972. While many schools are struggling to attract the best and brightest from around the world, CCIS is finding new opportunity in a long-standing asset: the co-op program.

Graduate student enrollment in CCIS's co-op program is at its highest level ever, driven primarily by international master's level students who are opting into the program.

"Our graduate programs tend to be research focused, but some students want U.S. work experience, and the co-op program can fill that need," says Mel Simms, associate professor in the cooperative education program.

Many domestic graduate students find their own employment, Simms points out. International students can use the extra support, as well as the assistance in obtaining employment clearance.

Graduate students who participate in co-op must be in their second year and must take eight to twelve mandatory class sessions that integrate co-op and classroom learning.

"We try to make co-op as academically rigorous as possible," Simms says. "Our goal is to provide a solid learning experience for students." Judging by the increasing popularity of graduate co-op, that strategy seems to be working. +

NEW DUAL MAJORS EXPAND UNDERGRADUATE OPTIONS

CCIS will add five new dual majors to its curriculum this fall, bringing the total number to nine. Designed for the most competitive students, dual majors provide comprehensive training in two distinct fields, leading to broad career flexibility and higher employment prospects.

“Dual majors create a bridge between computing issues and how they are applied,” says Richard Rasala, professor and associate dean of undergraduate programs. “They enable students to graduate with both technical and content expertise.”

New combinations include computer science with biology, business, multimedia studies, and music technology; and information science with business and cognitive psychology. Existing dual majors include computer science with cognitive psychology, information science, math, and physics.

CS-biology will prepare students for work in either field or in the emerging area of bioinformatics, which uses advanced computing applications to process the enormous data sets generated in genome analysis and related work. The biology requirements of the program emphasize genetics and molecular biology, while the computer science requirements stress applications that address biology research issues.

“Dual majors create a bridge between computing issues and how they are applied...”

CS-business and IS-business go further than IS alone in creating a bridge between technology and its application to business. While the

IS major gives students exposure to basic business concepts, the dual majors provide the complete business foundation that a business degree mandates, including courses in finance, management, accounting, marketing, statistics, and strategy.

CS-multimedia and CS-music technology build on the technology foundation of these two artistic disciplines. While both art-related majors already offer students some computing essentials, the dual majors will provide a solid technical foundation, enabling students not only to understand the technology behind a multimedia presentation or musical composition, but to use technology to advance those fields.

IS-cognitive psychology is similar to the existing CS-cognitive psychology dual major, but provides students with greater exposure to business principles incorporated in the IS program. +

NEW DEGREES ENRICH CONTINUING EDUCATION PROGRAM

The newly created Center for Informatics and Applied Technology is expanding continuing education opportunities at CCIS and reaching a new group of adult students—working professionals.

A partnership between CCIS and Northeastern’s School of Professional and Continuing Studies (SPCS), the Center addresses the needs of career changers as well as professionals who want to enhance their technology skills.

“The center allows the School of Professional and Continuing Studies to engage the college and its faculty in developing new IT-related programs,” says Leslie Schneider, director of professional programs. “It allows us to combine their content expertise with our experience in adult education.”

The center is launching its first program, a Master of Professional Studies in informatics, in January. This fall, it added a Bachelor of Science in information technology and a graduate certificate in healthcare informatics.

The MPS in informatics is designed for working professionals who want to leverage their technical expertise

to attain leadership positions within their organizations. It offers a technical foundation as well as courses on the application of information systems and the organizational and managerial context of information and technology. Students can specialize in a range of content areas, including bioinformatics, digital media, geographic information systems, healthcare informatics, or network security management.

The BS in information technology gives students a strong foundation in quantitative methods, programming, and technology, as well as the knowledge and tools to integrate IT broadly within an organization. Students can specialize in web and multimedia design, system and network administration, or networking and security.

Each of these programs is offered in a variety of formats including online, weekends, evenings and on-site at corporate locations.

“Information technology is converging with so many areas—security, healthcare, you name it,” says Schneider. “We want to provide the resources to enable students to keep up with the dramatic advances in the use of IT across all disciplines and industries.” +

Undergraduate Achievements

Jorel Fermin, '05, Churk Leung, '05, and College of Engineering student **Maurice Peltier, '05,** placed third in the national round of the 2005 Imagine Cup Software Design Invitational. The competition, sponsored by Microsoft, recognizes the creative and technological innovations of students around the world. The students' winning entry, eVt, strives to resolve communication barriers such as language or geography by enabling the use of technologies such as speech-to-text, text-to-speech and language translation in series with such devices as Smartphones, PDAs, and laptops. The team received a cash award of \$2,000, plus \$1,000 for placing first in the regional competition.

Andrea Grimes, '05, received top honors in the Computing Research Association (CRA) 2005 Outstanding Undergraduate Award competition. The competition draws hundreds of applicants annually from the United States and Canada.

Top male and female entrants receive a \$1,000 cash prize. Grimes' research in the area of information retrieval focused on identification and visualization of language patterns in biology papers and the use of support vector machines for classifying diagrams. This work resulted in three published papers, including one as first author that she presented at the IEEE Bioinformatics Conference at Stanford University in 2003. In the area of human-computer interaction, Grimes investigated the display of information on mobile devices in order to maintain privacy. In addition, she served as a mentor for computer science students at Northeastern, as a mentor for high-school students through a local higher-education resource center, and as a computer-technology instructor for a local inner-city community center.

Ian Langworth, '06, has become a published author while still an undergraduate. *His Perl Testing: A Developer's Notebook,* published by O'Reilly Media, Inc., is an instruction manual on



Andrea Grimes, '05

software testing for developers using Perl. Langworth participated in two co-ops under the supervision of Director of Technology David Blank-Edelman, during which he began developing a large system for managing the college's network and hosts and writing tests for the system using Perl. He then completed a directed study with Associate Dean Richard Rasala, in which he wrote the first three chapters of his book. He teamed up with co-author *chromatic* to complete the book and submit it to O'Reilly, which published it last spring. Langworth is now teaching a six-week course in Perl through the Northeastern chapter of ACM's Student Workshop Series.

Daniel Silva, '05, has received the CCIS Outstanding Undergraduate Research Award. Silva worked for several years with faculty and graduate students in the Programming Research Laboratory. His efforts resulted in publications in two important conferences, the 2003 Scheme Conference and 2004 PyCON (the Python Conference). He also had extensive research collaborations with IBM Research and spent four months at IBM in Japan working on clonable Java virtual machines. He plans to pursue his PhD in computer science and has been accepted to top doctoral programs, including the University of Washington, the University of Chicago, Brown University, Harvard University, and MIT.

Graduate Achievements

Recent PhD graduates have landed in prestigious teaching and research positions around the country:

Xiaowei Sun, '05: instructor, Case Western Reserve

Huanmei Wu, '05: assistant professor, Indiana University/Purdue University at Indianapolis

John Clements, '05: assistant professor, California Polytechnic State University, San Luis Obispo

Jiangzhuo Chen, '06: post doctoral fellow, Virginia Polytechnic Institute and State University

HOLLAND TO RECEIVE OUTSTANDING ALUMNI AWARD

Ian Holland, PhD '93, whose early work in object-oriented programming set new standards among software developers, will receive an Outstanding Alumni Award this fall.

While at Northeastern, Holland discovered the Law of Demeter, a foundational software principle that enables programmers to reuse elements of software that have been written and tested, making the software maintainable for long periods of time.

“Ian Holland’s years at Northeastern have had an impressive impact on the software development community...”

Holland gave his first talk on the Law of Demeter at the competitive Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA) conference, while he was a student at Northeastern. Representatives from IBM heard the talk and were prompted to offer him a summer position at IBM Research, and then to fund the remainder of his doctoral work.

“In the late '80s and early '90s, object-oriented programming was considered a giant leap forward,” Holland says. “IBM wanted expertise and leadership in the area. They wanted to use it more effectively.”

After earning his degree, Holland joined IBM full time as a software systems designer and architect. During the seven years he stayed at the company, the Law of Demeter took on a life of its own, becoming an industry standard and working its way into college textbooks. When he applied for a position at Kronos, his interviewer asked him to show that he understood the principle, not knowing that he had actually invented it.

“It was gratifying to know that something I did had pervaded Kronos to the point that it was a standard interview question,” Holland says.



Ian Holland, PhD '93

The rest of the interview went understandably well, and Holland is now vice president of architecture and systems engineering at Kronos and an adjunct professor at CCIS.

“Ian Holland’s years at Northeastern have had an impressive impact on the software development community,” says Karl Lieberherr, Holland’s dissertation advisor. “He is a very talented researcher and it was a privilege to have him as a student.”

The Outstanding Alumni Award is given to alumni “whose professional attainment and service to community bring honor to themselves and to the university,” and is Northeastern’s highest alumni award. It will be presented at the annual Homecoming Alumni Ball, Friday, October 14, at the Boston Park Plaza. +

COLLEGE OF COMPUTER AND INFORMATION SCIENCE

SUPPORTERS, 2004–2005

The following list includes CCIS alumni who made gifts or pledges to any Northeastern University fund, as well as alumni and friends who directed their gifts specifically to CCIS, between July 1, 2004 and June 30, 2005. Every effort was made to ensure the accuracy of this list. Our sincere apologies for any errors or omissions that may have occurred.

Jeff Alexander, '92	Jeremiah Ecker, '05	John Lawson III, '99	Daniel Rinehart, '00*
David Allen, '86	Annette Bergstrom Edwards, '87*	Catherine Leamy, '01	Elevinio Riojas, '05
Lester Allen, '94	Thomas Edwards, '87*	Jason Leatherman, '93	Philip Roux, '87
Elias Alvord II, '97*	Ramon Eves, '85*	David Lepauloue, '89	Irina Rozina, '97
Madhav Anand, '89*	Walter Eykel, '86	Robert Leslie, '96	Matthew Rubino, '05
Brian Andrews, '05	Mandy Familiar, '83*	Jones Leung, '99*	Eldar Sadikov, '05
Kenneth Banis, '70*	Robert Familiar, '95*	Raymond Lisiecki, '98*	Christopher Saia, '99
Erica Bartlett, '99	Todd Fellela, '85	Michael Llewellyn, Jr., '86	Denise Salmu, '89
Paul Bastide, '03*	Stephanie Fillion, '05	Cristina Lopes, '98	Ilise Samolyk, '90*
Mary Olejarz Bennett, '84	Larry Finkelstein*	Kimberly Lydon, '84	John Samolyk*
Thomas Bentley, '89*	Duncan Fisher, '98	Lisa Lynch, '84	Joshua Seadia, '99*
Rafael Benzan, Jr., '95*	Brian Foster, '05	Adam Lyons, '05*	Michael Shay, '92*
Catherine Bilotta-Lucia, '86*	Edward Fox, '69*	Steven Maio, '86	Jenny Yip Siede, '94*
John Blazeovich, '05	Mark Frydenberg, '87	Nazaire Marc-Danie, '05	Ignacio Silva-Lepe, '89
Frederick Boudreau III, '87	Edward Frymoyer, '61*	Paula Marcus, '88	Kim Silva-Lepe, '92
John Brooks, Jr., '02	John Garstang, '91	Julian Marks, '02	Artan Simeqi, '01
Dale Burgess, '80*	Francis Gicca, '59*	William Mason, '05	Elliott Smith, '87
William Burgess III, '81*	Joan Gicca*	Brendan McBreen, '89	Mary Smith*
Monica Burke, '95*	Abbot Gilman, '76*	Paul McCarron, '87	Raoul Smith*
William Burke, Jr., '94*	Stephen Giordano, '93	Daniel McCarthy, '88	Daniel Suchy, '05
Philip Burnham, Jr., '90	David Goldberg, '91	Thomas McCorry, '85	Robert Sullivan, '89*
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Linda Cabeca, '89*	Lea Gottfredsen, '85	Jorge Medina, '01	Erik Synnestvedt, '92
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Brian K. Perry '90

Chair, College of Computer and Information Science Resource Development Committee

Name change? Address change? Career news?

Please let CCIS know of any changes in your personal information so that we can update our records. We'd also like to hear your suggestions for alumni achievements to feature in future issues of the CCIS Network.

Please contact:

Diann Siegel
Senior Major Gifts Officer
d.siegel@neu.edu
617.373.2190

Or visit:

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