

Bulldog Bytes

University of Minnesota-Duluth

Department of Computer Science

Department News

Greetings from Duluth as we enjoy our first mild spring in recent memory. The 2014-2015 year saw much activity and several changes, including the retirement of **Carolyn Crouch** (see article). **Pete Willemsen** had a busy year, as he stepped in as interim Director of Graduate Studies and later was elected to the post for a 3-year term. Pete also headed our faculty search committee, and by the end of summer 2014 we hired new faculty members **Neda Saeedloei**, **Peter Peterson**, and **Arshia Khan** (see articles).

Jim Allert spent a productive four months in New Zealand while on sabbatical (see article). In summer 2014 Pete Willemsen was awarded the University of Minnesota's Informatics Institute's Transdisciplinary Faculty Fellow award. In fall 2014 Pete's SIVE lab was joined by post-doctoral researcher **David Shroeder** for the year. As if he was not busy enough, Pete sponsored UMD's winning

team at the Digi-Key Collegiate Computing Competition (see article).

Summer 2014 saw the retirement of SCSE Dean **James Riehl** and his replacement by **Josh Hamilton**, who came from the Marine Biological Laboratory and Brown University. Josh has started a college-wide strategic planning process and promotes the "active learning" approach to college education. Arshia, who recently taught at St. Scholastica, has experimented with active learning in her classes and helped to prepare a SCSE grant proposal on the subject from the National Science Foundation. Our own **Rich Maclin** continues as full-time Associate Dean of SCSE (see article).

The campus budget shortfall continued throughout the year, and UMD recently announced expense reductions in all areas of the campus. The budget difficulties stem from

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Faculty Spotlight

2014 marked a significant milestone for the Computer Science department, as **Carolyn Crouch** joined her husband Donald in retirement. Carolyn served UMD for 26 years, beginning in 1988, after stints at the University of Florida,



Cornell University, and Tulane University. She became Director of Graduate Studies (DGS) in 1994, holding that post for 20 years.

In 1994 our M.S. program was growing and our graduate students had well-developed CS backgrounds, but 22% were not completing

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New Faculty

We are pleased to report the addition of **Neda Saeedloei** to the faculty. In spring 2015 she taught the upper-division electives Artificial Intelligence and Principles of Programming Languages, both courses requiring new preparations from scratch, and the the latter being a new course that she proposed. She is supervising one graduate student and looks forward to adding another in the coming year.

Born and raised in Tehran, capital of Iran, Neda was fascinated by mathematics since elementary school, and logic throughout high school. In middle school she discovered an instinct for teaching. "I was always helping my sister, brothers and cousins with mathematics and physics," she remembers. She carried her



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mismanagement by a previous administration and from a decline in overall UMD enrollment. However, SCSE enrollment has grown by almost 50% in the last 15 years, and so the university has targeted the college for investment. System-wide President **Eric Kaler** has announced a major initiative and funding plan to grow several UMD programs, including computer science, by focusing on the recruiting of new high school students.

Meanwhile, we are using collegiate fees to refurbish our lab in MWAH 187. Also, department head **Hudson Turner** is leading the effort to prepare for the department's next national accreditation visit by ABET's Computing Accreditation Commission, to occur in the fall 2015. We remain one of only two accredited 4-year computer science programs in Minnesota.

The SCSE office underwent a shakeup this year as **Rich Maclin** (see photo right) assumed his post as full-time Associate Dean, just as **Josh Hamilton** (see photo below) was coming aboard as Dean. As former CS department head and associate head, Rich has experience leading successful ABET accreditation cycles. This fall two ABET teams will visit the college, one to review CS and one to review all UMD engineering programs, Chemical, Civil, Industrial, Mechanical, and Electrical. Rich has been tasked with seeing to the details of preparing for these visits, including gathering materials from all these departments demonstrating that their programs and curricula meet the requirements of accreditation.



Rich joined the college office at a busy time. Not only did Dean Hamilton come aboard, but he started an ambitious project to come up with a new college strategic plan amid university-wide budget difficulties. Noting the recent growth of SCSE despite en-

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the program. To improve this, Carolyn implemented a policy that monitored student progress on a semester basis. "This allowed us to recognize potential problems in advance and take action if necessary to ensure that each student made timely progress toward the degree," Carolyn remembers. As a result, from 1995 to 2013, only 8% of students failed to complete their coursework requirements. Virtually all the rest completed the research component and graduated in little more than two years.

Carolyn's commitment to the quality and participation level of our graduate research program met with approval from the U of M's Graduate School, which maintains high standards for its support. "We were able to obtain in excess of \$350,000 of Grad School funding for student research during my time as DGS," Carolyn says proudly. "All of this money went to students to support their research during the summers." In 2014, the CS graduate program underwent a thorough external review, with Carolyn writing the self-study, covering essentially the same time frame as her tenure as DGS. "It was highly successful," she reports.

Carolyn is delighted to leave the CS Graduate Program on sound footing, and she disagrees with those who regard M.S. degrees as less important from a career perspective than B.S. or Ph.D. degrees. "The Master's degree is a gateway," she asserts. "It opens your horizons. It gives you an idea of what future studies might be like. It effectively doubles the degree-specific coursework that you've had and exposes you to research. Some have used it to pursue the Ph.D. while others have used it to launch careers in business or industry. I'm proud of all of our graduates who worked hard and now help provide the technological backbone society needs."

Carolyn leaves us a small but well established, research-oriented graduate program. However she does not take all the credit. "It would not have been possible without the invaluable help of **Lori Lucia**, who worked seamlessly and tirelessly with me for 20 years," Carolyn observes, referring to the department's executive secretary. "If you have a very big task in front of you, I hope you are as fortunate as I was to have such a consummate professional as Lori working with you."

Besides directing the department's graduate program as a whole, Carolyn leaves results from her own research in information retrieval (IR), specifically structured retrieval

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NEW FACULTY CONT'D FROM P. 1

math and logic interests to Sharif University of Technology, where she received a B.S. degree in applied mathematics. That program required some computer science courses, and her interest in CS grew as she took more electives.

After graduation she worked as a developer for a software company in Tehran for a couple of years. However, "I always wanted to continue my education," she says. "Getting advanced degrees in CS at a university in the U.S. was my main motivation to move here." So she enrolled at the University of Texas at Dallas where she earned both her M.S. and Ph.D. degrees in CS.

Her dissertation research focused on model-based design and verification of real-time systems and was supervised by Gopal Gupta, who made a lasting impression on Neda's research experience. "Prof. Gupta continues to be my role model not just as a great professor but as a wonderful person." After completing her Ph.D. Neda spent two years as a postdoctoral researcher at INRIA in France and the U.S. Naval Research Laboratory before joining UMD.

As with any first-time professor, Neda's first year has been both challenging and exciting. Even though the upper-division courses she teaches are rigorous, "Most of the students are sharp, and seem to have no difficulty handling them," she observes. Neda also understands that this year's Minnesota winter has been especially kind to a transplant from Tehran, for which she is grateful. And so are we.

With cyber attacks and data compromises dominating headlines, computer and network security education has never been more important. Our graduates are now better prepared for our field's unsettling security future thanks to the addition of **Peter Peterson** to our faculty. Peter comes to us from UCLA where he pursued research interests in both operating systems and security. As a teaching assistant there, Peter created computer security exercises that have been used at more than 18 institutions around the world.

Peter's relocation to Duluth completes a cycle that began in nearby Poplar, WI, where he grew up. "I got into computers early because my dad, a school teacher, brought home TRS-80s or Apple IIs over breaks," Peter remembers. Programming on those machines involved line numbers and goto statements, but by high school he had learned Pascal, which he found boring. With a passion for music and theatre, and an interest in teaching and helping

people, he went on to major in Music Education at North Park University in Chicago. "I paid for school in part by working with technology and AV equipment," he recalls. "By the time I graduated, I decided that I wanted to work with technology as a profession and play music on the side." He continues to relax by singing and playing piano and guitar.

Peter's path to CS began while working in IT for his alma mater. "I installed the first Linux computer in service there, a Network Intrusion Detection System," he says. He also taught a course on networking as an adjunct, and "I recognized I might really enjoy teaching CS." But he felt he needed more formal schooling, and uses an analogy to explain. "You don't need to know music theory to be a musician, just like you don't need to know CS theory to be a programmer. But knowing theory gives you more depth of understanding."

So he enrolled at UCLA, where he turned his passion for "figuring out how things work" into research interests in operating systems and security. There he worked on information flow tracking operating systems, software-encrypted virtual memory, measuring the energy cost of computer security operations, and improving efficiency through adaptively compressed data.

Lucky for us, Peter and his family, including his wife, one year-old daughter, two Rhodesian Ridgebacks and turtle, really love Duluth. He would make a good testimonial for *Outside* magazine, which recently rated Duluth the number one place to live. He's a skier, likes to bake bread and brew beer, and plays old-school games like Nethack. He's signed up for the marathon, for which he occasionally trains in the woods, chasing down security demons in the brush.

Peter has been "super impressed" with his students so far, finding them conscientious, hard-working and interested. He's also looking forward to getting research projects going with both undergrad and graduate students. "All in all, I feel very fortunate to be here and I'm looking forward to contributing as much as I can to the department and UMD."



Alumni News

This issue of **Bulldog Bytes** continues a news feature whereby alumni can submit personal and professional updates. If you would like to submit updates to future issues, send them to Clare at cford@d.umn.edu.

Reid Amborn (CS CIS '06) is System Administrator at City of Duluth.

Conrad Beaulieu (BS Math/CS '79) is Engineering Fellow at Honeywell International, involved in applied systems and software research including ontology-driven systems and autonomic control algorithms.

Zachary Biles (BS CIS '02) is a System Administrator at Allete/MN Power in Duluth. He works on the Microsoft System Center suite of products to manage and maintain their Windows and Linux server environment.

Daine Billmark (BS CIS '03) is Senior Software Engineer at eBureau in St. Cloud, MN. Favorite side project: SkywayMyWay.com, an interactive map of the Minneapolis Skyways.

Samuel Clark (BS CS '98) is Senior Manager at Accenture and has been with the firm for 10 years. Area of specialty is large scale distributed Store Systems; current client is Whole Foods Market in Austin, TX.

Peter Edstrom (BS CS '99) works for Software for Good, a Minnesota Benefit Corporation that was featured in an American Family Insurance DreamBank campaign video: <https://www.dreamfearlessly.com/story/software-for-good/>.

Peter Euphosin (BS CIS '06) works for Datalink Corp as a Senior Systems Engineer for managed services. Projects include design, implementation, support, and presales of Symantec/Veritas, Asigra, Code42, and EMC products in an enterprise setting.

Scott Halverson (MS CS '12) is a Staff Scientist at Los Alamos National Laboratory's Applied Computer Science Group. Scott ports code for stockpile stewardship to next generation supercomputers and is also involved with an environmental and disaster modeling system.

Dan Hopson (BA CS '14) works in Brainerd for Micronet, Inc. a software and website company. Dan started as an intern in the web services group and is now an Account Manager overseeing support of customer websites.

Louis Hughes (BS CS '13) is a Software Consultant for PTC Inc., learning client business processes to customize PTC applications to meet client needs. Recent project for the largest credit card company in South America required him to travel to Sao Paulo, Brazil for "an experience of a lifetime."

Alex Jokela (BS CS '08) is lead software engineer for the Minnesota Population Center at UMTC, developing the project TerraPop to allow easy linking of population and environmental data. He's also enrolled as a graduate student at the UM, seeking an MS in CS.

Rob Koste (BS CIS '06) has been working at Facebook as a Data Engineer for the last year, after having worked at The Toro Company, SUPERVALU, and Target.

Zhiren Lu (BS CS '14) is Associate Software Engineer for Medtronic Inc., working on the Patient Care Software project, specifically android and telemetry communication development.

Brian Malecha (BS CS '97) is Senior Principal IT Business Analyst at Medtronic, recently working on the CRM solution for the US Launch of the CoreValve heart valve. Brian was promoted to Lieutenant Colonel in the Minnesota Army National Guard (Red Bulls). He is IT leader for a team of 75 personnel who build and defend tactical networks when deployed.

Bridget McInnes (BS CS '02, MS '04) is a professor in the Computer Science Department at Virginia Commonwealth University (VCU).

Admas Molla (BS CS '12) is contracting with Cisco on Jabber Guest, a video calling application. He was on the team that brought some of the tech behind the "Wall of America" to Jimmy Kimmel Live, with an estimated 6 million people watching. https://www.youtube.com/watch?v=byCe_LOeHMQ

Brian Nordmann (BS CS '02) is IT Director at Cubic Corporation in San Diego, CA., responsible for worldwide IT infrastructure including networking, systems, telephony and data centers. Projects include consolidating Cubic's nearly 40 data centers and rolling out a global VoIP phone system.

Charlie Oberg (BS CS '02) is Lead Database Administrator at Prime Therapeutics in Eagan, leading a team of 7 DB2 and Oracle DBAs.

DEPARTMENT NEWS CONT'D FROM P. 2

rollment declines in other colleges, the UM system has agreed to invest in further growth of our college. Rich has been helping to manage that investment by reorganizing space around the college and working on adding faculty in key departments, including Computer Science. Rich plans to return to the CS faculty next year after a (hopefully successful) accreditation visit.

Jim Allert spent much of a sabbatical leave this spring in New Zealand and Australia. In January he attended the AustralAsian Computer Science Week conference in Sydney. With an interest in the area of introductory computer science education, Jim also initiated a working relationship with faculty at the University of Canterbury, Christchurch New Zealand, where a number of innovative approaches to CS education, including unique software tools, have been pioneered.

Jim has also been active in international programs, so he visited UMD Study Abroad partner institutions in Perth, Australia (Curtin University) and Hamilton, New Zealand (Waikato University) to establish relationships with their departments of computer science. Here he is with Curtin's Department of Computing Head **Mihai Lazarescu**.

While in Wellington, New Zealand, Jim viewed a display of a 1949



analog, hydro-mechanical computer called Moniac. "It was one of the most unique experiences of my sabbatical," Jim recalls. "The Moniac was built by the Department of the Treasury and uses a system of water lines, pumps and reservoirs to simulate the monetary supply and inner workings of the national economy." Look for a Moniac lab exercise to work its way into CS 1511 this fall, giving new meaning to a program getting "hosed". ■

Donate

If you would like to help defray the cost of education for worthy students, please consider donating to the UMD Department of Computer Science Scholarship Fund. Just go to <http://www.d.umn.edu/cs/gifts.html> and click **Computer Science Giving Page**.

NEW FACULTY CONT'D FROM P. 3

Researching health informatics, writing textbooks for mobile applications, advocating for women in STEM, and ballroom dancing -- these are just some of the interests of **Arshia Khan**, who joined the department in fall 2014. Relocation to Duluth was not a problem, as Arshia came from our neighbor institution College of St. Scholastica, where she served as chair of undergraduate programs in the School of Business and Technology. Arshia's versatility as a teacher was evident at CSS and continues at UMD where she has taught or soon will teach courses as diverse as Computer Science 1, Visual Basic, Database System Concepts, and Machine Organization.



Arshia grew up in India and was attracted to both medicine and engineering. "In high school I was mainly interested in medicine but could not bear the thought of giving up mathematics so I chose engineering instead," she remembers. For her undergraduate capstone project she designed and developed a device to predict heart attacks, and since then most of her research has been related to health care.

She came to the U.S. and received her master's degree in CS at Hofstra, her thesis focusing on breast cancer imaging. She then researched Electronic Health Records (EHR) and the quality of care in rural critical access hospitals, earning a Ph.D. in IT at Capella.

At CSS she became interested in creating mobile solutions to improve health care. "My students and I developed an EHR system for a physician who volunteers in rural India. We deployed the system and went to India to see the physician's work." Her interest in mobile apps and a passion for teaching account for her writing a book on objective C and iOS programming. "Lots of books have been written on these subjects," Arshia says, "But none for students."

Arshia has developed mobile apps for health care problems as diverse as occupational therapy prescribed exercise monitoring, suicide monitoring and prevention, and patient pain management. She even has Big Data in her sights. "One of my current research interests is to explore data analytic opportunities on the large amounts of data gener-

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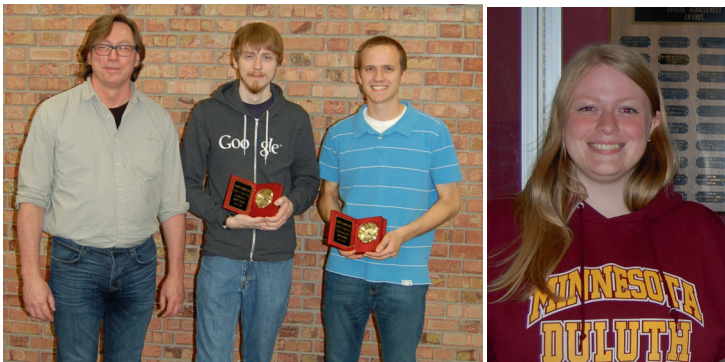
Undergraduate News

CS and CIS Graduating Seniors 2014-2015

Alexander Apter	Galen Maxim
Matthew Beaulieu	Derek Mayer
Paavo Bennett	Tony Mengelkoch
Eric Boggs	Brad Most
Samuel Chihak	Nathan Netko
Bryon Colby	Brandon Paulsen
Bridget Coughlin	Brent Pavlovich
David Djuric	Grant Phillips
Chase Dunbar	Justin Pieper
Thomas Erickson	Scott Redig
Tyler Feldhege	Jonathan Rusert
Kyle Fink	Alex Samuelson
Ryan Fuerstenberg	Jason Schafer
Charles Goldsworthy	Jesse Schmieg
Jerry Hanson	Austin Smieja
Brandyn Hardt	Ryan Stowell
Luke Johansen	David Strausser
Joshua Koll	Jeremiah Strong
Luke Kroska	David Van Loon
Alyssa Marlatt	James Walker

AWARDS

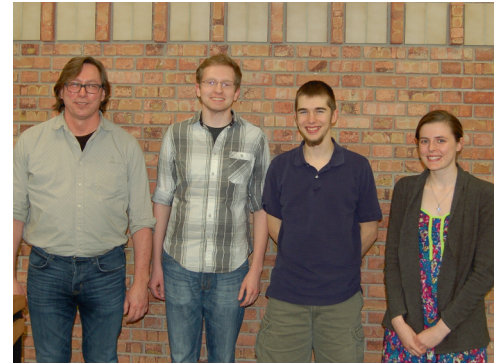
Academic Achievement:	Jesse Schmieg
Outstanding Senior:	Bridget Coughlin
Outstanding Service:	Scott Redig



Department head **Hudson Turner** with undergraduate award winners, from left to right, **Scott Redig**, **Jesse Schmieg**, and **Bridget Coughlin**.

SCHOLARSHIPS

Department head **Hudson Turner** with 2015 scholarship winners **Mitch Rysavy**, **Josh Muhich**, and **Janna Madden**



UMD VICTORIOUS AT DKC3

The 15th annual Digi-Key Collegiate Computing Competition was held in Thief River Falls, MN. Twenty-three teams from around the area took part, including UMD's team advised by **Pete Willemsen**. For the first time in the competition's history, two teams tied for first place after the word, short, and long problem sections: UMD and Bemidji State University. UMD was named champion after winning the tie-breaker problem. Here is our team, with Pete in the background: from left to right, **Scott Redig**, **Jonathan Beaulieu**, and **Bridget Coughlin**.

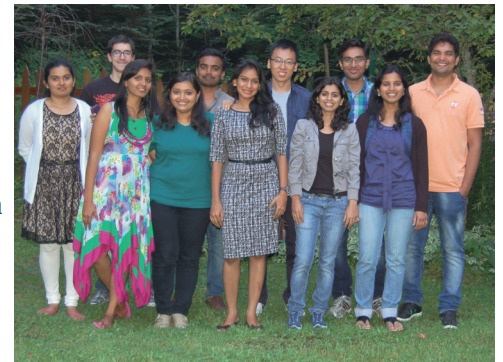


Grad Program 1st Year Class

Front: **Swetha Naidu**, **Preethi Chimerla**, **Priyankana Basak**, **Mounika Chilamcherla**, **Anicia D'Costa**, **Puja Davande**.

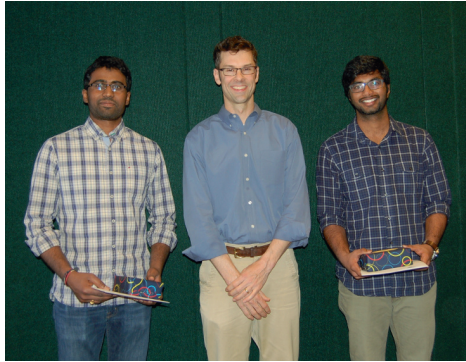
Back: **Logan Sales**, **Vamsidhar Kasireddy**, **Yan Bai**, **Nirav Sharda**, **Bharath Bommana**

Not Pictured: **Matthew Joyal**



GTA AWARDS

Director of Graduate Studies **Pete Willemssen** with Graduate Teaching Assistant award winners **Ravikanth Repaka** and **Shiva Chittamuru**



GRADUATE COMMENCEMENT



Back: **Ranga Palletra, Mounika Alla, Henry Wang, Pete Willemssen, Doug Dunham, Sai Charan Chitrala, Sakethram Karamuri, Peter Peterson, Sarmad Siddiqui**

Front: **Subhash Movva, Viswanadh Vuggumudi, Akshay Koppula, Shiva Chittamuru, Ravikanth Repaka**



DIWALI NIGHT



ALUMNI NEWS CONT'D FROM P. 4

John Pouchak (CS CIS '10) lives in the L.A. area and works as a remote web development consultant for eHealth Technologies of New York. He also supports development operations built on Microsoft's Team Foundation Server and Windows Azure. John finds life in southern CA "both infinitely terrifying and infinitely interesting," and anticipates returning to MN in the future.

Ravi Kiran Ravva (MS CS '14) works at Amazon in Seattle as a SDE-1. Before that he was a Junior Software Engineer for Hyland Software in Ohio.

Andrew Reitz (BS CS '11) is Senior Android Engineer at SmartThings and hosts several Android projects on GitHub. He also gives talks on Android throughout the year.

David Schmidt (BS CS/Math '87) is a Technical Director at Life Time Fitness in Chanhassen, leading an IT team that enhances and supports applications managing the company's core business functions. David is happy to work for a company "that inspires people to lead a healthy way of life."

Josh Sheppard (BS CS '00) After working at 3 companies in various web development roles Josh has been Manager of Software development at Infinite Campus since 2008.

Jason Sonnek (BS CS '03, MS CS '05 UMTC) is a Principal Research Scientist in Cybersecurity for Sandia National Laboratories. He and wife Christina (Holden, BS Math '02, MS Math '04) reside in Lino Lakes, MN, with their three children.

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NEW FACULTY CONT'D FROM P. 5

ated from EHR," she says.

One of a growing number of educators promoting "active learning" and the "flipped" classroom, Arshia does less lecturing in favor of hands-on exercises as in a lab setting. She also lends credibility to the college's diversity effort and serves on a committee promoting women in STEM fields. "I am always looking for ways to encourage women in CS and have had some success," she says, noting that she has received several grants toward this end. "I look forward to continuing these efforts."

Arshia and her husband, a physician, have a son, two daughters, two dogs, and three cats. "I am very close to my kids and love animals," she asserts unsurprisingly. "I also love ballroom dancing with my husband, watching movies with my kids, biking on the lake walk, beading, and painting." Lucky for us, she also squeezes teaching and research into the mix. ■

ALUMNI NEWS CONT'D FROM P. 7

Ron Thomsen (BS CS '96) designs, markets, manufactures and sells a full line of products for vintage Ski-doo snowmobiles. "After 17 years in the software business, I wanted to try something new," Ron writes. So he turned his hobby into a small business.

Vamshi Krishna Thotempudi (MS CS '14) is a software engineer for IBM Watson Solutions Development, working on the Natural Language Processing team of the Watson Oncology Expert Advisor for the MD Anderson Cancer Center, the world's leading cancer hospital.

Aaron Vander Giessen (BS CS '94) is a Business Process Analyst and Solution Architect (though he does not mention a company), focusing on a world-wide roll-out of HR supporting processes and technology.

David Wicklund (MS CS '06) is a Senior Oracle DBA at Starbucks Coffee in Seattle, WA.

Rob Wilde (BS CS '95) has been with Symantec software (formerly Veritas) for 15 years and currently works on the product NetBackup. He filed his first U.S. patent in 2014.

Nan Zhang (MS CS '04) is a Software Engineer for SumTotal Systems in Burlington, MA. ■

FACULTY SPOTLIGHT CONT'D FROM P. 2

from XML documents in response to user queries. "The INEX initiative sets forth retrieval tasks as competitions," Carolyn explains. "Research groups from all over the world participated in these competitions, and our results were often top-ranked. Our methodology, called dynamic element retrieval, allows us to retrieve elements at execution time while reducing the large number of indices normally required." Carolyn leaves a legacy of important publications in this area as well as many M.S. theses produced by IR graduate students from 2003-2014.

Carolyn will certainly not be idle in retirement. This summer she and Donald will travel by ship up the coast of Norway into the Sami country and then visit with friends in Norway. Their lovely east-end house will be 100 years old in 2016, so there are always ongoing projects there. She plans to become more involved in family genealogical research and in traveling to the sites, in this country and abroad, where her ancestors lived and records of their lives still exist. Wherever she goes she collects antique faience (glazed pottery) to remember the places and people she encounters when traveling.

Both Carolyn and Donald have been involved with IR since its very early days, and Carolyn has been asked to write about early events such as their involvement in starting the annual IR conferences on behalf of the ACM Special Interest Group on IR. She is looking forward to that, as well as deciding whether to continue her research on dynamic element retrieval, where she says there is still much work to be done.

While Carolyn has seen many changes over the years, one thing has not changed. "The students!" she exclaims. "We had great students in the early years, and we have great students now. That has been true every year of my tenure. I am proud of them and proud of what they have accomplished. I wish them the best, both in their lives and their careers in this dynamic, exciting field that we are all so fortunate to be part of."

We thank Carolyn and wish her the best as well. ■

Bulldog Bytes is conceived, written, and produced by **Tim Colburn** (tcolburn@d.umn.edu) with assistance from **Clare Ford**.