

Department News

Welcome to another issue of Bulldog Bytes, the UMD Department of Computer Science annual newsletter. Our program continues to grow, with the number of undergraduates doubling over the last 5 years to about 400 current enrollees. This year we expect to award over 80 bachelor's degrees. Also, in a sign of the times, we have changed our curriculum to require Computer Security, which up till now had been an elective.

Last year at this time we announced the hiring of **Sophia Knight** as assistant professor. See the Faculty Spotlight below for more about Sophia's first year with us and her research program in artificial intelligence. Besides Sophia

(our newest faculty member), below we also spotlight **Jim Allert**, our longest-running faculty member (35 years!) and his recent Chancellor's Award for Excellence in Teaching.

It has been a good year for other Computer Science faculty as well. **Peter Peterson** was given a Young Teacher Award by the Swenson College of Science and Engineering. Peter also received a \$300,000 National Science Foundation grant (see separate article). **Pete Willemsen** served as conference chair of the 2018 ACM Symposium on Applied Perception and co-chair of the 2019 IEEE Virtual Reality program committee.

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Faculty Spotlight Sophia Knight

With the increasing complexity of multi-user online systems and their focus on artificial intelligence, the need for logic and formal methods in computer science has never been greater. **Sophia Knight**, the newest member of our department, is well positioned for the challenge. "I do research on the relationship between knowledge, communication, information flow, and interaction in dynamic multi-agent systems, using tools from concurrency theory and epistemic logic," Sophia says, "I am interested in applying these ideas to problems in social networks and other multi-user online systems with personal data, as well as to security problems."



Sophia grew up in Littleton, Colorado. "I always liked

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Faculty Spotlight James Allert

Teacher of the Year
UMD has over 500 full-time faculty members. Each year, in a competitive process, one of them is selected to receive the Chancellor's Award for Excellence in Teaching. In 2019 the winner of that award is **Dr. James (Jim) Allert** of the Department of

Computer Science (seen here at the award reception with his wife **Debbie**). Among Dr. Allert's notable achievements are the following: He has taught almost 15,000 students over his career (this may be a record in SCSE) - with more to come.



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Women in Computing

It was a big year for the UMD Women in Computing (WIC) group, headed up by **Arshia Khan**. Last fall, WIC sponsored an Undergraduate Research Workshop, which introduced undergraduate students from UMD and regionally to research experiences, providing them with information about graduate school, and giving them an opportunity to interact with current UMD computer science faculty and graduate students.

The workshop was aimed at increasing enrollments of women and under-represented groups in graduate computer science education. Here undergraduates engage with faculty during the event.



In February, UMD WIC hosted MinneWIC, the ACM-W Celebration of Women in Computing for the Upper Midwest. The conference, which generated local media coverage, spanned two days and brought together computing professionals, faculty, and students, like these from across Minnesota and neighboring states.



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NSF Grant for Peterson

Common sense misconceptions in science often require effort to dispel through education. For example, a classic misconception in physics is that heavier objects should fall faster than lighter ones. Students can be disabused of this idea, but it requires rigorous experimentation.

In its Security Misconceptions Project, the National Science Foundation is interested in identifying and dispelling misconceptions about computer security. In 2018, our computer security professor **Peter Peterson** was awarded a two-year, \$300,000 NSF grant that supports two graduate students and summer research time. The aim is to create a list of common misconceptions about security as identified by experts in academia and industry, along with a test to gauge how well students understand those concepts, and a set of exercises and videos that teach the "correct" concepts.

Here Peter and graduate students **Maz Jindeel**, **Alek Straumann**, and **Brandon Geraci** stand before their NSF research project poster.

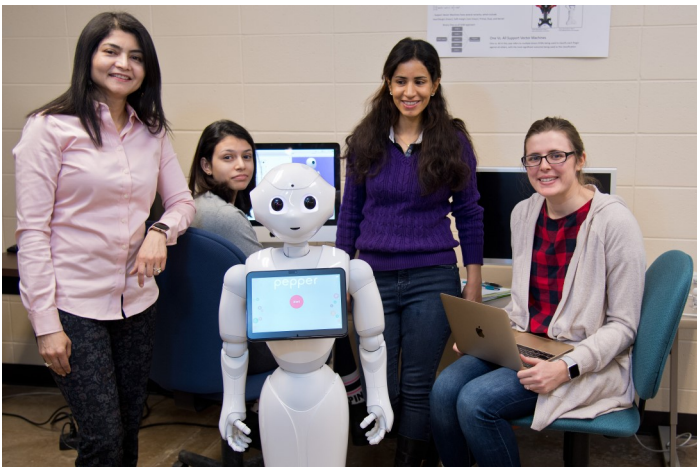


Peter is collaborating with several researchers at the University of Maryland Baltimore County and the University of Illinois. He has joined the Cybersecurity Assessment Tools project, which aims to create two tests: one for students who just completed a first course in security, and one for students who have finished a 2- or 4-year course in cybersecurity. These tests will help determine if those students picked up the information they should have following their particular course of training.

Robot Assistance for Care Giving

Professor **Arshia Khan's** research group applies robotics to patients with mild cognitive impairment. Their robot, called Pepper, can record physical activity including sleep, energy expenditure, and hand tremors. By monitoring posture transitions, Pepper can take actions, such as sending an alert for a caregiver to check for bed sores. Air temperature, inside and out, can be tracked and watched for conditions that would lead to freezing or overheating. And, in an area of great concern for loved ones, Pepper can watch for wandering.

Arshia's group's efforts have received university-wide and local media exposure, and keeps a team of graduate students busy. Here are Arshia, **Yumna Anwar**, Pepper, **Mahsa Soufinyestani**, and **Janna Madden** in Arshia's lab.



Undergraduate News

Undergraduate at Elite Summer Workshop

Undergraduate CS student **Shuning Jin** was accepted for a summer research workshop at Johns Hopkins University in the summer of 2018. She spent six weeks as part of a nearly 20 person team led by natural language processing faculty from NYU and Brown University. Their goal was to develop neural network/deep learning methods that represent and understand sentences.

Only three undergraduates were selected: one from Swarthmore, one from Harvard, and Shuning. The rest of

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Graduate News

This last year saw the addition of 10 first-year graduate students to the Master's program:

Dale Dowling
Brandon Geraci
Muhammad Gulfam
Jackson Houston
Josie Kachelmeier

Sumanth Kothapalli
Manaswi Mannem
Hamza Mustafa
Saptarshi Sengupta
Mahsa Soufinyestani

At commencement in May, thirteen second-year graduate students received their M.S. degrees:

Christianah Adigun
Yumna Anwar
Usman Gohar
Austin Gordon
Mazin Jindeel
Prateek Joshi
Janna Madden

An Nguyen
Zachary Patterson
Aleksander Straumann
Nisarg Thakur
Sagari Vatchavayi
Bo Wen

Here are An, Nisarg, Bo, Usman, Christianah, Sagari, Janna, Yumna, and Zach at UMD commencement.



Each year in the spring we recognize two second-year Master's students who have excelled as graduate teaching assistants. This year the awards went to **Zachary Patterson** and **Sagari Vatchavayi**, shown here with director of graduate studies **Pete Willemsen**.



Alumni News

Don McGregor (BS '81) was commissioned in the Air Force through the UMD ROTC program, then spent the next 35 years in the Air Force and Air National Guard. He retired from the Pentagon as a two star general in 2016 and is currently a pilot at United Airlines. Don is married with three children.

Dan Sivertson (BA '83) is Senior Technical Program Manager on the AWS Cryptography team in Seattle Washington.

Robert Sand (BS 89') is Linux System Administrator for Applied GeoSolutions in Durham, NH.

Brian Malecha (BS '93) is an IT Manager working in Medtronic's Digital Health group. A member of the Minnesota National Guard, Brian is currently deployed in the Middle East with the 34th Infantry Division, serving as the officer in charge of an advisor team providing advice and assistance to U.S. partners in the region.

Rajinder Singh (MS '94) owns the software consulting company Cheval Partners specializing in Cloud, DevOps and IoT. Cheval works with AWS, Microsoft and Hashicorp. Says Raj, "I loved my time at UMD."

Jonathon Fields (BS '96) worked for 10 years in development/engineering at IBM and Hitachi in the hard disc drive industry, then went on to graduate from medical school at the University of Iowa. Jonathon works in Occupational and Environmental Medicine in Cedar Falls, IA and Rochester, MN, using his IT background to setup new telehealth services for corporate clients.

Brian Nordmann (BS '02) lives in San Diego and is CIO of Dudek, an Environmental and Engineering Services firm in Encinitas, CA.

Josh Sheppard (BS '00) recently became Machine Learning Manager at C.H. Robinson. Previously he spent almost 13 years at Infinite Campus managing various software development teams to support K-12 school districts and state departments of education. In 2018, Josh also began speaking at developer conferences on the topic of Kubernetes.

Jesse Otterblad (BS '04) is Corporate Development Manager at Farmers Business Network in Sioux Falls, South Dakota. FBN is a technology startup focused on the agricultural sector. Jesse works on business acquisitions and strategic investments.

Melissa Patsch (BS '04) has been a software developer for a non-partisan office of the Minnesota legislature for the past 13 years. She is Assistant Deputy Revisor of Information Systems and leads the team of developers responsible for the legislative drafting and editing system for the state.

Jeremy Dobs (BS '06) is a Distinguished Engineer with Trimble managing backend communication teams. He also works across various transportation sectors to help drive technology innovation, execution, and adoption.

FACULTY SPOTLIGHT CONT'D FROM P. 1

In the previous year, overall student response data gave him the highest possible approval rating on every course evaluation question in every course he taught.

He is the author of an introductory computer science textbook with a major publishing house (Cengage) and journal articles in a number of different fields including computer science education, trace element geochemistry, archeometry and the social sciences.

He currently serves as the SCSE representative on the Assessment Subcommittee, has been an invited speaker at a number of ABET Symposiums and other engineering assessment conferences, and has written software to automate the ABET program and course assessment process.

He played a key role in several major campus technology initiatives, most notably the development of wireless computing and use of handheld computers in the classroom.

He is currently very involved in developing innovative approaches to flipped classrooms and active learning in large lecture situations.

We celebrate this very notable achievement with Dr. Al-Alert who looks forward to continuing to face new teaching challenges in the years ahead.

WOMEN IN COMPUTING CONT'D FROM P. 2

Participants shared experiences and strategies for recruiting and retaining women in computing fields, and explored issues common to women working in these fields. Young women like UMD student **Angelica Fleury**, shown here, explored career opportunities in computing and networked with women from academia and industry, including Thomson Reuters and Google.



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FACULTY SPOTLIGHT CONT'D FROM P. 1

math and outdoor activities like hiking and snowshoeing in the mountains," she says, "But even though I'm from Colorado I don't ski!" As an undergraduate, she attended McGill University in Montreal, where she started out studying philosophy and math. "My logic courses got me interested in (mostly theoretical) computer science," she remembers, "So I ended up staying at McGill to do a Masters in computer science." She credits her thesis supervisor and mentor Prakash Panangaden, who encouraged her to go to grad school despite her limited background in computer science.

Sophia's Masters thesis involved game semantics for process calculi with a focus on knowledge and strategies. She also worked on epistemic logic, a field of modal logic concerned with reasoning about knowledge. After her Masters she worked as a research assistant at McGill for another year, then went to Paris and the Computer Science Laboratory of the École Polytechnique. She continued working on epistemic logic and process calculi under supervisors Catuscia Palamidessi and Frank Valencia, receiving her PhD in 2013.

Sophia has had rich post-doctoral experience, both academically and personally. Her son was born during her first postdoc in Nancy, France, where she was part of Hans van Ditmarsch's epistemic logic team. Then came a second postdoc in Uppsala, Sweden, in Joachim Parrow's concurrency group. These postdocs involved new work on topological semantics for epistemic logics, and also on logics for games. Her daughter was born in Sweden, giving her family a decidedly international flavor, which she credits. "I was glad to have access to generous French and Swedish parental leave, childcare and healthcare!" Here are Sophia, her husband **Justin**, and her children on a winter outing in Sweden.



During her first year at UMD, Sophia has established herself teaching Automata and Formal Languages. Next fall she will add Operating Systems to her repertoire. "My first year has been great," she says. "I've really enjoyed my teaching and the students have impressed me with their interest and hard work."

This summer Sophia will continue her research, beginning with an invited talk at the Interaction and Concurrency Experience workshop in Copenhagen. Then she will visit Aniello Murano's group at Università degli Studi di Napoli Federico II for 6 weeks, to work on Epistemic Strategy Logic, a logic about what agents know in games. Finally, she will teach a summer school course on Topological Approaches to Epistemic Logic at the European summer school on languages, logic and information in Riga, Latvia.

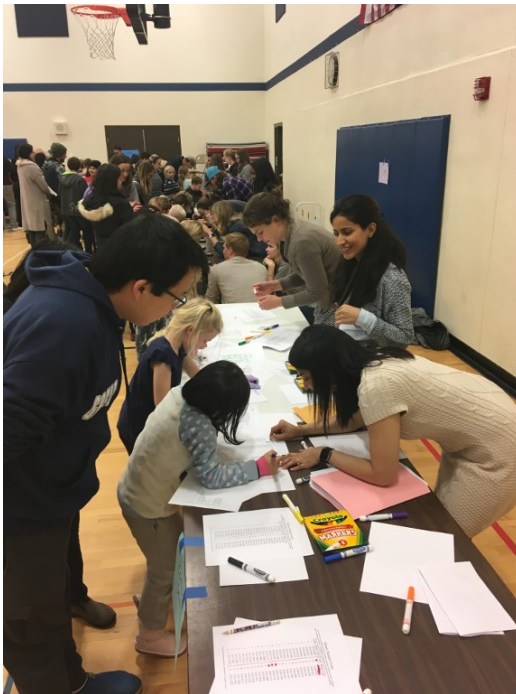
Sophia and Justin are no strangers to rugged outdoor activities, having backpacked with their one year-old 130 miles on the Kungsleden trail in the mountains in northern Sweden in the summer of 2016. "It was beautiful but it rained almost every day," Sophia remembers. She and her family will probably fit in well here. "Lake Superior and the surrounding areas are beautiful," she says. "I'm looking forward to enjoying some nature activities now that spring is here." She won't need to look far to find them, and maybe she'll take up skiing after all.

DEPARTMENT NEWS CONT'D FROM P. 1

Ted Pedersen is co-chair of the program committee for the 2019 Annual Conference of the North American Chapter of the Association for Computational Linguistics, meeting this summer in Minneapolis. **Arshia Khan** continues as organizer and advisor for the department's Women in Computing group (see separate article). **Henry Wang** was guest editor of an IEEE special issue on AI in intelligent services, and was publication and financial chair for the IEEE/ACM International Symposium on Quality of Service.

The department continues to take part in outreach to the community, and this year we participated in Congdon Science Night at a local grade school. Organized by **Pete Willemssen** and assisted by several students and faculty,

tables were set up so that grade schoolers could gather and get hands-on experience learning about the parts of a computer, binary codes, and fractals. Here are Sophia, graduate student **Mahsa Soufinyestani**, and Arshia guiding the little ones:



With the opening of the new Heikkila Chemistry and Advanced Material Science (HCAMS) Building on campus this coming fall, there is discussion of the Computer Science Department moving into the old, to-be-renovated Chemistry Building in the future. Rumors of us moving out of 3rd floor Heller Hall have circulated for decades, and we will believe it when we see it.

Please keep in touch.

UGRAD NEWS CONT'D FROM P. 3

the team consisted of PhD students, post-docs, and faculty. The primary results of the study, according to their report, "support the use of language modeling as a pre-training task and set a new state of the art among comparable models using multitask learning with language models."



Here is a team photo with Shuning at the bottom right.

This year's undergraduate awards for graduating seniors were presented at the annual department pizza party in May:

Outstanding Academic Achievement: **Shuning Jin**

Outstanding Senior: **Megan Effinger**

Outstanding Service 1: **Jeffery Smith**

Outstanding Service 2: **Tina Larsen**

Here are Tina, Jeff, Megan, Shuning with department head **Hudson Turner**:

We also awarded a number of scholarships for 2018-19 to returning students:

Kenneth E. Differt Scholarship:

Yongming He

Bridget & Clyde Rogers Scholarship:

Sourya Silwal

Computer Science Departmental Scholarship:

Nels Danielson

Ethan Johnsrud

Corey Knutson

Samuel Robinette



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UGRAD NEWS CONT'D FROM P. 6

Here is the full list of students receiving BS or BA degrees in 2018-2019:

Andersen, Alia	Lei, Sen
Anderson, Daniel	McKelvey, Joshua
Beck, Jacob	Miller, Andrew
Bolen, Josh	Miller, Nick
Breimhurst, Tony	Musika, Rudolf
Brust, Riley	Nuthak, Garrett
Cheek, Devin	Olson, Dylan Alan
Cheek, Dominic	Osborne, Brandon
Cich, Kyle	Osumo, Wesley
Composto, Evan	Parsons, Colin
Cox, Dillon	Pederson, Abigail
Cramer, Tyler	Peterson, Ryan
Crosby, Elizabeth	Phung, Nam
Dirkx, Cody	Rajendran, Srisha
Effinger, Megan	Reif, Jaron
Ellis, Benjamin	Rice, Jason
Enos, Austin	Rochel, David
Fan, Pinyi	Rodysill, Paul
Fulton, Jacob	Rosell, Dawson
Frank, Andrew	Rudin, Ryan
Fulton, Mackenzie	Rudrud, Craig
Gamboa, Ricardo	Sainz, Alfonso
Gebhart, Ryan	Sanford, Alexander
Geraci, Brandon	Schaefer, Patrick
Gervais, Nicholas	Schultz, Ross
Ghordlo, Lom	Scott, Roni
Grunenwald, Tyler	Senst, Josh
Guttormson, Lucas	Silver, Maxwell
Hauck, Sidney	Sipper, Paul
Her, Ken	Smith, Jeffery
Higgins, Kieffer	Smith, Jennie
Honerman, Elise	Swenson, Ethan
Hutchens, Gaven	Thesing, Jeremy
Jin, Shuning	Thies, Brandon
Johnson, Ryan	Ward, Matthew
Kallio, Jakson	Wawrzyniak, Jacob
Kropid, Nathaniel	Wei, Kerry
Kuzas, Noah	Weinhold, Mark
LaFrance, Shaun	Winger, Trevor
Lane, Mitchell	Wogensen, Breanne
Lardy, Hunter	Yin, Yue
Larsen, Tina	Zurales, Tom

ALUMNI NEWS CONT'D FROM P. 4

Peter Euphosin (BS '06) is with Insight Enterprise (Fortune 500) in their Cloud and Data center transformation division. He manages 20+ infrastructure engineers that deliver support, implementation, and research hubs for enterprise clients.

Sean Janssen (BS '10), after 10 years in the computing industry, has this advice for students: "You get what you put in. I still learn something new every day in this field so you have to be excited to learn. Make sure to utilize your resources like lab sessions, study groups and great teachers".

Ryan Bakken (BS '16) started his career with the company he interned for, Physio-Control (now Stryker), and worked on the HealthEMS Manager team as a full-stack developer. He recently accepted a position at Atlas-X, which builds automated solutions for the manufacturing industry.

Mounika Chillamcherla (MS '16) works at Microsoft in Cloud and AI Security. "Life is just great professionally and personally," reports Mounika.

Joshua Muhich (BA '16) has started working for UMD ITSS as an Application and Web Developer. "It's nice to be back on campus!" says, Josh. "Last year I ran Grandma's, my first full marathon."

Amanda Poston (BS '16) is a Software Engineer at Merrill Corporation, working on content upload and download to and from a virtual data room. Her work includes feature development, production support, pipeline management, and maintaining communications from development and product.

Mitchell Rysavy (BS '16) is a software engineer at Amazon in New York, NY.

Kade Helseth (BS '17) is a Full Stack Developer at Wex Health.

Liz Altobelli (BS '18) lives in Miami, FL, working as an Applications Consultant for a tech consulting firm called Capgemini developing an intelligent chat bot and a recommendations engine. Liz is chartering a Women in STEM Employee Resource Group to help connect, support, and empower people of all genders in STEM by building an inclusive community led by women within Capgemini. Says Liz, "Our goal is to support the greater women in STEM community as a whole and allow ways for Capgemini employees to get involved with the women in STEM pipeline."

Jake Pulkkinen (BA '18) works at General Dynamics Mission Systems as a SE2.

Swathi Vallabhajosyula (MS '18) has been accepted (with funding) to the PhD program in Computer Science at Ohio State University. She will start in fall 2019.

Ruta Wheelock (BS '18) is an Associate Researcher at SIFT (Smart Information Flow Technologies) in Minneapolis, working on application development and NLP related research.

Donate

If you would like to defray the cost of education for a worthy student, please consider donating to the UMD Department of Computer Science Scholarship Fund.

Just go to <https://scse.d.umn.edu/about/departments-and-programs/computer-science-department/support>

University of Minnesota Foundation

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