Computer Science Newsletter 2023

Western Washington University Computer Science Department

For Alumni and Friends

In This Issue:

WESTERN WASHINGTON UNIVERSITY

MAKE WAVES.

Letter From the Chair

Dear Alumni and Friends of Computer Science,

I am happy to announce a successful return to in-person operations. This quarter -- winter 2023 -- nearly all of our more than one hundred courses across our degrees are fully in person. A big thank you goes out to the faculty, staff, and students for all their tireless efforts to get to this point. This is on the heels of yet another successful year, during which we graduated 165 undergrad and 11 grad students, and conferred a handful of certificates. Moreover, despite the lingering effects and challenges of the pandemic that are prevalent across much of academia, all signs point to us forging ahead in the usual robust fashion that was the norm prior to 2020. We have 950 students taking one or more CS courses this quarter, which includes more than 50 masters students, our largest grad student cohort ever. Cybersecurity continues to be popular as a 2+2 program, and our recently launched Data Science BS is off to a great start. The first cohort of 10 Data Science students are slated to graduate in winter or spring, and going forward there should be upwards of 15 graduates each year. In addition, there are a half dozen externally funded research efforts underway in the department, and both undergraduate and graduate students have resumed attending conferences to present their research projects mentored by our faculty. And, our more than ten student clubs have resumed weekly meetings and activities. Things look good!

Looking ahead, there are significant efforts and exciting initiatives planned or in their incipient stages.

Groundbreaking on the new state-of-the art Kaiser Borsari Hall will be in March. The new hall, with a connecting skybridge to our existing spaces on the 4th floor of CF, will house 8 new CS faculty offices, 5 new office for NTT faculty, a new main office suite for the chair,

advisors, support staff, and directors, two new collaborative learning classrooms, multiple student study spaces, a student activities room, a senior project room, as well as a showcase robotics lab. The other half of the new building will be occupied by Electrical and Computer Engineering, with whom existing collaborations are already planned to increase. Accompanying the new building will be renovations and expansion of the existing CF research spaces in CF. At this time next year, we should have some exciting photos to share of the construction underway, as well as news of multiple new faculty hires.

I am especially excited to announce that Dr. Yasmine Elglaly has taken over the reins of the Computer Science Distinguished Scholars (CSDS) program, from recently retried Dr. Perry Fizzano. CSDS seeks to recruit into computer and data science incoming first-year students who demonstrate academic excellence. We are especially keen to bring to campus first generation students, and those who hail from traditionally under-represented groups in CS. Each yearly cohort participates in monthly gatherings with a focus on providing opportunities for internships, research experiences, and leadership. Recently, a friend of CS has made a generous donation to fund a handful of yearly scholarships for some of the CSDS students. Moreover, CSDS students will have a reserved seat in the CSCI and Data Science pre-major classes, enabling them entry into the major in as early as their sophomore year, thus graduating within 4 years.

All in all, the department is flourishing. Here's hoping for another successful year!

Dr. Filip Jagodzinski

Professor Hearne Retires

Thirty-seven years ago, Dr. James Hearne joined the Computer Science Department at Western Washington University. It was a much smaller department back then. Through all the growth and changes, Professor Hearne has been a dedicated and inspiring teacher, friend, and colleague. He has decided to retire at the end of spring term. Students, staff and faculty of the CS Department will surely miss him.

Jim joined the CS Department in 1986. He earned his PhD in Philosophy from University of California Riverside and worked in the aerospace industry. He and Professor Geoffrey Matthews (who retired just before the pandemic) knew each other in high school (1967) and reunited as colleagues teaching at Western. Jim's research is in data analysis of scientific and historical data and social networks.

One of Professor Hearne's many accomplishments include designing a programming language called Tahiti. The language got its name when in the gray of winter one of the collaborating professors Debra Jusak exclaimed, "I'd rather be programming in Tahiti!" Professor Hearne founded the Internet Studies Center ahead of the World Wide Web, and he served as the director of East Asian Studies for which he received the Carl J. Simpson Bridging Award.

After retirement Professor Hearne plans to return to pursuits interrupted by "the necessity of earning a living"—painting, writing, and composing music. We will miss him dearly.

New Data Science Major Blasts Off

The Data Science major, launched in Fall 2021, is off to a strong start. Having taken the new "Fundamentals of Data Science" course, 29 students applied for the major during the 2021-2022 academic year, and 18 were accepted. Another 18 applications were received in Fall 2022, and we expect to admit even more students throughout the 2022-2023 academic year. The first two majors are scheduled to graduate with their Bachelor of Science in Data Science in Winter 2023, with several more graduating in Spring 2023. We look forward to seeing them succeed in their data science careers to come.

The Data Science BS is a rigorous program, heavy in computing and math, designed to best prepare our students for careers as data scientists, data analysts, data engineers, and machine learning or artificial intelligence scientists or engineers. Compared to the Computer Science BS, it includes all but the systems track and software engineering course, replacing those with additional courses in data science, machine learning, multivariable calculus, linear algebra and statistics. The Data Science major includes a three quarter data science senior project sequence, and allows students to choose from among a wide variety of data science-relevant

elective options offered in the Computer Science and Mathematics departments. The Computer Science department is currently exploring several options for expanding our data science offerings. First, we are considering developing a Computer Science Master's of Science concentration in Data Science, or an outright Data Science MS degree. Second, we are hoping to obtain the resources to offer a Data Science minor, to provide access to key data science skills to majors across the university (e.g., biologists interested in bioinformatics, or linguistics interested in computational linguistics). Finally, we are anticipating designing a Bachelor of the Arts degree related to data science at Western Washington University's Poulsbo campus, which will operate autonomously once created.

If your organization is in need of data scientists, please consider offering tech talks to the majors, scheduling recruiting visits with them, or sponsoring scholarships to support them. Do not hesitate to reach out to Data Science advisor Tatyana Stahler (Tatyana.Stahler@wwu.edu) or Data Science program director Brian Hutchinson (Brian.Hutchinson@wwu.edu) with any questions or to learn more.

CS Student Club News

Whatcom Coders is a rebranded club that evolved from the Whiteboard Coders club and expanded their scope. Whatcom Coders is focused on building community and helping students prepare for job interviews. They hold three different types of meetings. The first type helps those actively preparing for interviews by practicing Leet Code problems. The second type is a general meeting where they might review resumes or share interview experiences to help club members prepare as they apply for jobs. The third type brings together students interested in personal coding projects. There are several officers running the club and lots of students participating in every meeting.

The number of students enrolled in the CS Master's program is at an all-time high. To address some challenges associated with growth, a few graduate students created the **Grad Cohort (aka the Grad Squad)** to help foster community. First, they organize a weekly social get-together to help graduate students get to know each other better. Second, the group has been advocating for graduate students to have a greater presence in the department and have better support structures. To this end, a department-specific graduate student orientation kicked off the year, and a web page of graduate student profiles is planned. They also plan to survey students regarding their preferences for elective offerings which will help inform the chair as course schedules are planned. This group is taking great strides toward improving the social and educational aspects of the master's program.

The Association for Gender Inclusion in Computing (AGIC) has been busy lately. The club holds social events like game night and Bob Ross Microsoft Paint night (yes, members watch an old Bob Ross show and follow along in Microsoft Paint, you should try it). On the more serious side, they recently had a meeting about Hacktober and how to get involved in Open-Source Projects. Some club members are planning to participate in TechTogether Seattle (the first all-female, femme, and non-binary hackathon in Seattle) and they will take a field trip to Adobe in Seattle. The club is welcoming to all students, participation is as robust as ever, and their costumes on Halloween were first-rate!

Brenn Nieva Speaks at MLH Hackon

CS Student Brenn Nieva was a speaker at MLH Hackcon at Rock Hill, NY where student leaders connect with companies excited about hackers and hackathons.

What was the event?
MLH Hackcon is an international conference hosted by Major League Hacking geared to support the CS community and hackathon organizers.

What did you present?
I presented an hour-long workshop on increasing diversity and inclusivity in our CS communities

What was a memorable experience of the event?
It was so encouraging to learn from other participant's experiences and build off other events they have hosted in the past. I constantly felt like I was feeding off the passion and excitement of the other student leaders. I was excited to return to WWU and implement these ideas for the students in our department.

Did you make any interesting connections?
One of my favorite people I met was Fiona Whittington, one of the founders of TechTogether. TechTogether is the nation's largest initiative to address the gender inequities in the hackathon community. We instantly clicked after discussing the overlap between TechTogether and our WWU Association for Gender Inclusion in Computing.

Who are some of your mentors at WWU or elsewhere?
I have been a member of Brian Hutchinson's research team Hutch Research since my first year at WWU. Collaborating with this team has been one of my strongest support and influence influences throughout my time at Western. I have learned so much from this team over the past four years and it has made a big impact my career and life as a whole. Building a community makes a tremendous difference in your success and mental health!

How did you get involved in the Association for Gender Inclusion in Computing (AGIC)?
In high school, I did a lot of advocacy work with Girls Who Code, an organization that aims to close the gender gap in CS by encouraging students as early as elementary school to interact with programming. Once I got to Western, I wanted to find a way to continue supporting that goal. Luckily, the AGIC (formerly Association for Women in Computing) has had a strong presence in the department for many years before me and I was able to immediately jump in and get involved.

You are now the AGIC President, what is that like?
I have been AGIC President since my sophomore year. While there is a lot of work involved, AGIC has been the most impactful part of my CS experience at Western. With ongoing support from both professors and students, the group has grown so much.

What advice do you have for CS students wanting to get involved?
Build connections with your peers and professors early on! It is a long journey from premajor to graduation, but having a strong support system will make a monumental difference. There will be times when you are discouraged, but you will succeed and grow!

What are your future goals?
After two years of interning, I am excited to work full time for Microsoft in their News and Feeds Team, which uses machine learning to tackle hate speech and toxic content online. I plan to continue working in the field of ethics in technology

Photo of AGIC Club "Life Maps" activity

Improving Cybersecurity Awareness in Small Business

To improve cybersecurity awareness and empower small businesses to protect themselves, Cyber Range Poulsbo spearheaded a collaboration with WWU's Kitsap Small Business Development Center (SBDC). On November 8, 2022, they delivered a free community workshop—Security Measures to Keep Your Business Safe and Secure—to businesses near Western's Peninsulas Campus in Poulsbo.

Keeping information safe and secure is challenging for businesses of all sizes. "While big companies make headlines, small businesses make attractive targets for cybercriminals," says Angela Henderson, MCL, Academic Liaison for Cyber Range Poulsbo. "Helping small businesses understand why they need to concern themselves with cybersecurity and then providing actionable, no-cost steps to improve their business's security posture can go a long towards managing risks to their accounts, data, and systems."

Dr. Erik Fretheim, director of WWU's Cybersecurity programs, reassured businesses that improving cybersecurity doesn't have to be intimidating or overwhelming. Since most cyber breaches are caused by human error, everyday people play an important role in threat prevention, detection, and remediation. Training and awareness are foundational to cyber resiliency.

Improving cybersecurity is a journey. "Small businesses have to start somewhere," counsels SBDC Business Adviser Joyce Oswald. "This workshop may be that first step."

The WWU Cybersecurity Club Attends DEFCON 30

Last August, the WWU Cybersecurity Club sent four representatives to Las Vegas, NV for five days to attend DEFCON, the world's largest hacking conference, for its 30th anniversary. From conferences to competitions, the WWU Cybersecurity Club strives to foster an social environment in which all members can learn, network, and successfully prepare for their careers.

While at DEFCON, the representatives were lucky enough to attend exotic real-time hacking villages, such as automobile key fob signal hijacking and electronic voting machine manipulation. They had the privilege to listen in on speeches given by prominent members of the cybersecurity community, like Roger Dingledine, the co-founder of the Tor Project. They also attended a fireside chat with members of the Cybersecurity and Infrastructure Security Agency (CISA), including the director of the government agency, Jen Easterly. The down-to-earth atmosphere of this chat helped to humanize the agency and encouraged attendees to work with CISA to help secure the computer systems of our country. Finally, the convention hosted hundreds of fascinating workshops, fun social events, and more were available around the clock, providing for a solid line directly into the heart of the global cybersercurity community. "One element of
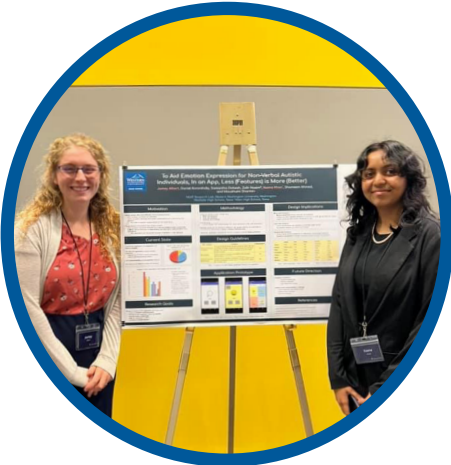
that really struck us while in Vegas," Sid Lacy, one of the representatives remarked, "was the incredibly diverse nature of the event and cybersecurity community there at large." Many cybersecurity professionals have a stronger presence online than in-person, and it's easy to forget just how many different kinds of people are involved.

DEFCON isn't the only conference the WWU Cybersecurity Club attends, however, nor is it near the only activity hosted by the Club; moreover, there are several exciting new events in store for the near future. Over the past year, the Club has under gone significant growth, and we're looking forward to our next activities. As the 22-23 academic year continues, the representatives will be sharing what they learned – from bleeding-edge security trends to exploits to career development advice– and hosting connections they made at the conference for the Cybersecurity Club at WWU. The Club urges everyone interested in cybersecurity to get involved in any capacity, whether that's attending weekly meetings (Wednesdays, 4:00 PM – 5:00 PM, in CF420), taking part in competitions and capture-the-flag challenges (great resume builders), or simply hanging out in our Discord community (https://linktr.ee/cscwwu).

Faculty Research Showcase: NEAT Lab

In the NEAT (Next-Generation Effective Affective Technology) Research Lab, Professors Shameem Ahmed and Moushumi Sharmin, along with their collaborators and students, are designing cutting-edge technology to improve the life experience of autistic individuals. Their research projects design smart technology-based solutions for addressing economic and socially-critical problems, such as creating accessible employment opportunities for autistic college students and real-time detection of stress and anxiety in autistic young adults to improve their mental health conditions. Two of their ongoing projects eXpress and Mitra continue to create accessible technology that can empower autistic individuals.

eXpress: Aiding emotional eXpression of non-verbal individuals

A significant proportion of autistic individuals are considered 'non-verbal or minimally verbal' and have difficulty expressing their emotions. Commercial alternative and assistive communication (AAC) applications are not only scarce, but also often ineffective in aiding autistic individuals in expressing emotions due to a minimal understanding of their unique needs and preferences. This problem is even more critical in lower and middle-income communities that neither have

sufficient infrastructure to encourage the development of autistic individuals nor the resources to make expensive technology affordable. To address this problem, members of the NEAT Lab designed eXpress, a mobile application that is accessible and multi-modal and caters to the specific needs of non-verbal and minimally verbal autistic individuals. eXpress helps autistic individuals to communicate their emotions through customizable symbolic representations of emotions via emoticons, musical notes, auditory feedback, and color.

New Faces

Bill Ashe

Bill has a background in both network security and education. He is our new Systems Administrator. Bill has a background in IT and education. His free time interests include flute, 3D modeling, and animation.

Peter Williams

Peter joined the department in fall as an IT System Administrator in CS Support. Peter says, "I am excited to work with a supportive and great team of people." Away from the office, Peter enjoys reading, gardening, and sailing

Angela Henderson, MS

Angela is our Cyber Range Academic Liaison at our Poulsbo campus.

"I get to serve and collaborate with many interesting people and organizations—Cyber Range Poulsbo acts as the Washington State academic cyber range. As the academic liaison to the cyber range, I directly support cybersecurity educators from K-12 through university levels. My days are interesting and varied."

Outside of work, you will find Angela in nature--walking the Poulsbo campus, hiking in the Olympics, watching critters, clouds, or tides. Angela is honing her nature photography skills along the way. She is also committed to learning Spanish.

Blake Pedrini, BS

Former WWU CS student Blake joined our teaching staff this fall to teach senior project series. Blake's are of expertise is system and embedded engineering. What excites him about his new role is "getting to work with and mentor bright and inspiring students". Away from work, Blake enjoys water skiing, snow skiing, snowmobiling, and hiking.

Kris Robinson, MS

Kris teaches cybersecurity and IT classes at our Poulsbo satellite campus. Kris's background includes earning a Master's of Science Cybersecurity Technology from the University of Maryland Global Campus and 8 years serving in the United States Marine Corps, Operation IRAQI Freedom (OIF). Kris enjoys the ability to share real-world experience with people interested in technology. For fun, Kris partakes in music production, gaming, working out, skiing and coding.

Quentin Jensen, MS

Quentin was an undergraduate and graduate student of Western's CS Department. Now Quentin is teaching introductory CS classes as part of our faculty. He is also working on computational biology research. Of teaching, Quentin says, "It has been incredibly rewarding creating a space where students can connect with each other and share aha moments while building problem-solving skills". Outside the classroom, Quentin spends time in nature hiking, biking and mushroom hunting. He also enjoys time with friends making art, music and good food.

Aaron Tuor, MS

Aaron is a visiting instructor with a joint appointment Pacific Northwest National Laboratory. His areas of expertise include machine learning for scientific discovery, physics-informed machine learning, domain-aware machine learning, natural language processing, computer vision, and dynamical systems modeling and control. Aaron is a graduate of our Master's program. He enjoys interacting with students and faculty and giving back to the department. In his spare time, Aaron builds things at his county home and wrangles a pack of six dogs—including Maia, a Chihuahua/Shitzu/Poodle mix that was a familiar pup around the department while Aaron was a MS student.

Piper Wolters, MS

Piper joined the department to teach senior project series. "I am so excited to rejoin the department I loved so much while attending school - this time as faculty!" Along with teaching at Western, Piper is an engineer at the Allen Institute for AI, where her research involves employing deep learning to various application domains. "My new role in the department allows me to interact with students and continue learning about both computer science and how to teach it." When not coding or instructing, you can find Piper mountain biking, backpacking, or going on road trips.

In addition, eXpress is designed following standards and guidelines specific to technology design for the autistic population. eXpress was presented at UbiComp 2022, one of the prestigious international computer science conferences and was praised for its focus on a critical problem. Currently, eXpress is going through robust evaluation to identify any usability issues before making it available to the target users.
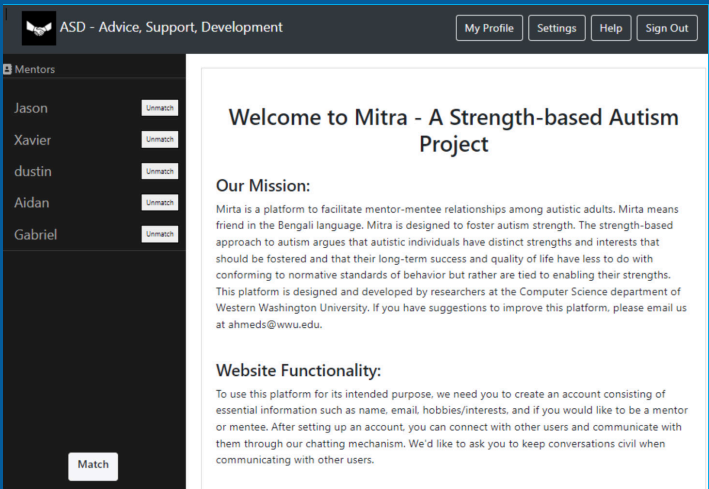
eXpress is a collaborative project of Dr. Moushumi Sharmin and Dr. Shameem Ahmed where graduate student Samantha Dobesh, senior undergraduate students Jamey Albert and Daniel Koronthály, and high school seniors Ilaana Khan and Zafir Nasim are working as the technology designers.

Mitra: A Strength-Based Autism Project

Mitra: A strength-based autism project is an ongoing effort to design and develop a website to facilitate mentor-mentee relationships among autistic adults. Mitra means friend in the Bengali language. In the context of the US, autistic children often have access to support services, but once these children become adults, their access to support services is much more limited. Similar to other disabilities, autistic and neurodivergent adults consistently experience higher levels of unemployment than the general population. While the blind and deaf "communities" have an established history of organizing and advocating around clear demands, autistic and neurodivergent populations represent a more heterogeneous population with less consensus about how they should be identified and what kinds of advocacy and accommodations should be made.

The strength-based approach to autism argues that autistic individuals have distinct strengths and interests that should be fostered and that their long-term success and quality of life have less to do with conforming to normative standards of behavior but rather are tied to enabling their strengths. Thus, the strength-based autism project aims to build a website that will enable autistic adults to build supportive mentor-mentee relationships.

As of fall 2022, we have a proof-of-concept version of the application. Reflecting the disability movement slogan "nothing about us, without us," we are organizing an advisory group of autistic adults and a series of participatory design workshops to help inform the key design and research decisions. We currently plan to release a public-facing website by spring 2023. This is a collaborative project of Dr. Shameem Ahmed and Dr. Dustin O'Hara. Four Western students are currently involved in this project: Don Strong, Kevin Hubbard, Xavier Rodriguez, and Ivan Jensen.

Scholarship Recipients and Awards 2022 - 2023

Scholarship Recipients

Cole Goodnight	CS Citizenship Award
Tony Baker	Community College Accelerator Scholarship
Sierra Schuster	Mark Lockwood Memorial Scholarship Fund
Mitchell Thompson	Scottish Rite Computer Science Graduate Fellowship
Samantha Murray Tuesta	Westcott Scholarship in CS
Yuliya Dominguez	Westcott Scholarship in CS
Tucker Moore	David W. Cole Endowment
Alexander Isbill	Dr. James Lee Johnson Memorial Endowment
Dylan Carroll	Dr. James Lee Johnson Memorial Endowment
Carson Vandegriffe	CS Graduate Fellowship
Dylan Roy	Track Global Fellowship in CS
Jaiden Garrett	Cloud Security Alliance Scholarship for Cyber Security
Logan Giddings	Faithlife CS Scholarship
Charanvir Singh	Faithlife CS Scholarship
Vivian White	Lars and Elaine Giusti Scholarship for CS
Mosey Brown	Ugwoaba Scholarship for CS Athletes
Brandon Smet	Anthony G. Vallot, Jr. Memorial Scholarship
Jaeil (Peter) Jeong	CS Department Fund

Faculty of the Year
Yasmine Elglaly

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Credits:

Editor: Mary Hall
Creative Advisor: Dustin O'Hara
Designer: Emma Johnson

Contributors:

Perry Fizzano, Mary Hall, Angela Henderson,

Filip Jagodzinski, Moushumi Sharmin Brian Hutchinson

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