NEW MAJOR ORIENTATION

Computer Science majors now are welcomed into the major with a New Major Orientation.

Mary Hall, Program Coordinator, Perry Fizzano, Department Chair, and Laura Langley of WWU’s Equal Opportunity Office created the orientation in an effort to foster a more welcoming environment for all of our students. The New Major Orientation aims to show new CS majors a bit of the road ahead, introduce opportunities available to them, and most important talk about expectations and core values that enhance our department.

The orientation engages the students in discussing how to be more inclusive and respectful to other students—especially those who feel like a minority or are just beginning in the major. In small groups, the students brainstorm ground rules and community agreements for fostering and maintaining a respectful and welcoming learning environment in the classrooms and labs. These ideas are then shared with the entire group.

“The positive feedback about the orientation has been phenomenal”, says Mary Hall, “In time we hope to see far-ranging positive effects from these orientations.”
Hello from Bellingham. Another year as Chairman of the Computer Science Department and another year of learning how much there still is to learn. The most exciting part of my job this year was interviewing candidates for our three new tenure-track faculty positions. It’s exciting to be interviewing candidates from near and far and envisioning the department with them in it. It will also be great to have some new tenure-track faculty to help us handle the ever increasing collection of students who want to major in computer science!

One of the things that all of the faculty candidates mentioned when they visited was that they were impressed with our students. The candidates were impressed with the turnout for their research talks and teaching demonstrations; they were impressed with the level of engagement that the students display in everything from research to outreach; and they were impressed with the students’ inquisitiveness and sincerity. Thanks to all of our alumni for helping to create the mold that the current students are cast from.

We’re still in negotiations with candidates this year, so I can’t talk about any of them yet but I can talk about our great hire from last year, Julian Rrushi. Julian’s research area is in cybersecurity, specifically the security of industrial control systems. Just this winter he taught the computer security class and had students working on some interesting and challenging projects. He’s a great addition to our faculty.

This year we started a “New Major Orientation” for all students once they declare the CS major. This activity spawned from our desire to help make the department feel more welcoming and inclusive. The growing department has been wonderful in that we get to teach more innovative electives and have more research projects going on and more collaboration in research. However, the downside is that it’s hard to get to know everyone. The orientation is helpful for us to get to know each other better and also to learn what the students think would make the department a more welcoming environment.

Another fun thing this year was meeting up with former students who came back to campus to recruit our current students. Let us know if you want to do that for your company. Our students appreciate learning what you’re up to, and they tell me they were impressed with our students. The candidates were impressed with the turnout in and around the Computer Science department. It will also be great to have some new tenure-track faculty to help us handle the ever increasing collection of students who want to major in computer science!

I am organizing some internal cybersecurity exercises that expand on the computer security course that I teach. The students form teams, and each team receives a server that runs custom vulnerable services. The exercise consists of each team defending its own server, while trying to ethically hack into the servers of the other teams.

I am a devoted husband and father. I have two young sons. My hobbies include working out — mostly through running and martial arts (Muay Thai) — and visiting historical attractions.

I was happy to join the CS department as an assistant professor this year. I previously served on the faculty of the British Columbia Institute of Technology in BC, Canada. I earned a BS, MS, and PhD degrees in computer science from the University of Milan, Italy. I did postdoctoral research at the DoE Oak Ridge National Lab and the University of New Brunswick.

My research interests are in cybersecurity and industrial control systems. The research arm of the Department of National Defence of Canada currently funds my industrial control systems security research. Together with some of my students, we are researching tools and approaches to digital forensics of computer intrusions into the electrical power grid. I have worked with the Department of National Defence of Canada before, and recently published several research papers in peer-review conferences.

This year I established a Cybersecurity Research Lab in the CS department. The lab hosts several graduate and undergraduate students, most of whom are funded as research assistants.

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ACADEMIC AWARDS AND SCHOLARSHIPS

Congratulations to all the 2014 - 2015 Academic Year Award and Scholarship Winners

Kaiser-Borsari Educational Foundation Scholarship for Women in Computer Science
» Bethany Long

Dealer Information Systems Computer Science Scholarship
» Bryce Danz

Track Global Fellowship in Computer Science
» Hongwei Lu

Computer Science Graduate Fellowship
» Aaron Tuor

Computer Science Citizenship Award
» Andrea Frost

Boeing Computer Science Scholarship
» Amerie Lommen

David W. Cole Endowment
» Jeshua Jacobsen

Mitch Hill Scholarship
» Seth Simms

Kaiser-Borsari Educational Foundation Scholarship for Computer Science
» Grace Ermi

Lars and Elaine Giusti Scholarship for Computer Science
» Danielle Thurow

Anthony G. Vallot, Jr. Memorial Scholarship
» Kendra De Groot

Computer Science Citizenship Award
» Kyle Rader

Mark Lockwood Memorial Scholarship
» David Shorten

Computer Science TAG Scholarship
» Cameron Little

Dept Tuition Waiver
» Taylor Walser

Danny Mason Scholarship
» Matte Bailey

Year Highlights

ACM Picnic
Students, faculty and staff celebrate end of school year with BBQ. The 2014-15 scholarship winners were announced.

Faculty of the Year
Martin Granier took this honor for 2014-2015 in June.

Dept. Retreat
Faculty prepared for New Year with retreat at Bellingham ferry terminal, including tour of "Zodiac", a classic, 160 ft. schooner.

Mix It Up Event
A 200+ person event to show the diverse faces of STEM at WWU (October).

Hackathon
Hackathon event occurred November 1st - 2nd.

ACM Programming Competition
ACM programming competition (November).

Cyber Defense
Cyber defense team competed in Pacific Rim Collegiate Cyber Defense Competition (PRCCDC) in March.

Computer Science Education Week
Computer Science Education Week in Washington State (December 8th - 14th).

Study Break
A dead week social event served up strawberry shortcake to CS students, faculty and staff (March 9th).
Sumerian Characters
By Clinton Burkhart

One of the more exciting topics of interdisciplinary research currently under way in the Department of Computer Science at Western Washington University is the use of natural language processing and data-mining algorithms on ancient text collections. The research got its start when Prof. James Hearne, at the time teaching a computer science class in data mining, was approached by Prof. Steven Garfinkle, the chair of the History department whose area of research is the Ancient Near East. Garfinkle asked if a four-thousand-year-old collection of Sumerian texts could be mined using the same algorithms that are typically employed on modern corpora such as Facebook posts and Enron emails, and suggested an experiment on the Ur III corpus.

Dating between the 20th and 21st centuries B.C.E., the Ur III corpus is comprised largely of economic documents, originally written on wet clay tablets in a series of wedge-shaped signs called cuneiform script. These tablets served primarily as contracts between borrowers and lenders, and had the immediate effect of enabling entrepreneurialism to transform a collection of squabbling city-states into the first coherent, albeit short-lived, empire.

Advised by Prof. Hearne and Prof. Yadong Liu, an expert in natural language processing and machine learning, a number of graduate and undergraduate students have collaborated on research on the Ur III corpus, investigating effective methods for recognition of named entities (such as personal, royal, and city names), identification and disambiguation of dates encoded on the tablets, and improvement upon current methods for annotating the Ur III corpus. Computers are “trained” on the Sumerian corpus and then a variety of machine learning techniques are used to identify patterns of Sumerian signs and words. The computers can then automatically classify individual passages as names or not-names. This learning and automatic classification is particularly valuable, as human expertise in the language is a rare commodity, and manual organization of the data is very time consuming. “With few exceptions,” notes Prof. Hearne, “almost everything has been done by hand. Extracting large amounts of information algorithmically has value in almost any endeavor.” As a result of this research, two papers co-authored with graduate students Liang Luo and Clinton Burkhart have been accepted for publication, and research with graduate student Bryan Conrad is in progress.

Plan of a real estate of the city of Unna (Photograph by Rama, Wikimedia Commons, Cc-by-sa-2.0-fr)

PRCCDC 2015

The WWU Cyber Defense team competed in the Pacific Rim Collegiate Cyber Defense Competition (PRCCDC) during the weekend of March 21-22. Team members were: Aaron Griffin (captain), James Collins, Michael Hennings, Rory Klein, Dane Lindell, Keith McNall, Austin Voecks and Matt Watkins. Preparation for the competition started in the Fall quarter, as part of the elective course CSCI 463 offered by Professors David Bover and Julian Rrushi. A larger group of twelve students continued meeting twice a week through the Winter quarter training on tools and techniques of system management and security.

The competition was held at Highline College and attracted teams from 14 institutions in Washington, Idaho and Oregon. Each student team was required to manage a computer network for a mythical branch office of the Center for Disease Control, secure their network against attacks from a very experienced, professional and aggressive “red team”, while at the same time handling demands from management during widespread outbreak of a strange disease. Teams were rated on the availability of services running on their network, the strength of their defenses against red team attacks and their response to management demands. The winners of this year’s regional competition was from ITT Technical Institute, Boise, followed by the University of Washington, Seattle, and Evergreen State College. The regional champions will be invited to the national competition held in San Antonio Texas.

Although unplaced in the competition, the WWU team performed very well under the excellent leadership of Aaron Griffin. The team will soon be debriefed by the competition organizers to inform them of where they did well and where they could improve in the competition. Regardless of the result, this competition provides a highly valuable experience for students and we now start planning for team preparation for next year.

Participants of the PRCCDC, March 21st - 22nd, 2015, HIGHLINE COLLEGE (Des Moines, WA)
Standing in THE BACK (from left to right): James Collins and Aaron Griffin (captain). Sitting at the table (from left to right): Michael Hennings, Rory Klein, Austin Voecks, Matt Watkins, Dane Lindell, and Gary McNall.

During the first two years of the program, students at the community college complete a total of 91 quarter credit hours, including core requirements, support courses and electives.

In the final two years of the program, taken at Western, students complete a further 90 to 93 quarter credit hours, including required computer science and security courses, required support courses, elective computer security courses, and courses to satisfy the general education requirements.

The current state of the program described here is that both institutions have attained full academic approval for the curricula and the articulation agreement. The first cohort of students from the community college will enter the program at Western in the Fall quarter, 2015.

Meanwhile, Western CS faculty are working with other community colleges in the region to determine whether similar articulation agreements may be formulated with them, thus broadening the intake of students into the final two years of the program. It is hoped that by further implementation of the 2+2 program we can make a significant contribution to the workforce demands in computer security.

CSS Program Continued...

This program was developed in response to an urgent need for trained personnel in this field far exceeding the capacity of existing programs. In considering the types of professionals needed for the computer security industry we identify four distinct but related roles.

1. Computer network security administration, using tools and techniques to protect the network against intrusion, monitor the system to detect intrusion, and provide strategies for recovery.
2. Secure software development, helping in the design and implementation of secure, robust software, using risk mitigation for common security vulnerabilities and monitoring or auditing software for proper use of security tools and techniques.
3. Reactive forensics, involving investigation of computer security breaches, assisting with recovery, identification of security weaknesses and strengthening of systems against future attacks.
4. Proactive forensics, searching for potential problems before they happen, capturing and analyzing malware before it has a widespread impact.
Sumerian Characters Continued...

Despite being written in a dead language, the tablets continue to impart enormous cultural value today. The terse, formulaic nature of the Neo-Sumerian documents make them surprisingly easy to analyze using modern data-mining and natural language processing techniques, allowing for the extraction of information such as names, locations, dates, and trade goods from the documents. In essence, we are reconstructing, in part, a social network linking entrepreneurs, governors, and generals who lived four millennia ago, and this network is a rich source of information regarding the structure and inner workings of the highly bureaucratic state and the day-to-day activities of individuals with influence within it, providing historians with valuable analytical and collaborative tools to further their research.

Preliminary results, which have included insights into the structure of the Sumerian texts and techniques for improving upon the translations provided by domain experts, suggest that many more such tools are to come. There are many characteristics of the Sumerian text that continue to torment historians where computer science may play a role in assisting historians, such as compensating for physical damage to the texts, suggesting meanings of unknown words, and resolving ambiguous names. To those who are interested in doing research at the crossroads of computer science and linguistics, Prof. Hearne advises “attention to basic knowledge of linguistics and the humanistic background, in addition, of course, to competence in natural language processing, databases, and machine learning.”