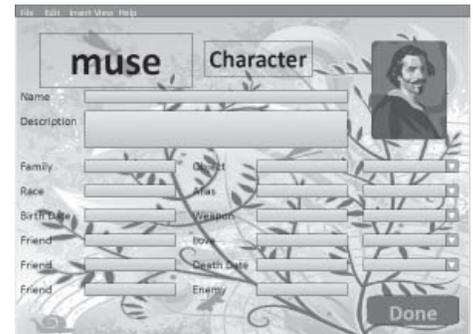


Coursework Designed to Answer Real User Needs

Senior Projects 2008 - 2009

This year marks the start of a new series of classes for CS majors at Western. The series is designed to replace CSCI 496, the “Senior Project.” It now starts with CSCI 491 Software Project Analysis which has students working in teams to specify the requirements for a project and to create a requirements document. The second class in the series is CSCI 492, the Software Project Design course, where students create design documents based on the requirement documents from CSCI 491. Finally, students implement their projects during CSCI 493, the Software Implementation class, using the project documents previously developed in the series. This year has seen its share of interesting projects such as MUSE, CS Web Advising, Qualnetics Interface, and the Western Petrography Database.



MUSE is software designed to help authors of fantasy or historical fiction writings. The software allows the authors to keep track of plot builds, characters, events, and other aspects crucial to the writing of a successful novel. MUSE helps authors by building tables and graphs to manage and present the information provided by the author. For example, if a character has a large family, the author would use MUSE to build and visualize the family tree. MUSE stores information such as storyboards and character charts in both images and text files and has a very helpful interface.

Continued on page 6

Information Retrieval With Dr. Perry Fizzano

Think local with IR and other projects

Information Retrieval (IR) can be broadly defined as the process of searching for information within a collection of documents. The most ubiquitous usage of IR comes in the form of Internet search engines like Google, but there are many other areas of application. Information retrieval is a blossoming field within computer science, one that is continually growing in sophistication and usefulness. There are many challenging computer science problems that arise in the study of IR, however, it is interdisciplinary in its most advanced form by drawing on knowledge from statistics, linguistics, cognitive psychology and mathematics.



Dr. Perry Fizzano

Dr. Perry Fizzano’s first exposure to IR was as a Software Engineer at a company called Go2Net in Seattle. His team was responsible for two search engines, Dogpile and Metacrawler, as well as other projects related to IR. Now in academia, that experience led him to create a course on IR at WWU which was first offered in the spring of 2008. A number of students from that class have subsequently started research in the field under his direction.

One of Dr. Fizzano’s graduate students, Pedro Huitema, has worked on building a web crawler for a Bellingham-specific search engine. Pedro wrote a crawler that had to navigate the Web and discern which pages were related to Bellingham and store

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Dr. David Bover
CS Department Chair

Welcome to the 2009 edition of the CS News, another snapshot of the personalities and activities in the Computer Science Department.

This year is particularly challenging for us as we cope with the unfortunate coincidence brought on by the economic downturn: increased interest in the Computer Science BS and MS programs at a time when we have decreased resources with which to meet student needs.

External sources are indicating a nationwide increase in students entering computer science programs, not an unusual phenomenon in times of decreased employment opportunities, as incoming students start to focus on areas of study more likely to equip them with the skills and knowledge most useful to employers. We will continue to do our best with the available resources, trying to minimize the impact on student progress through our programs.

Another unfortunate coincidence sees students facing increased tuition fees at a time when the university's scholarship funds are limited by losses incurred by bequest investments. None of our bequest scholarships will be awarded this year and we will rely entirely on direct donations to fund scholarships.

The department is fortunate to have many alumni in excellent employment situations and now well placed to reach back and give a helping hand to students following them through the program. We are most grateful to all those alumni who contribute to our alumni fund, enabling the department to pass on the results of their generosity in the form of scholarships and support for student meetings, conferences and travel.

ACM Student Activities

For more information visit <http://acm.wvu.edu>.

The Western Washington University Association for Computing Machinery (ACM) is a chapter of the world's largest educational and scientific computing society. Its purpose is to provide computer science students an opportunity to communicate with alumni, professors, and other computer scientists who are currently in the working field. "It also gives students a chance to see what is out there after graduation," explains Jonathan Bettger, the current Activities Coordinator. The ACM also provides members, as well as all Western computer scientists, with large array of resources on its Digital Library and leading edge publications.

Western ACM provides a great means for connecting with fellow CS students here on campus. On November 2, 2008, ACM hosted a programming competition. The event is always a great way for students to demonstrate their programming skills in a fun and friendly environment. The competition was held in one of the Computer Science labs, with teams competing to accomplish 10 programming related questions.

Other popular events that the ACM hosts are their regular guest speakers. This year there have been a combination of professors, WWU alumni, and representatives from industry who came to give presentations to our Computer Science students. For example, the ACM hosted talks from Mr. Cedric Dahl from Microsoft who came to give advice on technical interviewing. Mr. Zac Rumford from Microsoft Silverlight talked about Digital Rights Management. Representatives from Google, Logos, and Network Text also came to campus to talk about their work and to share tips on transitioning from students to employees. More recently Jordan Andersen, who is a Western alumni, spoke about his work with Microsoft Silverlight and explained why Silverlight is becoming the new preferred multimedia platform by increasing the creativity and glamour of graphics without increasing complexity of the development process.

To help prepare students for life after the classroom, ACM is currently developing "mock interview sessions" involving professors and staff members role-playing as recruiters. Students partake in simulated interviews that give them an idea of what it will be like to participate in real job interviews, which provides yet another example of the value of ACM membership.

New Microsoft Sponsorship Helps Fund AWC Activities

The WWU Association for Women in Computing (AWC) has a simple purpose: it wishes to provide an opportunity for both men and women in the CS Department to get to know each other, relax and provide overall support to each other. Members of the AWC find the name of this club to be misleading because this club is not just for women; indeed, the association is open to all students with an interest in computing, and its events are very well attended by a broad range of WWU students.

The AWC members are a busy bunch and every quarter highlights new activities. Social events with pizza, music, and exciting raffles are designed to entice not only computer science students, but also math and other science majors. A great example of an activity provided by the AWC is one of those famous LAN (Local Area Network) parties, put together jointly with the ACM. The party provides a wonderful opportunity for students to get together and participate in video games competitions. Until late in the night, students play Guitar Hero, Rock Band, or networked games such as Gears of War that allows members to enjoy head-to-head competition. The raffle prizes included Xbox Live points and various gift certificates.



The AWC has also a joint program with the engineering department to promote women in science. During a recent event, the AWC provided a Game Maker demo to help spark interest in programming. Lately, the AWC began work on a more ambitious project that involves hosting basic programming workshops geared towards middle school girls. Hopefully, such activities will allow young girls to experience the world of programming and show them that there is room for many of them in a computer science program.

The AWC was recently recognized by Microsoft, which generously presented the Association with a \$5,000 sponsorship. Microsoft made the gift to help support the club in its various efforts. This money is now being used to support club activities, particularly the development of the new program with middle school students from local schools. The sponsorship has also enabled the club to fund its own activities, so that it no longer has to depend on the CS Department budget.



Attracting New Students

Mobile technologies, social media, iPhones and Web 2.0 are just some of the examples of recent developments which have helped develop new interest amongst some teens in the field of computer science. Unfortunately, the same teens sometimes have some preconceived ideas about what CS really is. In order to answer the questions from local high school students, and with the hope to attract a new generation of students, Marty Neal was hired by the CS Department to be the first Student Affairs Representative. While pursuing his graduate studies, Marty was asked to visit local high schools

to share with students his experience as a computer science major at Western, and to provide guidance to students who may be considering future study and work in the field of computer science.

During the year, Marty has been visiting local high schools, such as Bellingham High, Sehome and Squalicum to promote the field by trying to inspire students with information about the creative career opportunities available with a CS degree. Marty has also been advocating the department at the Western Career Fair and at Western Preview, WWU's biggest visit event. "I am just trying to get students thinking, and maybe address some of the stereotypes concerning our profession," says Marty. When meeting students, he

is often asked about the amount of math required to be successful in the field and, of course, he is often quizzed about graphics and games.

Marty finds his meetings well attended and the students are very receptive to his presentations. He often starts by showing some eye-catching videos, such as examples of seam carving, an image resizing algorithm. Marty finds that such videos capture the interest of his audience and then he can expand on the kinds of work and research computer scientists are involved in. High school students attending these presentations express a lot of interest and the CS Department should find out soon if Marty's efforts will help improve CS enrollment numbers in the coming years.

Transitions: Ever wonder about your future prospects? Here are a few thoughts from your peers in various stages of their CS careers.

Beginning Student

Elliot Davidson is just starting his studies at Western, but his interest in computer science goes back to the mid-80's when he started exploring the world of computers. Elliot started programming by studying Java at a branch of Everett Community College in Wenatchee, and later developed more computing skills by learning how to program in Basic and Pascal and studying for the A+ certification. After various jobs, Elliot eventually decided to come to Western. "I have seen some of the jobs that my friends are doing after studying computer science," he says, "and that is the field I want to work in." Elliot thinks that "A computer science degree provides great job opportunities, and despite the current economy, CS related jobs are still looking pretty good."

Since his start at Western, Elliot has taken CSCI 141 and CSCI 145 and he has been enjoying learning Ada, but what he is really waiting for is the chance to expand his knowledge of C++ and C#. He also has strong interest in learning more about Java. When asked why, he explains that he wants to build applications for his G1 cell phone, the new T-Mobile phone which runs the Android operating system. Once he learns Java he will be able to make his own applications that will run on the phone.



Midstream Student

Johnathon Mohr completed the Running Start program at Spokane Falls Community College, where he received an AS degree. During his two years in Spokane, he was introduced to various programming languages (VB, Java and C) and also took introductory classes in Operating Systems and Networking. Johnathon has now completed two years at Western where he has successfully worked through half of his computer science degree.

When looking back at the classes he has taken, he commented on the topics and classes that have interested him most. "Anything involving programming, is what I like!" He also greatly enjoyed any Unix related classes, particularly the Unix Software Development course (CSCI 352), because Johnathon feels that "knowing Unix is vital to a computer science student." On the flip side, the class that was most challenging was Discrete Structures and Functional Programming (CSCI 211) because the concepts in the class were puzzling at times. "I misled myself in thinking that the class was easy, and I didn't study as much as I should have," explains Johnathon.

With a year left in his studies, Johnathon is putting more thought than ever into life after graduation. As of right now, he is essentially looking for a programming position, hoping to get a job with Logos, Microsoft, or Google.

Soon to Graduate

Lizzie Matthews took a number of classes during her tenure at Western and, like all students, she had her favorite classes while some others she found less appealing. For example, she really enjoyed the Analysis of Algorithms courses, as well as the one she took in Game Programming. On the other hand, she remembers her Unix experience as far less rewarding. "I did very well on the programming assignments" she remembers, "but then, we had those tests..."

Now that she is at the end of her undergraduate studies, Lizzie admits that she has caught the "teaching bug." Following her graduation in June, she will begin studying for her Ph.D. in computer science. Over the past few months, she has applied to a number of schools across the nation, but recently decided to limit her final choice to the schools that would provide her with financial incentives to help pursue her graduate studies.

After visiting Clemson University, Lizzie knew immediately that it was the place she wanted to call home for the next few years. "When I met the faculty members and Dr. Larry Hodges, Director of the School of Computing, I realized immediately that I could work with anybody in that department," she says. By the end of July, Lizzie will pack her belongings, fly to Atlanta, and then drive all the way to her new home in Clemson, South Carolina.



Working at Big Fresh Media

Justin Parker graduated from WWU with a computer science degree in winter of 2008, and after a few weeks relaxing with his family, he began a full-time career in web development at Big Fresh Media, a web-development company located right here in Bellingham. Justin has been working there for over a year and a half and has enjoyed every day. He uses his experience in the web-related field, as well as what he learned from the courses at Western, to create and provide rich web intranet and Internet applications to users.

Since web development and working with computers have always been Justin's passions, he had no doubts when it came to what career path he would choose, and he believes that Western did a great job of preparing him for life after graduation. Learning about both theoretical and practical applications of CS, as well as gaining professional work experience from an Internet Studies Center (ISC) internship, left Justin feeling prepared to accomplish any task put in front of him. Fortunately, Big Fresh Media recognized his enthusiasm and asked him to be a part of their team.

On the weekends, Justin spends time pursuing his other passions of working on cars and experimenting with new technologies. Just about the only thing he hasn't accomplished since graduation is taking a nice, long vacation!



Developing Apps at Treemo

Andrew Simmons was wondering what the next stage in his life would be after graduation. Over the years, he had acquired strong programming skills developing Flash applications, but he wondered whether the job market would have a demand for his expertise. As a back up, Andrew figured that if the right job did not turn up, he would go on to graduate school. Fortunately, Treemo, a Seattle-based company that creates social media communities, hired him upon graduating and he has been working there ever since.

In his position, he creates various types of interactive Flash applications for Treemo and its clients. One of his first tasks was to develop a media uploader and to find ways to record content from the Flash player and then to convert the resulting .flv file to other media formats. Fortunately for him, he had already successfully solved this very problem while working on his CS Senior Project.

Andrew is working with another WWU graduate, Josh Schumacher, making iPhone apps for various clients like CBS Interactive and soon will be developing new Android applications. "I have not had a chance to write an Android app yet, so this is going to be fun," Andrew says. At work, Andrew does all of the native application development and manages some projects while Josh manages the server-side development and creates WebViews for the apps. Josh Schumacher has been recognized by Apple and was awarded Apple Staff Pick for implementation of Treemo.com for iPhone as a WebApp. Andrew says, "What makes us successful is our focus on user experience. Josh's work is brilliant because he focuses on the product from the server side development through to the web interface. It's this focus in our team that has earned us front and center placement in the iTunes AppStore for our WebView driven CBS EyeMobile native app."

Moving on to Tatango

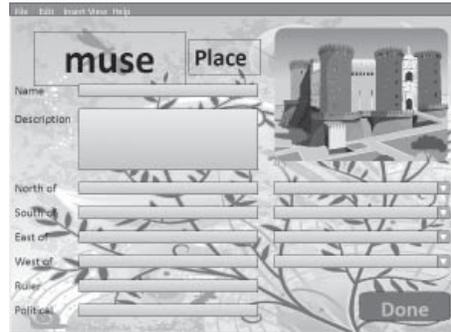
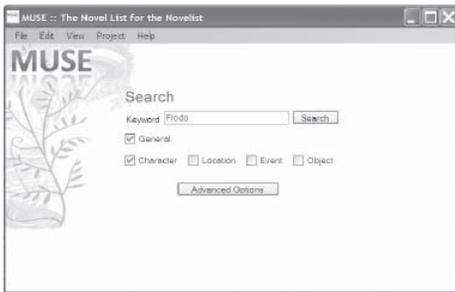
Ben Huntley never needed to deal with the tough job market upon graduating last winter. During his last term on campus, he had just completed an internship with NathanCarnes.com, a local graphic design and website development company, as a requirement for his Internet Studies Center (ISC) certification. "That internship landed me the job at Tatango," says Ben, "because my supervisor, Nathan Carnes, was the lead designer of Tatango.com at the time the position opened and he recommended me for the job."

Ben was immediately hired by Tatango, an Internet startup company focused on providing a simple, efficient way for groups to stay connected. Tatango was recently honored as the Northwest Startup Business of the Year, with over 50 million messages sent among its 350,000 members.

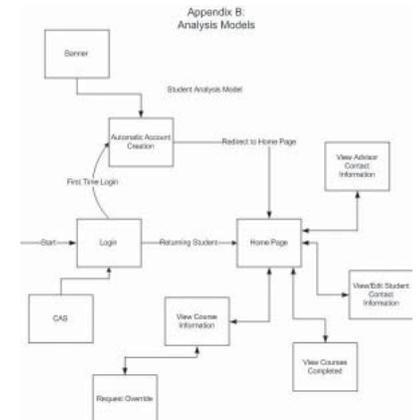
At Tatango, Ben plays an integral part in a three-person engineering team actively involved in site development, research and implementation. He is thrilled with his choice of a CS degree from Western, which has allowed him to find a job where he enjoys what he does every day. With six full-time employees all under the age of 24, it's no surprise that the Tatango office is equipped with a basketball hoop, Nintendo Wii and darts left over from previous mid-workday Nerf wars. However, it's not all play for Ben; the self proclaimed workaholic puts in over 60-hour work weeks to help bring the Tatango mission to fruition.



Coursework Designed to Answer Real User Needs Continued from page 1



The **Computer Science Web Advising** application was designed to provide computer science students and advisors with a dependable tool to help review a student's progress in achieving steps toward the completion of his or her CS degree. When students use the application, they are able to see what requirements they have met and the ones they still need to satisfy. Advisors can use the same tool to help inform students about the classes they need to take. Before this software implementation, the department advisor, Julie Marx, had to manually access a student's transcript and transfer the data to a form that she then used to evaluate and validate the student's progress. With the new software, all that is needed is to enter the student's number, and the necessary form is populated automatically, improving the speed and accuracy of the process.

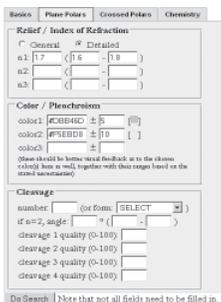


Utilizing "Hot Keys"

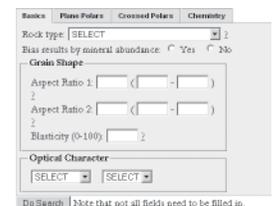
- The 5-button "wheel" is familiar to many users, so it increases discoverability
- Using "hot keys" prevents having to fumble with something like a stylus
- The 5-button configuration is common to almost all hardware, so we can easily program them to be hot keys



The current Qualnetics Media Player for Windows Mobile requires the use of a stylus and the screen has a lot of details not necessarily easy to use. To ease the interaction with the device, the **Qualnetics Interface** project was designed and implemented by students to try to recreate the interface of the player so that the user has an easier time using it. For the students involved, the goal was to develop an interface that would be clean, easy to discover, and offer only the necessary features required at any given time. This project uses all of the pre-existing functions of the media player.



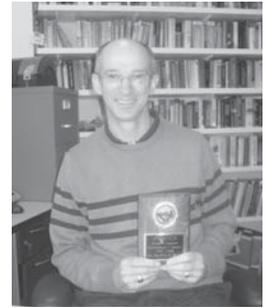
The **Western Petrography Database**, WPD, is a web application that allows users access to a vast database containing information about different minerals and rocks. This project was developed in collaboration with Dr. David Hirsch, a professor with the Geology Department at Western Washington University. The content of the database includes various aspects of minerals, such as optical characteristics, index of refraction, color or other attributes that allow geologists to identify and study minerals.



This year most of these projects were developed to help real users. Indeed, the authors of these senior projects can take great pride and satisfaction from knowing that their hard work was designed to answer the needs of others.

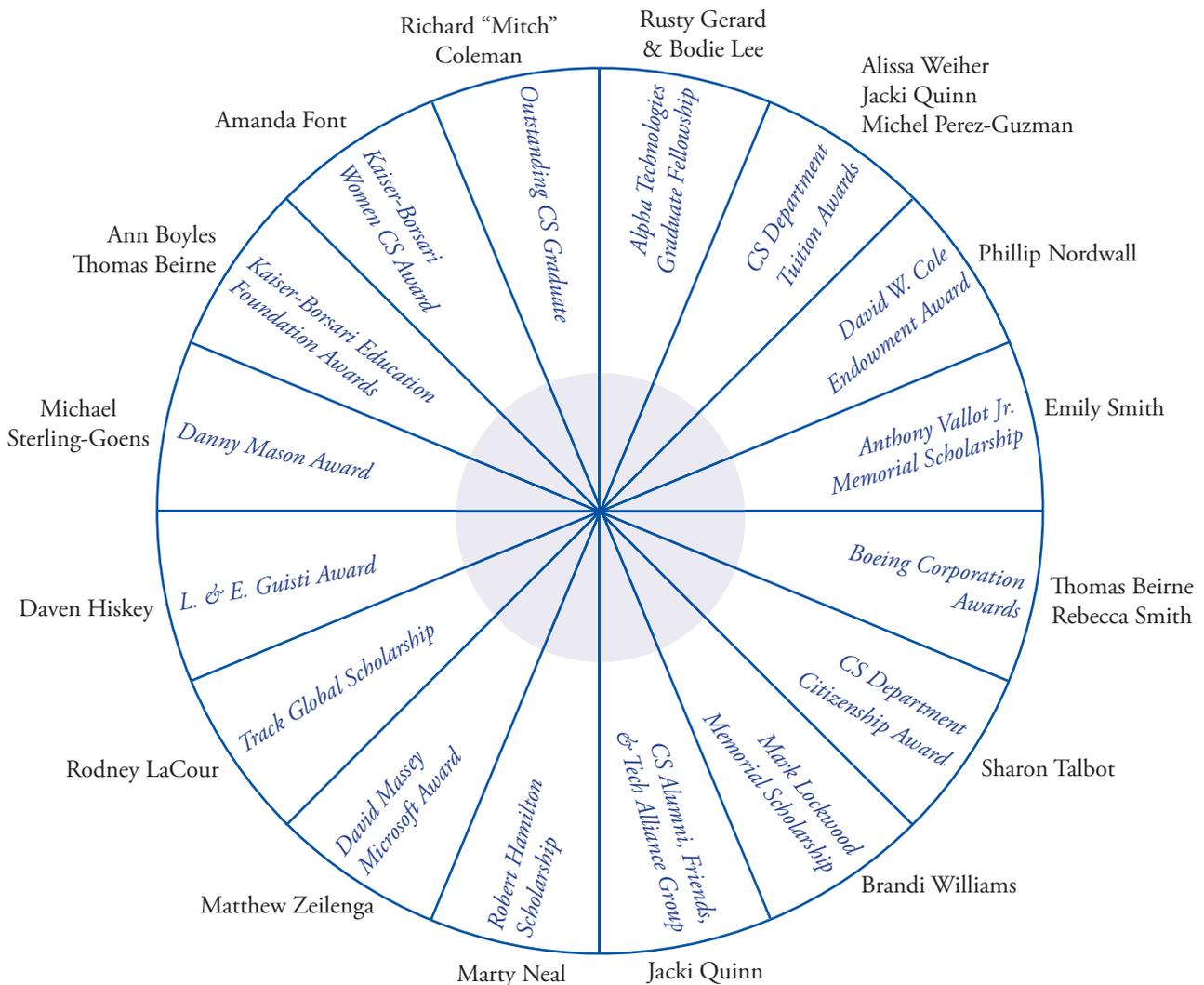
Dr. David Bover Teacher of the Year

The students have voted and the result is in! This year's Outstanding Instructor Award belongs to Dr. Bover, the Western CS Department Chair and Professor for more than 7 years. David Bover, a native of Australia, received his Ph.D. from the Australian National University in Canberra. He then moved to Bellingham with his wife after visiting and deciding it looked like a great place to live. During his years teaching at Western, he has created two popular computer science courses: Intro to Computer Game Development and the undergraduate Computer Security course. Dr. Bover credits his popularity among students to his ability to make the class material interesting and using jokes to keep the students entertained. Indeed, his students often comment on his koala jokes that make his already interesting lectures, even more enjoyable.



When not working in his office, Bover enjoys hiking in the mountains with his dog Buffy who, according to Bover, "does not actually slay vampires." He also enjoys canoeing and spending time at home with his wife Patty and Buffy's two cat sidekicks, Willow and Xander. Bover is especially looking forward to this summer, when he will be teaching a one-week course on Animation Programming for high school students as part of the annual College Quest program. Bover hopes this class will get high school students excited about the field of computer science.

2008 - 2009 ACADEMIC AWARDS



those pages on a CS Department server. The benefits of a local search engine are realized when the user is looking for local results. For instance, if you search for “skiing” on this search engine you will see links to regional clubs, local ski areas and nearby ski shops, whereas, a search for “skiing” on Google would yield a wider variety of results. As web access on portable devices becomes more commonplace demand for local search will only increase.

Try it out at: <http://bellinghamsearch.cs.wvu.edu>

Other students from Dr. Fizzano’s IR class are working on equally interesting projects. For example, Scott Worley has built a large database cataloging a couple years worth of revisions of the Linux kernel and is exploring how to predict the location of potential bugs. Rod Lacour’s research considers a set of news articles a user has read and then picks representative samples of unread articles in which the user might be interested. Matt Mullins is working on imposing a topic-based hierarchy on a collection of tagged bookmarks which will provide a means to navigate the Web in a structured fashion.



Information Retrieval is one of the many topics in computer science that was seldom mentioned in universities ten or fifteen years ago. Now, however, search engines are used by millions of people every day. This is just one example showing how quickly computer science is evolving and it also helps explain why the field is so exciting and challenging for students and faculty alike.

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Published annually by the
Computer Science Department
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Bellingham, WA 98225-9165

Alternate formats: (360) 650-3805
cs.wvu.edu/newsletter



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