



A Message from the Director

Welcome to the 2007 Newsletter of the Computing and Software Systems (CSS) Program at the University of Washington Bothell! The students, faculty, and staff of CSS have been involved in many exciting activities during the past year, and I hope that this newsletter will serve to bring you up to date and allow you to share in that excitement.

We want to thank all of you who sponsored and participated in our very successful 10th Anniversary Celebration last year. The first ten years of the CSS success story would not have been possible without the continued support of our students, alumni, and community partners.

The 2006-07 academic year saw us welcome our first freshman class as UWB moved to the status of a four-year university. The CSS Program has participated fully in this new venture, offering courses in introductory programming, the freshman interdisciplinary "Discovery Core," information fluency for non-CSS majors, and even in the calculus sequence. This has allowed us to be an important part of the education of many of our lower division students, whether or not they eventually major in our program.

Last year in this newsletter, I introduced the new Bachelor of Arts in Applied Computing degree (BA in AC), which had been proposed by the CSS Program. It is my pleasure to report that the proposal has received approval and that the degree will be offered starting this autumn to both transfer students and UWB lower division students. This choice allows students to major in either our traditional BS in CSS degree, with its emphasis on computer science and software engineering, or the new BA in AC degree which allows students to integrate their computer-related education with an interest in a particular application area. We envision enrolling a

very diverse set of students, who will be able to take courses in their related application areas on any of the three UW campuses.



As if expanding into lower division and starting a brand new bachelor's degree this year were not enough, we are also hoping to start our long awaited MS in CSS program in autumn 2008. There is a detailed article further on in this newsletter.

As you read the newsletter, please enjoy the many CSS accomplishments that are described here. To mention just a few, there are faculty and student research presentations and publications, grants and scholarships received by our students and faculty, the CSS Speaker Series, a faculty promotion, and most importantly, a really superb group of graduates moving on from UWB to careers in our community.

This July will mark the arrival of Dr. Kenyon Chan, the recently appointed Chancellor of UWB. The CSS Program looks forward to working with him as UWB flourishes under his leadership.

Finally, I want to thank all of the alumni and friends of the CSS Program whose support during the past year has contributed so much to the success of our mission. Without your support, both financial and otherwise, the Program would not be able to continue to provide a truly first-rate educational opportunity for the residents of the Puget Sound region.

Charles F. Jackels
Director

Credits

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Congratulations to our 2007 Graduating Class!

<p>William David Alexander Derek M. Altenburg Alex D. Badiou Elvir Bahtijaragic Jana L. Ballard Eric W. Barendt Matthew A. Boase Roset Cham Bouhan Chu David B. Cichy Matthew R. Clifton Nicholas A. Corey Jesse Corrington Candice M. Craig</p>	<p>Lulu Dai Aaron J. DeMarre Christopher E. Edstrom Kevin A. Erickson Hamilton J. Foro Rusty A. Gerard Eric W. Glomstad Larry D. Grove Sean T. Hagen Jeremy K. Hall Patrick D. Hipps Timothy D. Hoehn Deborah J. Hofer Shane S. Horan Emory C. Horvath</p>	<p>Abraham J. Kannankeril Fumitaka Kawasaki Hin Fai Lam Solomon J. Lane Jieqiang Lei Nathaniel P. Mangum Razvan M. Marcu Keeron G. Modi Steven J. Naramor Tri Huu Nguyen Robert D. Olson Joshua A. Phillips Boris Y. Poperny</p>	<p>Matthew R.A. Prior Alexandr Radutzkiy Peter M. Richardson Andrew V. Roubin Jonathan S. Russell Nathan P. Schelin David J. Schwegler Jonthan K. Seay Jr Jamie M. Shay Joseph E. Swanzy Azra Tabassum Joshua J. Van Dyk Ethan R. Verall Nadezhda Welter</p>
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CSS wishes to thank the following individuals who have recent donations of time, money, software or hardware to the program in the Academic Year 2006—2007.

The Software Revolution, Inc. donates scholarships to CSS!

The Software Revolution, Inc. (TSRI) has donated funds to provide five \$1000 Tuition Scholarships for students to take CSS 448-Translation of Programming Languages in Summer Quarter 2007.

The Software Revolution, Inc. (TSRI) is a software engineering firm in Kirkland, that provides automated legacy computer system modernization services to both government and industry.

The donation from TSRI will help enroll students who may not have had the means to take the class in summer quarter.

- Mr. William J. Frankhouser
- Ms. Michelle Gamboa
- Microsoft Corporation
- Mrs. Marcia E. Danne
- Mr. Eric Todd Davis
- Ms. Jennifer J.H. & Richard Beers
- Mr. Duncan E. Smith
- Boeing Company
- Sarah Jackson
- Shane Rai
- Amaze Entertainment
- Dr. Alan Leong
- Avanade
- Her Interactive, Inc.
- Mr. Bruce James

Ms. Jamie Shay

Mr. Andrew Mikesell

Mr. Dean Margell

The excellent education provided by CSS is only possible because of the generous support of our alumni and community sponsors. During the last year, gifts of financial support to CSS have provided for a wide range of program enhancements that would not have been possible from state funds alone. We invite you to be part of this success story and consider targeting your annual alumni donation or an additional gift to the CSS Excellence Fund. Just visit our website (www.uwb.edu/CSS) and click on the 'Make a Gift' graphic.

Regardless of size, your gift is important and of great value to the students in the CSS program. Thank you for your continued support!

Where is the Master of Science in CSS?

In what seems like the distant past, CSS announced that it would soon offer an MS in CSS degree. The following is quoted from Dr. Jackels' letter in the 2003 Newsletter:

"CSS also won approval for the Masters of Science degree. This program is designed for career-transition graduate students as well those already in a computer related field, a concept that was enthusiastically endorsed by panels of external academic and industrial reviewers. Although launch of the MS program has been postponed due to the state budget crisis, we are very hopeful that we will be able to enroll the first class in Autumn 2004."

Autumn 2004—and several other autumns as well—have passed and we are still waiting. There is a lot of community enthusiasm for this degree. In fact, during this last academic year nearly seventy people have contacted the CSS office to

express interest in our MS degree. "What happened?", many have asked us when we tell them that it is still awaiting start-up authorization.

Through all of the intervening years since 2003, the university simply did not receive sufficient state funding to start such new programs. For this coming biennium, however, we are happy to report that the UW and UWB will receive their best state budgets in many years.

The CSS Program is hopeful that UWB institutional priorities will allow launch of the MS in 2008 or shortly thereafter. However, CSS is not alone in this situation. Fine UWB graduate programs in other areas, such as culture studies, have also been waiting for funding. Although the campus has received a very positive budget from the recent legislative session, the total of requests for graduate program startups at UWB considerably exceeds the new resources.

You may be confident that the CSS Program is continuing to promote the MS in CSS as a top priority for 2008 startup at UWB. Since this program would clearly address a very critical community need for professionals in the information technology and software sectors, we will try at every opportunity to position it well within the strategic thinking of our new Chancellor Kenyon Chan and the entire campus. If you or your employer thinks that the MS in CSS would address a critical personal or company need, feel free to address those sentiments to Dr. Jackels in letter form. That type of evidence of community support will prove helpful in our discussions.

We certainly hope that we will be reporting news of the MS program launch sometime during the coming months. Thank you for your patience and continued interest!

Introducing Programming Concepts

Can including elements of computer games in regular programming courses change the tide of computer science enrollment levels? In a recent proposal to Microsoft Research, Prof. Kelvin Sung asks this and similar questions in a bid to fund research for development of materials for entry level computer science courses.

"Integrating computer gaming into CS1 and CS2 courses, the first programming course students encounter," said Prof. Sung, "is a promising strategy for recruiting and retaining potential students."



Professor Kelvin Sung

Prof. Sung's proposal is simple

at first glance. Develop tools that utilize interactive computer games as a gateway for a more in-depth examination of CS concepts. For example, requiring a student to create a 2D cell-based game emphasizes 2D array concepts, a basic requirement in any entry level CS course.

"The challenge is getting the games-based material into a format that is attractive to all students – especially those to whom video games do not appeal." Prof. Sung explained, "The second challenge is to educate faculty who may not have grown up playing computer games, or may not be familiar with the related technologies to look at this as a serious teaching development for entry level CS courses."

To address the first concern, Professor Sung is consulting contacts with local gaming studios, such as Her

Interactive Inc. whose specialty is designing gaming content for young girls, for feedback on gaming concepts that will appeal to both genders.

The answer to the second problem lies within the nature of the tools being developed. By designing the lessons as self contained instructional units, faculty are able to choose among a set of gaming based lesson plans, and drop (or replace) them into their existing curriculum as needed.

For example, a faculty member can design her own non-gaming assignments for enhancing looping concepts, while still choosing to include a gaming assignment regarding 2D arrays.

(continued on page 7)

Biotechnology and Biomedical Institute Founded!

Professor Michael Stiber, with faculty from IAS and Business, has founded the Biotechnology & Biomedical Technology Institute (BBTI) at the University of Washington Bothell. BBTI was created to serve as a resource for individuals and organizations in the region and state interested in the development of the biotechnology and medical device industries. Its mission is to engage government and business leaders, and the citizens of Washington State, in an ongoing conversation about the future of these technologies, their implications for society, and their role in the local, state, national and global economies.

Beginning with the founding of ATL and Medtronic in the 1950s, and Immunex and Zymogenetics in the early 1980s, Washington State has long been one of the nation's premier locations for the medical device and biotechnology industries. More than a quarter of the state's life science

employment resides within the area around the University of Washington Bothell campus, in north King and south Snohomish Counties. As the region's only four-year university, UWB has a unique opportunity to play a leadership role in developing the knowledge and human capital that will underpin this industry's growth and ensure that it is sustainable.

BBTI works to provide a range of information, education and research opportunities, as well as serving as a forum to meet and exchange information. By developing a curriculum at Bothell linking the campus' educational mission with the needs of the biotechnology and biomedical technology communities, students are prepared for careers in the life sciences industries. By collaborating in research at UW Bothell through BBTI, industry partners benefit from knowledge and skills that might not be available to them in-house.

BBTI also serves as a neutral space for citizens to learn about new technologies and discuss their implications for the local community and beyond. Through public forums, conferences, symposia, and lectures, citizens have the opportunity to learn first-hand about the latest scientific advances and technological trends, ethical and social controversies, and directions in law and public policy. A citizenry informed in the latest technologies and their applications is a citizenry empowered to be effective participants in decisions that affect their families, community and livelihoods.

Anyone with further interest in BBTI and its services are urged to view the BBTI website at

<http://www.uwb.edu/bbti/>

Professor Stiber's scholarship is supported by a grant from the National Science Foundation.

CSS Speaker Series Continues to Flourish!

The Computing & Software Systems Speaker Series continued to grow this year as it hosted its largest and most diverse line up of lecturers since its creation in 2003.

The series sponsored guests from a vast range of areas, including digital manipulation and creation of digital technology, nanotechnology, software project management and computer graphics and animation.

This year the Speaker Series committee brought guests from around the country to lecture on topics as diverse as voter safety, design patterns in programming, ground breaking research on super computers, and life altering experiences with Mother Nature.

In autumn, the school year was launched by a lecture and discussion led by Beverly Harris, founder of BlackBox voting, a nonprofit

watchdog group on electronic voting systems. Also in autumn, CSS hosted visitors from as far off as Japan (Dr. Yasushi Shinjo, *The Secure Virtual Machine Project of Japan*), and as close to home as Microsoft (Ivan Lumala, *Microsoft XNA Game Studio Express*).

Winter quarter topics shifted to a series of discussions on digital media – as a marketing tool (Dr. Jeffery Kim, *Boundary Spanning in Distributed Open Innovation*) and as a tool for space exploration and development (Dr. Yang Cheng, *On Target to Mars*).

As the new year proceeded, the lecture series spanned a host of interesting and exciting topics, including software modernization (*Automated Software Modernization: Technology & Practice*, Philip Newcomb, CEO of TSRI) high performance petascale

computing (*Petascale Computing and Beyond*, Dr. Stephen Elbert), and computational modeling, using the fascinating experiences of Dr. Edward Seidel, Director for the Center of Computational Technology of Louisiana State University, as he recounted his experiences on the task force monitoring the landfall of Hurricane Katrina.

For a full list of the 06-07 lecture series, please visit our website: www.uwb.edu/newsandevents/speakerseries.html

Computing & Software Systems has applied for a grant to secure funding for the next academic year. The committee is currently searching for new lecture ideas. If you have an idea for a lecture, or if your company is interested in sponsoring a lecture, please contact the Speaker Series Coordinator, Megan Hunter at meganhun@u.washington.edu.

ACM Chapter News

For the first time in years, ACM hosted an ACM student chapter membership drive in late January. Thirty new members joined, a mixture of CSS students, UW Bothell freshman and students across campus. This wide range of interspersed students were brought together by the ACM's focus on communicating and networking with professionals in the various computing fields across the state.

As a member of a registered club at UW Bothell, ACM received a grant for \$1500 for the current academic year. Club grants are created by the Student Activities Fees, and monitored by the Student Development Office, to support and increase the level of student development on campus.

ACM chose to use the grant money to host several social events for students. Every two week since the onset of winter quarter, students have enjoyed free pizza nights in the CSS labs, recruiting events from



companies such as Boeing, Avanaade, Microsoft, and Amaze Entertainment, a career skills workshop, a trip to the Sci-Fi Museum, and an X-Box game night.

The 2007—2008 academic year is already shaping up to be another exciting one for our members. With plans already underway for a t-shirt design contest, recruiting events, career skills events and more, ACM is fully on its way to reinventing itself after several less active years. They are currently working on a plan for actively recruiting future officers and establishing a consistent turnover of

leadership as officers graduate.

As part of this new strategic plan, ACM recently held elections for officers for the 07-08 year. Officers are:

Chair:
Mike Hoak

Vice Chairs:
Miriam Wallace
Ken Goodhope
Peter Ung
Jakob Homan

Treasurer:
Sheri Sharp

Secretary:
Hai Ton.

If you are interested in becoming a member of the student chapter of the ACM (must be a current UWB student to be eligible) or if you are interested in helping the ACM plan activities or events, please contact: acmuwb@uwb.edu

CSS Faculty Publications & Presentations

A list of recent publications by CSS faculty:

Clark F. Olson: "Visual Terrain Mapping for Mars Exploration." *Computer Vision and Image Understanding*, 105(1): 73-85, January 2007.

Clark F. Olson: "Encouraging the Development of Undergraduate Researchers in Computer Vision." In *Proceedings of the 11th Annual Conference on Innovation and Technology in Computer Science Education*, pages 255-259, June 2006.

Kelvin Sung: "Experiencing aspects of games programming in an introductory computer graphics class." In *SIGCSE '07: Proceedings of the 38th SIGCSE technical symposium on computer science education*, pages 249-253, New York, NY, USA, 2007. ACM Press.

Carol Zander: "Threshold Concepts in Computer Science: Do they exist and are they useful?" *Proceedings of the Thirty-Eighth SIGCSE Technical Symposium on Computer Science Education*, March, 2007.

Arnold S. Berger: "Hardware and Computer Organization: The Software Perspective." Elsevier Science and Technology Books, ISBN:0-7506-7886-0, May 2005.

Michael Stiber: "Transient bifurcations in neural error correction: local behavior." *BioSystems*, in press, 2007.

Michel Stiber: "A collaborative project on Java-DSP Involving Five Universities." presented with coauthors at the ASEE Conference, Chicago, June 2006. (Stiber)

Charles Jackels: "Control of the Coffee Fermentation Process and Quality of Resulting Roasted Coffee: Studies in the Field Laboratory and on Small Farms in Nicaragua During the 2005-06 Harvest." *Proceedings of the 21st International Conference on Coffee Science, International Association on Coffee Science, Montpellier, France, Sep 11-15, 2006*, pp 434ff.

Munehiro Fukuda: see article on Agent Teamwork for publications.

Promotion and Tenure Announcement.

We are pleased to announce that the University of Washington has promoted Dr. Munehiro Fukuda to Associate Professor with tenure, effective September 16, 2007. Please join the staff, faculty, and students of CSS as we celebrate this milestone and congratulate Munehiro on a well-deserved honor!

CSS Celebrates 10 Years of Computer Science Education



In October, Computing & Software Systems commemorated its 10th Anniversary with a landmark celebration. Over one hundred guests attended the evening affair, held on the Bothell campus at the North Creek Events Center. Attendees included family and friends of current students, alumni, faculty and staff from the program's beginning, and community supporters.

Of most interest to guests were the memorabilia tables that filled one side of the room. Lined with newspaper clippings and photo albums, they were a testament to both the growth of the program, and the commitment of its faculty, staff, and students who worked over the years to produce events and activities for fellow classmates and the community.

A newspaper clipping of the first



CSS Alumni examine the memorabilia table.

advertisement for faculty positions sat alongside a three page article written in 1999 by the Commons Newspaper, detailing the Women in Computing workshop – a workshop that taught over one hundred girls that computing was 'cool'. Flyers from events long past, hosted by Bothell's Chapter of the Association of Computing Machinery sat next to a poster board filled with photos from a Halloween costume party in 1998. Posters advertising the CSS Speaker Series keynote lectures from 2004 (Pixar) and 2005 (Mars

Rovers) were placed next to a photo board showing pictures of Prof. Zander's CSS 342 students from the program's inception, and a copy of the song sang at the first graduation dinner, recognizing the 1st graduating class (now on display outside the CSS Main Office). Internship posters from a wide range of years that won the 'Best Poster' competition completed the display.

On each dinner table were signs commemorating the 10 years of CSS, with thanks to the sponsors of the anniversary celebration: Amaze Entertainment, Microsoft, and the UWB Development Office, all of which donated funds to ensure a successful anniversary celebration.



Founding Faculty and Staff at 10th Anniversary Celebration

Computer Science is BACK!

Well, maybe it never went away. Computer Science jobs are on an upswing that has not been seen since the dot.com boom in the 1990's. Judging from the sudden rise in two key indicators, starting salaries reported from recent CSS graduates and the sudden increase in demands for CSS students to fill internships in local and national companies, computer science students are once again in high demand.

"It used to be that we would get an internship request about once every month" states Janet McDaniel, CSS Internship Coordinator. "Now I am getting on average two requests each week from companies that have heard of our program and want to hire our students—either as interns or as full-time employees."

Although the number of available job

spaces has increased suddenly, the number of applications to computer sciences majors in colleges across the nation is still low.

"Quite simply, word hasn't gotten out yet." explains Counseling Services Coordinator Dina Meske. "The dot.com bust is over. Now we are seeing the pendulum swing the other way, where there is a large deficit in the number of students graduating with degrees in CS, versus the number of job openings for CS students. Starting salaries have risen from an average \$45,000 a few years ago to an average of 65,000 this year."

It is only a matter of time until word gets out that CS jobs are on the rise. CSS students have been quick to seize the opportunities presented. Recent graduates report having receiving on average two to

three job offers and exit surveys have shown a dramatic increase in the starting salaries. Another indicator of the economic changes is the increase in signing bonuses.

CSS Alumni are also reporting an increased value of their degree, shown by the rapid rise in their salaries over the past few years.

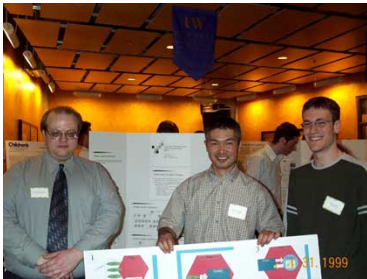
"We are certainly seeing a change in the current trends, and it's a trend that we expect to continue throughout the next few years. And with the addition of our Bachelors of Arts degree, and Masters degree in CSS, we will expand even more." said Dina Meske. "Its an exciting time to be part of the Computing & Software Systems Program."

AgentTeamwork Update!

In the Distributed Systems Laboratory, Dr. Fukuda and his CSS undergraduate student researchers have been implementing the AgentTeamwork grid-computing middleware system that dispatches a scientific-computing application to idle computers through a hierarchy of mobile agents.

Duncan Smith, a CSS graduate in 2006 has enhanced AgentTeamwork's mobile-agent execution platform so as to deploy agents on a cluster system.

Emory Horvath has coded an agent-



Emory Horvath, Prof. Fukuda and Jeremy Hall at the Spring 2006 Colloquium

based job-dispatching algorithm that coordinates job execution over multiple cluster systems that have been deployed in the Linux labs in uw1-302 and uw1-320.

Solomon Lane has installed on those clusters the Globus grid-computing toolset and the OpenPBS job scheduler, both of which are well-known open-source software systems. He then compared AgentTeamwork and Globus/OpenPBS for their job-dispatching performance.

Jumpei Miyauichi, a former Ehime Univ. exchange student has implemented a file-transfer mechanism in AgentTeamwork that delivers user files to remote jobs in a specific order.

Joshua Phillips has worked with Jumpei at Ehime University to implement a random access file that can be shared among remote jobs in a consistent manner.

This work has been supported by a

grant from the National Science Foundation and has all been published or accepted for conference presentations as listed below:

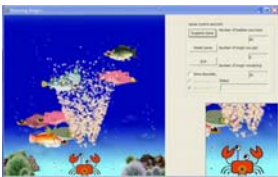
- Munehiro Fukuda, Duncan Smith, "[UWAgents: A Mobile Agent System Optimized for Grid Computing](#)", In Proc. of the 2006 International Conference on Grid Computing and Applications, Las Vegas, NV, pages 107-113, June 26-29, 2006
- Jumpei Miyauichi, Munehiro Fukuda, Joshua Phillips, "[An Implementation of Parallel File Distribution in an Agent Hierarchy](#)", In Proc. of the 2007 International Workshop on Scalable Data Management Applications and Systems, Las Vegas, NV, pages to appear, June 25-28, 2007
- Munehiro Fukuda, Emory Horvath, Solomon Lane, "[Fault-Tolerant Jo Execution over Multi-Clusters Using Mobile Agents](#)", In Proc. of the 2007 International Conference on Grid Computing and Applications, Las Vegas, NV, pages to appear, June 25-28, 2007

Introducing Programming Concepts (continued)

Continued from page 3

To encourage wide-scale adaptation among first level CS courses, Prof.

Sung plans to create a detailed laboratory manual describing the mechanics and procedures for each lesson plan, including sample solutions. In addition, each lesson plan will include a template for interested faculty to design and implement their own games-themed programming assignments.

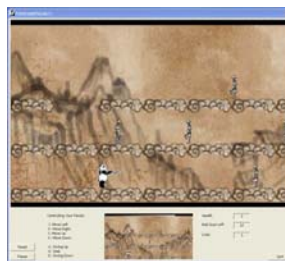


Sample of Game themed Programming: Onigiri

“We believe the most significant outcome from this work would be excitement from

empowerment for both students and faculty.” said Prof. Sung. “For students, assignments based on XNA, the programming language of the XBOX 360 game device, empower them to apply the mundane programming construct and abstract programming concepts into games that they can play on an XBOX 360. For faculty members, the XNA based assignments provide a simple and clear pathway to integrate games into their own courses.”

Sample of Game Themed Programming: Pandamonium



Of course, this in no way changes the basic concepts taught in the courses, assures Prof. Sung. As a crucial foundation for students, basic concepts and the context of those concepts in computer science are essential for any CS student to master.

“Its simply another way of approaching the subject matter. With the ability to see the outcomes of their work in a clear format that is familiar to them, young students are drawn more deeply into the world of computer science.”

Professor Sung's work is supported by a grant from the National Science Foundation.



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CSS Alumni Newsletter

Attention Recent CSS Graduates

Join the UW Bothell Alumni Council!

Stay in touch with your alma mater in any number of ways. For more information on how you can be an involved CSS alum contact:

Michelle Gamboa, (BS in CSS, 2005) UW Bothell Alumni Council
CSS Representative
mgamboa@u.washington.edu

Alex Webster, UW Bothell Alumni Relations Manager
awebster@uwb.edu or 425-352-3394

Or visit: www.uwb.edu/alumni



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