UMass Lowell
Computer Science

May 2009

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Chair's Message

Dear CS alumni, friends, and colleagues:

This is the second issue of the Computer Science Alumni Newsletter for the 2008-2009 academic year. We are still coping with the severe budget cut we sustained last semester, and we are facing a more severe budget cut in the next fiscal year. However, I am confident that we will go through this budget crisis under the strong leadership of the new administration and through the hard work of our faculty and staff. We will emerge as a vigorous department.

I would like to take this opportunity to report a few notable achievements since I last communicated with you six months ago. I am pleased that our freshman and transfer enrollment has gone up 40% for the class of 2009. I am delighted that the State Board of Higher Education has approved our request to change the name of our existing doctoral degree program from Doctor of Science (ScD) in Computer Science to Doctor of Philosophy (PhD) in Computer Science, effective immediately. Current students already enrolled in the ScD program are given the option to receive a PhD.
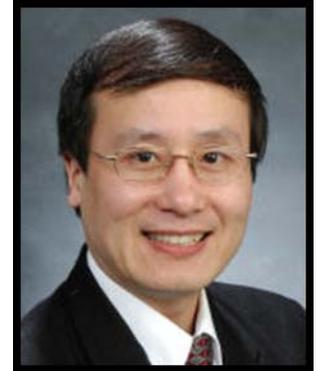
Stanley Barr is the first student to receive a PhD under this rule, and he will be hooded at the Spring 2009 Commencement.

The Department Industrial Advisory Board held its first meeting in March 2009. We are in the final stage of creating a Professional Science Master's degree program in Computer Science with Software Entrepreneurship.

The Computer Science faculty and staff are deeply committed to improving the quality of our degree programs at all levels, and we are striving to become a strong PhD department with national and international reputations. Included in this newsletter you will find details of the news items I reported in this letter and a number of other news items that you may find interesting.

I am eager to hear from you about your achievements, your thoughts, your concerns, and your suggestions on how to make the UMass Lowell Computer Science Department a stronger place for our students. I believe that a strong department will, in turn, help our alumni and make them proud of being graduates of our programs.

If you would like to offer financial support to the department or to a specific program in the department, I'd appreciate it very much if you could specify that on your donation form.

Yours sincerely,

Jie Wang, PhD
Chair and Professor
wang@cs.uml.edu
978-934-3649

Outstanding Undergrads

The CS Dept. recognizes the following graduating BS students for their Outstanding Academic Achievement.
- Caisse, Ross A.
- De La Zerda, Daniel
- Deveau, Christopher P.
- Haynes, Daniel
- Johnson, Christopher D.
- Lucas, Jesse T.
- Reichlen, Megan L.

Performamatics Continues to Prosper

Our National Science Foundation (NSF) funded Performamatics project, which began in 2007, continues to gain momentum and garner interest and funding. CS Prof. Fred Martin and Art Prof. Karen Roehr offered their interdisciplinary Tangible Interaction Design ("TID") course in the Fall 2008 semester, and registration for the Fall 2009 offering has already reached its limit of 30 students. Last year's TID student projects were exhibited at the Revolving Museum in Lowell and the Children's Discovery Museums in Acton. In April 2009, Prof. Martin presented a paper on this work entitled "Joining Computing and the Arts at a Mid-Size University" at the 2009 Conference of the Consortium for Computing Sciences in Colleges, Northeastern Region (CCSCNE).

A TID project demonstration at the Children's Discovery Museums

CS Prof. Jesse Heines and Music Prof. Gena Greher offered their interdisciplinary Sound Thinking course for the first time this spring, and it, too, has been highly successful. Three CS and ten Music majors worked together to create new digital compositions and web pages that incorporate sound. This work has become the focus of a new proposal that Prof. Heines submitted to the NSF at the end of April, expanding the work to involve Sound Recording Technology professors, as well as others. In addition, Profs. Heines and Greher have presented papers on this work at the 2009 ACM SIGCSE Technical Symposium on

CS Education and the 2008 Conference of the Association for Technology in Music Instruction.

Prof. Heines was invited to speak on this work at Villanova University, and he and Prof. Greher will be presenting at the 2009 Conference of the Association for Technology in Music Instruction, as well.

A Sound Thinking "found instrument" by CS student Eric Fairbanks

Other Performamatics initiatives include "synchronized" courses in which students in a standard CS course interact with students in Arts courses to design and evaluate software. Prof. Martin paired his Software Engineering II course with a Theatre Design course this semester, and Prof. Heines paired his GUI Programming II course with a Music Education Methods course. In the latter pairing, CS students designed software for a music repository, and the Music students served as usability test subjects to comment on the programs' human factors issues.

We will find out in the summer whether our new proposal will be funded, but our work has already received accolades from our NSF program officer and won us additional funding.

In 2008 we received an additional $12,000 to add to the original $368,000 to support two students working with us under the Research

Experience for Undergraduates program.

We have just received an additional $15,925 to support two more students in the same program next year. In addition, we have applied for $25,000 to support two teachers working with us over the summer to migrate this work in high and middle school curricula.

Music Prof. Gena Greher and student R.C. Lations, who is funded under an NSF Research Experience for Undergraduates supplement to our Performamatics grant, at the Student Research Exposition on May 1.

We find Performamatics not only beneficial to our students, but interesting and revitalizing for our professors as well. Additional information, including videos of classes in action are available at our website, www.performamatics.org or by contacting Prof. Heines at heines@cs.uml.edu.

John Fertitta

CS junior John Fertitta won the "Most Creative Course Project from an Upper Level Course" award at the first New England Undergraduate Computing Symposium. John won this award for his work in OPL by creating a set of Scheme APIs for communicating with the iRobot Create platform.

Faculty Highlights

Holly Yanco

Prof. Yanco was featured in the March/April 2009 issue of *Technology Review*, in "Machines for Living: Holly Yanco, SM '94, PhD '00, develops robots to help people in the home and in the field." The article discusses Prof. Yanco's research on robotics and its societal impact, including robotic arms and wheelchairs for people with disabilities and remote-controlled robots to help improving disaster response.

The full text can be found at: http://www.technologyreview.com/article/22156/

Georges Grinstein

Congratulations to Prof. Grinstein, who has been elevated to a senior member of both the ACM and the IEEE, as well as being as a distinguished scientist for the ACM.

Prof. Grinstein spoke on "The VAST Contests - Mathematical Challenges" at the Mathematics Methods in Counterterrorism Conference on March 12, 2009.

Dr. Hongli Li, supervised by Prof. Grinstein, has been at Pfizer for one year and is now a technical lead. She recently received "The Research Technology Center TMI/BBCI Team Award."

Prof. Grinstein will be the Principle Lecturer of the DyDAn 2009 Summer Reconnect Conference, speaking on "Visual Analytics and Applications."

Jie Wang

Dr. Jie Wang gave a keynote speech on placement algorithms of wireless sensor networks at the DIMACS/DyDAn Workshop on Approximation Algorithms in Wireless Ad Hoc and Sensor Networks, April 22–24, 2009.

DIMACS (Center for Discrete Mathematics and Theoretical Computer Science) is a National Science Foundation Science and Technology Center and DyDan (Center for Dynamic Data Analysis) is a Homeland Security Center, both located at Rutgers University.

In May 2009 Dr. Wang was elected to the editorial board of the *Journal of Combinatorics Optimization*, a prestigious journal in the field published by Springer.

Dr. Wang received $15K from the NSF to support students to attend the WASA 2009 conference.

Xinwen Fu

Prof. Fu gave a talk entitled "One Cell is Enough to Break Tor's Anonymity" at Blackhat DC 2009 on February 18. The Black Hat Briefings have become the biggest and most important security conference series in the world by sticking to its core value: serving the information security community by delivering timely, actionable security information in a friendly, vendor-neutral environment.
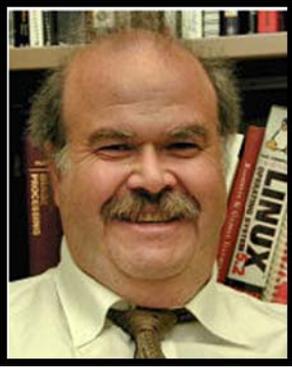
First New England Undergraduate Computing Symposium

The first New England Undergraduate Computing Symposium was held at Wellesley College, bringing together nearly 100 students and faculty from 12 institutions in the region. Students participated as speakers and poster presenters, covering a wide range of computing research and applications. More than 40 posters were presented throughout the day. Prof. Fred Martin and undergraduate students William Brendel, Chris Corcoran, and John Fertitta attended the symposium and presented student posters. Fertitta was selected to give a plenary talk and won an award.

Professional Science Masters

The Professional Science Masters (PSM) in Software Entrepreneurship is a new proposed Master's Degree within the CS Graduate Program. It is directed to people with a strong undergraduate background in CS who are interested in both deepening their CS technical knowledge and understanding the tools required for developing a company directed toward software services and products. The specific degree program will incorporate the CS courses used for our MS degree, with three courses being provided by the College of Business. Details of the PSM program are currently being reviewed by the department faculty.

OpenIndicators Project

OpenIndicators is a software system being developed at Prof. Grinstein's Lab for regional planners and others who need to analyze and present large amounts of complex data such as economic, social or environmental indicators. This new software simplifies analysis by allowing large amounts of data to be presented in a clear, meaningful manner using a variety of visual formats or visualizations including scatter plots, bar or pie charts, line graphs and maps with multiple jurisdictions (municipalities, neighborhoods, voting districts, watersheds, etc.).

OpenIndicators is a high-performance, highly interactive system that allows users to query data with simple interfaces and to define mapping boundaries rather than to select only from preset options. The software allows multiple visualizations to be displayed on a single screen simultaneously.

Action on any of the displayed visualizations automatically updates the others. For example, selecting a set of municipalities on the map will trigger associated changes in the bar chart or scatter plot visualizations. Similarly, a user's selection in the scatter plot automatically updates the maps. Users may generate interactive animations and make these available within custom reports. Users can also collaborate in real time, and the software maintains session history for collaborators. Such history may be replayed, analyzed and compressed. A recommendation system is being developed that will not only support single users, but also collaboration.

Welcome Day

On April 4, 2009, the department hosted more than 40 incoming freshmen and their parents at the university's annual "Welcome Day for Admitted Students." These were students who had been accepted to UMass Lowell, but who may not have yet made up their minds to enroll for the Fall 2009. As followers of CS enrollments will realize, this was much larger than the number we have had applying to our program in recent years. In fact, the number was so large that we had to move our planned welcome from our normal meeting room in Olsen 311 to the larger Biology lecture hall in Olsen 503.

Profs. Wang, Martin, and Heines welcomed the students and their families and answered numerous questions about our curriculum and life at UMass Lowell. The students then toured the department, visited its labs, and met with other professors. Many spoke to Profs. Wang, Martin, and Heines after the formal presentations to address individual issues.

We are particularly pleased to know that so many of these students have now decided to join our program. As of May 4, 2009, 64 freshmen and 11 transfer students have already paid deposits to hold their places as CS majors in the Fall. Given that we currently have 162 majors (19 of whom will be graduating this semester), one can see that these 75 new students will swell our undergraduate ranks considerably. We are very excited that our program is growing again and look forward to the energy that new students always inject into our program.

Alex Bauman

Congratulations to Alex Baumann, recipient of our "Outstanding Graduate Student" award. Alex is an active scholar who has published papers, presented at conferences, and participated in patent inventions. He has worked on projects from haptics to visualization to sonification, and he is the chief architect of the OpenIndicators project.

Industrial Advisory Board

The Computer Science Industry Advisory Board (IAB) held its first meeting on March 24, 2009. Five board members — Jill Drury, Michael Gibbons, Dan Grecoe, Eric Helliwell, and Himanshu Sinhu — attended the meeting and were welcomed by Dr. Jie Wang (Chair of Computer Science) and Dr. Bob Tamarin (Dean of Sciences). Board members voted unanimously to elect Mr. Eric Helliwell Chair the IAB for a two-year term. The board members and attending CS faculty members discussed issues related to undergraduate curriculum, the proposed Professional Science Master's Degree, potential co-op models, and ABET accreditation.

Teaching Award

Prof. William Moloney, who is well known for his smooth lecture deliveries, has been named the recipient of this year's CS Dept. Teaching Award.

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WASA 2009, Int'l Conferences on Wireless Algorithms, Systems, & Applications

The 2009 International Conferences on Wireless Algorithms, Systems, and Applications (WASA) will be held in Hyatt Regency Boston in Boston from August 16-18, 2009.

As one of the sponsors of this conference, all of our CNIS (Center for Network and Information Security) faculty members will be involved.

WASA is an international conference on algorithms, systems, and applications of wireless networks. It is motivated by the recent advances in cutting-edge electronic and computer technologies that have paved the way for the proliferation of ubiquitous infrastructure and infrastructure-less wireless networks. WASA is destined to become the world's most prestigious conference in various areas of wireless networks, and to contribute to shape the future of wireless network research and development.

WASA is designed to be a forum for theoreticians, system and application designers, protocol developers and practitioners to discuss and express their views on the current trends, challenges, and state of the art solutions related to various issues in wireless networks. Topics of interests include, but are not limited to, effective and efficient state-of-the-art algorithm design and analysis, reliable and secure system development and implementations, experimental study and test bed validation, and exploration of new applications in wireless networks.

In addition to technical sessions and panels, the conference will feature several keynote speeches, given by leading researchers and practitioners in the areas of algorithms, systems, & applications in wireless networks.

General Co-Chair
Prof. Jie Wang

Program Committee Co-Chair
Prof. Benyuan Liu

Program Committee Member
Prof. Xinwen Fu

Workshops Chair
Prof. Guanling Chen

Local Arrangement Committee
Prof. Jie Wang (Chair)
Prof. Cindy Chen
Prof. Guanling Chen
Ms. Sharon Quigley
Ms. Karen Volis

New Mentoring Program

WiCS has launched a mentoring program for new CS students. Each CS1 or CS2 student has been assigned a junior, senior, MS, or PhD student as a mentor. The goal is to help support new students and improve the CS retention rate. This informal pairing will make it easier for students to ask questions about courses, the department, internships, and job opportunities.

The program held a kick-off pizza party on March 6, with nine CS1/CS2 students and more than 20 mentors attending. The event was extremely successful, and we look forward to providing additional social events for mentors and mentees throughout the semester. The program is currently administered by Dr. Kristen Stubbs.

Name Change from ScD to PhD is Now Official

The Massachusetts Department of Higher Education has recently approved our request to rename the Doctor of Science (ScD) in Computer Science to the Doctor of Philosophy (PhD) in Computer Science.

The current curricular requirements of the ScD are the same as those for a PhD and no changes are proposed. Students currently enrolled in the program will be allowed to choose which degree they would like to receive; students admitted after Fall 2009 will receive the PhD.

The doctoral degree program in Computer Science at UMass Lowell, while called a Doctor of Science program, is structured in the same way as a standard Doctor of Philosophy degree program. For historical reasons, the department chose to award the ScD in its doctoral program when it was established the in 1986. The program requires broad and in-depth coursework, qualifying exams, a dissertation proposal, and a dissertation defense.

Since PhD is the more common name for doctoral degree programs in computer science, renaming from ScD to PhD will cease the confusion for students interested in pursuing doctoral studies, which may have hindered the growth of our program.

Stanley Barr

Stanley Barr, whose dissertation is entitled "Constructing Underwater Sensor Based Barriers Using Distributed Auctions," is the first student who will graduate with the degree of PhD in Computer Science from our department. Dr. Barr is now with MITRE. His thesis advisors were Dr. Jie Wang and Dr. Benyuan Liu.

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A Newsletter from the
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