Dear CS alumni, friends, and colleagues:

It has been almost a year since I communicated with you about our programs. It has been a watershed year for UMass Lowell. First, Marty Meehan became our new Chancellor on July 1, 2007. Dr. Jacquie Moloney was then named our new Executive Vice Chancellor. Finally, Dr. Ahmed Abdelal arrived as our new Provost on July 1, 2008. Dr. Abdelal, a biologist, was the Provost at Northeastern University before joining UMass Lowell. He brought new visions, courage, leadership, and administrative skills to the campus.

UMass Lowell is aiming at a higher ground and moving toward becoming a highly ranked national research university. The computer science faculty and staff are working hard to improve the quality of our ABET-accredited undergraduate program, and we are striving to become a strong doctoral department with national and international reputations. Included in this newsletter are a number of interesting items that report on our progress.

I am sorry to tell you that UMass Lowell is seriously affected by the recent state budget cuts. In particular, the university received a mid-year 5% budget cut, which is equal to a shortfall of $4M. To cope with this budget crisis, the university administration has decided to terminate some programs that are not related to the core mission of the university and there will be some layoffs. On the other hand, I am pleased to tell you that the academic programs and personnel were minimally impacted by this cut. The university’s top priority is to maintain and even improve the highest possible academic standards. Any additional cut would impact negatively our academic programs.

I’d very much like 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 feel proud of being graduates of our program. 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, Ph.D.
Chair and Professor
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Our award banquet was held on September 12, 2008, in Alumni Hall. Dr. Robert Tamarin, Dean of Sciences, greeted everyone and welcomed them to the banquet. He introduced Dr. Jacqueline Moloney, Executive Vice Chancellor, who delivered a short address on behalf of the university administration. Dr. Jie Wang, Computer Science Department Chair, then announced the 14 scholarship winners. After dinner, David E. Shulman spoke on “Beyond College — Lessons In Learning”.

The scholarships are the David E. Shulman Scholarship for Excellence in Computer Science, the Muthverlraj Scholarship for Excellence in Computer Science, the Martin J. Schedlbauer Computer Science Endowment Scholarship, the Bryon Drigan Memorial Scholarship, the Ziaogos Family Endowment Scholarship, the Computer Science Endowed Scholarship, and the Computer Science 25th Anniversary Scholarship.

The University of Massachusetts Amherst is leading a Commonwealth Alliance for Information Technology Education (CAITE) to design and carry out comprehensive programs that address underrepresentation in information technology education and the workforce. CAITE is intended to focus on women and minorities in groups that are underrepresented in the Massachusetts innovation economy. The project is led by Prof. Rick Adrion and received $1,911,928 in initial funding from the National Science Foundation (NSF) in 2007. CAITE received an additional $1,479,200 from the NSF in November 2008 to expand the program into eastern Massachusetts, and Prof. Adrion invited UMass Lowell Computer Science Profs. Holly Yanco, Fred Martin, and Jesse Heines to join the team. CAITE's goals are closely aligned with those of the Artbotics and Performamatics projects at UMass Lowell CS, which are funded through the NSF's Broadening Participation in Computing (BPC) and Computer and Information Science and Engineering (CISE) directorates, respectively. Yanco, Martin, and Heines will lead CAITE's activities at UMass Lowell and work closely with personnel at Middlesex Community College and Worcester State to plan their activities. Prof. Hyun Ju Kim of the UMass Lowell Dept. of Art will work with Martin and Yanco on the inclusion of Artbotics into the CAITE Alliance.

Dr. Kristen Stubbs is a new Postdoctoral Research Associate who works primarily with Holly Yanco and the UML Robotics Lab. Kristen received her B.S. in Computer Science from the University of Minnesota - Twin Cities and her M.S. and Ph.D. in Robotics from the Robotics Institute at Carnegie Mellon University.

Kristen's major research area is human-robot interaction. In particular, she is interested in how people and robots can build common ground in application domains such as exploration robotics, assistive technology, and educational robotics.
Fifteen middle and high school teachers from Massachusetts, New Hampshire, New York, and Washington recently attended a summer workshop funded by the National Science Foundation. Called “iSENSE: Internet System for Networked Sensor Experimentation,” the workshop was a collaborative project between UMass Lowell and Machine Science Inc., a supplier of educational robotic and electronic kits.

iSENSE trains educators on hands-on science using networked sensor probes. Its goal is to develop a web-based system for collecting and sharing sensor data. Such a system will allow students to view, graph, analyze and export data from individual sensors and then combine that data with information from multiple sensors to examine regional, national and global phenomena.

The workshop’s faculty included Prof. Fred Martin of Computer Science, Prof. Sarah Kuhn of Regional Economic and Social Development, Prof. Michelle Scribner-MacLean of the Graduate School of Education, and Sam Christy and Ivan Rudnicki of Machine Science.

“The program supports teachers and students in developing science projects with topics that range from human health to environmental science and energy conservation,” says Martin.

For Josh Segaloff of North Andover, the main reason for participating was to train with other educators on new data-capturing devices and techniques and to share his knowledge and experience with his seventh-grade science students at the Alexander B. Bruce School in Lawrence.

“Our project involved using sensors to capture daylight illumination, temperature and humidity levels at various locations in Lawrence, using the school as home base,” said Segaloff. “Our students would then use the sensors to learn about geography and the environment, and to make the connection from the classroom to the real world.”

Frank Nigh found the workshop to be very useful in taking actual data and connecting students to that information through the Internet. Nigh teaches physics and math at Lawrence International High School. “I hope this will inspire my students to collaborate with schools all over the country,” he said.

“It was a very rewarding experience,” said Augusto Casas. A first-time workshop participant, Casas teaches computer science at St. Thomas Aquinas College in Sparkill, N.Y. “I now have a new teaching tool that I can use,” he added. “I’ve always been interested in information technology, and I’m constantly searching for new ways to motivate and help students learn.”

For more information about the iSENSE program, visit http://www.isenseproject.org. For more photos of the workshop, visit UML’s photo gallery at http://www.uml.edu/gallery/main.php?g2_itemId=12236.

Congratulations to Dr. Jay McCarthy, who graduated from CS at UMass Lowell and received a Ph.D. from Brown University. He has just started a tenure track faculty position in CS at Brigham Young University.
Profs. Jesse Heines and Fred Martin believe that computer scientists have much to learn from those trained in the arts and the humanities, and vice versa. To achieve this, Jesse and Fred teamed up with Profs. Karen Roehr and Jim Jeffers in art, Gena Greher in music, Nancy Selleck in the English Department's theater program, and Sarah Kuhn in regional economic and social development and applied to the National Science Foundation's computer and Information Science and Engineering (CISE) directorate for funding under their "Pathways to Revitalized Undergraduate Computing Education" (CPATH) program. In the summer of 2007, the team learned that its proposal, "Performamatics: Connecting Computer Science to the Performing, Fine, and Design Arts," was awarded funding for two years in the amount of $368,000.

For Computer Science students, Performamatics is intended to help give context to the concepts and techniques taught in our classrooms by introducing them to some of the ways in which computer technology influences these seemingly non-technical fields. It encourages CS majors to think creatively and expand their views of what computers can do and what they can accomplish.

For Art students, the program provides the opportunity to interact with the type of technical people whom they will rely on to implement their ideas in real-world environments. Many types of art produced today and many designs for exhibitions include highly sophisticated technology. Working with people familiar with technology can expand these students' concepts of the types and scope of art they can produce.

During the first year of the project, the Computer Science curriculum was revise slightly to make room for new courses. Two "synchronized" CS/Art and CS/Music courses were offered during the first two semesters of the project by combining existing courses in new interdisciplinary collaborations. In the Fall 2008 semester, a new CS/Art course called "Tangible Interaction Design" was offered, and another new course called "Sound Thinking" is scheduled to be offered in the Spring 2009 semester. In addition, the team published one journal paper, presented two conference papers, and organized a conference panel. Another paper and panel have just been accepted to the prestigious ACM SIGCSE conference in March 2009.

For further information, as well as full texts of our papers, please see the project website at www.performamatics.org.

Industrial Advisory Board

The Industrial Advisory Board at the Department of Computer Science was formed in November 2008. Board members were selected from alumni and friends living in the greater Lowell area based on faculty recommendations. The following five people have agreed to serve for a two-year term: Jill L. Drury (Sc.D.), Mike Gibbons, Dan Grecoe, Eric Helliwell, and Himanshu Sinha (Ph.D.).
Faculty Research Highlights

Jie Wang


Prof. Wang received a new NSF grant of $150,000 to support his research: *Reliable Spatial-Temporal Coverage with Minimum Cost in Wireless Sensor Network Deployments*.

Prof. Wang co-chaired the 14th Annual International Conference on Computing and Combinatorics, held in Dalian, China, June 27-29, 2008.

Holly Yanco

Prof. Yanco received three grants since the summer. One is from NSF and is for the CAITE expansion. The second is from Microsoft Research, which is supporting research into controlling multiple robots using multi-touch displays. As part of this work, we expect Microsoft to ship us a Surface soon. The third is from the National Institute of Standards and Technology, which is supporting work towards defining safety standards for robots used for urban search and rescue.

Prof. Yanco is on sabbatical this year, but still at UML one day each week to work with her students. On the other days, she is working at MITRE on new research projects, some of which include unmanned aerial vehicles (UAVs), and writing a textbook on the Artbotics project.

Georges Grinstein

John Sharko and Prof. Grinstein presented a paper at the IEEE Visualization Conference on Vectorized Radviz and its application to multiple clustering (results of project work for DARPA and Pfizer).

Prof. Grinstein also chaired a panel on Grand Challenges in Information Visualization at the same conference, where it won best panel award.

Prof. Grinstein gave an invited workshop at the opening of the Bridging Pharma and IT in Providence RI, with Dr. Peter Henstock, Director Statistics and Visualization, Target & Mechanism Informatics, Pfizer Research Technology Center. The title of the workshop was *Effective Drug Discovery Decisions: Using Visualization Techniques to Handle Data*.

Benyuan Liu

Prof Liu’s research focuses on the applications, protocol design, and performance modeling of emerging wireless ad hoc and sensor networks. His research has been funded by the National Science Foundation (NSF) and the UMass President's Science and Technology Initiative.

Guanling Chen

Prof. Chen received a one-year extension grant from Department of Homeland Security (DHS) for his work on wireless network security monitoring and performance troubleshooting.

Prof. Chen taught a new course on online social networks and was interviewed by WUML – UMass Lowell’s public radio station.

WiCS ACM Chapter

Congratulations to Kate Tsui and Betty Yang, who have successfully promoted our WiCS (Women in Computer Science) program chartered by ACM and ACM-W.

Astaro Partnership

Astaro Corporation has partnered with our Center of Network and Information Security (CNIS) and donated three network security appliances for research and teaching.

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Dr. Xinwen Fu joined us as an assistant professor at the beginning of the Fall 2008 semester. He received his B.S. (1995) and M.S. (1998) in Electrical Engineering from Xi'an Jiaotong University, China and the University of Science and Technology of China respectively. He obtained his Ph.D. (2005) in Computer Engineering from Texas A&M University. From 2005 to 2008, he was an assistant professor at Dakota State University.

Dr. Fu won the second place in the graduate category of the International ACM student research contest in 2002, the Graduate Student Research Excellence Award of the Department of Computer Science at Texas A&M University in 2004, the Merrill Hunter Award for Excellence in Research at Dakota State University in 2008, and the best paper award at the International Conference on Communications (ICC) 2008.

Dr. Fu has been publishing papers in conferences such as the IEEE Symposium on Security and Privacy (S&P), the IEEE International Conference on Computer Communications (INFOCOM) and the IEEE International Conference on Distributed Computing Systems (ICDCS), journals such as the IEEE Transactions on Parallel and Distributed Systems (TPDS), and book chapters. Dr. Fu’s current research interests are in network security and privacy, information assurance, computer forensics, system reliability and networking QoS. His research is supported by National Science Foundation (NSF).

### Graduated Doctoral Students


Hongli Li, dissertation title: *A Canonical Visual Adjacency Matrix for Graphs*. Now at Pfizer Research Technology Center in Cambridge, MA. (Adviser Dr. Georges Grinstein.)

Wei Li, dissertation title: *An Efficient Query System for High-Dimensional Spatio-Temporal Data*. Now at IBM Silicon Valley Lab, San Jose, CA. (Advisers Dr. Cindy Chen and Dr. Jie Wang.)

Patrick Shaughnessy, dissertation title: *Computational Prediction of Protein-Protein Interactions in Novel Organisms with Application to Chloroviruses*. (Adviser Dr. Gary Livingston.)

### Visiting Scholar – Jizhi Wang

Prof. Jizhi Wang is a visiting scholar whose interests focus on the information security, especially chaos-based one-way hash functions, the formalization of secure protocols, and network security. He is an Assistant Professor at the Shandong Computer Science Center, China.

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