Greetings. Another year has passed and I hope all of you are doing well as we head into the holiday season. As you will see in this newsletter our department continues to be very active in teaching and in research, though our overall number of students has dropped quite a bit in the past few years. Also, please take the time to fill out and send us back the survey attached to this newsletter.

These surveys are an important part of the ongoing assessment of our department and we use them to try to reshape and reform our curriculum.

In departmental news, Masha Sosonkina, who had been on extended leave, decided to resign and stay at the Ames Research Lab rather than return to UMD. We wish her well. As our enrollment numbers have mirrored general enrollment numbers in Computer Science around the country (we are at about 60% of the number of students we had 5 years ago), the Dean chose not to return Masha’s position to the department, so we are operating at a bit of a disadvantage. As it appears the job market is still strong (and we are even seeing a significant number of small computer firms opening up in Duluth) we expect this situation will change in the near future.

To help make students better aware of what sorts of jobs might be available to them we are planning on holding a panel with industry people for the current students to give them a chance to ask questions of alumni about what they do. The panel has been scheduled for February 9th in the afternoon; if you are interested in participating (or just want an excuse to come back to Duluth) please email me (rmaclin@d.umn.edu).

In other departmental news, Hudson Turner returned from his sabbatical and Ted Pedersen is on sabbatical this year. Ted will be spending some of his time working with the Mayo clinic and then will be working in Spain on a Fulbright fellowship. Our faculty continue to do well at attracting support for academic research with grants from the National Science Foundation, Sandia National Laboratories, the Defense Advanced Research Projects Agency, and the Minnesota Department of Transportation as well as from University of Minnesota sources.

In university news, the opening of the new Swenson Science building has led to the temporary closure of the Life Science building, which is being extensively reworked (and tends to be a bit noisy). Life Science is expected to reopen in the Fall of 2007. Once it reopens, the Pharmacy school, which is currently in the Kirby Center will be moving to occupy that space, ITSS will then move to occupy the Kirby space vacated by Pharmacy and Computer Science will then move to occupy the ITSS MWAH space (probably in Fall of 2008). Hopefully it will all go smoothly.

Finally, I would again ask that you please stay in touch with us, and if you find yourself in Duluth please stop by and visit.

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The lab involves computer graphics, simulation, and human-computer interaction within virtual spaces. It currently houses four state-of-the-art PCs, all with dual-core processors and advanced video graphics adapters. These machines are used to render the computer graphics necessary for displaying a model of a virtual environment to the head-mounted display (HMD), a very specialized device that allows the user to be fully immersed in a 3D environment.

Professor Dunham receives an advising award from Jo Anne Huber, NACADA President

BULLDOG BYTES

Faculty Spotlight

The lab is responsible for rendering the computer Interaction in Virtual Environments: Understanding the Reality of Virtual Reality. Students will be introduced to the software algorithms, hardware components, and concepts necessary for building and evaluating virtual environments for effective human-computer interaction. Pete is excited about this course as it will be very hands-on and allow the students to really use the lab. The course will also serve to help Pete prepare an undergraduate offering in the near future.

The lab also includes two haptic rendering devices for "feeling" the interaction with a virtual object. Haptic devices are also referred to as force feedback devices and are currently the only means to physically interact with objects in a 3D virtual environment.

The lab is being used heavily by Pete's graduate students. One project involves using the GPU (or graphics processing unit) on a graphics card to very quickly solve for the dispersion of a large number of particles in a wind field. A related project involves tree animation models that react to dynamically changing wind fields so that 3D models of trees can be placed in a virtual environment and move according to the simulated wind.

Promotions and Awards

The department is happy to announce four promotions in the last year: Jim Allert to Assistant Professor, Chris Prince to Associate Professor with indefinite tenure, and Rich Maclin and Carolyn Crouch to Full Professor. Congratulations to them all.

In October, Doug Dunham received a Certificate of Merit for Outstanding Faculty Advising from NACADA (the National Academic Advising Association).

Also, one of Doug's computer-generated art works, "Six Lizards Pattern", was selected for display at the Art Exhibit of the Joint Mathematics Meetings of the American Mathematical Society and Mathematical Association of America in January.

Doug's year was not without controversy, however, as the UMD Students' Union (SUN) filed a complaint that Dunham's work was not worthy of the award. Dunham currently manages the site and its dozen or so people. Crouch is a contractor at the site.

Doug has maintained a close relationship with the UMD CS Department since returning to Minnesota. She has supervised several SNE internships for CS Department students, and she serves on the department's Advisory Board.

As with many modern families, the Rogers family finds creative ways to work and raise children. "I have always been fortunate in that I have been able to choose employment that allows me to balance family and work. I have worked part-time for several years while my children were young. Now my husband does while I am a full time manager." When asked how her UMD CS education prepared her for her work, Dunham says, "The program gave me the building blocks I needed in industry. I had all the basics and could move on from there." About the specific things she had to learn beyond her education she comments, "In college you produce labs created by a small group of people (often one) tested once. In industry this is not the case. The amount of time to create a product is greatly overshadowed by other factors in its lifecycle."

Dunham says she is fortunate to have entered the computer security field when she did. "CS has changed a lot. When I got my first job no one thought that computer security was very interesting. Lucky for me I did, and it has become a very good field to be an expert in."


Facility News

Jim Allott has been busy teaching many of the lower division web-enrollment courses in our department (Computer Science I, Visual Basic) and Java. He is heavily involved as a research participant in a university-wide Bush Foundation initiative to improve teaching and learning in large-enrollment classes. The UMD Bush Foundation Research Team is addressing reflective teaching and self-regulated learning, and currently involves several dozen faculty members from a wide variety of disciplines. Jim is a member of both the large-class research group and the science and engineering research group.

Jim conducted an Instructional Development Service workshop for UMD faculty last year on learning styles and participated in several Bush Foundation research colloquia held on campus. As a recipient of a summer grant from the Visual and Digital Imaging Lab he gave a presentation on his work, including visualization software he wrote, depicting and analyzing patterns of "usage of student web resources". This year Jim also became the CSE representative on the Campus Web Committee.

In recent research in conjunction with several professors from the American University of Sharjah in the United Arab Emirates, Jim compares the learning styles of computer science students in the Middle East and those here at UMD. It turns out there are surprisingly few differences, which has implications for cross-cultural computer science curriculum development.

BULLDOG BYTES

Jim Colburn served on the program committee for the Philosophy of Computer Science track of the European Conference for Computing and Philosophy (ECPAP-06) in June in Trondheim, Norway, where he chaired a panel session. He also presented a paper with Gary Shott on "Abstraction in Computer Science", which was delivered by Gary. Tim and Gary hope to present new work at ECPAP-07 in June in the Netherlands.

Tim will soon complete his seventh year as the book review editor for Minds and Machines Journal for Artificial Intelligence, Philosophy, and Cognitive Science. His book Philosophy and Computer Science (M. E. Sharpe, 2000) was translated into Korean last spring.

Tim continues to enjoy teaching Software Analysis and Design, Computer Ethics, and Software Engineering. Last spring he again partnered the latter course with a Duluth software company.

Jim is in his nineteenth year serving as the department's career advisor and internship coordinator. If your company would like to hire UMD CS students permanently or through internships, he encourages you to contact him.

For several years, Carolyn Crouch and the Information Retrieval research group at UMD has concentrated on web retrieval. In particular, they have focused on issues arising from structured retrieval through participation in INEX, which provides an environment for experimenting in XML retrieval. Participants include researchers in universities and industry.

During the past year, Carolyn's group solved a problem of considerable interest in this field, namely, the dynamic retrieval of elements. Based on a single indexing of the collection at the level of the basic indexing node, documents of interest are identified. The associated elements are created dynamically, correlated with the query, and a rank-ordered list of elements is returned to the user. During the past year, efforts centered on generating a properly weighted query for use in this environment, since the global data required is not available in the normal web. Thanks to excellent work by Murthy Ganapathibhatla, this particular problem has been solved. The group's methods have been extended by Vishal Balsakhi into the Alpaca domain. Wiki presents a new and challenging environment for their current efforts, now dealing with semi-structured data.

Doug Duhamel was appointed to the editorial board of the Journal of Mathematics and the Arts, a new journal whose first issue will be published in January, 2007. Doug was also appointed to the position of Secretary for SIGMAA-ARTS, a new special interest group of the Mathematics Association of America dealing with mathematics and the arts.

Three of Doug's MS students completed their thesis or project work and have graduated in the last year, and he supervised a UROP student working on the classification of semi-regular hyperbolic tessellations. Doug continues to teach Computer Science Theory, Advanced Data Structures, User Interfaces, and Graphics. He has been invited to teach Complexity and Complexity in the spring if enough students enroll. This is a "follow on" course to Computer Science Theory. The teaching of Turing machines more in depth and studying the classes P and NP, among other topics.

Rich Maclin cannot say that he is adjusting comfortably to the position of department chair. His time in the position has given him a true appreciation of just how well Don Crouch did the job for so many years. But he will "muddle on" (his words), and continue the course set by Don.

Rich's research work with DARPA, Sandia National Laboratories, and the Minnesota Department of Transportation has continued, though his roles with each have evolved. He has also been consulting regularly with researchers at the University of Wisconsin, focusing both on topics in systems involving the RoboCup soccer simulator and on bioinformatics research related to gene annotation.

CSE Dean Jim Riehl has become especially interested in bioinformatics related degrees, especially with respect to bioinformatics and chemical informatics. He has put Rich in charge of an ad hoc college committee to investigate adding CSE minors or majors in these areas. If you are interested in providing input or guidance on these issues please contact Rich.

Ted Pedersen is on sabbatical this year, catching up on various research projects, and doing a little traveling. In November 2006 he attended the annual symposium of the American Mathematics Association Association in Washington, DC, to present a paper and also report on UMD's participation in a competition of systems that predict whether a patient is at high risk based on the contents of their medical records.

In January 2007, Ted will travel to Hyderabad, India, to give a keynote lecture at the 5th International Conference on Natural Language Processing. Immediately thereafter Ted will present a tutorial and workshop paper at the 20th International Joint Conference on Artificial Intelligence. Then in February 2007 he will travel to Mexico City to present a paper at the Eighth International Conference on Intelligent Text Processing and Computational Linguistics.

Chris Prince once again helped organize the 2006 edition of the yearly Conference on Epigenetic Robotics (EpibRob2006). He presented a talk in Japan over the summer at the International Conference for Infant Studies titled "Models of infant development: Are we really serious about understanding infant development and dynamics?" and co-organized the 2006 edition of the RoboCup soccer simulator and on bioinformatics research related to gene annotation.

Chris continues his avid interest in gliding, and last year purchased and flew a "new" glider. Built in 1975, it is a primarily metal Schweizer 1-35.

This year Hudson Turner contributed a chapter on Nonmonotonic Causal Logic to the Handbook of Knowledge Representation, a volume of the Foundations of Artificial Intelligence series, to be published by Elsevier. His primary research area is logic-based artificial intelligence, focusing on the use of nonmonotonic reasoning for representing commonsense knowledge about the effects of actions. This causal logic has a publicly-available implementation—the Causal Calculator—that can be used to answer queries about action domains and to solve classical planning problems.

Hudson also studies mathematical properties of another implemented nonmonotonic logic—answer set programming—closely related to causal theories. In addition, he has recently worked with several graduate students on satisfiability solvers for finite-domain propositional logic, a slight but convenient extension of classical propositional logic. He has served on several recent conference program committees related to these research areas, and continues to review submissions for professional journals and conferences.

Publications continued


Pedersen (2006). Selecting the "Right" Number of Sessions Based on Clustering Criterion Functions, Proceedings of the Posters and Demo Program of the Eleventh Conference of the European Chapter of the Association for Computational Linguistics, April 5-7, 2006, Trento, Italy (with Kulkarni).


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Graduate Program News

Our program continues to flourish. Although our enrollments, along with virtually all other graduate programs in computer science, suffered briefly from concerns about the bursting of the tech bubble and outsourcing jobs to other countries, this situation seems to have righted itself. If current indicators hold, we expect enrollments, employment opportunities, etc., will equal if not exceed those of earlier years.

Our program ranks very high in number of students who complete all requirements and receive their degrees in a timely fashion. At this time, all of the students scheduled to complete their degrees during the past year have graduated, and all are either employed or have entered Ph.D programs at excellent universities. Here are the students who graduated in May, 2006:

- Sameer Atar
- Vishal Bakuhi
- Kedar Shumkar
- Satpanarayana Ganapathibhotla
- Mahesh Joshi
- Saiyam Kohli
- Anagha Kulkarni
- Lalit Nookala
- Apurva Padhye
- Aditya Palomella
- David Wicklund

Employment opportunities are excellent, with graduates from our program working not only in the midwest (Minnesota and Wisconsin) but also on the east and west coasts. We continue to believe that the Master of Science in Computer Science provides both an excellent entry to interesting positions to the profession and, in the case of our research-oriented program, to further graduate study for those interested in pursuing this option.

Undergraduate Program News

The department conferred 35 undergraduate degrees during the 2005-2006 academic year. The following students received Computer Science degrees:

- John Burrows
- Jeremy Dobs
- Robert Fensterman
- Aaron Goldberg
- Sven Grosen
- Bjarte Harnam
- Mirza Karacic
- Andrew Karasch
- Kevin Kaufeld
- Daniel Kempenich
- Andrew Krause
- Nicholas Larsen
- Justin Lee
- Anjana Manandhar
- Michael Marko
- Joseph Marty
- Christopher Meier
- Douglas Mulley

A few graduating seniors at the awards party

Undergraduate Awards

In May, 2006, our annual departmental awards were presented.

- Outstanding Academic Achievement: Justin Zimpel
- Outstanding Senior: Andrew Theuninck
- Outstanding Thesis: Jeffrey Sharkey

Student Programming Competitions

Last year we reported that one of our student programming teams won the Digi-Key Collegiate Programming Competition in Thief River Falls, MN. This year another team returned, along with advisor Pete Willemsen, to defend the department championship. Unfortunately they came up short and had to return the massive traveling trophy the department had displayed for a year.

Last time we also mentioned that our Digi-Key champion team entered the ACM North Central North America Region competition in Twin Cities and, though it did not win, performed admirably. This year the ACM Club and UMD CS Department teamed up to act as one of the host sites for this regional competition, a stepping stone to the world championships to be held in Tokyo, Japan, in March. Besides hosting, we had three teams competing among the 181 teams distributed throughout the seven states and two Canadian provinces of the North Central region.

You may also remember passing through the Medical School. You may also remember passing the familiar wildlife dioramas depicting hawks, eagles, beavers, etc. in their habitat. In order to keep them from being destroyed in the renovation, the 38-year-old dioramas were painstakingly removed, canned, and placed in storage until an appropriate new home for them is found.

Swenson Science Building Sculpture

As we reported last year, the new Swenson Science Building for biology and chemistry is now a fixture on our end of campus. Last spring a spectacular sculpture was completed near the campus entry on College Street. UMD publicity materials describe it as "a towering sculpture titled Wild Rising Moon by internationally known sculptor and environmentalist John David Mooney. The 89-foot-tall steel piece contains a large circle, 40 feet in diameter, representing the full, rice-harvesting moon of late summer—with out-stretched, curving lines moving through it depicting the North Shore of Lake Superior and natural features of the region."

Sports and Health Center Addition

Last September a $12.4 million addition to the Sports and Health Center was opened, and the long wait to use fitness equipment is a thing of the past, with three times the number of cardio machines than before. The beautiful two-story addition includes two group exercise rooms, a 37-foot colorful climbing wall, a recreational multi-purpose gymnasium, and a two-level fitness center featuring 65 pieces of cardio machines, as well as tread mills, elliptical machines, upright and recumbent bikes, and various forms of weight machines.

Labovitz School of Business and Economics Building Construction Begun

Ground-breaking began in July for the new $23 million Labovitz SBE Building. This building will be the first public higher education building in the state to be certificated a “Green Building”, meaning it will use less energy than standard buildings of comparable size. The building will connect to the Library Annex, with Kirby Drive passing beneath part of it.

Wild Rising Moon
Support the Computer Science Scholarship Fund

Did you know that you can show your support for your Alma Mater and the Computer Science Department when you make your annual gifts to the University? When you receive a phone call from a student caller or when you receive one of the University’s mail pieces asking for your support, please consider helping the current and future Computer Science students; simply ask that your gift be designated to the Computer Science Scholarship Fund. Through the generous gifts of alumni and friends we hope to provide scholarships to deserving students. So next time you open a UMD letter asking for your support, please consider helping a Computer Science student.

UMD Announces Reaching Higher Scholarship Initiative

Since 1998, each student body has successively been the largest in UMD’s history, and our documented academic excellence has been rising right along with it. But as we educate the next generation that has an inspiring passion to learn, we are aware of a critical shortfall; the need for more scholarships.

Currently, Computer Science does not have any endowed scholarships to offer our students. Through the Reaching Higher Scholarship Initiative we hope to change this. The University has committed institutional funds to match the payout of the new endowed scholarships. For example, if $1,000 is being awarded from a new endowed scholarship fund, UMD will match that with an additional $1,000. And that doubles the chances for success of our students.

Any gift (or pledge payable over up to 5 years) of $10,000 or more that meets program qualifications is eligible for the match. Gifts are used to create an endowment fund for UMD students. A little less than five percent of the fund’s market value is paid out annually to fund the scholarship. Each year, UMD will match this payout to double the impact of the gift.

The Reaching Higher Scholarship Initiative is a great opportunity for donors to double the impact of their giving and truly help students achieve their educational goals.

If you would like more information about making a gift to support the Department of Computer Science, please contact Tricia Bunten, Director of Development for the College of Science and Engineering (218-726-6995 or via tbunten@d.umn.edu). You can also visit the Development website at http://www.d.umn.edu/development/.