

Bulldog Bytes

University of Minnesota–Duluth

Department of Computer Science

A Message from the Department Head

Rich Maclin

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.

Faculty Spotlight

Pete Willemsen and the Virtual Environments Lab

Last year we reported on the addition of Pete Willemsen to the department. Since then Pete has been hard at work setting up a laboratory for use with his teaching and research activities. Pete is happy to report that the Virtual Environments Laboratory is now functional and occupied by students! From a research perspective, the purpose of the lab is to explore human computer interaction in ways that go beyond the current mouse, keyboard, and monitor interaction with which many of us are familiar. *continued page 2*

Alumni Spotlight

Bridget Rogers

With this issue we begin a series of short articles spotlighting CS undergraduate alumni.

Bridget Rogers graduated from Duluth East High School in 1982. She received a Hunt scholarship and attended the University of Minnesota, Twin Cities, campus for one year before returning to Duluth and UMD. She received an undergraduate degree in Computer Science and Mathematics in 1987, shortly after Computer Science split from Mathematics as an academic department. In 1989 she received one of the first CS master's degrees, as did her husband Clyde.

Bridget and Clyde both took jobs at Secure Computing in Roseville after receiving their degrees. As that time, Secure Computing was a fresh spin-off company from Honeywell, Inc., with roots in early Department of Defense efforts to design machines with multilevel, provably secure operating systems. In 1983, the group at Honeywell that would become Secure Computing hired Tim Colburn, who later joined the UMD CS Department in 1988. So as it happens, Professor Colburn and the Rogers overlapped briefly at UMD and also worked with several of the same people at Secure.

continued on page 3

Faculty Spotlight *continued*

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 within a 3D environment.



Closeup of a HMD unit

One of the computers in the lab is responsible for rendering the left eye view of the user and displaying it on the left screen of the HMD, while a second computer renders the right eye view of the user, displaying it on the right screen. The result for the user is a stereo image capable of presenting depth information. In other words, if you are wearing the helmet and you look over the edge of a virtual cliff, you will get the sensation that your next step will be a long one!



Displayed rendering of a virtual 3D environment

In addition to this equipment, the lab contains a tracking system to monitor the position and orientation of the user's head when they are in the lab. The lab is approximately 20 by 30 feet in size so users have a sizable space in which they can

Students using the HMD unit in the lab



locomote. The information from the tracking system is sent to the rendering PCs so that as the person moves around in the space or rotates their head, the views being displayed within the HMD change appropriately.

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. A third project attempts to simulate the driving behaviors of autonomous vehicles on virtual roadways. The lab has also been used by undergraduates and will continue to support their research efforts through UROP.

In spring 2007, Pete will introduce a new course offering for graduate students, Human 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.

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



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

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 Statesman caught him hosting a Scotch tasting session for Griggs Center members and published a photo of the event. Students of course were scandalized that alcohol was allowed on campus.



Doug checking the color of Cragganmore

Alumni Spotlight *continued*

Bridget worked at Secure until 1996, just before the Rogers' third daughter was born. During her tenure there she continued the tradition, originated at Honeywell, of helping design and implement a highly secure system that was targeted for the government.

Bridget took two years off when she and Clyde moved their family to Albuquerque in 1996. In 1998 she began working at Sandia National Laboratories (SNL), where she continued to work in computer security. She has had a variety of responsibilities including performing vulnerability assessments throughout the government. In 2000, she and Clyde were able to move back to Minnesota and start a remote site for SNL. Bridget currently manages the site and its dozen or so people. Clyde is a contractor at the site.

Bridget has maintained a close relationship with the UMD CS Department since returning to Minnesota. She has supervised several SNL internships for CS Department students, and she serves on the department's External 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 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, Bridget 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."

Bridget thinks 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."

Publications

Allert, J. (2006). Learning Styles of Computer Programming Students: A Middle Eastern and American Comparison, *IEEE Transactions on Education*, The IEEE Society, Vol 49, No 4, Nov. 2006. (with Zualkernan, I. & Qadah, G.)

Crouch, C. (2006). Dynamic Element Retrieval in a Structured Environment, *ACM Transactions on Information Systems*, Oct. 2006.

Crouch, C. (2006). The Dynamic Retrieval of XML Elements, *Advances in XML Information Retrieval and Evaluation: Fourth Workshop of the Initiative for the Evaluation of XML Retrieval (INEX 2005)*, LNCS Vol. 3977, Springer-Verlag. (with Kahanna, S., Potnis, P., and Doppdapaneni, N.)

Dunham, D. (2006). More 'Circle Limit III' Patterns, *Proceedings of The Ninth Annual Bridges Conference*, August 4-8, London Knowledge Lab of the Institute of Education, London, UK.

Dunham, D. (2006). A Tale Both Shocking and Hyperbolic, chosen to be published in the book, *The Edge of the Universe*, a collection of articles selected from the first ten years of *Math Horizons Magazine*.

Maclin, R. (2006). A Simple and Effective Method for Incorporating Advice into Kernel Methods, *Proceedings of the Twenty-First National Conference on Artificial Intelligence (AAAI'06)*, Boston, MA. (with Shavlik, J., Walker, T. & Torrey, L.)

Maclin, R. (2006). Skill Acquisition via Transfer Learning and Advice Taking, *Proceedings of the Seventeenth European Conference on Machine Learning (ECML'06)*, Berlin, Germany. (with Torrey, L., Shavlik, J., & Walker, T.)

Pedersen (2006). A Comparative Study of Supervised Learning as Applied to Acronym Expansion in Clinical Reports, to appear in the *Proceedings of the Annual Symposium of the American Medical Informatics Association*, Nov 11-16, 2006, Washington, DC. (with Joshi, Pakhomov, and Chute)

Pedersen (2006). An End-to-End Supervised Target-Word Sense Disambiguation System, *Proceedings of the Twenty-First National Conference on Artificial Intelligence*, July 19, 2006, Boston, MA. (Intelligent System Demonstration, with Joshi, Pakhomov,

Maclin & Chute)

Pedersen (2006). Kernel Methods for Word Sense Disambiguation and Acronym Expansion, *Proceedings of the Twenty-First National Conference on Artificial Intelligence*, July 19, 2006, Boston, MA. (Student Poster, with Joshi, Maclin & Pakhomov)

Pedersen (2006). Unsupervised Context Discrimination and Automatic Cluster Stopping, *University of Minnesota Supercomputing Institute Research Report UMSI 2006/90*, August 2006. (with Kulkarni)

Pedersen (2006). How many different "John Smiths", and who are they?, *Proceedings of the Twenty-First National Conference on Artificial Intelligence*, July 19, 2006, Boston, MA. (Student Poster, with Kulkarni)

Pedersen (2006). Using Word-Net Based Context Vectors to Estimate the Semantic Relatedness of Concepts, *Proceedings of the EACL 2006 Workshop Making Sense of Sense---Bringing Computational Linguistics and Psycholinguistics Together*, April 4, 2006, Trento, Italy. (with Patwardhan)

Pedersen (2006). Determining Smoker Status using Supervised and Unsupervised Learning with Lexical Features, to appear in the *Working Notes of the i2b2 Workshop on Challenges in Natural Language Processing for Clinical Data*, Nov 10-11, 2006, Washington, DC.

continued on page 5

Faculty News

Jim Allert has been busy teaching many of the lower division large-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 fall 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 of findings, 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.

Tim Colburn served on the program committee for the Philosophy of Computer Science track of the European Conference for Computing and Philosophy (ECAP-06) in June in Trondheim, Norway, where he chaired a panel session. He also presented a paper on the topic "What is Philosophy of Computer Science?", and jointly prepared a paper with **Gary Shute** on "Abstraction in Computer Science", which was delivered by Gary. Tim and Gary hope to present new work at ECAP-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 local Duluth software company.

Tim is into 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 experiments 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 way. Thanks to excellent work by Murthy Ganapathibhotla, this particular problem has been solved. The group's methods have been extended by Vishal Bakshi into the Wikipedia domain. Wiki presents a new and challenging environment for their current efforts, now dealing with semi-structured data.

Doug Dunham 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 hopes to teach *Computability and Complexity* in the spring if enough students enroll. This is a "follow-on" course to *Computer Science Theory*, treating 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 head. 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 continues to work extensively with researchers at the University of Wisconsin, focusing both on gaming research involving the RoboCup soccer simulator and on bioinformatics research related to gene annotations.

CSE Dean Jim Riehl has become especially interested in informatics 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 Medical Informatics 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 smokes based on the content 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 (EpiRob06). 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 environmental interaction and dynamics?", and he co-presented a tutorial (with Christian Balkenius at Lund University, Sweden) on sensory feature processing at EpiRob06. Two graduate students completed their MS degrees with Chris in 2006. Chris also attended a humanoid robotics summer school in Italy (for some

video see <http://rattus.d.umn.edu/~cprince/Robots/james-RobotCub-7-26-06.mov>).

Recently, Chris's research group has started laying out a new research project, A Framework for the Development of Development. Building on an existing lower-level framework (Yarp: Yet Another Robotic Platform), they are working towards a software component specification and a framework that they hope to gradually enable robots to show autonomous behavioral development.

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 Non-monotonic 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 causal logic for representing commonsense knowledge about the effects of actions. This causal logic has a publicly-available implementa-

Chris in his "new" glider, safely on the ground



tion---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 Boolean 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). Automatic Cluster Stopping with Criterion Functions and the Gap Statistic, Proceedings of the Demonstration Session of the Human Language Technology Conference and the Sixth Annual Meeting of the North American Chapter of the Association for Computational Linguistics, June 6, 2006, New York City. (with Kulkarni)

Pedersen (2006). Selecting the "Right" Number of Senses 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)

Pedersen (2006). Improving Name Discrimination: A Language Salad Approach, Proceedings of the EACL 2006 Workshop on Cross-Language Knowledge Induction, April 3, 2006, Trento, Italy. (with Kulkarni, Angheluta, Kozareva & Solorio)

Pedersen (2006). An Unsupervised Language Independent Method of Name Discrimination Using Second Order Co-occurrence Features, Proceedings of the Seventh International Conference on Intelligent Text Processing and Computational Linguistics, February 19-25, 2006, Mexico City. (with Kulkarni, Angheluta, Kozareva & Solorio)

Pedersen (2006). Measures of Semantic Similarity and Relatedness in the Biomedical Domain, to appear in the *Journal of Biomedical Informatics*, Elsevier, 2006. (with Pakhomov, Patwardhan & Chute)

Graduate Program News

Our graduate 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 Bakshi
Kedar Bhumkar
Satyanarayana Ganapathibhotla
Mahesh Joshi
Saiyam Kohli
Anagha Kulkarni
Lalit Nookala
Apurva Padhye
Aditya Polumetla
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 within the profession and, in the case of our research-oriented program, to further graduate study for those interested in pursuing this option.

Some of the graduating masters students



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 Haram
Mirza Karacic
Andrew Karasch
Kevin Kaufeld
Daniel Kempenich
Andrew Krause
Nicholas Larsen
Justin Lee
Anjana Manandhar
Michael Marko
Joseph Marty
Christopher Meier
Douglas Mulley

Andrew Norgren
Ryan Salsman
Ryan Schlimmer
Jeffrey Sharkey
Andrew Theuninck
Anuradha Uduwage
Justin Zimpel

The following students received Computer Information Systems degrees:

Reid Amborn
Andrew Berscheid
Marc Carr
Michael Drees
Peter Euphosin
Amanda Haroldson
Karen Hughes
Patrick Jones
Joshua Mau
Andrew Ryan

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 Service: **Jeffrey Sharkey**

Student Programming Competitions

Last year we reported that one of our student programming teams won the Digi-Key Collegiate Computing Competition in Thief River Falls, MN. This year another team returned, along with advisor Pete Willemssen, 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 the 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. As you might expect, competition was keen, and none of our teams was able to place among the leaders. But there is always next year.



UMD team working a problem during the ACM programming contest

ACM Club Active

Besides helping sponsor the programming competition, the student ACM club is active in other areas this year, sponsoring LAN parties that focus on open source games, and arranging for Linux Installfests during the year. They are also planning on giving several seminars during these events on topics ranging from shell scripting to using Firefox.

Campus News

Life Science Building Renovation

A \$15.2 million renovation of the UMD Life Science Building was begun last January and is in full swing. With an opening planned for fall 2007, the fully-renovated building will house the College of Pharmacy and the Department of Biology in a state-of-the-art facility.

You may recall the familiar walk from Heller Hall to the lecture halls in LSci and MWAH. Due to the construction, we must now make daily detours

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, crated, 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 Ricing Moon by internationally known sculptor and environmental artist 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 outstretched, curving lines moving through it depicting the North Shore of Lake Superior and natural features of the region."



Wild Ricing Moon

Sports and Health Center Addition

Last September a \$12.4 million addition to the Sports and Health Center was opened, and the long waits to use fitness equipment are 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.



Climbing wall at the new Sports and Health Center

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 certified 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.

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 Buntin, Director of Development for the College of Science and Engineering (218-726-6995 or via tbuntin@d.umn.edu). You can also visit the Development website at <http://www.d.umn.edu/development/>.

U.S. POSTAGE
PAID
Duluth, MN
PERMIT NO. 722
ZIP CODE 55812

Department of Computer Science
320 Heller Hall
University of Minnesota-Duluth
Duluth, MN 55812