

Bulldog Bytes

University of Minnesota–Duluth

Department of Computer Science

A Message from the Department Head

I know many of you are probably surprised to see someone other than Don Crouch as Department Head, and some of our older alumni may not have met me, so let me first introduce myself. My name is Rich Maclin and I joined the CS department in 1995 after completing my Ph.D. at the University of Wisconsin-Madison. I became associate head of the department in 2000, and department head as of last September when Don Crouch decided to step down (see the accompanying story). Our department continues to prosper due to Don's leadership in the past, and I hope to follow his lead over the next few years.

The department has seen a number of changes in the past year. The Information Systems and Technology degree was renamed Computer Information Systems, as this better fits the focus of the degree. Our Computer Science program was again accredited by the Computing Accreditation Committee of the Accreditation Board for Engineering and Technology. 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. We hired a new faculty member, Pete Wilmsen, who received his Ph.D. from the University of Iowa in 2000 and worked as a research professor at the University of Utah. You can find more about Pete later in this newsletter.

One of my initial goals as department head is to do a better job of staying in touch with our alumni. I would like to make it possible for you to update your contact information through our web site, and if you choose, to make information such as an email address and a web link available on an alumni web page (note that for privacy purposes we will only make such information available if you contact us and indicate that it is ok---we will continue to keep the contact information we do have private otherwise). We are working toward better contact with our alumni because we believe that you are one of our best resources for refocusing and changing our curriculum to meet the changing needs of our

field, and we would like to be able to contact you periodically to get your feedback. Please check out our web page <http://www.d.umn.edu/cs/alum/> as it is updated periodically to make it possible for you to keep in touch with us.

In other news regarding the department, we continue to prepare for eventually leaving our Heller Hall location and moving to Marshall W. Alworth Hall. As you may be aware, this move is occurring in part because of the domino effect of the recently completed Swenson Science Building (see the accompanying story).

Please stay in touch with us, and if you find yourself in Duluth please stop by and visit.

Long-Time Head Steps Down



Fall 2005 marked the first time in 12 years that Professor Donald Crouch has not led the department into a new academic year as department head. His tenure far outlasted the recommended department head terms for the college, which was just fine with the rest of the department *continued 2*

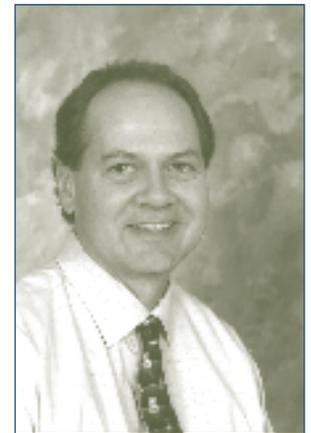
Featured Personnel

In this issue we feature one of the longest running members of the department and our newest member.

Dr. James Allert

Jim Allert first started teaching computer science at UMD in 1984 after a number of years of involvement in the computational aspects of research with the Lake Superior Basin Studies Center, the UMD Archaeometry Laboratory, UMD-U.S. Environmental Protection Agency cooperative research programs and as a Fellow at the Minnesota Supercomputer Institute.

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UMD Programming Team Wins Competition

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Long-Time Head Steps Down

continued

ment faculty, who came to rely on his steady oversight and judgment. Professor Crouch presided over significant and difficult department events, including two national accreditations of the Computer Science degree, the establishing of the Computer Information Systems major, several significant curricula changes, the transition from quarters to semesters, and the establishing of student computer labs.

In addition, Professor Crouch oversaw the hiring of 7 permanent faculty members and successfully shepherded 5 junior faculty through the promotion process. He has been instrumental in procuring external grant money for the department in support of undergraduate research, and the graduate program has expanded dramatically under his watch. Faculty have enjoyed freedom afforded by his scheduling the courses they wanted to teach, taking care of administrative matters behind the scenes, and keeping department meetings to a minimum.

The department thanks you, Professor Crouch!

Featured Personnel

continued

He is the co-author of one book and a number of book chapters and journal articles in Archaeometry and the environmental sciences. Jim became Professor Allert when he recently completed his Doctorate in Education from the University of Minnesota. He is engaged in a number of projects to improve the quality of the computer science undergraduate educational experience. He teaches several of our introductory freshmen classes and is a research participant in a university-wide Bush Foundation initiative to improve teaching and learning in large-enrollment settings. As a member of the UMD Bush Foundation Research Team he is addressing

Professor Allert presiding over one of his many graduate teaching assistant meetings



reflective teaching and self-regulated learning in Computer Science I. It is apt that Jim does research in computer science education, as he is certainly an expert in it. He currently is teaching Computer Science I (190 students), Visual Basic (160 students), and Introduction to Java (40 students), for a total of almost 400 students! Such numbers require the coordination of many graduate teaching assistants, as seen in the accompanying photo.

Jim's involvement in undergraduate technology programs and his research in effective teaching methods keep him busy presenting papers at national and international conferences.

In 2003 he presented on the use of innovative classroom technology at both the national Educause convention in Atlanta and the International Conference on Innovative Technology in Computer Science Education (ITiCSE'03) held in Thessaloniki, Greece. In 2004 he presented a paper on assessing outcome effectiveness in computer science education at the Australasian Computer Science Conference (ACSC) in Dunedin, New Zealand and another on the learning styles of computer science students at the IEEE International Conference on Advanced Learning Technologies convened in Joensuu, Finland (ICALT 2004). This summer he co-authored a paper with several computer scientists from the Middle-East, Imran Zualkernan and Ghassan Qadah, comparing Arab and American computer science student learning styles. It was presented in September, 2005, at The Second International Conference on Innovation in Information Technology (IIT'05) in Dubai, United Arab Emirates. In October 2005 he conducted a UMD Instructional



Exchange students (from left to right) Amanda Haraldson (UMD), Nellie Eriksson (Sweden), and Suvi Vacker (Finland)

Development Service workshop for faculty on the importance of learning style assessment and in December he will present research on the visualization of student learning conducted in conjunction with a grant from the UMD Visual and Digital Imaging Lab.

Jim also serves as our International Education Advisor. The UMD Department of Computer Science encourages students to pursue short-term study opportunities abroad and has special student exchange relationships with a number of universities throughout the world. These offer opportunities for students to pursue CS coursework while also experiencing life in another culture. The effects are often life-changing. Jim experienced international education first-hand obtaining his MSC in England from the London School of Economics. In addition, both of his children were involved in studying abroad (in Senegal and New Zealand) while attending UMD. In conjunction with several of the conferences men-

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UMD Programming Team Wins Competition *continued*

Digi-Key Corporation, a provider of quality electronic components based in Thief River Falls, MN, sponsors an annual Collegiate Computing Competition. In October 2005 the sixth annual competition included 17 four-student teams from eight universities in Minnesota and North Dakota. The UMD Computer Science department, with instructor Steve Holtz as faculty advisor, sent two teams to the competition. The team composed of Joseph Marty, Leroy Krueger, Jeffrey Sharkey, and Anuradha Uduwage won the competition by a wide margin. Each student on the team was awarded a \$200 prize, and the department received \$3000 (as well as a massive traveling trophy that the department will be hard-pressed to display on a wall!)

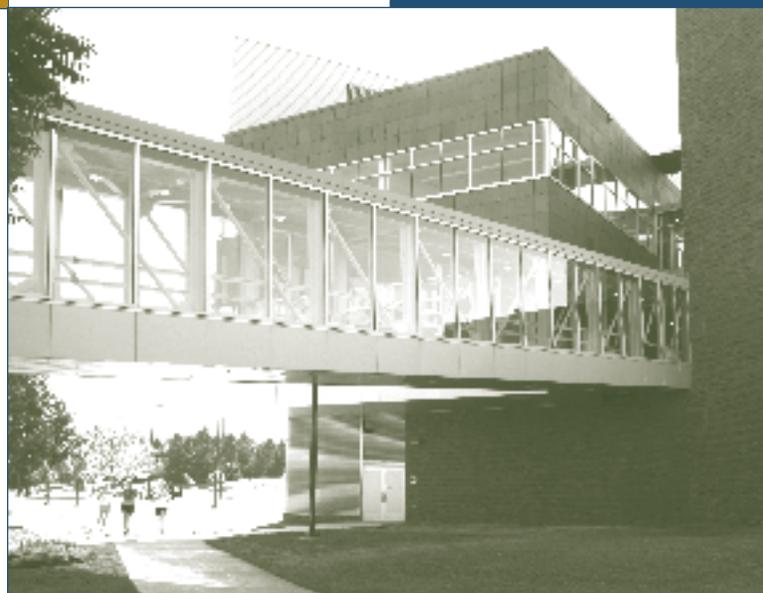
Our winning team also won the warm-up challenge of building a structure out of sheets of paper and scotch tape designed to hold the Digi-Key catalog (all 1500+ pages of it) at the highest possible altitude for at least three seconds. UMD's second team, composed of Jeremy

Dobs, Andrew Kasper, Michael Marko, and Jason Novek, placed seventh out of 17 teams. As a school, UMD won the "Best Dressed" award, for which all eight students received prizes.

Incidentally, UMD CS also won the Digi-Key competition in 2000, and placed second in 2001.

While the Digi-Key competition features teams from two states, the ACM North Central North America Region programming competition attracts teams from Minnesota, Wisconsin, Western Ontario, Manitoba, Iowa, North Dakota, South Dakota, Nebraska, and Kansas. In November 2005, fresh off its Digi-Key success, UMD sent two three-student teams to the ACM regional competition in Minneapolis, again with Steve Holtz as coach. The team of Jeffrey Sharkey, Joseph Marty, and Anuradha Uduwage placed 14th out of 186 teams, while the team of Jason Novek, Joshua Clark, and Evan Harris placed 128th. We are extremely proud of all our student programming team members.

Digi-Key competition winning team of Joseph Marty, Leroy Krueger, Jeffrey Sharkey, and Anuradha Uduwage



New Science Building

After three years of construction, the Swenson Science Building has opened across Kirby Drive from Heller Hall and Life Sciences.

The three-level structure houses the biology, chemistry, and biochemistry departments. It has separate teaching and research wings, with a stunning, centrally located atrium with glass walls overlooking a pond that in the spring will hold wild rice. Across the pond in a grassy area near Kirby Drive, an 89-foot tall steel sculpture titled "Wild Ricing Moon" has been partially completed. The sculpture contains a 40-foot diameter circle representing the full moon. Next spring, lines depicting wild rice stalks will be added.

With the completion of the Swenson Science Building, the stage is now set for the renovation of the Life Sciences Building, which will allow Information Technology Systems and Services to vacate the Marshall W. Alworth Building, which will allow us, the CS department, to move into MWAH. We'll believe it when it happens.

Faculty News

Dr. Tim Colburn

Last fall I took on a new course, CS 3111, Computer Ethics. It was very well received by students, and marked the first time in my 17-year UMD career that I taught a course with no programming. The students are highly motivated to give their perspective on problems ranging from software patents and digital rights management to spam and ethical hacking. I also continue to be a guest lecturer in Phil 3242, Values and Technology.

Last spring I added a new initiative in my CS 4531, Software Engineering course. In what I hope will become a tradition, I partnered this course with a local Duluth software company that agreed to provide real-world projects for student teams. I believe this experience will jump-start these students' pursuit of software engineering careers. Related to this, last year I sponsored a UROP student in software engineering.

I continue as the department's career advisor, and I've coordinated 20 internships in 2004-05, arranging for students to receive



academic credit for working with companies from Sinex Aviation to 3M.

My research lies in the area of philosophy of computer science, and I am on the program committee for the European Conference for Computing and Philosophy in 2006 in Norway. CS professor Gary Shute and I are collaborating on a presentation on abstraction in software development at this conference, and we will be producing an article on this topic for a special issue of the journal *Minds and Machines: Journal for Artificial Intelligence, Philosophy, and Cognitive Science*. I also continue in my role as book review editor for this journal.

Dr. Carolyn Crouch

For the last four years, our work in information retrieval at UMD has focused on structured or XML retrieval. With the enormous number of papers, documents, etc., in this format resident on the web, IR people are interested in knowing how best to query and retrieve relevant information from these sources. Traditional IR seeks to retrieve relevant documents in response to a user's request. Structured retrieval, in contrast, is focused in a sense on the small, i.e., it seeks to retrieve the most exhaustive and specific elements or components of

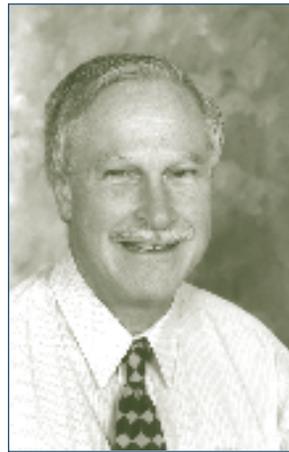
a document in response to a query which may itself be structured. A structured query may, for example, specify that only specific parts of a document (e.g., abstract) are to be returned and/or specify the part(s) of a document to be searched for content.

Structured retrieval is supported by INEX, the Initiative for the Evaluation of XML Retrieval, which provides the XML collections, topics, relevance assessments and evaluation procedures for participating organizations. UMD has participated since the inception of INEX. Our system has grown from an early, document-based system to (as of this year) a system that can retrieve at the element level. It is built upon and uses the Smart experimental retrieval system as its basic search engine. Thanks to Harsh Bapat and Sameer Apte, who built the initial system, to Aniruddha Mahajan, who produced the first version of the flexible system and Archana Bellamkonda, who first automated the query processing modules, and lastly to Sudip Khanna, who produced the current, dynamic version of the flexible system, Poorva Potnis, who performed our first experiments in structured relevance feedback and assisted with flexible retrieval, and Nagendra



Doddapaneni, who optimized the query processing routines based on flexible retrieval, we now have a competitive operational system based on flexible element retrieval. If you are interested in our progress, see our papers in the proceedings of the INEX workshops (e.g., *Advances in XML Information Retrieval*, edited by Fuhr, Lalmas, Malik and Szlavik, LNCS 3493, Springer-Verlag, 2005).

Dr. Doug Dunham



I was honored to be promoted to full professor effective July 1, 2004. In August 2004, I also received a national award, the Trevor Evans Prize from the Mathematical Association of America for my paper "A Tale Both Shocking and Hyperbolic," which appeared in the April, 2003 issue of *Math Horizons* magazine. I also received two local awards: the CSE Sabra S. and Dennis L. Anderson Scholar/Teacher Award in May, 2004, and a UMD Outstanding Faculty Adviser Award May 4, 2005.

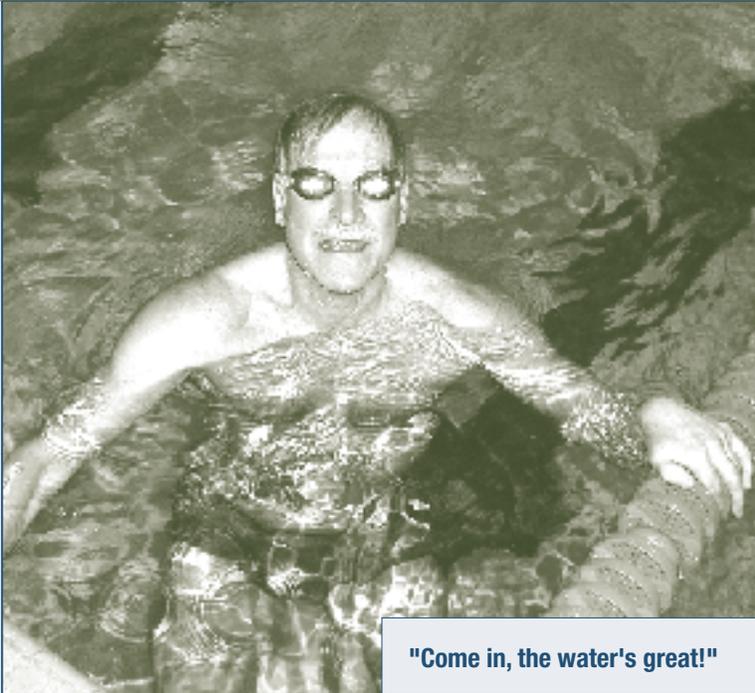
Since the last newsletter, I have presented papers at five conferences and the papers have been published in the corresponding conference proceedings: The 4th International Conference of Mathematics and Design, June, 2004, Mar del Plata, Argentina, where I presented the paper "Computer Design of Repeat-

ing Hyperbolic Patterns"; the ISAMA-CTI 2004 Conference, June, 2004, Chicago, Illinois, where I talked about "Hyperbolic Key Patterns"; the 2004 Bridges Conference, July, 2004, Winfield, Kansas, where I gave an overview of Tony Bomford's "Hyperbolic Hooked Rugs"; the Art+Math=X Conference, June, 2005, Boulder, Colorado, where I discussed the "Family of 'Circle Limit III' Escher Patterns"; and the Bridges 2005 Conference, July, 2005, Banff, Canada, where I talked in depth about "H.S.M. Coxeter and Tony Bomford's Colored Hyperbolic Rugs" and their color symmetries.

I have worked with three UROP students during the past two years. The first, Abul Mohsin, a previous UROP student, presented the results of his work "Generating More Generic Hyperbolic Escher Patterns," at NCUR2004, the 18th National Conference on Undergraduate Research, April, 2004, Indianapolis, Indiana. The second, Kyle Kalmi, completed his project "Visualization of Binary Search Trees", spring semester, 2004. Currently, Jason Novek is working on "Classification of Semi-regular Hyperbolic Tessellations" as his UROP project.

Six CS MS students whom I supervised completed their thesis work and have graduated since the last newsletter: Nan Zhang, Prashant Rathi, Yanhau (Cassie) Li, Kailash Aurangabadkar, Tarun Kapoor, and Ajit Datar.

I have been teaching many of the same courses as in the past: Advanced Data Structures, User Interfaces, and Graphics. One new course that I developed is CS 3511, Computer Science Theory, which was first offered Fall, 2004. This required course was introduced to address a concern of our last accreditation team that our students



"Come in, the water's great!"

could graduate without seeing some of the more advanced topics of computer science such as structural induction, vectors and matrices applications in computer science, a more formal theory of proofs of correctness, and finite automata (through Turing machines) and their corresponding formal languages.

Finally, I continue to train insanely for endurance contests of various sorts. Here's me in the pool for a promotional photo in support of UMD Rec Sports.

Mr. Steve Holtz



I am about to begin work as a contributing author on the text being used in CS 1521. The work will involve fixing errata as well as introducing and integrating updated software engineering content, altering and testing all of the code examples, and adding additional exercises and projects to the end of each chapter. I am excited about bringing my teaching experience into the next edition of the textbook. This is my first term as faculty advisor to the UMD Student Chapter of the ACM (ACM Club). The Club organized two 4-person teams to participate in the 6th annual Digi-Key Collegiate Computing Competition hosted by Digi-Key Corporation in Thief River Falls, Minnesota (see the accompanying story).

One of our teams placed first among the 17 teams from 8 participating universities. This win brings \$3000 to the Department of Computer Science and \$200 Best Buy gift certificates for each member of the winning team. The department will also receive and display a traveling bronze trophy for the year.

The ACM Club also sent two 3-person teams to the 30th annual ACM International Collegiate Programming Contest. We participate in the North Central North American region. This region had 187 teams from 68 schools competing this year. One of our teams placed 14th in the region. This is a remarkable accomplishment! I am excited by the strong problem solving and programming skills coming out of our program.

Other ACM Club activities planned for this year include hosting LAN gaming parties, hosting a Linux install-fest, and preparing for future programming contests.

Dr. Rich Maclin

The past year was very busy for me. I have been pursuing research in conjunction with Profs. Jude Shavlik and Mark Craven at the University of Wisconsin and these collaborations have led to several research papers and to a large research grant with the Naval Research Laboratory as part of the DARPA Transfer Learning project. I expect to continue this research and to continue other research projects with Sandia National Laboratories and with the Northland Advanced Transportation Systems Research Laboratory.

I also became department head this year for a term of three years and am hoping to do well for the department in this capacity. My main hope is to try and continue the excellent work of Don Crouch. As I noted in my message, I am hoping to do a better job of reaching out to our alumni, and would like to increase our interactions. I am also hoping to continue working on securing more space for the department and to expand

the faculty so as to teach a wider variety of undergraduate courses.

Dr. Ted Pedersen



I traveled quite a bit in the Summer of 2005. In June I attended the annual conference of the Association for Computational Linguistics (ACL) in Ann Arbor, Michigan. I was the co-organizer of the poster and demonstration session, and also co-organized a workshop on Parallel Text and Machine Translation. In addition, I presented a tutorial (with Rada Mihalcea of the University of North Texas) on word sense disambiguation, which is the problem of determining the correct meaning of a word in text automatically.

Also at ACL, I was very pleased to see current graduate student Anagha Kulkarni present research that she and I have done over the last year on the problem of name discrimination in large corpora of text. The task is simple to state but hard to solve---suppose you do a web search for the name of a person or company and get back 300 results that contain that name. How can you automatically determine if these refer to the same person or organization, or if there are some number of underlying entities that share the same name?

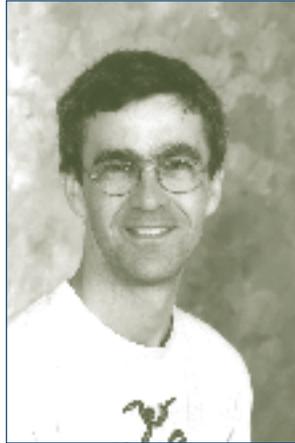
Finally at ACL, former graduate students Siddharth “Sid” Patwardhan and Satanjeev “Bano” Banerjee presented a demonstration of a method of word sense disambiguation they have worked on with me since their days at UMD.

In July I went on to Pittsburgh to attend the annual meeting of the American Association for Artificial Intelligence. Rada Mihalcea and I presented the tutorial again (to a different audience) and I also conducted a demonstration of the SenseClusters package that I have developed with former graduate student Amruta Purandare and current student Anagha Kulkarni. This package supports our research in name discrimination, and can be applied to many other problems such as email categorization and automatic discovery of word meanings. In addition, Sid and Bano again presented a demonstration of their word sense disambiguation research.

Later in July I traveled to Cluj-Napoca, Romania, where I was an invited lecturer at the EuroLAN summer school. This is a bi-annual event that takes place in Romania, and brings together students and researchers from all of Europe for 2 weeks of short intensive classes. I conducted a day-long class that revolved around the techniques implemented in the SenseClusters package.

Dr. Chris Prince

Since the last newsletter, I have continued work with my students and collaborators on the KidCause project. This project models the learning and behavioral development of young children, using robots. So far, we have been focusing mainly on sensory processing, and a major empirical report on this



project was presented at the Fourth International Workshop on Epigenetic Robotics (EpiRob 2004), titled “Taking Synchrony Seriously: A Perceptual-Level Model of Infant Synchrony Detection.” An extended version of this paper appeared in the 2005 volume of the Journal of Cognitive Systems Research. This past summer, we also presented a theory paper at the Fifth Epigenetic Robotics meeting titled “Ongoing Emergence: A Core Concept in Epigenetic Robotics.”

In Spring 2004 Eric Mislivec completed his Undergraduate Research Opportunity (UROP) project constructing the SenseStream program. This program detects synchrony between the audio and visual streams of a digital video file. For example, when a person talks, there is audio-visual synchrony between their mouth movements and speech sounds. The SenseStream program is the main software basis for our EpiRob 2004 paper, and the ensuing journal paper. We recently ported this software to the Mac OS X platform, and the IKAROS simulator. In graduate student research from our team, Alex Kosolapov and Kiran Vuppla completed their MS thesis research with theses titled: “The Effects of Category Information on Association Learning Tasks in Neural Network Mod-

els” and “Evaluation and Documentation of Two Synchrony Detection Implementations.” Sam Salunke also recently finished his master’s thesis “Comparing Synchrony Detection Algorithms for Robotic Self-Other Discrimination.”

In addition to using algorithms to have robots distinguish self from others, we are interested in models of synchrony detection because synchrony detection plays a role in infants’ early language learning. It seems obvious once you think about it, but infants may more easily associate a word with an object if you say the object name while moving the object. For example, if I want a 10-month-old infant to learn the name “cup,” it will probably help to say the word “cup” while moving a cup in the infant’s view. Following on this idea, we have created an initial perceptual model of word-learning modeled as audio-visual association learning, based on the use of synchrony detection. The model performs a kind of unsupervised learning, and learns audio-visual associations only when there is audio-visual synchrony in the incoming perceptual streams. So far, this work is unpublished, but we are holding out hope!

In the last two years, it has been my pleasure to collaborate with Dr. George Hollich, a faculty member at Purdue University, Department of Psychological Sciences. Given that our research team is working on robotic models of infant learning and behavioral development, it is only natural that we should be collaborating with psychologists. More recently, I have also begun to collaborate with Dr. Lakshmi Gogate, a researcher at SUNY Health Science Center at Brooklyn. Lakshmi is a developmental psychologist and she also studies infant language

learning. Lakshmi is particularly interested in how audio-visual synchrony helps young infants bootstrap their initial word-learning skills.

Our research team benefited in the Spring 2004 semester from programming by Dr. Tim Colburn’s CS 4531 (Software Engineering) class. Tim’s class carried out programming on a project specified by Nathan Helder and myself. This project directly contributed to our research, as it involved the CS 4531 students programming a real-time audio-visual synchrony detection algorithm. Prior to that point we did not have an audio-visual synchrony detection implementation that worked from live sensors (i.e., a camera and microphone).

On a personal note, the last few years have marked my continued adventures with the sport of soaring. I have started to fly “cross-country,” adding landings in five farmers’ fields to my accomplishments. My longest cross-country flight so far is 165 miles (as the crow flies) from Albert Lea, MN to SE of Des Moines, Iowa. I fly with the Red Wing Soaring Association at Benson’s Airfield, White Bear Lake, MN, and more recently at Faribault Airport in Faribault, MN.

Dr. Hudson Turner

The past year I was on sabbatical, after having been promoted to associate professor and granted tenure. I continue my NSF-funded research in logic-based artificial intelligence, focusing on the use of non-monotonic causal logic for representing

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Featured Personnel *continued*

tioned above he recently made site visits to five of UMD's international education partner institutions: Waikato University in Hamilton, New Zealand, The University of Joensuu, Joensuu, Finland, Jonkoping University in Jonkoping, Sweden, Vaxjo University in Vaxjo, Sweden and both campuses of the Blekinge Institute of Technology in Ronneby and Karlskrona, Sweden. Several students from our department have participated in international education opportunities recently through semester-abroad programs with UMD's partner institutions Jonkoping University, Sweden and Curtin University in Perth, Australia. See the accompanying photo. On the personal side, Jim is an avid canoeist, sea kayaker and outdoor enthusiast (non-motorized) and a maintenance slave to his log home. He has also recently taken up playing the mountain dulcimer and is a charter member of the Burt Reynolds Memorial Literary Cell for Middle-Aged Men with Delusions of Grandeur---Duluth/North Shore Chapter.

Dr. Peter Willemssen

Pete is the newest member of the department. He officially started in August as an assistant professor and is teaching the Introduction to Computer Graphics course. His research interests are concentrated in human-computer interaction and computer graphics, with an emphasis on virtual environments.

Pete joins the department after having spent the last two years as a Research Assistant Professor in the School of Computing at the University of Utah in Salt Lake City, Utah. Prior to that he was a post-doctoral researcher in the School of Computing. He received his Ph.D. in Computer Science from the University of Iowa in May 2000.

Having grown up in central Iowa, Pete spent many of his childhood vacations in northern Minnesota, canoeing and fishing in the BWCAW and in the lakes around Ely. He finds the area of the north woods to be truly spectacular and looks forward to experiencing the area's many activities with his family. Yes, he's even looking forward to the winter activities and has stated that he plans to walk to work a couple of times when the temperatures are below zero! Pete is a big fan of ultimate frisbee and has played the sport since 1991, starting initially with the University of Iowa team. He's looking forward to eventually playing disc in Duluth (next summer).

The goal of Pete's research is to facilitate the creation of dynamic virtual environments that are effective tools for research, training, or education. If you have ever seen the Holodeck from Star Trek, then you have a fairly good sense of what an ideal virtual environment might be like. Creating such a virtual space is a very long ways off, but contemporary examples do exist, such as driving simulators,

flight simulators, or even video games. The motivation for Pete's work reflects the fact that humans learn from experience. By creating virtual environments that mimic the natural world in an effective manner, we have a very useful tool for producing experiences for training, education, and research activities.

Pete's research efforts are highly interdisciplinary and focus on the problems associated with making human interaction with virtual environments more natural and realistic. His work is genuinely enhanced by collaboration with colleagues from psychology, computer science, and engineering. There are two approaches he takes with his research. The first examines human perception in virtual environments by measuring responses to visual, haptic, or motoric tasks. The second approach investigates the software and algorithms necessary for creating virtual environments in which dynamic virtual entities engage and interact with users of the virtual environment. By thoroughly understanding the various components of virtual environment hardware and software, including the limitations, he plans to increase their utility and applicability for use in research, training, and education.

Pete is currently setting up a virtual environments lab at UMD and plans to conduct studies using the virtual environment later this year.

Faculty News

continued

commonsense knowledge about the effects of actions. This causal logic has an implementation---the Causal Calculator---that can be used to solve classical planning problems. I also continue studying math-



ematical properties of another implemented non-monotonic formalism---answer set programming---closely related to causal theories. Finally, I have recently worked with several graduate students on satisfiability solvers for finite-domain propositional logic, a slight but convenient extension of classical Boolean propositional logic. I've served on several recent conference program committees related to these research areas, and continue to review submissions for professional journals, conferences, and National Science Foundation panels.

Graduate Program Update

By Carolyn Crouch, DGS

Our graduate program continues to attract exceptionally well qualified students. The department's profile is much as it has been for the last several years. Most of our students graduate in a timely fashion, finishing their degree requirements by the end of the summer of their second year (if not before). We continue to focus on the research component of the Master's degree, i.e., Plan A



or thesis option, as opposed to Plan B (the project option) and the new, upcoming Plan C (coursework only option) which is being introduced in some departments this year.

Requirements for entrance to our graduate program have changed as a result of our last accreditation. Current applicants must have an undergraduate degree in computer science or computer engineering and must have completed operating systems, architecture or networks, and the new CS theory course as prerequisites.

Job prospects for graduates look good. In contrast to the situation faced by grads for a couple of years due to the bursting of the tech bubble, this year's graduates have been quite successful in finding good jobs doing interesting work. Most of our graduates enter the job market after graduation, but some go on to pursue Ph.D.s. And some return to academia after a stint in the real world. Wherever you are and whatever you do, there are people in the CS department at UMD who are interested in you and your life and would like to hear from you from time to time.

2005 Graduates:

Ravindra Bharidia
Ajit Datar
Nagendra Doddapaneni
Tarun Kapoor
Sudip Khanna
Varsha Kodali
Hemal Lal
Jason Michelizzi
Poorva Potnis
Pratheepan Raveendranathan
Sampanna Salunke
Archna Yada

2004-2005 GTA Award:
Nagendra Doddapaneni

Undergraduate Program News

In addition to our ACM Club programming team successes (described elsewhere in this issue), the undergraduate program continues to flourish. Here is a list of students who graduated in computer science or computer information systems in 2004-2005:

Paul Beck
Chad Breske
Justin Chase
Daniel Cinnamon
Beau Crawford
Scott Daniels
Adam Duncan
Brent Eggenberger
Rose Ekberg
Robiel Embaye
Aron Embaye
Samuel Erickson
Robert Fensterman
Claton Gardner
Mark Grassman
James Greensky
Brandon Hall
Muzefa Hashim

2005 graduating class of CS masters students



Students enjoy pizza at spring awards event

Ryan Humphries
Evan Iblings
John Kelcher
Jefferson Krohn
Christopher Kuhl
Aaron Loes
Umesh Maitipe
Michael Marko
Adam McDermid
Christopher Meier
Peter Melling
Naveed Memon
Adam Moren
Steven Neils
Jeremy Newland

Leonard Notto
Phillip Rachal
Christopher Reynolds
Andrew Ryan
Kyle Saathoff
Eric Schwartz
Chun Ki Shin
Victor Thompson
Eric Verdoorn
Chad Weber
Sean Wesenberg
James Wiegand
Joel Youngblom
Syed Zaidi

We also continue our tradition of presenting our undergraduate awards. In Spring of 2005 we gathered to recognize the following outstanding students:

Outstanding Academic Achievement Award:
Jeremy Newland
Outstanding Senior Award:
Peter Melling
Outstanding Service Award:
Chun Ki Shin

Students continue to take advantage of undergraduate research opportunities in the department through both UROP (Undergraduate Research Opportunities Program) and NATSRL (Northland Advanced Transportation Systems Research Laboratories). The internship program also attracts about a dozen students per year. If your company is interested in

providing an internship experience for our students, please see <http://www.d.umn.edu/~tcolburn/interns/> and contact Tim Colburn directly (tcolburn@d.umn.edu). Also, if you are interested in on-campus recruiting visits or job fairs, contact Mary Gallet (mgallet@d.umn.edu) in the UMD Career Services office.

Recent Faculty Publications

Allert, J. (2005). A Cross Cultural Comparison of Learning Styles: The AUS-UMD Experience, The Second International Conference on Innovation in Information Technology (IIT'05), Dubai, United Arab Emirates. (with Zualkernan, I. and Qadah, G.)

Allert, J. (2004). Learning Styles and Factors Contributing to Success in an Introductory Computer Science Course, Proceedings of the 4th IEEE International Conference on Advanced Learning Technologies, Joensuu, Finland, IEEE Computer Society, Washington DC, 385-389.

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Maclin, R. (2005). Giving Advice about Preferred Actions to Reinforcement Learners Via Knowledge-Based Kernel Regression, Proceedings of the Twentieth National Conference on Artificial Intelligence, Pittsburgh, PA. (with J. Shavlik, L. Torrey, T. Walker and E. Wild)

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Maclin, R. (2005). Using advice to transfer knowledge acquired in one reinforcement learning task to another, Proceedings of the Sixteenth European Conference on Machine Learning, Porto, Portugal. (with L. Torrey, T. Walker, and J. Shavlik)

Pedersen, T. (2005). A Comparative Study of Support Vectors Machines Applied to the Supervised Word Sense Disambiguation Problem in the Medical Domain, Proceedings of the Second Indian International Conference on Artificial Intelligence, December 20-22, 2005, Pune, India. (with Joshi and Maclin)

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and the emergence of behavioral imposters, in P. Carruthers, S. Laurence and S. Stich (Eds.), *The Innate Mind: Structure and Contents*. Oxford University Press. (with Povinelli, D. J. and Preuss, T. M.)

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Willemsen, P. (in press). Ribbon Networks for Modeling Navigable Paths of Autonomous Agents in Virtual Environments, *IEEE Transactions on Visualization and Computer Graphics*. (with J. K. Kearney, and H. Wang)

Willemsen, P. (2005). Six Degree-of-Freedom Haptic Rendering Using Spatialized Normal Cone Search, *IEEE Transactions on Visualization and Computer Graphics*, Vol. 11, No. 6, pp. 661-670. (with D. E. Johnson and E. Cohen)

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Department of Computer Science
320 Heller Hall
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