

Department News

As this issue goes to press, Prof. **Hudson Turner** wraps up his first year as department head. Hudson succeeds Prof. **Rich Maclin**, who very capably guided the department for six years, culminating in our successful re-accreditation last year from ABET, our national accrediting body. See our Faculty Spotlight below for more on Rich.

With the accreditation pressure eased, faculty have returned to focusing on teaching and research, as described further in Faculty News. We have also benefited from the presence of a McKnight Visiting Scholar, Prof. **Andrew Brooks**, who has been doing research and teaching courses in the area of software engineering for us. And once again a UMD computer science alumnus has been

made a member of the SCSE Academy of Science and Engineering. See more about that in Alumni News.

We continue to await the planned Heller Hall renovation project, funding for which has yet to be approved by the state legislature. While a renovation would be welcome, it would also be disruptive, as we would have to temporarily relocate.

Previous issues of **Bulldog Bytes** have reported on department activities during calendar years. With this issue we change to a more natural cycle and focus on academic years. Because of the switch, this issue will include information from spring semester 2011 as well as the academic year 2011-2012.

Please keep in touch with us as your careers progress. We very much enjoy hearing from you.

Faculty Spotlight

Rich Maclin

The UMD Computer Science Department's "modern era" begins in 1989, when we received our first national accreditation with **Doug Dunham** as department head, and continued through three full six-year renewals in 1992, 1998, and 2004 under **Donald Crouch**. Our latest renewal, in 2010, was achieved under **Rich Maclin**, our head during 2004-2010.

Born in New Jersey, Rich was a (self-described) "math geek" early and then late in his school years. "My middle school had no idea what to do with me, so I sat in the back," he remembers. He went to an international high school in West Germany while his father worked for Dupont. His boyhood interests included reading (science fiction, spy novels, history) and



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Staff Spotlight

Lori Lucia

There was a time when "executive secretary" described **Lori Lucia's** position with the UMD Computer Science Department, but "office manager" is more appropriate. It is safe to say that without Lori, the department's smooth administrative functioning would grind to a halt. Whether it's handling all department budget and accounting procedures, arranging for faculty travel and writing expense reports, or dealing with student walk-ins, since 1999 Lori has done it all with expertise and a smile.

She marks all staff and faculty birthdays with cake (even though some of us old-timers would rather forget), and sets up all department social functions, including grad student luncheons and end-of-year parties.

Born in Duluth and raised on the same property her father grew up on, Lori can recall another era. "It was a farm when my father was a boy and still considered out in the country when I was little, but you'd never know it now with the Miller Hill Mall being right there," she recalls with some nostalgia. "We used to swim and fish in the Miller

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Faculty News

The department was pleased to welcome Visiting McKnight Professor **Andrew Brooks** (shown at right) for 2011-2013. A software specialist, Andrew has been conducting research and teaching courses in software engineering and software evaluation.



In the summer of 2011 **Ted Pedersen** participated in a 3-month i2b2/VA Sentiment Classification competition, where the task was to develop Natural Language Processing (NLP) systems to identify emotions found in suicide notes.

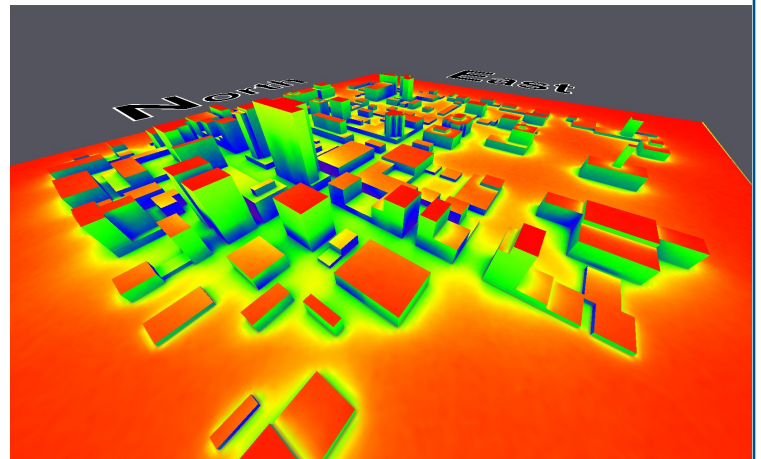
Ted spent considerable time analyzing these notes by hand, then constructed a rule-based system based on his observations. He discovered that quite a few of the notes were relatively unemotional, and focused on conveying instructions or information. This turns out to be a common phenomenon with suicide notes, since people who have reached the point of writing such notes have already in effect made a decision to end their lives, so they are often more at peace with themselves than might first be expected.

The 40 competing systems, submitted from around the world, were ranked based on how closely they matched a human annotation of the emotion content of the notes. Ted's rule-based system was in the top third of the competition, where nearly all of the higher ranked systems relied on statistical methods or machine learning. Ted feels the time spent studying the notes and manually developing a system gave him a much firmer grasp of this kind of data than otherwise. He continues to pursue the application of NLP techniques to problems in mental health such as diagnosing depression and also in preventing suicide.

Pete Willemsen's research group continues to develop tools aiming to increase knowledge of how environment and urban form interact. Pete leads a team investigating the complex interactions of various types of urban structures by developing design strategies for optimizing urban form under a variety of constraints. Their hypothesis is that urban structures exist that minimize energy use while also minimizing air pollution exposure. Through GPU-assisted simulation, the team's optimization algorithms are able to rapidly execute large numbers of simulations with-

in the optimization space.

One of the team's tools is QUIC Radiant, a utility that models heat transfer in an urban environment, focusing on radiant heat interactions between buildings, a ground layer, and incoming solar radiation. QUIC Radiant is capable of modeling heat conditions for use in urban planning and weather simulation. It produces results by means of ray tracing methods, focusing in particular on NVIDIA's OptiX framework for rapid sampling of radiant heat parameters within an urban domain, though it can work in a wide range of environments. Here is an image showing a QUIC Radiant rendering of temperature data for a 1 square km area of Salt Lake City, UT.



Jim Allert has been active in developing software to automate the program assessment process for engineering and computer science accreditation. (Jim qualifies as an expert in this area, having now taught over 11,000 students in his career at UMD!) For the past three years he has been an invited speaker at the annual ABET (Accreditation Board for Engineering and Technology) Symposium and at the annual Rose-Hulman Evaluation Conference. In 2012 he will lead a three-hour workshop at the ABET Symposium. His presentations address issues from streamlining the assessment process in large-enrollment classes to computer science and engineering program assessment as a whole.

In the spring of 2011 Jim released the Program Assessor software to the University of Minnesota Office of Technology Commercialization. He delivered a related paper at the 2011 ASEE North Midwest Section Meeting and has been actively engaged in presenting on this topic to the UMD campus community through the UMD Instructional Development Service.

Tim Colburn and **Gary Shute** have been studying the philosophical implications of types in computer science and will be presenting a paper on this in July at a symposium on the history and philosophy of programming, co-located with AISB/IACAP World Congress 2012, a conference in Birmingham UK celebrating the centenary of the birth of Alan Turing.

Publications & Presentations

Allert, J. Streamlining Program Assessment for ABET: What to Do With All that Data, *Proceedings of the ASEE North Midwest Section Meeting*

Allert, J. Program Assessor User Manual, University of Minnesota

Colburn, T. & Shute, G. Abstraction, Law and Freedom in Computer Science, *Metaphilosophy*

Colburn, T. & Shute, G. Decoupling as a Fundamental Value in Computer Science, *Minds & Machines*

Colburn, T. & Shute, G. Knowledge, Truth & Values in Computer Science, *Thinking Machines and the Philosophy of Computer Science*

Crouch, C., Crouch, D. et al. A Useful Method for Producing Competitive Ad Hoc Task Results, Comparative Evaluation of Focused Retrieval LNCS

Dunham, D. Enumerations of Hyperbolic Truchet Tiles, ISAMA

Dunham, D. Hyperbolic Truchet Tilings, Bridges

Dunham, D. A Family of Butterfly Patterns, Joint Mathematics Meetings

Maclin, R. et al. Advice Refinement for Knowledge-Based Support Vector Machines, NIPS

Pedersen, T. Identifying Collocations to Measure Compositionality: Shared Task System Description, Association for Computational Linguistics

Pedersen, T. et al. Knowledge-Based Method for Determining the Meaning of Ambiguous Biomedical Terms Using Information Content Measures of Similarity, Annual Symposium of the American Medical Informatics Association

Pedersen, T. et al. The Ngram Statistics Package - A Flexible Tool for Identifying Ngrams, Collocations, and Word Associations, *Proceedings of Multiword Expressions: from Parsing and generation to the Real World*

Pedersen, T. et al. Towards a Framework for Developing

Semantic Relatedness Reference Standards, *Journal of Biomedical Informatics*

Pedersen, T. et al. Using Second-order Vectors in a Knowledge-based Method for Acronym Disambiguation, *Proceedings of the Fifteenth Conference on Computational Natural Language Learning*

Pedersen, T. Measuring Degrees of Relational Similarity with the Gloss Vector Measure of Semantic Relatedness, *Proceedings of the 6th International Workshop on Semantic Evaluation*

Pedersen, T. et al. Measuring the Similarity and Relatedness of Concepts in the Medical Domain: IHI 2012 Tutorial Overview, *Proceedings of the 2nd ACM SIGHIT International Health Informatics Symposium*

Pedersen, T. Rule-based and Lightly Supervised Methods to Predict Emotions in Suicide Notes, *Biomedical Informatics Insights*

Pedersen, T. et al. Semantic Relatedness Study Using Second Order Co-occurrence Vectors Computed from Biomedical Corpora, UMLS and WordNet, *Proceedings of the 2nd ACM SIGHIT International Health Informatics Symposium*

Willemsen, P. et al. Change Blindness Phenomena for a Virtual Reality Display System, *IEEE Transactions on Visualization and Computer Graphics*

Willemsen, P. et al. Natural Perspectives Projections for Head-Mounted Displays, ICML

Willemsen, P. et al. Accelerating Urban Fast Response Lagrangian Dispersion Simulations Using Inexpensive Graphics Processor Parallelism, *Environmental Modelling & Software*

Alumni News

Established in 2002, the Academy of Science and Engineering recognizes alumni of the Swenson College of Science and Engineering who have brought distinction to themselves through their participation, commitment, and leadership in their chosen profession. In the fall of 2011, **Bridget Rogers**, who graduated from UMD with a B.S. (1987) and M.S. (1989) in computer science, was one of five new inductees into the Academy.

Bridget works for Sandia National Labs in the Twin Cities developing science-based technologies that support America's national security. On the occasion of her induction in-

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FACULTY SPOTLIGHT CONT'D FROM P. 1

acting. "I was in almost every production of school plays from junior high through high school."

In high school Rich had two years of calculus through the international baccalaureate program and he was on a math team that won a school competition. "The school also had a very old computer that was fun to tinker around with," he recalls. For college, he chose University of Wisconsin-Madison, "Just because I wanted to try some place I hadn't been to before," starting in electrical engineering, then moving into psychology and primate research. Late in his undergrad career a job he had developing a tutoring system for Mendelian genetics helped him get into computer science, and he wound up taking a double major in CS and psychology. He would stay at Madison for his M.S. and Ph.D. degrees.

In 1995 Rich joined our department. "I liked that the UMD faculty I interviewed with seemed to have a variety of interests," he says. In addition to performing the usual teaching and research expected of new hires, Rich immediately began participating in other important departmental affairs, including the remaking of our curriculum during the transition from quarters to semesters in 1999. When Donald Crouch stepped down from the head position after 12 years, Rich was drafted for the job.

During his time as head, the economy collapsed and with that came fewer students in the program, department budget reductions and associated frustrations. Most of his effort was spent "just keeping the program afloat as CS contracted most of the time I was head. I did lead us through our latest accreditation, and I am very proud of that." The job did have its satisfying elements. "We have a great staff here and working with them is fun. The faculty also make it pretty easy – we have a very congenial department. I liked helping students through problems and it was fun to go out and meet alumni."

Since returning as a full-time faculty member Rich has concentrated his research on his primary interest, machine learning. As a graduate student he became involved in trying to predict secondary structure for globular proteins and did some work on trying to revise domain knowledge, which became the focus of his career. "We generally refer to the overall process of domain knowledge revision as advice taking, though we use it in a variety of ways," he says. Along the way he has made forays into side projects

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STAFF SPOTLIGHT CONT'D FROM P. 1

Hill Creek right across the road from our house."



Lori in her annual role as pizza purveyor for the undergraduate awards

Growing up with two sisters and a brother, Lori remembers camping and large family gatherings with extended family members who lived in the area. She's always loved to read, draw, sew, and do other craft activities, but spending as much time as possible outside has always held a special allure. Today Lori and her husband John live thirty miles from UMD on Pequaywan Lake, despite the occasional hassle of driving to work in the Duluth winter. As if that weren't enough "outside," she and John maintain a camper in Canada, spending "as many long weekends in the summer as possible up there enjoying no phones or computers and lots of great walleye fishing," she says.

Lori's interest in accounting and organization began at Denfeld High School, where she graduated in 1981, and continued through the secretarial program at what is now Lake Superior College, which she finished in a year. She and John married in 1982 and started a family, but she maintained a variety of clerical jobs. After her second child she even got a night job doing data entry. She started at UMD in 1992. "It was perfect for me since it was part-time with summers off so I could get my kids to and from school and be home with them in the summer," she says.

By 1999 the executive secretary position in CS became open and Lori started with us full-time. Over the years, she has sharpened her administrative skills, but she also excels at the social aspects of the job. "I enjoy assisting students, especially the international students, and it makes me feel good to make them feel welcome."

After 30 years of marriage Lori loves to spend time with

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ALUMNI NEWS CONT'D FROM P. 3

to the Academy, Bridget presented a colloquium entitled "Red Teaming and Alternative Analysis of Computer Systems." Here she is with Dean Riehl (far left), Chancellor Black (far right), and the other inductees:



Awards and accolades continue to mount for **Amit Singhal** (M.S., 1991). Back in 2007 we reported here on Amit's being made a Google Fellow for his work on Google's page-ranking algorithm. In December 2011 it was announced that Amit had been named an ACM Fellow. This select group is recognized for contributions to computing that have provided fundamental knowledge to the computing field and generated multiple technology advances in industry, commerce, healthcare, entertainment, and education. "These women and men, who are some of the leading thinkers and practitioners in computer science and engineering, are changing how the world lives and works," said ACM President Alain Chesnais.

In early 2012, it was announced that Amit had been elected to the National Academy of Engineering, an achievement among the highest professional distinctions accorded to an engineer. Amit's election was based on his contributions to information retrieval and search. Also in 2012, Amit was honored by the second annual Asian Awards for Outstanding Achievement in Science and Technology. The Asian Awards honor only the very highest levels of achievement from within the worldwide Asian community.

To top it all off, in March it was announced that Amit is now a senior vice president of Google.

It was late spring in 2011, and one would expect to find **Josh Clark** hard at work in the graphics lab or poring over his master's thesis in preparation for his coming defense. Instead, Josh was refurbishing old computers at the Boys

& Girls Club in West Duluth, doing his best to narrow the digital divide. The event, run by the Duluth Chamber of Commerce, put computers in the hands of low-income families in the community, some of whom had never owned one.

"Low-income folks who don't have access to technology, it just widens that gap," Josh said in a Duluth News Tribune article. "I think the more you can level the playing field, the more you can help people out, get them computers, get them connected -- those resources are going to help them through their lives."

Josh was one of more than 40 volunteers from UMD, CSS and local tech groups who collected older computers from companies that were going through technology transitions. Dismantling and assembling computers comes naturally to Josh, so "spending a Saturday or a Sunday, coming down here and working, it's just a lot of fun," Josh told the DNT. "Plus you get to hang out with a bunch of geeks."

Josh and his wife **Michele Clark** received their MS degrees in 2011 and for the last year have been working for Saturn Systems in Duluth. They both received their BS degrees in CS from UMD in 2009.

While attending a Meeting of the Association for Computational Linguistics in summer 2011, **Ted Pedersen** ran into UMD CS alumni **Bridget McInnes**, **Saiyam Kohli**, **Saif Mohammad**, **Varada Kolhatkar**, and **Sarika Mehta**. Ted reports that all are doing well.

Graduate Program News

MS Graduates Since May 2010

Natasha Acquilla	Henry Helgen
Radhika Banhatti	Kiran Kura
Christopher Becker	Bhagyashri Mahule
Dnyaneshwari Chandarana	Supraja Nagalla
Sai Subramanyam Chitilla	Reena Narendravaram
Joshua Clark	Lakshmi Rayma Pathi
Michele Clark	Kaushik Satyavolu
Scot Halverson	Bharat Siginam

Outstanding GTA Awards

2010-2011: **Natasha Acquilla** and **Radhika Banhatti**
 2011-2012: **Christopher Becker**

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FACULTY SPOTLIGHT CONT'D FROM P. 4

involving ensemble learners and support vector machines. He would like to see machine learning methods made available to a broader community and he is currently in the process of making them more accessible online.



Rich on a development trip to San Francisco when he met with a number of our graduate student alumni.

Rich has a variety of interests outside computer science. He still loves the theater – he and his wife Tara have annual season tickets to the Guthrie – and he is an avid baseball and football fan. Rich and Tara have been married since 2009, and for a number of years they hosted our annual graduate student picnic including some memorable games of M \ddot{o} lkky. That's not a typo; it's a Finnish lawn game. However we don't expect Rich will be joining any fantasy M \ddot{o} lkky leagues soon. ■

STAFF SPOTLIGHT CONT'D FROM P. 4

her two grown children and three grandchildren. She and John, who builds and remodels homes, enjoy traveling: to California to visit their son who is in the Air Force, to Florida for the beaches, and to Nashville for the music. She shows no sign of slowing down. "I am very grateful to have a job where I enjoy working with the people and doing the work I enjoy." We are very grateful to have Lori. ■

Campus News

The UMD men's hockey team won the 2011 NCAA Championship.

The James Swenson Civil Engineering Building won a 2011 AIA/CAE Educational Facility Design award.

Undergraduate News

CS and CIS Graduates Since May 2010

David Bloom	Cayla Lee
Christopher Bombeck	David Loppnow
Dylan Burich	Joshua Lukens
Keith Butler	Brandon Lund
Samuel Clark	Brian Meyer
Jonathan Decker	Admas Molla
Abhinav Devireddy	Brett Nelson
Jonathan Drahos	Robert Nelson
Douglas Dunn	Ryan Nelson
Ross Eaton	Brady Neumann
Andrew Erickson	Matthew Overby
Mark Fedor	Noah Potti
Robert Flaig	Christine Randall
Reid Frahm	Andrew Reitz
Kyle Giering	Bradley Schlicht
Jack Gilbert	Hillary Schwan
Anthony Greseth	Aaron Sly
Luke Haakenson	Eric Smith
Kyle Halverson	Joshua Stahnke
George Harnish	Daniel Strapple
David Heebink	Matthew Theusch
Thearon Helgeson	Robert Thomas
Andrew Hornberger	Peter Timinski
Sean Janssen	Kurt Traver
Yan Jiang	Jaideep Umraiya
Erik Johnson	Dallas Williams
Matthew Joyal	Jonathan Williams
Kaleb Jungclaus	

Awards

2010-2011 Academic Achievement: **Jonathan Williams**

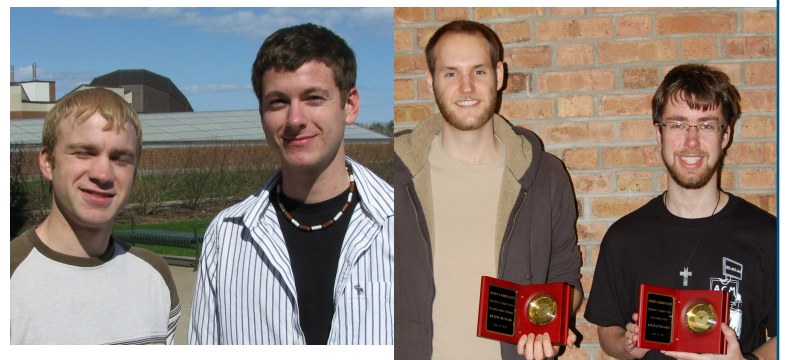
2010-2011 Outstanding Senior: **Bradley Schlicht**

2011-2012 Academic Achievement: **Keith Butler**

2011-2012 Outstanding Senior: **Kaleb Jungclaus**

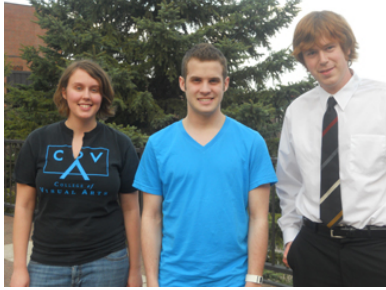
Jonathan and Bradley

Keith and Kaleb



A new language application for the iPad, called the German Grammar Guide, made its debut at UMD Techfest in March. The app replaces and goes beyond a textbook that is now out of print. The effort, run through the Undergraduate Research Opportunities Program, was a collaboration of faculty and students from German Studies, Graphic Design, and Computer Science, with our **Pete Willemssen** working with student programmers **Sean Breid** and **Yan Ji-ang**.

In this photo, Sean (at right) is shown with graphic designer Abby Kallas and content developer Carl Berwald. According to Carl, "The app is actually expanding what the book was able to do," he said. "Because the app is interactive, you can click on words to get more information than on any one page in the book."



"Yan and I had to do the coding together," Sean said. "I mean together, as in sitting right next to each other working on the code." The new environment was the toughest part of the assignment. "Programming on a handheld device is so foreign, it's hard to get used to. The best part was seeing it actually work."

As a student in our Computer Security course, **Kurt Traver** developed a keen interest in the field and decided to continue for his Master's degree. Accepted at James Madison, Pittsburgh, Georgia Tech, and CMU, Kurt is headed for CMU, which also provided support with a Scholarship for Service.



Kurt started his undergraduate career in Honors Computer Science and has excelled throughout the program. Good luck Kurt!

GRAD PROGRAM NEWS CONT'D FROM P. 5

Natasha and Radhika

Christopher



Our May 2011 graduating class had an unusually high number of women. Here they are gathered together at the spring luncheon:



From left to right: Reena, Radhika, Lakshmi, Natasha, Mugdha, Bhagyashri, Michele, Ankitha, and Dnyaneshwari.

The May 2011 graduating class:



Reminder

With this mailing you should have received a gift donation envelope. Just a reminder.

The fall 2011 graduate student picnic was held at the home of **Donald and Carolyn Crouch**.



From left to right, standing: **Mihir Atmakuri, Supraja Nagalla, Siva Gurram, Maneesha Vejendla, Rajesh Tripurneni, Sai Chittilla, Aditya Vegesna, Swapnil Nawale, Gai "Alex" Geng, Kiran Bushireddy, Kiran Kura.**

Seated: **Matthew Faris, Sameer Kulkarni, Anand Jha, Christopher Becker**

The 2012 luncheon for second-year grad students was held at Blackwoods.



In seated order from left to right: **Henry Helgen, Jim Allert, Pete Willemsen, Gary Shute, Kiran Kura, Carolyn Crouch, Tim Colburn, Doug Dunham, Supraja Nagala, Kaushik Satyavolu, Sai Chittilla, Christopher Becker, Scot Halverson**

The Feast of Nations is a favorite annual event for our graduate students. At right are **Siva Gurram, Anand Jha, and Aishwarya Ashok** in traditional garb in March 2012.



The May 2012 graduating class:



From left to right: **Christopher Becker, Henry Helgen, Supraja Nagalla, Scot Halverson, Sai Chittilla, Srivishnu Kaushik Satyavolu, Kiran Kura**

