Issue
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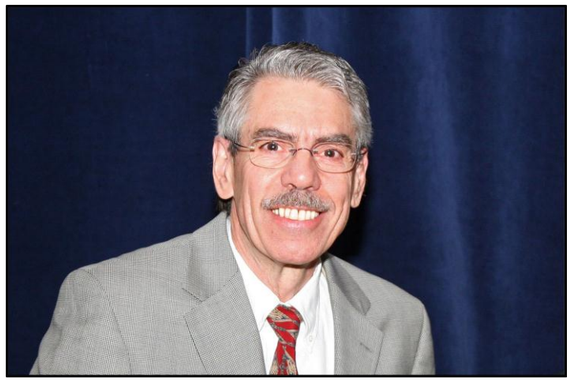
Spring 2012

CSEE News

Department of Computer Science and Electrical Engineering



Dr. Gary Carter, *Chair*

this issue

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A Note from the Chair:

As we are entering the second semester of the 2011-2012 academic year, we are preparing for changes and new opportunities. Associate Professor Brooke Stephens has retired and we are preparing to interview candidates for two open tenure track positions in Computer Science. CSEE has just received permission to search for a Professor of Practice in Computer Science. In addition to assisting our CS instruction, the Professor of Practice will be affiliated with our Cyber Security Program which is rapidly growing.

In the Kudos department: Professor Tim Finin was named UMBC Presidential Research Professor for 2012; Professor Anupam Joshi was recently appointed as the Oros Family Professor of Technology, a five year endowed professorship; UMBC's 2012 Alumnus of the Year for Engineering and Information Technology is Ralph Semmel ('92 Ph.D., Computer Science).

He is currently the Director of The Johns Hopkins University Applied Physics Laboratory; the Association for Computing Machinery (ACM) has recognized CSEE Professor Marie desJardins as a Distinguished Member for her contributions to the field of computing; Professor Yelena Yesha was awarded the 2011 IBM Center for Advanced Studies (CAS) Faculty Fellow of the Year; the IEEE Signal Processing Society has named Professor Tulay Adali a Distinguished Lecturer.

CSEE was visited during Fall 2011 by ABET as part of the accreditation process for the Computer Science and Computer Engineering programs. Richard Chang, Tim Oates, Chuck LaBerge, and Mohammed Younis guided us through this process.

Have a great Spring Semester. Keep up to date by visiting www.csee.umbc.edu

-Gary

4TH ANNUAL GLOBAL GAME JAM RETURNS TO UMBC

Game enthusiasts of all stripes hunkered behind computer screens in the UMBC GAIM Lab for the 4th annual Global Game Jam—a fast-paced weekend where teams around the world conceive and creative video games around a common theme. The three-day event, which took place Friday, January 27th through the 29th, drew nearly forty participants ranging from undergraduate and graduate students, alumni, and even current game developers.

Dr. Marc Olano, professor of Computer Science and Electrical Engineering and Neal McDonald, assistant professor of Animation & Interactive Media, have been running the jam at the UMBC site since its inception four years ago. "It's intense but I think people have a lot of fun," says Olano, who is also the director of the Computer Science Program's Game Development Track.

The weekend follows a strict itinerary. At 5 p.m. on Friday, a video keynote kicks off the competition and the secret theme is announced. From that point on, participants have until 3 p.m. on Sunday to complete a game from start to finish. Factor in eating and sleeping, and it's not much time. "Three days is an extremely short period of time," says Olano. "In terms of wall-clock time," he says, "it's a little less than two days."

In previous years, themes included "As long as we're together, there will always be problems," or more simply, "extinction." But this year, a theme was chosen that could be equally relatable to the nearly 11,000 participants from countries like Canada, Sweden, Brazil, France, Italy, Hungry, Israel and Japan (to name a few). Instead of a phrase, this year's theme was a picture: Ouroboros--a snake eating its own tail--which Wikipedia describes as a representation of "the perpetual cyclic renewal of life."

Some teams were inspired by this idea of reincarnation, including the team responsible for *Bit Exhaust*, a

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UMBC
AN HONORS UNIVERSITY IN MARYLAND

Four CSEE Professors Recognized for Excellence

Last semester, CSEE Professors Dr. Anupam Joshi, Dr. Tulay Adali, Dr. Tim Finin and Dr. Marie desJardins were recognized for their scholarly achievements: Dr. Joshi as UMBC's Oros Family Professor of Technology, Dr. Adali as a Signal Processing Society Distinguished Lecturer, Dr. Finin as UMBC's Presidential Research Professor and Dr. desJardins as an ACM Distinguished Professor.

In November, **Dr. Anupam Joshi** was appointed as the **Oros Family Professor of Technology**. This five year endowed professorship will provide Dr. Joshi with nearly $33,000 to spend on enhancing education in the fields of Information Technology at UMBC.

Apart from being a prestigious distinction, the award allows support by way of a generous donation. Broadly defined, the money will be used to support students with assistantships and fellowships, develop international collaborations, and buy equipment to keep labs up to date. But, the funds are also meant to enhance and extend Dr. Joshi's own research at the intersection of healthcare IT and mobility. "The funds enable me to merge these two existing and very strong research threads to pursue a new "Blue Sky" opportunity," says Dr. Joshi.

For example, Dr. Joshi is interested in creating a mobile device that can be used to diagnose illness— something similar to the "Tricorder" used in Star Trek. What Joshi envisions is a small, wireless tool (think smartphone) that could do things like take sensor readings and measure vitals. Essentially, it could diagnose a patient who is thousands of miles away from a hospital. Joshi explains that the implications of a device like this are especially encouraging for people in remote areas and poorer populations, where access to modern healthcare is limited if not non-existent. Dr.Joshi also hopes the award will help him look more closely at the implications of mobile and social computing on our privacy.

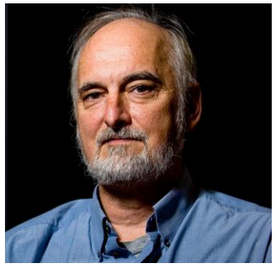
In January, **Dr. Tulay Adali** was named a **2012 IEEE Signal Processing Society Distinguished Lecturer**. Nominated by the Machine Learning for Signal Processing Technical Committee, Dr. Adali is one of only five Distinguished Lecturers appointed this year.

The position commits Dr. Adali to travel around the world to present her current research, which focuses on data-driven and complex-valued signal processing and their applications in medical image analysis. Her lectures will revolve around the following topics:

- Data-driven Analysis and Fusion of Medical Imaging Data
- Complex-valued Adaptive Signal Processing: When and How to Take Noncircularity into Account
- ICA, ISA, and IVA: Theory, Connections, and Applications in Medical Image Analysis
- Joint Blind Source Separation: Applications in Medical Image Analysis

"My research group, the Machine Learning for Signal Processing Lab [MLSP-Lab], has been conducting research in two of the most active areas in my field: data-driven signal processing and medical image analysis and fusion," explains Dr. Adali. "I am looking forward to telling a wider audience than I have in the past about the exciting research results we have, as well as better introducing these important areas to new audiences."

The appointment will last from January 1, 2012 until the end of December 2013.



In January, **Dr. Tim Finin**, was named this year's **Presidential Research Professor**. The appointment, which lasts from the beginning of July 2012 through June 2015, is awarded to faculty members whose outstanding scholarship and excellent teaching have stood out at UMBC.

"I'm very honored to be selected," says Dr. Finin of the award. He credits his research success to the collaborative research environment at UMBC and the talented students and professors that he has worked with over the years. "I feel like I've been lucky to be here at UMBC because having a good set of colleagues and students to work with is the reason for [this] success."

Through his research in Artificial Intelligence, Dr. Finin is constantly searching for answers to the question: "How can we make [software] systems more intelligent?" He has applied his research to the increasingly popular areas of Mobile Computing, Social Computing and Security. Recently, Dr. Finin has been working on a project that looks at the potential of smartphones to understand a user's Context.

Finin's appointment as Presidential Research Professor comes with a $2,500 allowance, and a $2,500 per semester gift to the Computer Science and Electrical Engineering Department, to be used towards enhancing teaching and research. A formal award ceremony will take place this spring to celebrate Dr. Finin and the other recipients of 2012 Presidential Faculty and Staff Awards.

In December, the Association for Computing Machinery (ACM) named fifty-four of its members as "**Distinguished Scientists**"—among the selective group was CSEE Professor **Dr. Marie desJardins.**

Distinguished memberships recognize up to ten percent of ACM members who have made significant accomplishments in the computing field, according to the ACM website. In addition, prospective distinguished members must have at least fifteen years of professional experience under their belt, endorsements from colleagues in the field, and must have been an ACM member for at least five years.

ACM is regarded as the largest educational and scientific society in the word. It brings professors, professionals and researchers together by sponsoring conferences and putting out publications like *Communications of the ACM, Ubiquity,* and *eLearn*.

Dr. Marie desJardins, runs UMBC's Multi-Agent Planning & LEarning (MAPLE) lab**.** This summer, she was granted senior member status by the Association for the Advancement of Artificial Intelligence (AAAI).

This semester, professor Susan Mitchell is teaching her CMSC 345 class in conjunction with Next Century Corporation.

Next Century Corporation Comes to the Classroom

This semester, the students in Susan Mitchell's Software Design and Development course were hand-picked. After applying and being interviewed, ten students were chosen based on their "go-getter" attitude.

Why the selectivity? Susan Mitchell's CMSC 345 course this semester is a trial course that's being taught in collaboration with Next Century Corporation, a Maryland-based technology company. Though Mitchell has been teaching CMSC 345 for ten years, this is a first.

Designed around the completion of one software-design project, the course provides students with a "customer" (normally a faculty member) who gives them specific guidelines for the "product" they need to complete. In years prior, students were given the task of developing a program that plans a student's UMBC course career. Mitchell explains that the product for this semester will be especially real-world focused.

In fact, essentially everything about the course is meant to simulate working in the software industry. A writing intensive course, students are asked to write formal documents, and at the end of the semester, they must give a formal presentation.

Mitchell explains that the course isn't so much about coding as it is about understanding the "software development lifecycle." It's the process that's important, she explains, from conception to carry through. Understanding what the customer wants and then turning out a product that fits those guidelines is the goal.

Chris Stepnitz, a software engineer at Next Century, is the "customer" of this semester's pilot course. Stepnitz, who graduated from UMBC in 2006 with a degree in Computer Science, took the very same course with Mitchell years ago. "We wrote an accounting system," remembers Stepnitz, who admits she was considering changing majors before taking the course. She credits it with opening her eyes to the reality of a career in software development and the rewarding experience of programming with a team.

So, when Stepnitz heard that Next Century, who has been reaching out to the community through local colleges, was about to reach out to her alma matter, she jumped at the chance to participate. "I'm very excited," says Stepnitz. "For the students, I really want to make sure that they both enjoy [the class] and get the taste of what it's like to really be in the development world."

The arrangement is meant to be mutually beneficial. Students in the course learn how to succeed in an industry setting, while Next Century builds bonds with universities that may provide them with future staff members (In fact, roughly 20% of their staff are UMBC alumni). If all goes well, Mitchell hopes to collaborate again and maybe even branch out to other local businesses.

Students, Game Developers, and Hobbyists take part in 4th Annual Global Game Jam

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game developed for the Microsoft Windows Phone platform. Reminiscent of *Space Invaders*, though graphically and conceptually more sophisticated, *Bit Exhaust* turns conquered foes into allies and visa versa. "What we took from the theme was rebirth and cyclic life," reads the game description on the Game Jam Website. "Enemies and allies are constantly switching sides as you kill them and they die."

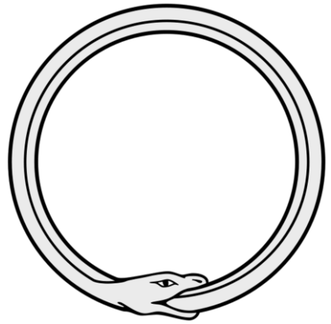
Bit Exhaust was the recipient of an award from Next Century Corporation, whose sponsorship allowed the Global Game Jam to be a free (and catered) event for all participants.

Participants gathered in the UMBC GAIM lab for the 4th annual Global Game Jam.

Even Microsoft sweetened the deal with the promise of a free phone for teams who chose to develop games for their windows phone platform (not surprisingly, six of the ten teams opted to do just that). In addition, Microsoft offered up two prizes to phone-based games: second place to *Bit Exhaust,* and first place to *Survive the Serpent*, a literal take on the event's theme. The 2-D maze game features a character who must escape being eaten by a snake by outsmarting it into biting its own tail.

Each year the People's Choice Award is given to the game that's voted the best overall by its peers. This year the winner was *Snake 'N Bake,* a two-player game where a snake must help a cupcake make it to the oven before the tasty confection gets hit by a fireball.

Though individual sites—like UMBC—can offer prizes, Olano stresses that the Global Game Jam is not a competition. "They really want it to be more about cooperation than about competitiveness," he says of the event's sponsor, the International Development Association (IGDA). It's not uncommon, he says, for teams to help each other out during the three-day fest.



Ouroboros—a snake eating its own tail—was the theme for this year's Global Game Jam.

Olano says he is definitely planning to host the Global Game Jam again next year, which will again put UMBC among other local hosts including Shady Grove, American University and George Mason University. The Global Game Jam is the largest gam jam event in the world, according to its website. "This year there were 246 locations around the world," says Olano, and the number will only grow.

"I've never been bored in my life," says Maksym Morawski (call him Max), a Computer Science graduate student who spends most of his free time scaling mountains.

Originally from Silver Spring, Max moved to Baltimore in 2006 to study Computer Science as an undergraduate. In the 4th grade, while others kids were busy building volcanoes for their science projects, Max and his computer scientist dad were putting together a computer that compared different algorithms for computing prime numbers. So choosing his major in college, explains Max, was a no-brainer.

Now a second year graduate student pursuing a Master's in Computer Science, Max is working on a thesis that looks at predicting connections in social networks, like Facebook. A computer scientist with a sociological streak, Max's project uses computers to understand how people interact with one another based on e-mail data sets taken from corporations.

Meet Max, a Teaching Assistant (TA) who loves climbing mountains, swing dancing and Artificial Intelligence.

Max's foray into teaching began in 2010 when he became a Teaching Assistant for CMSC 202. He says his favorite part about being a TA are the discussions—where he actually gets to get up and teach and get his students excited about Computer Science. His dose of teacherly advice is as follows: "Program for fun." If you don't practice and enjoy programming, he explains, you will never be as good as someone who lives and breathes it.

Throughout his years at UMBC, Max's on-campus involvement has extended past teaching. An avid dancer (he frequents Mobtown Ballroom in Baltimore City), he founded UMBC's Swing Dancing club. He also helped conceive Project X, the club that sponsored a campus-wide scavenger hunt in 2008 and 2009 that included tasks like jumping into the Inner Harbor and high-fiving Freeman Hrabowski (which prompted a not-so-enthusiastic e-mail from the UMBC president). The prize for the hunt was an amalgamation of candy that was procured from the "Spot" using late-night meals over a series of weeks, explains Max.

But, Max's favorite thing to do is the hobby he took up in high school: exploring mountains. A frequenter of Earth Treks—a climbing center in Columbia--Max had plans to climb frozen waterfalls in New York State this winter. His dream job, he says half-jokingly, is to be a mountaineering guide. Though, he may also consider a job in academia: "I would love to be a teacher," he says.

Student Spotlights

Need Homework Help? Ask Dan…

A Sophomore Computer Science major, Dan Maselko has been a tutor in the Computer Science Help Center since last fall.

Dan Maselko got hooked on computer science in high school. "When I took my first computer programming course in tenth grade," he says, "I realized how easy and fun it was for me to get computers to solve problems." Since then, Dan, a Sophomore, has been working towards his Computer Science degree while helping those who struggle with the subject.

Last Fall, Dan applied to be a tutor in the Computer Science Help Center. "The best thing about tutoring is getting the chance to help other students learn," he says. "Every time someone walks out of the door of the Help Center with a better understanding of the material they had questions about, I just feel good knowing I could help them learn something." Though Dan mainly helps students in CMSC 104, 201, and 202, the center provides help for students in most lower-level Computer Science courses including CMSC 100, 203, 313, 331, and 341, he explains.

The Computer Science Help Center—located in ITE 201- E—offers tutoring on a walk in basis. "Anyone enrolled in a Computer Science course at UMBC can be tutored by the Help Center," says Dan, "and it's completely free." Dan compares the challenges of tutoring to those faced by computer scientists.

"The good challenge is trying to figure out how to make the computer science topics make sense to different people with different ways of thinking," explains Dan. "Trying to understand so many diverse strategies is a lot like solving a problem in computer science."

Dan has plans to continue tutoring until he pursues a Master's degree in Computer Science. Once in graduate school, his teaching aspirations will not cease: "I do hope to eventually become a TA." Though Dan enjoys helping others, he's not set on a career in teaching, though he's still considering it. "I…want to work at a job that's exciting and requires collaboration," he says. "Right now the thing that excites me most is cyber security."

Professor desJardins attends Grace Hopper and Frontiers of Engineering Education Conferences

Dr. Marie desJardins had the opportunity to attend two invitation-only professional development events in November 2011.

The Senior Women's Summit at the Grace Hopper Celebration of Women in Computing in Portland, Oregon, brought together senior women who are leaders in their fields in academia, industry, and research labs. The event featured a panel on career advancement, working sessions on leadership and developing a "brand" as a senior scientist, and networking opportunities for the women to share their experiences and advice with each other. Dr. desJardins reports, "I was inspired by the amazing senior women at this event, and by their accomplishments in the field. It was particularly interesting to realize that some of the women who are more senior than I am—department chairs, deans, vice presidents—were wrestling with many of the same questions I've been asking myself, about what career choices and leadership opportunities would be most satisfying to pursue, as I enter the second half of my professional career."

The Frontiers of Engineering Education (FOEE) Symposium, organized and sponsored by the National Academy of Engineering, provided an opportunity for early- and mid-career faculty to share their experiences and ideas about innovative strategies for improving engineering education. In the symposium's poster session, Dr. desJardins gave a presentation on the honors seminar that she teaches at UMBC, called "Computation, Complexity, and Emergence." The course brings together students from a wide range of backgrounds to explore complex systems and understand the importance of complexity in understanding processes and behaviors in many different application fields. Dr. desJardins's presentation emphasized the importance of teaching non-engineers about engineering and computational topics, the value of interdisciplinary learning environments, and the importance of emphasizing student-centered learning methods. The FOEE Symposium also included panels and presentations on project-based learning, assessment of learning outcomes, active learning, and design-based learning. Meeting other faculty from across the country who are teaching and innovating at a wide range of academic institutions, was also the source of new friendships as well as exciting new ideas for engaging students and increasing the depth of their learning experiences inside and outside of the classroom.

One of the most valuable parts of the FOEE symposium, according to Dr. desJardins, was the small-group mentoring sessions with senior leaders from industry and academia. She had the opportunity to have breakfast with Larry Shuman (Senior Associate Dean for Academic Affairs at the University of Pittsburgh) and lunch with Stephen Director (Provost and Senior Vice President for Academic Affairs at Northeastern University), and was inspired and fascinated by their stories of implementing major curricular changes at their respective universities.

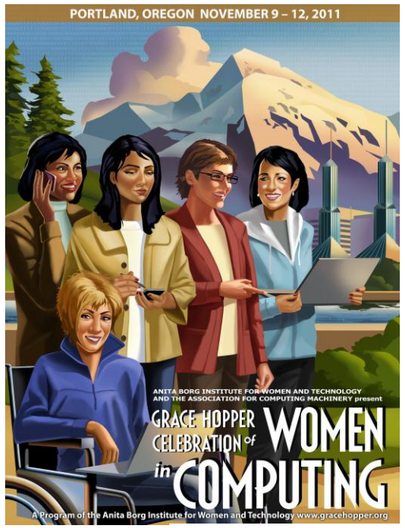


Photo Courtesy gracehopper.org

Upcoming Events

COEIT Diversity Summit
When: February 27, 2012, 10 a.m. to 2 p.m.
Where: University Center Ballroom

Joni Daniels , principal founder of Daniels and Associates, moderates a panel of four industry experts: Kim Weaver (Director, Global Diversity & Inclusion at McCormick), Janese Murray (Executive Director of Talent Development and Inclusion at Constellation Energy), Caroline Laguerre-Brown (Vice-provost for Institutional Equity at Johns Hopkins University), and Stephanie Hill (Corporate Internal Audit at Lockheed Martin). Students, staff, and faculty are encouraged to attend in order to learn about the importance of diversity in the workplace.

CWIT's 2nd Annual Spring Into Leadership
When: April 4, 2012, 6:30 to 8 p.m.
Where: University Center, 3rd Floor

The Center for Women in Technology (CWIT) presents its 2nd annual Spring Into Leadership Event with the theme "What's Your Story?" UMBC students, staff, and faculty members share personal stories about how they have and how they plan to make a difference. The event features keynote speaker Wendy H. Martin, PMP and Vice-President of Advanced Information Solutions and Washington Operations for Harris Corporation's Government Communications Systems. Dinner will be served.

Register for this free event by **April 2nd** by visiting: http://bit.ly/SpringIntoLeadership2012. For more information, contact CWIT Associate Director Dr. Susan Martin (susan@umbc.edu).

Undergraduate Research and Creative Achievement Day (URCAD)
When: April 25, 2012
Where: University Center, Fine Arts

Each year, UMBC students across a range of disciplines present the results of their unique research projects. Last year, CSEE student presentations included topics like: "Finding Communities through Social Media," "Innovations in Computer Game Development," and "Spectrogram Analysis and Evaluation and Brainwave Appreciation of Music."

Thinking about presenting? The deadline for applications is **February 28, 2012.** See www.umbc.edu/undergrad_ed for more information.

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