shell

cs@UMD: ~

```
Checking for updates... Done
6 updates found
Update will take 74.08 Mb. Do you want to continue [Y/n]? y
Get:1 https://cs.umd.edu/news/shell/
CS Celebrates 40 Years of Success                                      [100%]
Zia Khan and David Van Horn Join UMD CS                                [100%]
Undergrads Dominate Hackathons                                         [100%]
Jevgr gb rqvgbe@pf sbe n G-fuveg.  Svefg svir jva!                     [100%]
Center for Women in Computing Opening Soon                            [100%]
ACES Completes First Semester                                          [100%]
Hanan Samet and Ben Shneiderman Named Distinguished Professors        [100%]
cs@UMD:~$
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2014

COMPUTER SCIENCE

UNIVERSITY OF MARYLAND

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To our Alumni and Friends,

As evidenced by our inaugural publication of shell magazine, we here in the Computer Science Department at the University of Maryland are celebrating a number of significant milestones and we are experiencing a lot of exciting changes.

In October 2013, we celebrated our 40th Anniversary with so many of our alumni, emeritus and former faculty, and dear friends. We lauded our major achievements in research, teaching, and industry with presentations from faculty members about our history, our current research, and our future endeavors. We heard from our alumni about their work in industry and academia and what their education at the University of Maryland continues to mean to them. Our celebration culminated with our inducting five alumni into the CS Hall of Fame. Martin Farach-Colton, Pooja Shankar, Glenn Ricart, Patrick Jenkins, and Paul Capriolo joined a group of distinguished alumni who have contributed to the field of Computer Science and the community at large. We would like to celebrate all of our alumni, so please let us know about your milestones as well.

Several of our faculty members are celebrating well-deserved promotions. Mike Hicks and Jonathan Katz have become Professors of Computer Science. In a moment of symmetry, Jonathan Katz became the new Director of the Maryland Cybersecurity Center after Mike Hicks' remarkable time as the first Director of the same center. Hal Daume has earned the rank of Associate Professor of Computer Science with tenure, and Evan Golub is now a Senior Lecturer.

While our faculty members were celebrating their new positions, our current and former graduate students were winning dissertation awards and major fellowships, and our undergraduate students were winning major hackathons and programming competitions. In the fall, The Terrapin Hackers took first place in the 2013 Major League Hackathon Season after competing against students from many universities all over the US and Canada. Our programming team also qualified for the ACM ICPC World Finals in Russia this summer. Not wanting to leave local high schools students out of the excitement that accompanies problem solving and competition, we hosted over 30 teams of high school students for our 24th annual High School Programming Contest.

The thrilling changes to our department include the launching of Emeritus Professor Bill Pugh's educational initiative Computer Science Education for Tomorrow, as well as the new Maryland Center for Women in Computing headed by Director Jandelyn Plane. It is our hope that these two programs will help to keep our field relevant, exciting and diverse for future generations of computer scientists.

We are also fortunate to have added three new faculty members to our celebrated ranks. In the fall of 2013, we were very excited to welcome Zia Khan (PhD Princeton) and David Van Horn (PhD Brandeis) to the department as Assistant Professors. In the summer of this year, Eytan Ruppin from Tel-Aviv University will join our department as Professor of Computer Science and Director of the Center for Bioinformatics and Computational Biology. We look forward to learning more from them and their research in the years to come.

I look forward to hearing news of your triumphs and accomplishment, and I encourage you to take a look at our new website www.cs.umd.edu for stories about what is going on in the department and what is going on in the lives of your friends and former classmates.

I wish all of you the very best, and here's to a productive spring and summer.

Sincerely,
Samir Khuller, Professor and Chair

% ls -l

40ᵗʰ Anniversary

40.cs.umd.edu

Professor Emeritus Marv Zelkowitz


Celebratory Cake


Evening Reception Guests

Afternoon Reception Guests

The Department of Computer Science, founded in 1973, celebrated its 40th anniversary on Oct. 18, 2013. Alumni, former and current faculty and staff members as well as corporate representatives from around the United States gathered in College Park to celebrate the achievements of the department and to reunite with one another. In addition to setting up a website to document the evolution of Computer Science at the University, the department hosted an afternoon event in the Computer Science Instructional Center. That afternoon, nearly 200 guests gathered to learn the history of the department, hear from distinguished alumni, and gain insight about future directions for teaching and research. Later that evening, over 300 guests attended the second part of the celebration at a reception held at the Samuel Riggs IV Alumni Center. This gathering featured distinguished speakers from the university including Dr. Wallace Loh, the President of the University of Maryland, Dr. Jayanth Banavar, Dean of the College of Computer, Math and Natural Sciences, Dr. Mary Ann Rankin, Senior Vice President and Provost, and William 'Brit' Kerwin, the University of Maryland System Chancellor.

The afternoon event commenced with the first chairperson of Computer Science, Emeritus Professor Jack Minker, who spoke about the history of the department along with Emeritus Professor Marv Zelkowitz. Dr. Minker and Dr. Zelkowitz have both written extensively on the founding and early history of the department and so were able to give a detailed narrative about its birth and evolution--from a small collective of professors interested in the impact of computing on their work in other fields including mathematics and physics--to one of the most well respected departments of computer science in the country.

Computer Science Department Chair Samir Khuller then enumerated several of department's many achievements including its current ranking (14th, according to US News), yearly amount of funding ($20 million) and the fact that 20 of the department's 50+ full time professorial faculty have received NSF Career Awards. Dr. Khuller also proudly announced that the Department has granted over 600 Ph.D.s and that graduates of the program have gone on to become the presidents of universities, chairs of Computer Science Departments, founders of companies and directors of scientific labs.

The afternoon program also informed the audience about new initiatives in the department. Senior Lecturer Jan Plane spoke about activities to increase the numbers of women in computing, including her development of a summer program for middle school girls in association with the launching of a new initiative to support women in computing. Professor Adam Porter introduced a new program aimed at revolutionizing CS education for undergraduate students, and UMIACS Director Amitabh Varshney spoke about emergent and cutting edge research that CS professors are engaged with in conjunction with UMIACS.
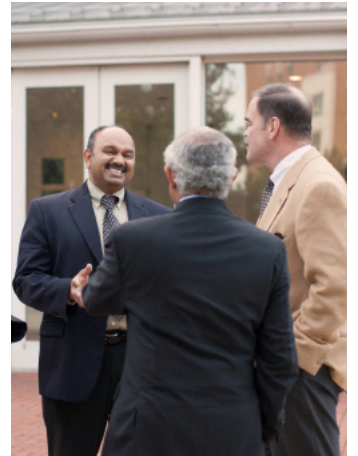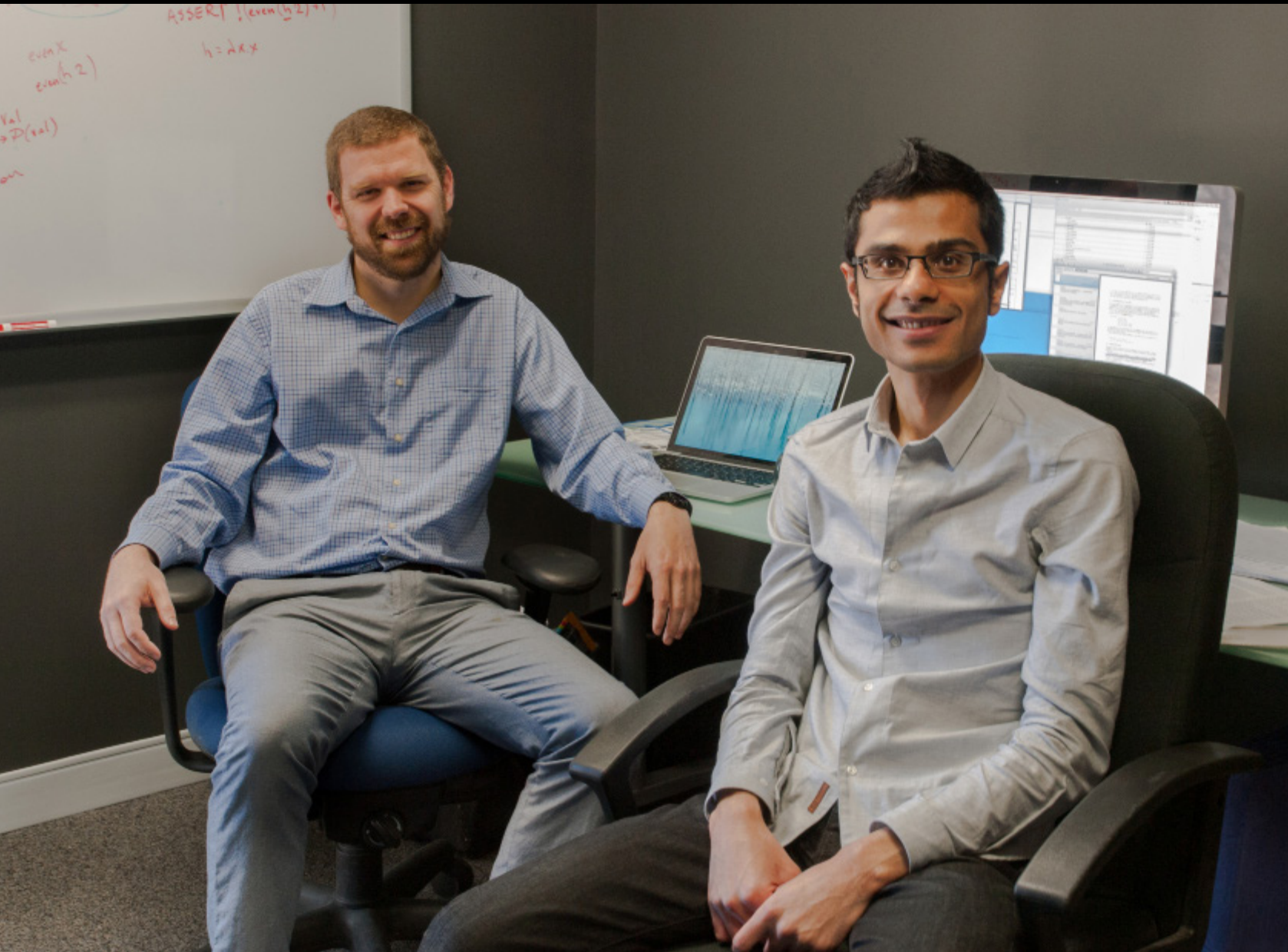
CS Welcomes
New Faculty

Zia Khan

Dr. Zia Khan joined the University of Maryland Department of Computer Science with an affiliation in the Center for Bioinformatics and Computational Biology as an Assistant Professor in December 2013. He received his B.S. in Computer Science and Biology from Carnegie Mellon and his Ph.D. from Princeton University.

Dr. Khan's research is in the area of bioinformatics: he uses computation to answer questions in biology. His work focuses on how genetic differences within and between species affect traits and on designing novel ways to measure cell shape change during embryonic and tissue development. Dr. Khan's research on genetic differences was recently published the journal Science.

The paper, "Primate Transcript and Protein Expression Levels Evolve under Compensatory Selection Pressures," discusses morphogenesis: molecular level differences that affect human traits.

Dr. Khan's research has resulted in the development of a number of software tools including PView and EDGE4D. PView helps visualize vast quantities of protein data. EDGE4D is a morphogenesis and imaging application which can be used for problems such as providing quantitative 4D analyses of tissue development processes such as epithelial folding during embryonic development. In Spring 2014, Dr. Khan is teaching a graduate course, CMSC858D: Computational Proteomics.

David Van Horn

Dr. David Van Horn joined the University of Maryland Department of Computer Science and University of Maryland Institute for Advanced Computer Studies as an Assistant Professor this December 2013. He received his Ph.D. from Brandeis University and received his M.S. and B.S. from the University of Vermont.

Dr. Van Horn researches how functional and object-oriented programming languages can best be applied to make software more trustworthy and reliable. He leverages techniques such as: program analysis, semantics, and transformation. His ultimate goal is to make the automated construction of reusable, reliable software components possible and effective.

Dr. Van Horn will be continuing this research at Maryland and will be joining the Programming Languages at the University of Maryland (PLUM) lab and collaborating with the Maryland Cybersecurity Center (MC2). "The PLUM lab has been doing some of the best research in programming languages of the past several years," says Dr. Van Horn, "I'm looking forward to working with the faculty, students and post-docs. I'm also excited about the large number of excellent researchers in the Maryland Cybersecurity Center and look forward to collaborating with them."

Dr. Van Horn has taught undergraduate courses at Northeastern University and also authored a book, Realm of Racket, with eight undergraduate students. Realm of Racket introduces the Racket programming language (a derivative of Lisp) through developing a series of increasingly sophisticated interactive video games. Dr. Van Horn is excited to continue teaching when he comes to Maryland and is particularly enthusiastic about instructing his first graduate course, CMSC631-Programming Analysis and Understanding, in Spring 2014.

CS Education For Tomorrow

A $1 million dollar initiative founded by Professor Emeritus Bill Pugh to inspire innovation in computer science education at the University of Maryland

▶ This past summer, Professor Emeritus Bill Pugh challenged the Computer Science Department to raise $500,000 to support innovation in computer science education. Dr. Pugh pledged to match this $500,000 over the next 5 years. Dr. Pugh's generosity was inspired by his own experiences teaching numerous UMD CS courses of various sizes filled with students who possessed disparate academic backgrounds. "Teaching such diverse students presents unique challenges and opportunities to the course instructors, particularly in an era filled with buzz words such as 'active learning' and 'computer assisted instruction'" says Dr. Pugh. Thus, when it came time to give back to UMD, Dr. Pugh wanted "to have the maximal impact at the university in a way that I thought needed to happen." He decided this area of maximal impact was in computer science education.

As such, the CS Education for Tomorrow program, with $1 million of funding provided by Dr. Pugh's matching grant, was launched in order to "provide computer science department professors with an impetus to develop novel ways of using technology to innovate in UMD computer science courses." Two examples of innovative courses that have been supported by the CS Education for Tomorrow program are Professor Ben Bederson's "Paths to Computer Science" course and Professor Adam Porter's "Programming Handheld Systems."

Dr. Bederson's "Paths to Computer Science" is a unique self-paced course during which students have the opportunity to earn one to three general education credits depending on their progress through the course material.

The course teaches the basics of Python programming and introduces concepts such as software design, secure software, and ethics. An experiment in "Mastery Based" course structure, the course allows students to move through small content modules by demonstrating mastery of each module, earning one credit at a time. Students can complete the course in less than one semester or over two semesters depending on the time it takes for them to master the material. In order for this type of learning to take place, the "Paths to Computer Science" classroom is "flipped." That is, pre-recorded lectures are available online and the

Professor Adam Porter
Instructor of *Programming Handheld Systems,* a flipped classroom course.

Professor Ben Bederson
Instructor of *Paths to Computer Science,* a mastery based course.

I want to provide Computer Science Department professors with an impetus to **develop novel ways of using technology to innovate in UMD computer science courses.**

Professor Emeritus Bill Pugh

classroom time traditionally used for lectures is devoted discussion, working on homework, classroom activities with other students, and classroom activities with other students, and student presentations.

Since students complete work at their own pace and because collaboration is encouraged throughout the course, frequent in-class exams are offered. Students can retake the exams as many times as they like until they earn an A. Thus, the traditional stress of exams is largely eliminated, and some students describe the process as 'freeing'. The general goal of the class, says Dr. Bederson, "is to exchange the traditional grade bell curve with a credit bell curve. Every student is given multiple opportunities to earn an A, but some will earn three credits while others will earn one or two credits."

Innovation in the CS Curriculum is not restricted to students who are at the beginning of their coursework. Professor Adam Porter's 400-level "Programming Handheld Systems" course is another implementation of a "flipped classroom." With this approach, students watch Dr. Porter's videotaped lectures online, before coming to class. The video lectures are broken down into multiple five to ten minute chunks. After watching each video, the students also take a short quiz on the material. In class, Dr. Porter leads a short question and answer session and occasionally delivers a mini-lecture to address any lingering questions or conceptual misunderstandings. Students then dive into a sophisticated hands-on lab activity, which puts their newly acquired knowledge in practice.

Dr. Porter has previously taught this class in the traditional format, and "while it's still too early to know exactly how the flipped classroom model performs, [he has] already heard from many students that… they feel the classroom environment has become more open, friendly and collaborative, and they are learning the material very well."

Professor Adam Porter launched the first UMD CS Massive Open Online Course (MOOC) on the Coursera platform.

His course is the most profitable course on Coursera, with an enrollment of 220,000 students.

Maryland Center for Women in Computing

mcwic.cs.umd.edu

Opening in Spring 2014

▶ The University of Maryland Department of Computer Science, University Institute for Advanced Computer Studies and the College of Computer, Mathematical, and Natural Sciences are pleased to announce the Maryland Center for Women in Computing. The Center is committed to improving gender diversity for current and future generations of computer scientists through retention, research and outreach. The Center will support, educate and mentor female students at the University of Maryland and will reach out to the local K-12 community in order to recruit young women into computing fields. The Center will sustain a vibrant community of scholars, researchers, students and educators working together to increase the involvement—and success—of women interested in earning a computer science degree. New dedicated space for the Center will foster a supportive, collaborative community for current undergraduate and graduate women studying computing at the university.

Maryland Center for Women in Computing Initiatives

Computer Science Connect

cs.umd.edu/compsciconnect

Maryland Center for Women in Computing Ambassador works with CS Connect-Outreach Students

Computer Science Connect summer camp and monthly weekend school year program, and Computer Science Connect-Outreach, is a weekly after-school program, are designed to interest middle school girls in computing through hands-on activities. The curriculum emphasizes connections between computing and other fields. The program also educates students about how computing can be used for social good. The curriculum is facilitated by the Maryland Center for Women in Computing Ambassadors, in order to provide middle school participants with positive intentional role models.

Spring 2014 Computer Science Connect-Outreach is held at College Park Academy
Computer Science Connect summer camp will be held from June 30th to July 11th, 2014

Curriculum-In-A-Box

Curriculum-In-A-Box is a series of hands-on curriculum modules, video lectures, computer scientist profiles, and other resources that are available to students, educators and parents for free, online. The Curriculum-In-A-Box will enable educators, parents, and universities interested in creating outreach programs to do so easily, with pre-packaged, pre-tested curriculum.

Curriculum-In-A-Box videos are available at goo.gl/9l2lZl

CyberGirls

The CyberPatriot competition is a national high school cyber defense competition. The Maryland Center for Women in Computing Ambassadors serve as coaches to help all-girls teams prepare for the competitions and young professional members of Women in Technology serve as mentors for more advanced cyber security techniques.

Spring 2014 CyberGirls is held at Elizabeth Seton and Eleanor Roosevelt High Schools

Graduate Women's Speaker Series

Graduate Women's Speaker Series is a monthly event during which two female graduate students are selected to give a conference-style talk on their current research to current undergraduate and graduate students. The talks are followed by a social event and a Q&A session with the speakers about graduate school and research.

The first Speaker Series event was held on April 16, 2014.

Maryland Center for Women in Computing Ambassadorship Program

The Maryland Center for Women in Computing Ambassadors Program is a scholarship for service program. The Ambassadors are undergraduate computer science students who will serve as mentor-facilitators for Maryland Center for Women in Computing outreach programs and represent the Center at University events. Further, the ambassadors receive weekly mentorship and curriculum training. This program is designed to increase socialization and retention of female undergraduate students.

The Spring 2014 Maryland Center for Women in Computing Ambassadors are:
Allie Abad, Michelle Cody, Izzy Coronado, Monica Katzen, Sean Kross, Amy Malone, Sydnee Shannon, Heidi Shiau, and Katie Woods.

Women in Computing Host CS Casino Night

Terrapin Hackers Crowned Major League Hacking Champions

www.terrapinhackers.com

▶ On November 6, 2013, the Terrapin Hackers were officially crowned the champions of the inaugural Major League Hacking season in a ceremony held at the Jeong H. Kim Rotunda. MLH Commissioner Mike Swift presented a handmade two foot statue to the dozens of Hackers who spent countless hours building and coding innovative apps and products during the six-week season.

The president and co-founder of Terrapin Hackers, Shariq Hashme, a double major in Computer Science and Electrical Engineering, stood in front of a crowd of computer science and engineering students and proudly demonstrated the winning hacks from HackRU at Rutgers University and MHacks at the University of Michigan.

The students were recognized by distinguished faculty and staff as well. Dr. Samir Khuller, Department Chair of Computer Science and Dr. Rama Chellappa, Department Chair of Electrical and Computer Engineering offered congratulatory speeches to the members of Terrapin Hackers and Dr. Darryll Pines, Dean of the Clark School of Engineering also offered the students words of encouragement as well.

The Terrapin Hackers, are a dynamic group of over 150 Computer Science, Engineering and other students from the University of Maryland claimed first place in the Major League Hacker Standings. Throughout the first half of the fall semester, the Terrapin Hackers spent their weekends competing in Hackathons—24 to 96 hour events in which students code or 'hack' a software or hardware project from scratch. The Terrapin Hackers travelled to events in: Philadelphia (PennApps), Michigan (MHacks), New York (HackNY), Boston (HackMIT), New Jersey (HackRU).

At each hackaton, the Terrapin Hackers garnered points for participation and prizes (either from being judged 'best overall hack' or by winning individual categories sponsored by companies). Yesterday, the Terrapin Hackers won the title by over 100 points.

The Terrapin Hackers are led by Shariq Hashme, Junior Computer Science and Electrical Engineering major;

Ivan Melyakov, Senior Computer Science major; Diego Quispe, a Senior Computer Science major, and Kunal Sharma, a Sophomore Computer Science major. These four students tirelessly organized transportation and helped with hackathon registration for their group members. The Terrapin Hackers took busses, cars and even planes to multiple events in order to build and showcase their software and hardware projects (more commonly known as 'hacks'). At the same time, the students learned a great deal from each other as well as from students representing universities from all over the United States and Canada.

During the summer of 2013, while doing internships and working, Mr. Hashme, Mr. Melyakov, Mr. Quisepe and Mr. Sharma decided to form a group so that they could travel to Hackathons. "We were just doing what we loved," said Diego Quispe, "It all started with getting other students to come with us to do what we love: HACKATHONS. However, everything we've accomplished in such a short time really shows that doing what you are passionate about always ends up in a great way."

The Hackathon season began in September with PennApps. The Terrapin Hackers brought a large delegation of students to Philadelphia and posted about their activities on Twitter and other social media. One twitter post showed a large group of Terrapin Hackers in front of a Maryland State Flag.

Ivan Melyakov said that PennApps was really educational and that he and his team quickly had to adapt their idea because a company sponsoring the event had already built the software they had thought of creating.

"...[at] PennApps we had quickly learned that point. io ha[d] done our job for us a couple of months prior (they are a new tech company). As such, we had to entirely scrap our idea and think of a new direction[;] so on the second day, we decided to work with point.io and build a HIPAA compliant document viewer based on the point.io platform."

Photo Credit: Kevin Yiming Chen

UNDERGRADS
DOMINATE
HACKATONS

It is incredible to realize how much you can learn and create in just 24 hours!

Paige Nelson, Class of 2015

Other Programming Accomplishments of Note

Undergraduate students Scott DellaTorre, Dylan Ladwig, Rizeng Zheng and reserve member Ashton Webster advanced to the World Finals of the Association for Computing Machinery's International Collegiate Programming Contest (ACM-ICPC) after placing 3rd in the Mid-Atlantic Regional Contest. UMD students Melika Abolhasani, Anu Bandi, Milad Gholami and reserve member Alex Alberg placed 9th in the ACM-ICPC competition (not pictured).

Team Coach: Computer Science Department Professor Dr. MohammadTaghi HajiAghayi.

Rizeng Zheng, Scott DellaTorre,

Ashton Webster, & Dylan Ladwig (left to right)

Terrapin Hackers:

That change in direction led to their team winning a prize from point.io as well as establishing a collaborative working relationship with the company. "We're going to work together in the future," Mr. Melyakov mentioned. He also encouraged other students to try Hackathons, emphasizing, "It's not about what you can code. It's about what you can do with what you can code."

The Terrapin Hackers went on to do very well in all of the Hackathons in which they participated. After an impressive showing in numbers and a first place win at MHacks in Michigan, the group went on to Boston to participate at HackMIT.

Paige Nelson, a Junior Computer Science major, competed with Eric Zinnikas, a Senior Computer Science Major, Chul Kwon, a Senior Economics Major and Justin Chen, a Senior Computer Engineering Major.

She had this to say about at HackMIT: "I was a little nervous before going to HackMIT because it is such a big competition and seemed really intimidating. I had such a great experience though! It is incredible to realize how much you can learn and create in just 24 hours." Ms. Nelson was very excited about her project which searched specific words or phrases used in a video or searched for concepts discussed in a video. "We didn't make top ten, but we ended up winning prizes from a couple of companies, and $1000.00, and that was pretty good."

Because they did so well at these hackathons, by the middle of the season, the Terrapin Hackers ended up in third place behind Carnegie Melon and MIT in the Major League Hacker Standings. The last Hackathon of the series, HackRU at Rutgers University, ended up determining the overall winner of the title "Best School for Hackers."

Ian Sweet and Joe Martin clinched the win for Maryland with their hack W.A.B. (Web-based Algorithmic Benchmarker). Their software W.A.B. (Web-based Algorithmic Benchmarker) is a web application built using Ruby on Rails. Their application benchmarks analyzing processor-time parameters (time complexity). This custom

made hack won first prize at HackRU. That win, along with the large number of UMD student participants, earned the Terrapin Hackers bragging rights until next season.

This was Ian Sweet's first hackathon.

through the competition. Earlier in the day, after hearing about the Terrapin Hackers' win, Mr. Martin said the same thing about Ian Sweet. "I knew that if Ian and I worked together, we would come up with a really great hack."

It's not about what you can code. It's about what you can do with what you can code.

-Ivan Melyakov

When asked about what his first hackathon was like, he agreed with Paige Nelson and said that it was intimidating:

"I had the conception going in that it was all about knowing APIs (Application Programming Interface) and how many you can glue together and how much you do outside of school, but I found that it was more about having the idea and finding and then finding APIs to support it[…] but if you have an idea that you're passionate about, that's going to be the thing that wins you the competition[….] and it's very different from a programming competition, it's not about how fast you can make your brain work whereas a hackathon is product driven."

Mr. Sweet credited his teamwork with Joe Martin, a Mechanical Engineering and CS double major for getting him

Shariq Hashme, the main spokesperson and relentless, positive force behind this organization, remains a bit incredulous about how large this newly formed student group has grown. He has reached one of his goals to introduce hackathons and hackathon culture to all students at the University of Maryland. He doesn't want to limit this organization to students with technical majors. Overjoyed by the win, he said, "You start to realize how much is possible if you just work really, really hard--we won MLH in our first semester; now how can we take [Terrapin Hackers] to the next level?"

By all appearances, the Terrapin Hackers are poised to grow in membership. It is certain that their talent pool will deepen, and they will continue to enhance the reputation of the Department of Computer Science, and the entire University of Maryland.

Hanan Samet
and Ben Shneiderman
Named Distinguished University Professors

▶ Professors Hanan Samet and Ben Sheiderman were recognized as Distinguished University Professors at the university-wide Convocation held in October 2013. Dr. Samet, who joined the computer science department in 1975, was recognized for his stellar accomplishments in the field of spatial indexing. Dr. Shneiderman, who came to Maryland in 1976, was acknowledged for his pioneering work in the field of human-computer interaction. "We are very proud and honored to have Hanan and Ben as our colleagues. Their outstanding research, scholarship and service brings recognition to the department and the university," said Dr. Samir Khuller, Chair of the Computer Science Department at UMD.

For almost four decades, Dr. Samet's work in digital spatial data has led to new discoveries in computer graphics, geographic information systems (GIS) and robotics. In 2011, the Association for Computing Machinery recognized his achievements with its Paris Kanellakis Prize, which honors theoretical work that has had significant real-world impact. Dr. Samet, who also has an appointment in the university's Institute for Advanced Computer Studies (UMIACS), has been awarded more than 60 grants and has given more than 400 speeches and lectures in the United States and around the world. He has written six books, 46 book chapters, more than 100 articles to scholarly journals and hundreds of conference publications.

Dr. Shneiderman, who also has an appointment in UMIACS, has focused much of his research on finding the most efficient and user-friendly strategies for humans to use computers—particularly in making them more visually and graphically appealing. He was founding director of the university's Human-Computer Interaction Lab, where his early work in treemaps—a method of visually displaying data using rectangles—led to hundreds of papers that refined and applied his basic idea. Dr. Shneiderman has written or co-written 17 books and more than 400 scholarly articles. He gives nearly 40 talks and lectures a year and is on the advisory board of eight scholarly journals.

With this stellar list of academic accomplishments to their credit, neither Dr. Samet nor Dr. Shneiderman show any signs of slowing down. Dr. Samet is refining his work in a smartphone app, known as NewsStand, that "geotags" RSS newsfeeds worldwide. And Dr. Shneiderman—who credits much of his productivity and impact to his students and a more than 25-year collaboration with UMIACS Senior Research Scientist Catherine Plaisant—is continuing his work on electronic health records, network visualization and science policy.

Hanan Samet Receives University Distinguished Professor Award

Photo Credit: Mike Morgan

Ben Shneiderman Receives University Distinguished Professor Award
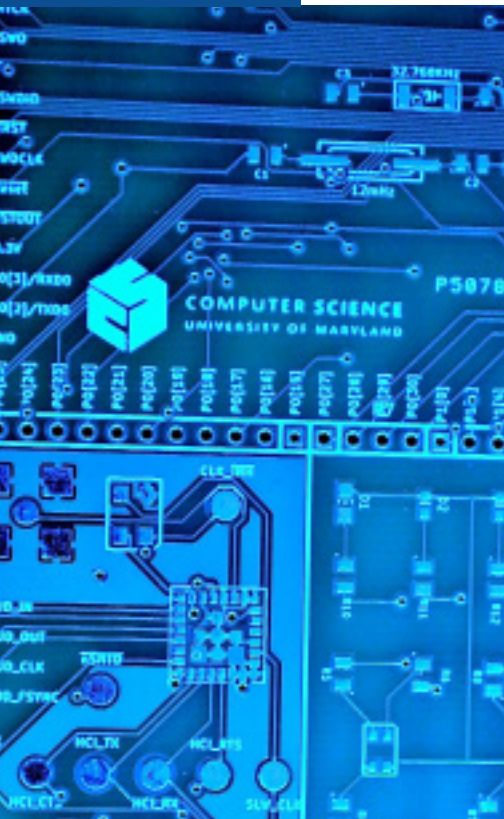
Photo Credit: Mike Morgan

We have created something new and radically different

Michel Cukier, Director of ACES

First Cohort of ACES Students
On Sept. 25, 2013 UMD and Northrup Gruman launched the
Advanced Cybersecurity Experiences for Students (ACES) program.

Advanced Cybersecurity Experiences for Students Program Finishes Inaugural Semester

www.aces.umd.edu

▶ The Advanced Cybersecurity Experiences for Students (ACES) program is the nation's first cybersecurity honors program for undergraduates. The program, a partnership between Northrop Grumman, the Computer Science Department, the Honors College, and the James A. Clark School of Engineering, accepted fifty-seven students this year. These students live together in dedicated dorms and learn cybersecurity concepts through hands-on activities integrated into an intensive interdisciplinary curriculum.

Guided by Director Michel Cukier of the Clark school and Assistant Director Jandelyn Plane of the Computer Science department, ACES mission is to prepare students to lead and transform the cybersecurity field and to make a difference in the world. "There is no program like this that exists in the U.S." notes Dr. Cukier, "we have created something new and radically different." So far, students have learned to program the UNIX operating system and have explored topics such as cyber-ethics. Outside the classroom they have visited Northrop Grumman and the National Cryptologic Museum.

In addition providing relevant and engaging curriculum, the ACES program facilitates summer learning experiences for students such as industry and government internships, teaching experiences and research experiences. The program has internship partnerships with NIST, the Department of Defense and Lockheed Martin. ACES students may participate as teaching assistants for the middle and high school CyberSTEM camps offered at UMD. Additionally, for those students potentially interested in pursuing careers in cybersecurity research, UMD offers a Cybersecurity summer research experience for undergraduates (REU) program, which hosted six students this past summer.
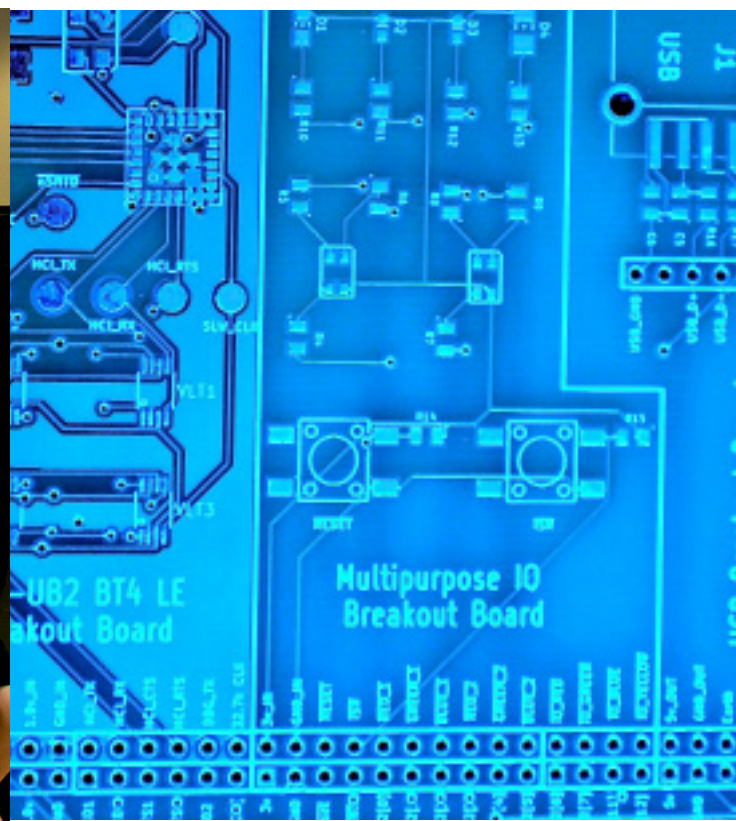
Elaine Shi Awarded 2014 Sloan Research Fellowship

Elaine Shi, who joined the University of Maryland's Computer Science Department as an Assistant Professor in 2012, has been awarded a Sloan Research Fellowship for 2014. This award, granted by the Alfred P. Sloan Foundation, identifies 126 early-career scientists based on their potential to contribute fundamentally significant research to a wider academic community. Dr. Shi joins a growing list of UMD Computer Science faculty members who have received this award: Bonnie Dorr (1994), Bobby Bhattacharjee (2004), and Carl Kingsford (2012).

Dr. Shi is also affiliated with the Maryland Cybersecurity Center. Her research focuses on oblivious computation and integrates cryptography, compilers, and hardware for secure cloud-based computation. "I am really excited to receive the Sloan Research Fellowship," said Dr. Shi. "It feels great that people acknowledge my research, and the fellowship will also be crucial for bootstrapping my research at UMD. I am very thankful for the generous support of the Sloan Foundation."

"The Sloan Fellowship is one of the most prestigious fellowships for young researchers, and I am exceedingly delighted that Elaine is a recipient," said Samir Khuller, UMD Computer Science Department Chair.

Alumnus Ben Langmead Wins 2014 Sloan Research Fellowship

Computer Science Department Alumnus Ben Langmead was awarded the 2014 Sloan Research Fellowship. Dr. Langmead received his M.S. and Ph.D. from the University of Maryland Department of Computer Science in 2009 and 2012, respectively. Dr. Langmead was co-advised by Computer Science Professor Mihai Pop and Dr. Steven Salzberg during his M.S. work and was advised by Dr. Steven Salzberg during his Ph.D. work. Dr. Langmead is now an Assistant Professor at the Johns Hopkins University Whiting School of Engineering, where he is a member of the Computational Biology and Medicine Group. His research interests include genomics and sequence alignment, high performance computing, and big data.

2013 Association for the Advancement

Bonnie Dorr, University of Maryland Department of Computer Science Professor. Honored for her significant contributions to natural language understanding and representation, and development of the widely recognized methods for interlingual machine translation.

Dana Nau Named 2013 ACM Fellow

for his contributions to automated search and planning

Professor Dana Nau has been named a 2013 ACM fellow for his contributions to automated search and planning. ACM recognizes fellows for their significant contributions to computing. Dr. Nau's research is in artificial intelligence, with a focus on automated planning and game theory. He also the co-founder and co-Director of the Laboratory for Computational Cultural Dynamics.

In a recent interview, Dr. Nau talked about the honor of being named and ACM fellow as well as his work and the exciting contributions that Computer Science is making to other fields:
"Computer science is starting to make large contributions to a number of fields. We have seen big changes in the biological sciences as a result of computational techniques, and I think that Computer Science is on the verge of making similar kinds of contributions in the behavioral and social sciences. My colleague, Professor V.S. Subramanian and I got interested in [this development] a few years ago when we set up laboratory. The purpose of the lab is to help make those contributions happen."
Dr. Nau went on to say that his work in Computational Cultural Dynamics reinvigorated his research in Game Theory, and as a result, he heads research projects in both Automated Planning and Game Theory.

Recently, Dr. Patrick Rouse (PhD '13), Professor Michelle Gelfand of the Psychology Department, and graduate student Ryan Carr worked with Dr. Nau to publish a paper in the Proceedings of The Royal Society Biological Sciences entitled High strength-of-ties and low mobility enable the evolution of their party punishment.

# of Artificial Intelligence (AAAI) Fellows

Lise Getoor, University of Maryland Department of Computer Science Associate Professor. Honored for her significant contributions to methods which combine probabilistic and logical representations in machine learning, knowledge discovery, graph mining, network analysis, and database systems.

Qiang Yang, University of Maryland Department of Computer Science Alumnus (M.S. '87, Ph.D. '89). Honored for his significant contributions to fundamental research and practical applications of AI planning, data mining and case-based reasoning.

Entrepreneurs

The Story of Quickmailcheck

▶ Sam Feldman has been interested in entrepreneurship since he started as a freshman at UMD in 2012. "I was always thinking of ideas and talking them through with friends," says Sam. The summer after his freshman year, Sam decided to create a text reminder service. Users of the service can text a certain number a message such as "remind me to take out the trash tomorrow at 5pm." The user then receives a text the next day at 5pm reminding them to take out the trash. In order to implement his idea, Sam learned HTML, CSS, Javascript and PHP. While working on the text reminder project, Sam thought up another project: Quickmailcheck. "I realized that if I could send texts to and from an email address and process the text, I could create a program that would allow users to check their email via text message."

Users of Quickmailcheck can text a specific email address requesting a summary of their email inbox. They receive a text back with their 10 most recent messages. They can then reply to this text and request a copy of one of the emails in their inbox. They then an option to reply to that email using their phone.

Sam recently finished implementing Quickmailcheck, which is available as a monthly paid subscription service. He is now testing different advertising options. One challenge, he says, is finding the right avenue through which to advertise. "I'm trying to reach people who don't have smartphones. [Thus,] they tend not to be very technologically savvy, so advertising to them is a creative process. Right now, I'm advertising on Gmail and Facebook, both services that have the option to specifically target people who do not to have smartphones."

Sam hopes to grow Quickmailcheck as much as possible. To this end, he entered the University of Maryland Pitch Dingman entrepreneurial competition and the Department of Computer Science F.I.S.H. bowl entrepreneurship competition. After taking second place and receiving the audience choice award at the Pitch Dingman competition and receiving the Best New Idea award at the F.I.S.H. bowl, Sam has enough funding to continue his project for the time being.

UMD Entrepreneur Resources

▶ **Start-up Shell**: A student-run, non-profit incubator and collective that cultivates entrepreneurship through collaboration.

▶ **Dingman Center for Entrepreneurship**: One of the 10 UMD Robert H. Smith School of Business Centers of Excellence, the Dingman Center supports entrepreneurship-focused courses, multiple competitions, and provides access to mentors and potential funders.

▶ **MTech**: The Maryland Technology Enterprise Institute offers programs, courses, workshops and competitions to help aspiring entrepreneurs learn how to bring their ideas and products to the world.

▶ Check out innovation.umd.edu for more resources!

Sam Feldman Accepts His Award from the UMD Dingman Center for Entrepreneurship

in Our Midst

▶ Justin Searles graduated from UMD in 2008 with a B.S. in Computer Science. During his time at UMD he founded the UMD Startup Shell, a student startup accelerator, with fellow Computer Science Department students Eric Rosenberg and Deonna Hodges. Most recently, Justin founded VentureBoard, a web platform that allows startup founders to build their teams, stay organized and motivated and leverage a variety of tools such as Google docs, Heroku, and MeetUp.com. Justin co-founded VentureBoard with UMD students Avi Eisenberger and Scott Block. Computer Science Department Staff Writer Elissa Redmiles caught up with Justin, find the interview @ cs.umd.edu (direct link: goo.gl/wZMO3G).
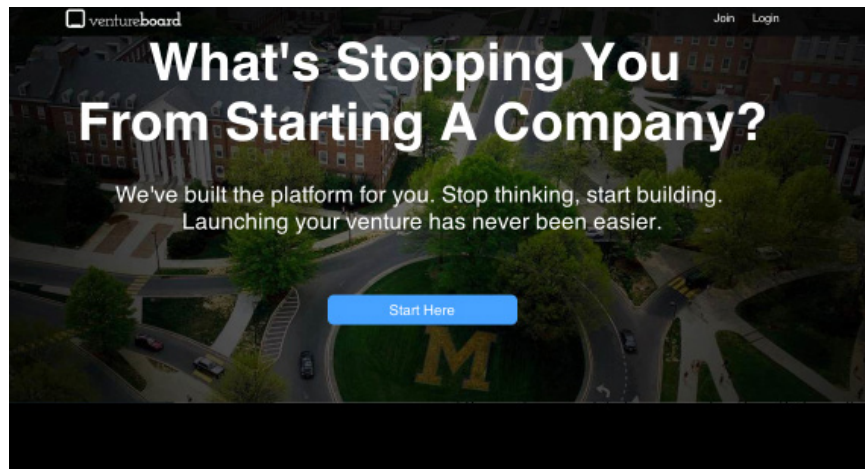
Founding The Health Sherpa:
A New Free Guide to Insurance Plans

▶ Creating The Health Sherpa did indeed take three days of work, although former UMD CS undergraduate student Michael Wasser is in his 20s, not 20-years-old. Michael recently founded The Health Sherpa with George Kalogeropoulos and Ning Liang. The Health Sherpa provides an intuitive user interface for finding appropriate insurance plans. Michael, George and Ning were all looking for insurance and having difficulty selecting a plan. Three days later, the trio produced a solution to their problem using publicly accessible insurance data. The Health Sherpa quickly attracted notice from the press and was featured on CNN as a "triumph of tech-startup nimbleness."

Although the project is still in the developmental phase, the founders have received thousands of emails from users thanking them and suggesting new features. "Our goal for the next week is to complete the data in our database, we're currently working on MD data and want to complete data for as many states as possible," says co-creator Michael. The team is experimenting with a variety of approaches including potentially starting

How hard is it to create a website to help people get health insurance under the Affordable Care Act? For three 20-year-old programmers in San Francisco, it took about three days' worth of work...
–CNN

their own computerized medical records system and using the data collected from that system to inform users of the most appropriate insurance plan given their medical history.

Michael credits UMD Professor Jim Purtilo's CMSC435 course with sparking his start onto the entrepreneurial software engineering path. "I was a team lead in Dr. Purtilo's class four times, I loved it so much I just kept coming back," says Michael. After graduating from UMD, Michael worked briefly at Microsoft before founding two tech start-ups: Elastic Box and Raveld. Over the past 9 months since selling Raveld, Michael has experimented with 9 different healthcare projects, of which Health Sherpa is the latest and most promising.

Ben Shneiderman's Treemap Art Project

Every
Algorithm
Has Art In It

treemapart.wordpress.com

This article was written by Andy Kirk and is reprinted with permission from visualisingdata.com.

Andy Kirk is a UK-based freelance data visualization specialist. He has delivered over 80 public and private training events across the UK, Europe, North America, India, South Africa and Australia and including clients such as Walmart, Disney, Intel, WHO, OECD and McKinsey. He is a visiting lecturer at Maryland Institute College of Art (MICA). Andy released his first book in December 2012, titled "Data Visualization: a successful design process" and is beginning work on a second title.

▶ The Treemap Art Project showcases data-generated artwork from one of the most influential names in data visualization, Ben Shneiderman. The project has the compelling strapline 'Every AlgoRiThm has ART in it'.

Ben has had a hugely distinguished career and is responsible for a host of notable achievements in this field, along with Human Computer Interaction. His 'Eight Golden Rules of Interface Design' and 'Visual Information-Seeking Mantra' are but two of his most enduring footprints on these subjects. However, I'm sure it would be the case that many people most associate him as the pioneer of the treemap visualization technique.

He has been working on a summer project to create a set of artworks based on his treemap technique, which has now come to fruition with the hanging of 12 framed images (24 x 36 inches) on the walls in the University of Maryland Computer Science Instructional Center.

Whilst the noise has died down somewhat recently, the negative reaction many purists have to data art as a concept is often misplaced. Data art should be judged through a different lens to data visualization. The latter is generally concerned with discoveries from or communication of data, whereas data art is more about self-expression or an exhibition using data. Sure, there may some consequential discovery or enhanced cognition about the underlying subject through the resulting patterns, but that is not the goal.
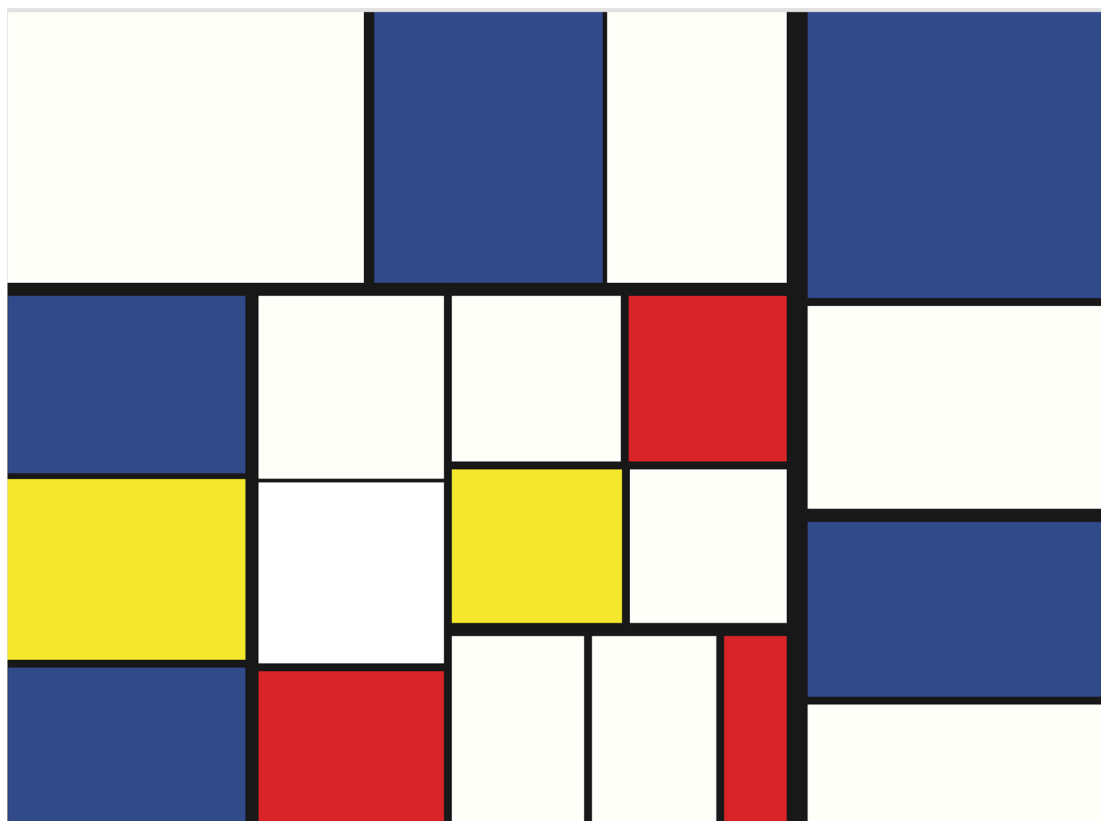
The Singing Mondrian

This data set contains artist data from Last.fm. On their 10 year anniversary, Last.fm published a list of top 100 artists based on their popularity as per user data. From that list, we have taken the top 20 artists, the total number of times their tracks were 'scrobbled' or played, and the number of unique listeners for each artist. We also identified broad genres of the artists based on their most popular tags. The boxes represent individual artists where the size of the box is the number of times their tracks were played while the color represents the genre of the artist – rock is white, alternative is blue, pop is yellow and hip-hop is red. This visualization were inspired by Piet Mondrian's compositions with red, yellow, and blue colors. The above one is titled "Composition C (no.III), with Red, Yellow and Blue".

"Although I conceived treemaps for purely functional purposes (understanding the allocation of space on a hard drive), I was always aware that there were aesthetic choices in making appealing treemaps, such as the layout, color palette, and, aspect ratio of the entire image. Also certain treemaps were inherently interesting because of the data displayed or patterns revealed, " says Ben.

Ben goes on to explain his belief that there are at least four aesthetic aspects of treemaps:
• Layout design (slice-and-dice, squarified, ordered, strip, etc.)
• Color palette (muted, bold, sequential, divergent, rainbow, etc.)
• Aspect ratio of the entire image (square, golden ratio, wide, tall, etc.)
• Prominence of borders for each region, each hierarchy level, and the surrounding box

The dedicated website tells the story, shows sets of draft designs, and full size PDFs for the 12 images. There is also a flyer for those who want a 2-page summary with all 12 thumbnails and some pictures of the installation.

Ben explains that the prints will be up for at least two months… "then we'll see what happens… I've been getting increasingly enthusiastic feedback as we refined the designs. Now dealing with requests for prints, which is a good sign. It's been very interesting to shift my thinking to the aesthetic side and commit to making artistic choices. "
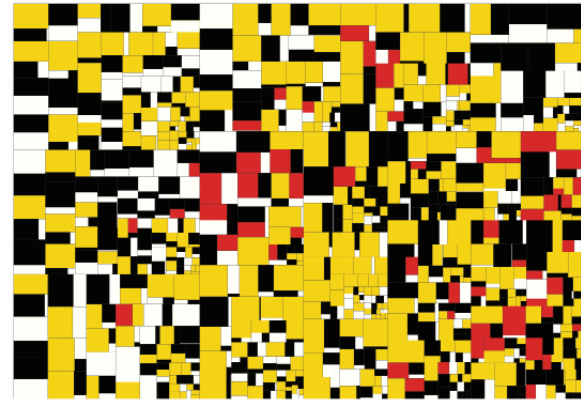
Green Terps
This dataset was collected from Maryland Open Data website. The dataset contains historical data on total grant amount awarded to different clean energy projects. The projects are grouped first by county and then by zip code. They are aggregated into four different technology types and were colored accordingly: solar hot water, solar PV, geothermal and wind. The colors were chosen to represent the Maryland flag. Each box represents the total amount grant awarded for a certain technology in certain zip code. The items were filtered to show only values below $40,000 for grant award amount.

40th Anniversary: continued from Page 4.

The afternoon program concluded with the Department's official recognition of distinguished alumni for 2013 including: Martin Farach-Colton (Ph.D. 2001, Professor at Rutgers University and Founder of Tokutek), Glenn Ricart (Ph.D. 1980, Inductee to the Internet Hall of Fame and Founder of US Ignite), Pooja Sankar (M.S. 2004, Founder & CEO of Piazza, Inc.), and Paul Capriolo and Patrick Jenkins (B.S. 2006, Founders of Social Growth Technologies and Now or Never). Martin Farach-Colton and Patrick Jenkins also gave short, entertaining talks about their experiences at the University of Maryland and how those experiences continue to impact them today.

At the evening reception, attendees shared their memories and excitement about the Computer Science Department over drinks, hors d'oeuvres and dinner. Ashok Agrawala served as the master of ceremonies and graciously introduced speakers from campus including University President Wallace Loh, University System Chancellor Brit Kirwan and Senior Vice President and Provost Mary Ann Rankin. Each official expressed his or her congratulations and marveled at the milestones that the Computer Science Department has achieved over the last 40 years. Former chairperson of the Computer Science Department Satish Trapathi, who is now president of the University of Buffalo, talked about how he has watched the department grow from the time he led the department. CMNS Dean Jayanth Banavar offered his enthusiastic congratulations to the

Department, celebrated its past and present, and expressed his continued support of mission of the Computer Science Department.

 All attendees, university members, and students expressed confidence that the future holds many exciting developments for the Computer Science Department for not only the next 40 years, but well into the future.

Paul Capriolo, Pooja Sankar, Martin Farach-Colton, Glenn Ricart and Patrick Jenkins (from left to right)

F RESEARCH ocus

pingin' in the Rain

with Dr. Aaron Schulman,
Dr. Neil Spring,
Ramakrishna Padmanaban
and Youndo Lee

▶ When severe weather events occur, it comes as no surprise that Internet connectivity and service may suffer latency or failure, leaving users without a way to interact with their favorite internet sites. Dr. Aaron Schulman has devised a way to measure the relative connectivity of ISPs (Internet Service Providers) by examining IP addresses with his well-regarded network measurement project, entitled Pingin' in the Rain. With contributing work from Professor Neil Spring and fellow graduate students Ramakrishna Padmanaban and Youndo Lee, Dr. Schulman's project uses a tool called ThunderPing to measure the connectivity of residential internet ISPs before, during, and after a severe weather event. ThunderPing tracks storm predictions via the National Weather Service, and finds IP addresses in a given geographic location to determine what, if any, impact a thunderstorm, ice storm, tornado or hurricane may have. ThunderPing determines what IP addresses should be used during a given alert, and uses geographically diverse PlanetLab hosts to pings (or contact) these various IP addresses in eleven minute intervals for up to six hours before or after a given weather event.

The ultimate goal of the Pingin' in the Rain project is to help better understand a given network's reliability in areas that depend upon various residential internet service types. This exciting work is in its genesis, and promises to provide insight into various types of ISPs and their responses to and reliability during severe weather events. Dr. Schulman and Dr. Spring examine several types of these providers (DSL, Cable and Satellite) and compare their response rates while pinging ISPs during weather events to determine if ISPs are functioning or not. The true challenge of a project of this nature is to determine what role the weather has in affecting the Internet as there are other factors that may contribute to latency or failure—these factors can include congestion, outages caused by other failures or unanticipated network events.

Aaron Schulman Awarded SIGCOMM Doctoral Dissertation Award for Outstanding Ph.D. Thesis in Computer Networking and Data Communication

Dr. Aaron Schulman graduated from the University of Maryland with his Ph.D. in Computer Science in 2013. During his doctoral study, Dr. Schulman was advised by Dr. Neil Spring. Dr. Schulman was awarded the SIGCOMM Doctoral Dissertation Award for his dissertation, "Observing and Improving the Reliability of Internet Last-mile Links." Dr. Schulman's dissertation "provides the first observation of fundamental factors that limit the reliability of the Internet's critical last-mile infrastructure and presents improvements to mitigate the effects of these factors." Dr. Schulman is now a postdoc at Stanford University.
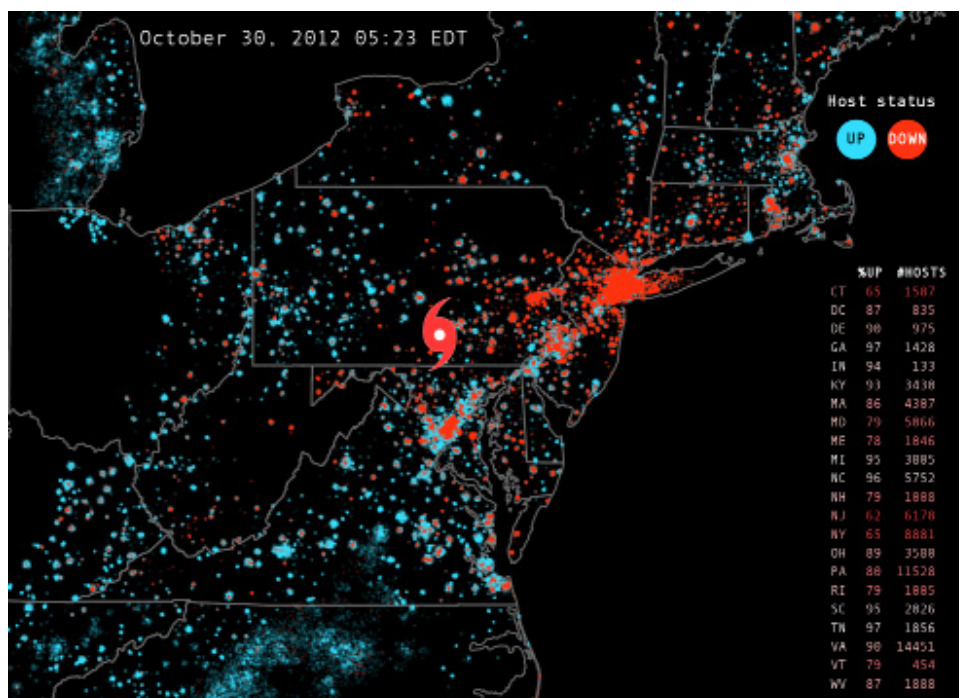
ThunderPing Map

This map shows residential internet outages during hurricane Sandy when the eye of the storm was over Pennsylvania. Red dots indicate a host that became unresponsive. Cyan shows hosts that remain responsive.   The percentages on the right indicate the fraction of probed hosts that remain up by state.

CS Education for Tomorrow: (continued from Page 8)

Computer Science Education for Tomorrow is having an impact on computer science education even outside of the University of Maryland. On January 21st, Dr. Porter's "Programming Handheld Systems" course (re-named "Programming Mobile Applications for Android Handheld Systems") launched as an eight-week Massively Open Online Course (MOOC) on Coursera. Dr. Porter's course has generated the most revenue (nearly $400,000) of any course on Coursera and is also the second largest course to ever run on Coursera. At any given point in time, up to 220,000 students were registered for the course.

Dr. Porter's course has been mentioned in Forbes, The Washington Post, The Baltimore Sun, Inside Higher Ed, The Chronicle of Higher Education, ComputingWorld, techcrunch., and lifehacker. Most recently, Google has partnered with Coursera to support the class by providing several dozen Nexus 7 tablets as prizes for top students and by committing to feature student work in the Google Play Store.

Programming Mobile Applications for Android Handheld Systems
coursera.org/course/android

"Programming Mobile Applications for Android Handheld Systems" is the first of a series of courses and a capstone project, which are being offered as a Coursera specialization. The next two courses and project in the specialization are being created in collaboration with two professors at Vanderbilt University. This specialization is the first ever trans-institution MOOC offering, bringing together professors with different institutions to offer a unique set of courses that don't independently exist at either institution.

Dr. Porter is currently working on the next set of courses in the specialization. He recently spoke at the Coursera Partners Conference, and Dr. Porter and others will also be presenting a paper entitled, "The Past, Present, and Future of MOOCs" at the 36th International Conference on Software Engineering, May 31 - June 7, 2014, in Hyderabad, India.

2013 Awards

student

marco adelfio & hanan samet*	GIR Best Paper Award
snigdha chaturvedi & kotaro hara	IBM Ph.D. Fellowships
rajesh chitnis	ESA Best Paper Award
laura dally	Student Athlete Honor Roll
sam feldman	Audience Choice & 2nd place Awards, Pitch Dingman Competition
kotaro hara, jon froehlich*, vicki le, sean pannella & robert moore	ASSETS Best Paper Award
rajiv jain, douglas oard*, & david doermann*	DRR Best Student Paper Award
emily jones & matt mccutchen	NSF Graduate Research Fellowships
vicky lai	Finalist, CRA Outstanding Undergraduate Researcher Award
mohammad rastegari	Facebook Fellowship
jay pujara and hui miao	ISWC Best Student Paper Award
jeffrey stuckman, kent wills & jim purtilo*	ISESEM Best Short Paper Award
luke valenta	Phillip Merrill Scholar
graham welch	Phillip Merrill Scholar

*faculty

departmental

victor chen	Dante Scholarship for Innovation
jeremy fallick	Appian Scholarship
kyle nission	Booze Allen Scholarship

alumni

suman banerjee	Ph.D. '03	ACM SIGmobile Rockstar Award
david doermann	Ph.D. '93	IEEE Fellow
jason b. ellis	B.S. '95	STEM Career Achievement Award
rajiv gandhi	Ph.D. '03	Rutgers University Chancellor's Award for Faculty-Staff Civic Engagement
ben langmead	Ph.D. '13	Sloan Research Fellowship
deepak sherlekar	Ph.D. '87	Synopsys Inventor of the Year
kyuseok shim	Ph.D. '93	ACM Fellow

faculty

bonnie dorr	AAAI Fellow
ramani duraiswami	UM Ventures Start-Up Prize
fawzi emad	Esteemed Phillip Merrill Faculty Mentor
jon froehlich	Maker Faire "inventor in our Midst"
jodie gray	CS Department Staff Award (Fall 2013)
lise getoor	AAAI Fellow
todd holden	CS Department Staff Award (Spring 2013)
michelle hugue	Esteemed Phillip Merrill Faculty Mentor
jonathan katz	Influential Marylander Award
atif memon	"Retrospective" Award: Most Influential Paper of the 2003 WCRE Papers
dana nau	ACM Fellow
jandelyn plane	Women in Technology Leadership Award for Social Impact
bill pugh	ACM/IEEE Supercomputing "Test of Time" Award
ben shneiderman	Graduate Faculty Mentor of the Year
g.w. (pete) stewart	Mathematics and Computer Science Award from the Washington Academy of Sciences

Congratulations to the 2013 Ph.D. Graduates

Nima Asadi
James Ryan Carr
Daozheng Chen
Timur Chabuk
Radu Dondera
Cody Dunne
Vladimir Eidelman
John Guerra Gomez
Amit Goyal
Qi Hu

Tugrul Ince
Cheuk Yiu Ip
Jagadeesh Jagarlamudi
Derek Juba
Yit Phang Khoo
Daehwan Kim
Shivsubramani Krishnamoothy
Abhishek Kumar
Jayant Kumar
Fatemeh Mirrashed

Walaa El-Din Moustafa
Koyel Mukherjee
Bao Ngoc Nguyen
Eunhui Park
Qiang Qiu
Patrick Roos
Aaron Schulman
Sima Taheri
Sureyya Tarkan
Ferhan Ture

Where they're going next

BBN Technologies
Yahoo!
Perceptronics Solutions
VMWare
Google
LivingSocial
Microsoft
Xerox
IBM Research
Duke University
FiscalNote
Facebook
Palo Alto Research Center
Digital Signal Corporation
The MathWorks
Amazon Web Services
Amrita University
Intel Labs
Objective Solutions
NIST
Stanford University
Johns Hopkins University

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