On Monday, September 17, the Computer Science Resources Consortium had its fall luncheon and Career Fair. This fall's career fair, held in Cassell Coliseum, was the largest since the dot.com boom, with 78 companies attending. For the fall 2012 semester, the CSRC welcomed 20 new companies and institutes: Accenture, Agilex, CCS Inc, Digital Receiver Technology, EMC, Excella Consulting, Gannett Co., Georgia Tech Research Institute, Hughes Network Systems, Lutron Electronics, MetroStar Systems, Open Software Integrators, Packet Forensics, Palantir Technologies, PIETECH Inc, Readyforce, Solers, TIBCO Software, Ultimate Software, ViaSat, and Zeta Associates. The CSRC also welcomed back Hughes Network Systems.

The members of the CSRC were on campus to learn more about the department and to recruit students as full-time employees, interns, and cooperative education students. CSRC companies provide support for CS student organizations and student scholarships.

Attending the luncheon in Owens Banquet Hall were 100+ company representatives, CS faculty and undergraduate scholarship winners. Sixty undergraduates were recognized for receiving scholarships for the 2012/13 academic year. The majority of these funds were provided by the College of Engineering, with CGI, the Department of Computer Science, and the CSRC contributing to the total.

CSRC members had the opportunity to visit several classes and speak with Computer Science students to discuss how to prepare for career fairs and interviews, the variety of opportunities in the field, and the abundance of jobs available to CS majors.

With the number and variety of positions offered by our CSRC partners, it is definitely a great time to be a CS major!

The Department of Computer Science celebrated 2012 Fall Commencement for undergraduates and graduate students on Thursday, December 20, 2012. December graduates, their friends and family, and CS faculty and staff attended the CS Commencement Reception held in the Computer Science Undergraduate Learning Center. Congratulations to all of our graduates!
CS@VT team takes top prize at IDT Programming Competition for second year in a row

Innovative Defense Technologies (IDT) held the final round of its annual High School and Collegiate Programming Contest on Saturday, March 2, at the Virginia Tech Research Center in Arlington, VA. The competition focused on innovative methods of implementing Automated Software Testing techniques. Several local high school and university teams participated.

In the High School Division, McLean High School won first place (Akshay Karthik, Peter Ott, Drew Sorrels). IDT recognized McLean’s coach, Jean Wright, for her 31 years of teaching Computer Science at the high school level. Two teams from Thomas Jefferson High School for Science and Technology (TJHSST) placed second and third.

In the Collegiate Division, Virginia Tech won first place (Ian Davies, Karthik Kumar, Eeshan Shah). Second place went to William & Mary (James Rountree and Gregory Smith). McLean High School team with coach Jean Wright. “The purpose of this type of event is to promote student interest in Automated Software Testing through problem solving, teamwork, and innovative technology,” said Thom Garrett, IDT contest chair. The top three high school teams earned cash awards for the Computer Science Departments at their schools, as well as prizes and T-shirts for the participants. The college teams won cash awards for their team members. IDT’s annual programming contest is open to teams from high schools and colleges in Virginia, Maryland, and DC.

For more information about future contests, visit contest.IDTus.com.

Article provided by Innovative Defense Technologies.

CSRC makes $75K donation to Investment in Excellence Scholarship

The CS Department’s corporate partners program, the Computer Science Resources Consortium (CSRC), made a $75,000 donation to the Investment in Excellence Scholarship fund in December 2012. The Investment in Excellence Scholarship was created in the fall of 2007 by funding provided by the CSRC. The CSRC has been able to make a sizable donation in each year since the endowment was created. With the 2012 donation, the endowment has reached $250,000. The CS Department thanks the corporate partners who made this possible.
Four CS@VT students recognized for "Creativity on Campus"

Four computer science students were recognized for their "Creativity on Campus" by the Institute for Creativity, Arts, and Technology (ICAT). According to the ICAT website: "Creativity on Campus (ConC) challenges all Virginia Tech students to submit anything that speaks to them as an excellent example of creativity. Creativity can come in all shapes and sizes, from songs to graphs, paintings to diagrams, animations to research posters—nearly anything is eligible." Each winner receives a $50 Amazon gift card and have their submission published on the ICAT website.

2012/2013 CS Winners:

- October 2012, Huanqing Liu: Self-Portrait in Sand
- November 2012, Alexandru Cioacia: Picture of Chicago O'Hare Airport
- December 2012, Panagiotis Apostolellis: VIGOR Concept Design
- February 2012, Michael Stewart: Sodoku Game Design

Undergraduate Huanqing Liu selected for National Conference on Undergrad Research and ACC Meeting of the Minds

Second year computer science student Huanqing "Quinn" Liu was selected to present his research at the National Conference on Undergraduate Research (NCUR) and at the ACC's Meeting of the Minds (MOM). Liu is mentored by Dr. Anthony Cate, assistant professor of psychology at Virginia Tech. Read more about Liu's research:

Hierarchical Temporal Memory Simulation Using OOD and MVC (presented at NCUR and MOM)

From the NCUR website: "Currently, the best neural networks have only been successfully applied to specific problems and are fundamentally not how a real brain creates intelligence. In order to further the machine learning field in a more biological direction to allow success for any given input data, I have programmed hierarchical time dependent memory models that are biologically accurate to the human neocortex. To visualize the activity of cells within a lobe of the brain I simulated the known biological behaviors of synapses, axons, cells, columns, and lobes known to neuroscience using object oriented design and graphical user interfaces techniques known to computer science. This interdisciplinary research has produced a new programming library that is based on neuroscience physiology and computer computational efficiency to better understand the brain through modeling. When fully implemented the result will be a new fundamental technology that will be the epitome of time based inference. This will allow understanding of how neurons interact through common learning algorithms by observing small scale brain simulation experiments with object recognition and object prediction. By doing so more efficient and effective brain simulation algorithms that are capable of spatial in-variance and multiple time step predictions can be developed. Furthermore, as the model grows to incorporate biologically accurate feedback algorithms, a detailed theory of consciousness can be added to our understanding of neuroscience."

You can also read more about this and see his artwork on his own homepage: www.walnutiq.com
Graduate student Chun-Yi Su selected for Lawrence Scholar Program at Lawrence Livermore National Lab

Chun-Yi Su, a PhD candidate in computer science, has been selected for the Lawrence Scholar Program at Lawrence Livermore National Lab (LLNL). Su is advised by Dr. Kirk Cameron, professor of computer science, who reports "that Chun-Yi's application proposed heterogeneous, NUMA memory modeling, analysis and optimization. He is among approximately a dozen students selected nation-wide for this honor. This program allows him to work on his dissertation research at LLNL with a scientist mentor/advisor, Edgar Leon."

Cameron goes on to say "that this award comes with a significant annual stipend and some travel support as well as the chance to work on-site with LLNL personnel for several years. Chun-Yi will work with our group and his LLNL advisor closely on this exciting project in the years to come."

From the LLNL website: "The Lawrence Scholar Program (LSP) and its predecessor programs have played a critical role for many years in helping to recruit new scientific and engineering talent to Lawrence Livermore National Laboratory (LLNL). Top Ph.D. students are granted appointments of up to four years to conduct research of interest to the Laboratory while completing their thesis."

Graduate student Zalia Shams places second in graduate student poster competition at Grace Hopper Celebration of Women in Computing

Zalia Shams, a PhD candidate in computer science, won second place in the graduate division of the poster competition at the Grace Hopper Celebration of Women in Computing for her work entitled "Evaluating Students' Assignments by Running Their Test Cases Against Each Others' Code." She describes the project: "A robust mechanism for evaluating student-written software tests is running one student's solution against others' test-cases. However, in object-oriented languages, tests are commonly included in program codes that may depend on any aspect of author's solution and may not compile against another’s program. We present a novel solution for Java that uses bytecode transformation and reflection so tests will run against any other program regardless of compile-time dependencies. Our solution allows automatic evaluation of correctness and test quality of students' solutions even if the solutions are partial or incomplete." Shams is advised by Dr. Steve Edwards.

VT MIT program ranks third in the United States

US News & World Report's Best Online Education publication ranks VT's MIT program as third in the nation. Both the College of Engineering, home to the Department of Computer Science, and the Pamplin College of Business jointly administer this degree program. Virginia Tech placed third behind the University of Southern California and Sam Houston University in Texas. To read more about this ranking, please see the story in its entirety on the College of Engineering's website.
Three graduates of the CS@VT program returned to their native country of Haiti to work and to teach the next generation of computer science teachers. Mario Eliezer Calixte (BS 2010, MAEd 2012), Fabrice Marcelin (BS 2010 and MS 2012) and Jennifer Alexandra François (BS 2010) taught two training sessions for Haitian teachers. (Pictured at left are Calixte, François, and Marcelin.)

The press release from Higher Education for Development, part of the US Agency for International Development (USAID): Following a devastating 2010 earthquake, Haiti received donations of all kinds and funding from several countries to support its recovery and rebuilding process. When Literacy Volunteers of Fauquier County (LVFC) in Warrenton, Va. donated and installed computer labs with Linux-Mint operating systems throughout Haiti, the group faced one major hurdle: The Haitian teachers and computer lab managers were familiar with Windows, but not with Linux. Determined to put their donations to use, Denny Baumann of LVFC contacted Virginia Tech faculty and requested computer training support for the recipients in northern Haiti. However, the solution was already in-country: Three computer science graduates, Mario Eliezer Calixte, Fabrice Marcelin, and Jennifer Alexandra François, had returned to Haiti months earlier upon graduation from Virginia Tech. “As Haitians, we are well aware of how difficult it is to get either prime education or training, so we felt that it was our right and duty to teach such skills and share our knowledge with the teachers and students in Haiti,” stated François, a recent Virginia Tech graduate and new employee at Ericsson, a telecommunication company.

Calixte, Marcelin, and François applied skills and techniques acquired through their education at Virginia Tech to create and facilitate training sessions in their home country. They are among the five graduates whose bachelor’s degrees were funded by the U.S. Agency for International Development through a Higher Education for Development (HED) partnership between Virginia Tech and Ecole Supérieure d’Infotronique d’Haiti. As trainers, the three Haitian computer science engineers collaborated on curricula development and led two one-day computer skills sessions in September 2012 in Terrier-Rouge and Port-au-Prince. “This opportunity matched my vision to use technologies to bring educational resources and training into the hard-to-reach area of Haiti,” stated Calixte. A total of 14 teachers from schools in Terrier-Rouge, Capotille, Ouanaminthe, Fort-Liberte, Port-au-Prince, and Petit Goave attended hands-on sessions to learn basic navigation skills, application information, and the difference between Linux, Windows and Mac computer operating systems. Calixte and Marcelin also worked individually with each participant and tailored instructions to each person’s level. “With my vast knowledge of Linux-Mint, I know I would be a valuable asset to the team,” stated Marcelin.

Fulfilling local community needs is not a new endeavor for Calixte, Marcelin, and François. While at Virginia Tech, they were members of the student group, “Computer Science Community Service,” which is dedicated to teaching computer skills to U.S. youth and adults alike. Their spirit of global community service is rooted in their international higher education partnership. “The experience at VT had a great impact in our involvement in this project,” stated François. “As strong believers of Virginia Tech’s motto ‘Ut Prosim—That I May Serve,’ giving back to the community is now second nature to us.”
Dr. Eli Tilevich, associate professor of computer science, recently received an award from the Microsoft Research Software Engineering Innovation Foundation (SEIF) for his work on mobile device applications. Tilevich's work seeks to improve porting applications across different mobile devices and platforms. This Microsoft award was one of only 10 worldwide.

To read more about Dr. Tilevich's research, please see the article by Lynn Nystrom at [http://bit.ly/P9PC44](http://bit.ly/P9PC44).

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Deborah Tatar co-PI for REU "Hands-on, Minds-on: Multidisciplinary Approaches to Understanding and Preventing Society Violence"

Dr. Deborah Tatar, along with colleagues in the Undergraduate Research Institute, Communication, Human Development, and Psychology, were awarded a $365,000 grant from the National Science Foundation for this REU. Read more about this exciting project on the VT News website: [http://bit.ly/13pGRW1](http://bit.ly/13pGRW1).

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TM Murali, PhD students Ahsanur Rahman and Chris Poirel, and David Badger win best paper award

TM Murali, PhD students Ahsanur Rahman (first author) and Chris Poirel, and group member David Badger won the Best Paper Award at the ACM Conference on Bioinformatics, Computational Biology and Biomedicine 2012. Murali describes the paper: "Analysis of molecular interaction networks is pervasive in systems biology. This research relies almost entirely on graphs for modeling interactions. However, edges in graphs cannot represent multi-way interactions among molecules, which occur very often within cells. Hypergraphs may be better representations for such interactions, since hyperedges can naturally represent relationships among multiple molecules. In this paper, we propose using hypergraphs to capture the uncertainty that is inherent in reverse engineering gene-gene networks from large-scale datasets. We provide a novel formulation of hyperedges to capture this uncertainty. We propose the first algorithm in the literature to discover hyperedges from systems biology datasets."

Feng and Sandu awarded grant for hardware/software co-design project

Dr. Wu Feng, PI, Dr. Adrian Sandu, co-PI, and co-PIs at Virginia Tech Eric de Sturler (Math), Chris Roy (AOE), Danesh Tafti (ME) and co-PIs at NC State Jack Edwards (ME), Hong Luo (ME), and Frank Mueller (CS) were awarded $3.5 million in funding from the AFSOR Basic Research Initiative program. The grant is titled "Co-Design of Hardware/Software for Predicting MAV Aerodynamics."

Dr. Feng describes the project: "While Moore’s Law theoretically doubles processor performance every 24 months, much of the realizable performance remains untapped because the burden falls to the (less informed) domain scientist or engineer to exploit parallel hardware for performance gains. Even when such untapped hardware potential is fully realized, it is often not coupled with advances in algorithmic innovation, which can deliver further (multiplicative) speed-up beyond Moore’s Law. Building on our past success in adapting our CPU-based parallel implementations of n-body methods and spectral methods onto the GPU via an ad-hoc hardware/software co-design process, we seek to formalize the aforementioned co-design process and apply it to the structured/unstructured grid motifs found in computational fluid dynamics (CFD) in support of aerodynamic predictions for micro air vehicles (MAVs). While many past efforts to develop such CFD codes on accelerated processors have shown limited success, our proposed hardware/software co-design approach will create malleable algorithms that can be mapped and optimized onto the right type of processing core at the right time, and in turn, deliver orders of magnitude better performance than would have otherwise been possible by Moore’s Law alone."


Madhav Marathe named IEEE Fellow

In late 2012, Madhav Marathe, deputy director of the Network Dynamics and Simulation Science Laboratory and professor of computer science at Virginia Tech, of Blacksburg, Va., was named an Institute of Electrical and Electronics Engineers (IEEE) Fellow. He was recognized for "for contributions to the development of formal models and software tools for understanding socio-technical networks." To read more about Marathe's accomplishments, please see the press release on the Virginia Bioinformatics Institute's homepage.
Steve Edwards, associate professor of computer science, received one of the State Council for Higher Education in Virginia (SCHEV) awards for Virginia Outstanding Faculty on February 12, 2013. This award is the "highest honor for Virginia Faculty."

“Stephen H. Edwards is an Associate Professor in the Department of Computer Science at Virginia Tech, where he has taught since 1998.

“Dr. Edwards’ research interests are in software engineering, the use of formal methods in programming languages, automated testing, and software components. In addition, he is internationally known as a researcher in computer science education, and one of the leading advocates of teaching software testing to students of computing.

“In 2012, Dr. Edwards was appointed as the W.S. “Pete” White Chair for Innovation in Engineering Education by the Virginia Tech Board of Visitors. This endowed chair was created by American Electric Power to honor Pete White, in order to ‘celebrate and illustrate innovative approaches to teaching using technology.”

“Dr. Edwards actively serves as an associate editor for Transactions on Computing Education, the flagship professional society journal for educational research articles in his field.

“Dr. Edwards’ research group at Virginia Tech has produced a number of educational tools for classroom use, the most well-known of which is Web-CAT: The Web-based Center for Automated Testing. This tool, which is designed to give computing students feedback about the quality of computer programs they write, is the most widely used open-source educational tool of its kind, with over 10,000 users at 75 schools at present. Web-CAT won the Premier Award in 2006, given by the NEEDS consortium to recognize high-quality, non-commercial courseware designed to enhance engineering education.

“Dr. Edwards received a B.S. in electrical engineering from the California Institute of Technology in 1988, an M.S. in computer and information science from The Ohio State University in 1992, and a Ph.D. from The Ohio State University in 1995, where he majored in software engineering, and minored in both formal methods in programming languages and in information retrieval and databases. He is married to Diane M. Hodge, Professor in the School of Social Work at Radford University, and they have two children, Matthew and Amanda.”

Article from SCHEV website: [http://www.schev.edu/AdminFaculty/OFA/2013/13Edwards.asp](http://www.schev.edu/AdminFaculty/OFA/2013/13Edwards.asp).
Aditya Prakash and co-authors win Best Paper Award at 21st ACM CIKM

Aditya Prakash, assistant professor of computer science, and his co-authors won the Best Paper Award at the 21st ACM International Conference on Information and Knowledge Management. The CIKM is a major conference in informational retrieval and data mining. Read the paper in its entirety, which Prakash has posted on his webpage: http://bit.ly/15QJXud.

Naren Ramakrishnan featured in ASEE December issue of PRISM

Naren Ramakrishnan's research was featured in the cover story on data analytics in the ASEE December issue of Prism. Read the article on the ASEE PRISM website: http://bit.ly/17AOhx9. Ramakrishnan's research was also featured on the CCC CRA blog (http://bit.ly/PakLSM), which was picked up by ACM TechNews.


Danfeng Yao wins best paper award at ICNP; receives 3 year grant from ONR

Dr. Danfeng (Daphne) Yao, assistant professor of computer science, and her collaborators at the Chinese Academy of Sciences and Michigan State University won the Best Paper Award at the International Conference on Network Protocols (ICNP) 2012 held in Austin, Texas earlier in November. Their paper is on reverse engineering unknown network protocols, specifically how to analyze patterns in network traffic in order to extract protocol specifications. Daphne and her collaborators drew parallels between the natural language processing and network traffic analysis, and experimentally demonstrated the accuracy of data mining methods used with large-scale datasets.

Dr. Yao also received a three year grant from the Office of Naval Research for her project titled "Real-Time Anomaly Detection and Quantitative Assurance For Securing Systems." Yao describes her project "We aim to answer the question of whether a complex computer system is running normally as intended by its owner. We will design novel quantitative system assurance models and principles, as well as developing scalable measures and prototypes for practical real-time monitoring."

Read more about this award at http://bit.ly/19A4y1S.
September Events—September 15, 16 and 17

Sunday, September 15
3:00 to 6:00 p.m., location TBA
All CSRC members are invited to join us for our annual picnic. All computer science faculty and staff, as well as all undergraduate, graduate, and prospective CS students, are invited to attend and bring their family and friends. If you arrive in Blacksburg on Sunday, please plan to join us for this informal event.

Monday, September 16
CSRC Fall Luncheon
11:00 a.m. to 1:00 p.m.—Owens Banquet Hall
The CSRC Luncheon will be held in Owens Banquet Hall on campus. To assist with parking, the CSRC will be providing a shuttle service from the Chicken Hill parking lot. Additional information will be provided with your packet in late August/early September.
Prior to the luncheon, you will have time to mingle with CS students and faculty attending the luncheon. All students receiving scholarships from the College of Engineering and our department will be invited to attend this luncheon.

Fall CSRC Career Fair
3:00 to 7:00 p.m. — Squires Student Center—Commonwealth Ballroom
The CSRC Fall Career Fair is a career fair for all undergraduate and graduate CS students. We also invite all students on our CS-Interest listserv which includes interested new freshmen from General Engineering.
We are also requiring all students from the Sophomore Seminar class to attend this event.
Student volunteers will be available to assist you with getting in to and out of Squires. Further information about unloading will be provided closer to the event.

For Premier/Regular Members:
We have opportunities for regular/premier members to be on panels for several different student audiences:

CS 3604 Professionalism Class
Tuesday, Sept 17, 9:30 to 10:45 and 11:00 to 12:15
Juniors and seniors in computer science are invited to ask representatives about their companies, searching for that first full-time position, and the current job market.

CS 1944 Sophomore Seminar
Tuesday, Sept 17, 4:00 to 4:50
The sophomore seminar is a new requirement for all students completing their degrees in 2014 and thereafter. Topics for the panel will include how to interact with recruiters, how to prepare for a career fair, what makes an effect elevator speech, and more. This panel should be about helping students to interact professionally with corporate recruiters.

CS 4944 Senior Seminar
Tuesday, Sept 17, 5:00 to 5:50
These graduating seniors are moving on to positions in industry or on to grad school. Topics include transitioning to the workplace and career management.

Women in Industry/Networking Event
Tuesday, Sept 17, 6:00 p.m.
We would like women in industry to be panelists during this event. We'll be using this as a welcome back and networking event for female students in computer science.

Upcoming Events

Fall Etiquette Dinner
October TBA
The CSRC invites all regular and premier members to join us for our fall etiquette dinner. Attendees at this event will mostly be drawn from our CS 1944 Sophomore Seminar. Plan to join us to host a table!

Spring 2014 CSRC Events
CSRC Spring Career Fair:
Monday, February 17
CSRC Panels:
Tuesday, February 18