



Chairman's Corner



Although computer science has consistently been listed as a top major to pursue in college, it can be difficult to attract students to the field due to lack of exposure in middle and high school. Often, computer course offerings at this level are limited to literacy and use of office applications.

One of the missions of our department has always been to engage in outreach with local schools to increase awareness of computer science. We continued that tradition this fall by attracting nearly 150 middle and high school students and teachers to an Open House event coinciding with the nationwide Computer Science Education Week. Perhaps as a result of our sustained outreach efforts, our undergraduate enrollment has steadily risen, with over 200 students now pursuing a B.S. through our department. Our class sizes have been the largest in recent memory.

At the same time, we have maintained excellence in our graduate programs and research. Our faculty attained over \$1M in new research grants during the latter half of 2013, from funding sources such as the Department of Energy, Department of Homeland Security, National Science Foundation, and FEMA. We enjoyed publicity in both the Daily Helmsman and the Commercial Appeal for these achievements.

I would like to extend a warm welcome to our new instructor Dr. Elena Strange, who joined the department this semester after several years as a professional software developer.

Looking forward to another successful semester in 2014!

-Dr. Sajjan Shiva

Department News

CS Open House a Huge Success

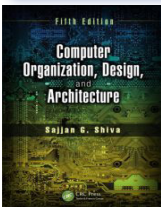
To celebrate [Computer Science Education Week](#), the Department hosted an Open House for middle- and high-school students and teachers on Friday, Dec. 13. Around 140 teachers, staff, and students from a variety of schools attended the event and had the chance to view interactive demonstrations of research projects by U of M computer science faculty and students, participate in workshops on video game development and Lego robotics, and listen to several guest presentations. The U of M's [ACM student chapter](#) hosted an "Hour of Code" that encouraged students to think computationally using hands-on activities. The [Memphis Daily News](#) covered the Open House on Dec. 17.



Department Receives Joint Cyber-Security Grant from FEMA

The University of Texas at San Antonio Center for Infrastructure Assurance and Security (CIAS), the University of Arkansas System's Criminal Justice Institute, and the U of M's [Center for Information Assurance](#) have been awarded a three-year \$800,000 cyber security education grant from FEMA.

Faculty Achievements



- The 5th edition of **Prof. Sajjan Shiva's** textbook, *Computer Organization, Design, and Architecture*, was published in December by CRC Press. It illustrates hardware concepts by walking through the complete design of a simple computer and has been described as suitable for undergraduate or beginning graduate level coursework.

- Our cyber security group's paper "Applying Puzzle-Based Learning to Cyber Security Education," a joint work of **Prof. Dipankar Dasgupta**, postdoc **Dr. Denise Ferebee**, and **Zbigniew Michalewicz**, won Runner-up Best Paper at Kennesaw State University's Information Security Curriculum Development Conference held on Oct. 12. Kennesaw State and the U of M are recognized as [National Centers of Academic Excellence in Information Assurance Education](#) by the NSA.

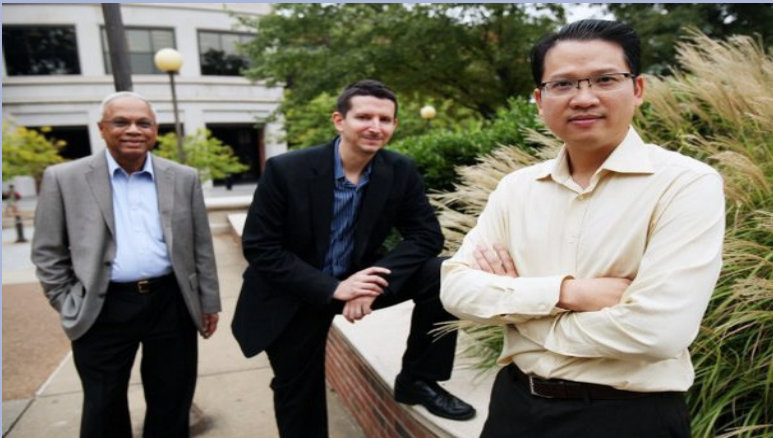
Kumar Advances mHealth

Santosh Kumar has led the design of software that can monitor heart and respiratory rates



through smartphone devices. Kumar has been highlighted by Popular Science magazine and offers advice to the White House about unhealthy habits such as smoking. Prof. Santosh Kumar's work was highlighted by the [Commercial Appeal](#) on Sept. 18.

Million Dollar Professors



Sajjan Shiva (left) is chairman of the U of M Department of Computer Science, where grant recipients include professors Scott Fleming and Vinhthuy Phan. Prof. Wu (not pictured) was on sabbatical at time of photo shoot. Photo courtesy of the Commercial Appeal.

Three University of Memphis computer science professors received more than a million dollars in research grants this semester.

- **Chase Qishi Wu** received two research grants worth a total of \$525,000 from the U.S. Department of Energy.
- **Vinhthuy Phan** received a three-year, \$280,000 grant from the Department of Homeland Security.
- **Scott Fleming** received a \$312,000 grant from the National Science Foundation.

The Department of Computer Science at the University of Memphis is ranked 55th in the nation among computer science departments receiving federal grants for research.

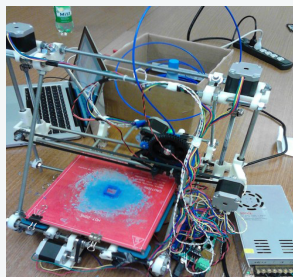
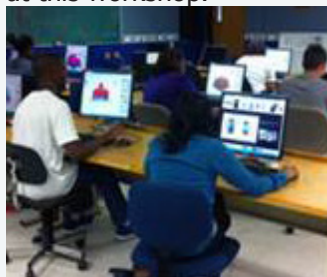
STUDENT HIGHLIGHTS



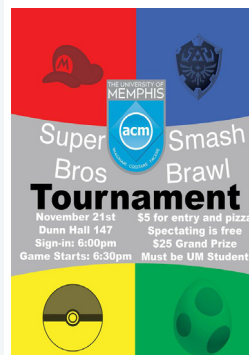
3D Printing Workshop Excites Local High School Students

The ACM student chapter received a \$1000 grant for two 3D printer and modeling workshops targeted at 9th through 12th graders with the goal of generating interest in Computer Science, from MemphiSTEM and West TN STEM Hub.

MemphiSTEM is an organization that awarded them a grant to build the 3D printer earlier in the year with off-the-shelf parts, under the direction of faculty advisor Prof. Timothy Hnat. These workshops, such as the one held July 10th, allowed around 2 dozen students who were interested in 3D modeling and 3D printing to have hands on experience while learning about the computer science concepts necessary to build such systems. They also allowed the students to create and complete their own 3D model using SketchUp, a free and easy to learn 3D modeling tool, then use the ACM student group 3D printer to print this model in order for them to take home. The ACM student group provided a stimulating and fun environment where students could ask questions and receive instruction as well as walk away with a feeling of accomplishment. Students gained a better understanding of Computer Science, realizing it is much more than just programming, and hopefully will consider it as their major in college due to the opportunities presented to them at this workshop.



Super Smash Bros. Brawl



On November 21st, the Student ACM Chapter at the University of Memphis hosted a Super Smash Bros. Brawl Tournament in Dunn Hall. Super Smash Bros. Brawl is the third installment in the Super Smash Bros. series of crossover fighting games

from Nintendo. The entry fee was only \$5 for any student to "brawl" and a grand prize of \$25 was awarded. Garibaldi's Pizza and drinks were provided. Thanks ACM!

Where Are They Now?

- **Adam Alyyan** is working at Amazon.com in Seattle, WA after completing an internship with them this past summer.
- **Brandon Curry** and **Ethan Willis** joined the Bioinformatics Graduate Program at University of Memphis

Fall 2013 Graduates

Doctor of Philosophy

Harkeerat S. Bedi

dissertation:

"Mitigating Congestion-Based Denial of Services (DOS) Attacks"

Serge A. Salan

dissertation:

"Minimum-Energy Exploration and Coverage for Robotic Systems"

Afroza Ahmed

Aman N. Patel

Sukshith S. Veerappajja

Chaitanya Vemulapalli

Master of Science

Adam Alyyan

John R. Bohne

Brandon C. Curry

Cody W. Travis

Clive W. Trower

Ethan Willis

Bachelor of Science

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CS Colloquiums

The Computer Science Colloquiums are open to the public at large and are usually held on Fridays at 12:30 pm during the Spring and Fall semesters. These colloquiums provide a view of cutting-edge research in computer science, computer science education, and other relevant fields with speakers that include University of Memphis faculty, guests from other schools, and industry leaders. Each colloquium is followed by a reception that fosters interaction between the audience and speakers. Our Colloquiums are made possible, in part, by the [Peter I. Neathery Colloquium Fund](#).

Puzzle-Based Learning for Cyber-Security Education

Dipankar Dasgupta, Professor, Computer Science, University of Memphis

Scientific Workflows on High Performance Networks under Budget and Energy Constraints

Xiangyu Lin and Tong Shu, Ph.D. Students, Computer Science, University of Memphis

Cognition and Computing: Lessons from Neuroscience

Steve Strain, Ph.D. Student, Department of Biomedical Engineering, University of Memphis

Improving Genetic Programming with Model Discovery

Cezary Z. Janikow, Associate Professor, Department of Mathematics & Computer Science, University of Missouri - St. Louis

Efficient String Matching and Its Application to Genome Assembly

Vinhuy Phan, Professor, Computer Science, University of Memphis

Heterogeneous Computing: Benefits, Challenges, and the Future

Byunghyun Jang, Assistant Professor, Department of Computer & Information Services, University of Mississippi

Self Assembly of Complex Systems

Russell Deaton, Professor & Chair, Department of Electrical and Computer Engineering, University of Memphis

FedEx Internship Program

Micah Bell, Steele Scroggins, Emily Marino, David Ngo, FedEx

The Key to Career Success in the 21st Century

Madan Birla, Author, Speaker, Strategist; Unleashing Innovation for Enterprise Growth