NEWSLETTER OF THE DEPARTMENT OF COMPUTER SCENCE

ORANGE COMPUTING

FALL 2011

Message from the Department Head

Prof. Subhash Kak
Regents Professor and Head

The past few months have seen many changes in the CS Department. Amongst personnel, two new faculty, Tingting Chen and Eric Chan-Tin, joined us from University of Minnesota and Buffalo, respectively, and John Chandler, professor from the inception of the Department and lately Graduate Coordinator, retired.

The Department is in the midst of renovations. A new robotics laboratory for use by undergraduates and graduate students is coming up in 203 East. A new student lounge will be housed in half of 206.

Jennifer Diane Cordill, Alliaz May Grzybowski, Collin Thomas Ragusa, Harlan Matthew Gross, and Christina Nicole Hagenwon won the ConocoPhillips scholarships. Mahesh Singh Khadka was chosen for the Fisher scholarship for graduate students.

The Department received two new grants from the National Science Foundation: one on "Exploring a Robust Quantum Cryptography Protocol for Securing Optical Burst Switching Networks" and the other on Acquisition of a High Performance Compute Cluster for Multidisciplinary Research." It also received a United States Department of Agriculture grant on "Advancement of a whole-chain, stakeholder-driven, traceability system for agricultural commodities: beef cattle pilot demonstration."

In the national rankings of OSU's Ph.D. program by PhDs.org, we were at rank of 57 in the larger programs and 18 in the smaller programs out of a total of 127 programs.

Subhash Kak

INSIDE THIS ISSUE:

Dr. John Chandler retires after 41 years of service

Professor John Chandler retired from the Department of Computer Science after 41 years of service. He is retired in Portales, NM, where his wife Sunny Choi, who got her Ph.D. in 2011 in Computer Science from Oklahoma State University, is teaching computer science at Eastern New Mexico University.

Dr Chandler grew up in Clarion, Pennsylvania. He graduated from Lehigh in 1957 with a B.S. degree ii Engineering Physics. He spent the summers of 1957 and 1958 working for IBM in Endicott, New York as a computer programmer in the Scientific Computation Laboratory. He completed his Ph.D. in Physics from Indiana in 1967, specializing in the experimental physics of elementary particles. Dr Chandler joined the newly formed Department of Computer Science at Oklahoma State University in 1970 at a salary of $12,500.

Dr Chandler recalls that in 1970, "the only computer available to us was the IBM 360/50 mainframe computer in the basement of the Mathematical Sciences (MS) Building. If a user wanted to run a computer program, the user went physically to the basement of the MS Building, taking his or her program along, either in the form of punched paper cards or on a magnetic tape." How times have changed.

Dr Chandler contributed to the Department in more ways than can be listed here. Many graduate students and faculty worked closely with Dr Chandler in his role as Graduate Coordinator during the last few years. He will be greatly missed and we wish Dr Chandler a long and happy retired life.

Terry Wright wins Outstanding Staff Award from CAS

DEAN SHERWOOD PRESENTS THE AWARD TO TERRY

TERRY'S AWARD PLAQUE

DEAN SHERWOOD — "PEOPLE IN THE DEPARTMENT SAID THAT TERRY GOES THE EXTRA MILE TO UNDERSTAND AND MEET THE NEEDS OF THOSE ENTERING HIS DOOR OR BY EMAIL OR BY PHONE"

In October, Terry Wright was selected as one of three staff members from the College of Arts and Sciences to be given an Outstanding Staff Award for Outstanding Service. Dean Sherwood presented the award to Terry and praised him for his tireless efforts and for being available even in the face of work overload. The Dean also mentioned that people in the department said that Terry goes the extra mile to understand and meet the needs of those entering his door or by email or by phone. We can all vouch for these qualities in Terry. Terry was very modest about his achievement and his attitude can be summed by his own words spoken to Orange Computing "for myself, I believe I am doing my job the best way I know how while chipping away at larger long term department challenges." Our Congratulations to Terry, you have done us proud. .

Ph.D Graduates of 2011

Sunny Choi

Title of Dissertation: *Evolutionary Least Squares Algorithms*
Now: *Assistant Professor at Eastern New Mexico University*

Jaroslav Lajos

Title of Dissertation: *Computer Modeling Using Hidden Markov Model Approaches Applied to the Stock Market*
Now at: *MSCI Inc., Oklahoma City*

Abhishek Parakh

Title of Dissertation: *New Information Dispersal Techniques for Trustworthy Computing*
Now: *Assistant Professor at University of Nebraska, Omaha.*

Huanyu Zhao

Title of Dissertation: *TRUSTNET: A Trust and Reputation Management System in Distributed Environments*
Now at: *Yahoo Inc,. Sunnyvale, CA*

Dr Ting Ting Chen joins OSU Computer Science

Orange Computing: Dr Chen, Welcome to the Computer Science Department. Tell us a little bit about yourself.

Dr Chen: I am a first year tenure -track assistant professor at computer science department. Before joining Oklahoma State University, I graduated with a Ph.D. degree from Computer Science and Engineering Department, at State University of New York at Buffalo, in June 2011. I received my M.S. degree and B.S. degree both in Computer Science and Engineering from Harbin Institute of Technology, China, in 2006 and 2004 respectively.

DR TING TING CHEN

Orange Computing: What are your research interests?

Dr Chen: My current research interests include economic incentives in wireless networks, data privacy, health informatics and cyber-security. In the above research fields, I have published 11 journal articles and 6 conference papers, including in IEEE Trans. on Computers and IEEE Trans. Neural Networks.

Orange Computing: What have been the highlights in you academic career to date?

Dr Chen: I won the best doctoral dissertation award from CSE department, SUNY Buffalo, and was nominated for the ACM Doctoral Dissertation Award.

DR CHEN WON THE BEST DOCTORAL DISSERTATION AWARD FROM CSE DEPARTMENT, SUNY BUFFALO, AND WAS NOMINATED FOR THE ACM DOCTORAL DISSERTATION AWARD

Dr Eric Chan-Tin joins OSU Computer Science

DR ERIC CHAN-TIN

Dr. Eric Chan-Tin joined the department in the Fall 2011 as an assistant professor. He received his Ph.D. in Computer Science from the University of Minnesota in 2011, and his B.A. from Macalester College in 2006.

Having spent 9 years in cold Minnesota, he looks forward to the winters of Oklahoma. His research interests include computer networks, computer security, distributed system security, anonymity, and privacy. He enjoys playing various team sports and video games.

DR CHAN-TIN "LOOKS FORWARD TO THE WINTERS OF OKLAHOMA"

Conoco-Phillips Scholarship Awardees 2011

The Oklahoma State University Computer Science Department is pleased to announce the recipients for the 2011 Conoco-Philips scholarships.

Congratulations to the recipients!

Jennifer Diane Cordill
Alliaz May Grzybowski
Collin Thomas Ragusa
Harlan Matthew Gross
Christina Nicole Hagen

NSF Grant—New Cryptographic Protocol for Critical Applications

KAK'S PROTOCOL DOES NOT REQUIRE THE STRINGENT CONDITION THAT ONLY SINGLE PHOTON SOURCES AND DETECTORS BE USED AND, THEREFORE, IT HAS THE POTENTIAL OF REVOLUTIONIZING THE FIELD OF PROVEN SECURITY IN OPTICAL NETWORKS.

Subhash Kak has been awarded a three-year grant titled "Exploring a Robust Quantum Cryptography Protocol for Securing Optical Burst Switching Networks" by the National Science Foundation. This research will investigate a new protocol that Kak published in 2006 in Foundations of Physics Letters which promises unbreakable security between two communication parties (http://www.cs.okstate.edu/~subhashk/threestageFPL.pdf).

The current standard for unbreakable coding between two parties is the BB84 protocol for quantum key distribution (QKD). This protocol permits secure exchange of a key between sender and receiver (Alice and Bob) utilizing the quantum properties of photons. The major threat to the security of QKD algorithms comes from the fact that the constraints on the implementation of the optical apparatus used in these protocols are impractical (i.e., single photon emitter and single photon detector). BB84 is provably secure only if the photon sources produce single photons and the detector can detect single photons. Recently, industry implementations of the protocol that were thought to be secure were successfully hacked. Although patches for these attacks have been introduced, there is no evidence at this point that other loopholes in the implementation do not occur. In general, BB84 remains open to siphoning attacks in some form or the other if the number of photons being transmitted per time unit exceeds one. On the other hand, if the average photon rate is much less than one as used in the implementation schemes of industry, the overall rate of a few thousand bits per second makes the system unsuitable for quantum data communication and that is the reason why it is primarily used for quantum key distribution.

Kak's protocol does not require the stringent condition that only single photon sources and detectors be used and, therefore, it has the potential of revolutionizing the field of proven security in optical networks. It would make it possible to encrypt data itself (in contrast with the generation of keys as in the earlier technology) and thus it is likely to have many applications in defense and finance.

The idea behind Kak's cryptographic system is very simple. If Alice wishes to send a secret to Bob, she can put a random transformation on it, and when Bob receives it, he puts his own random transformation on top of the one that Alice used. The signal is returned to Alice who undoes her transformation and then back to Bob, who undoes his. So long as the two transformations by Alice and Bob commute, this constitutes an unbreakable system.

Support OSU Computer Science

You can help us accomplish our departmental goals by contributing to:

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We can be reached by: email : tbeau@cs.okstate.edu, phone : +1 (405) 744 5668, fax : +1 (405) 744-9097. Please check our webpage at http://cs.okstate.edu/

Faculty, classmates as well as currents students are interested in you and your career after finishing at OSU. Any information that you can send us will be circulated to departmental faculty and staff and will be printed in the next issue of Orange Computing. Please let us hear from you.

New Mobile App Development Course

Like many faculty members, Dr. Blayne Mayfield receives calls from departmental alumni and other contacts in industry asking for the names of students who are preparing to graduate and have particular skills. By the summer of 2011, Dr. Mayfield noticed that a majority of the calls he was getting were for mobile app development skills. Finding few students prepared to work in this growing area of computing, he began to put together plans for a course in mobile app development. The course will be offered for the first time during the spring 2012 semester; it will emphasize iOS (Apple iPod, iPhone, and iPad) app development during its inaugural semester, but most likely will include Android and other platforms in the future.

The University and some regional companies have shown great interest in this mobile app development course. Students will spend the first few weeks of the semester learning to use the SDK (software development kit), and then work in groups to develop apps for OSU and corporate clients. Dr. Mayfield is considering the options for expanding the course into a collection of courses that involve multiple departments and colleges.

BY THE SUMMER OF 2011, DR. MAYFIELD NOTICED THAT A MAJORITY OF THE CALLS HE WAS GETTING WERE FOR MOBILE APP DEVELOPMENT SKILLS

USDA Grant—Food Traceability System

Drs. Blayne Mayfield and Johnson Thomas are part of a multidisciplinary team that recently received approximately $550K in funding from the United States Department of Agriculture USDA NIFSI (National Integrated Food Safety Initiative) program for a project titled *Advancement of a Whole-Chain, Stakeholder Driven Traceability System for Agricultural Commodities: Beef Cattle Pilot Demonstration.*

The goal of the project is to demonstrate the viability of a software system that will permit the consumer to trace the foods they purchase (in this case, beef) from the point of origin (beef cattle farms) to the point where they purchase the foods. Information on drugs, hormones, and other factors affecting the beef cattle will be available to the consumer. Further, the system will become a tool that governments can use to help identify and contain cases of food contamination or other health risks (for example, a salmonella outbreak).

As part of the project, Drs. Mayfield and Thomas will be working with CCNx – a content-centric networking system – to see if it is a workable basis for housing the data managed by the traceability system. Content-centric networking is an approach to communication architectures in which information is accessed based on its content rather than its physical location; CCNx is a content-centric networking project initiated and sponsored by Xerox PARC (Palo Alto Research Center). Drs. Mayfield and Thomas recently attended the first CCNx community meeting at Xerox PARC.

TO DEMONSTRATE THE VIABILITY OF A SOFTWARE SYSTEM THAT WILL PERMIT THE CONSUMER TO TRACE THE FOODS … FROM THE POINT OF ORIGIN …TO THE POINT WHERE THEY PURCHASE THE FOODS

Computer Science Student wins Second place in Photography Competition

Congratulations to Naveen Dhanapal for being awarded second place in the Fifteenth Annual Study Abroad photography competition. Naveen is a Masters graduate student in Computer Science.

The Fifteenth annual Study Abroad Fair was conducted on 21st September, 2011. This fair showcases a wide range of study abroad programs available to OSU students and a photography contest was conducted.

Photos were to be submitted in the domestic and international categories. The submitted photos were exhibited and judged at the fair by local professionals and attendees. Naveen said that "It was one of my most memorable moments as this was the first photo contest I had participated in and happily, I came second in the domestic category!" Naveen's photograph is shown on the left. A second potential career for Naveen?

"IT WAS ONE OF MY MOST MEMORABLE MOMENTS AS THIS WAS THE FIRST PHOTO CONTEST I HAD PARTICIPATED IN AND HAPPILY, I CAME SECOND …"

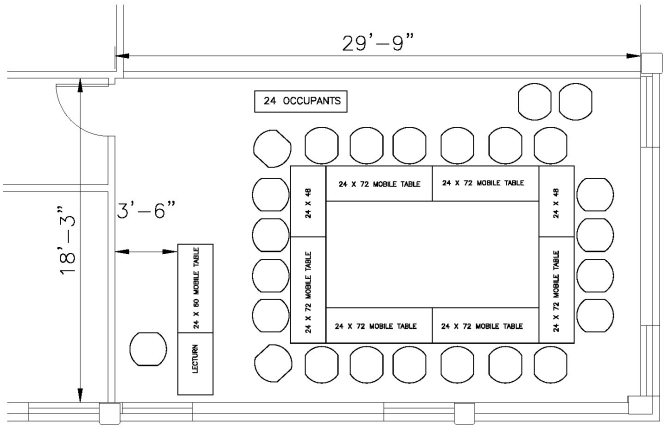
Fisher Scholarship Awarded to Mahesh Khadka

MAHESH KHADKA

The 2011 Fisher Scholarship has been awarded to Mahesh S Khadka, PhD Student in Computer Science Department at Oklahoma State University. Mahesh Khadka received his Bachelors Degree in Computer Engineering from Nepal Engineering College, Pokhara University, Kathmandu Nepal in 2004 and Masters Degree in Computer Science from Oklahoma State University, Stillwater, Oklahoma, USA in 2008. He is currently a PhD Student in Computer Science. His research interests are in the fields of Reliability Theory, Risk Analysis, Simulation and Modeling, and Databases.

Congratulations Mahesh!

Plans for New Faculty Lounge and Seminar Room



SEMINAR ROOM CONFIGURATION

MSCS 203W has been recently renovated and will now serve as the new seminar room. Televising (Polycom) equipment will be moved to the room. The room can be used as a colloquium, seminar, teaching, or discussion room.

One possible configuration of the room is shown on the left. The tables and chairs can be easily rearranged to form a number of other configurations. The room will also include the latest Polyvision smartboard, a document camera, and projector screen.

FACULTY LOUNGE OVERVIEW

MSCS 236 will be renovated to be the new faculty lounge. An overview of how it will look like is shown in the picture.

Photographs of the completed rooms will appear in the next newsletter

Editor's Note

2011 has been an eventful year. Congratulations to students, staff and faculty on their many and varied achievements. Please submit articles for the next newsletter to the editor at jpt@cs.okstate.edu. Happy Holidays, Happy Hanukkah, Happy Christmas and Best Wishes for the New Year.