It is late at night. In a quiet room, a programmer stares at the computer screen. The program keeps crashing. After hours of debugging, the bug remains elusive and the deadline is looming.

Anyone in the computing industry can relate to this picture. Every day, thousands of programmers spend their valuable time chasing bugs. Testing and debugging efforts cost billions of dollars, and bugs that “escape” can cause great damage to productivity, security or even human life. Atanas (Nasko) Rountev and his PRESTO research group - short for PRowgram analysEs and Software TOols - create algorithms and tools that help programmers tackle the overwhelming complexity of software behavior. Their work defines compile-time and run-time automated program analyses for use in software tools, with the ultimate goal of helping software developers and testers do their work faster and better.

Compile-time analysis algorithms process the source code of a program and infer properties that are guaranteed to hold over all possible program executions. Such algorithms are the foundation for optimizing compilers, bug-detection tools and programming environments for code understanding and refactoring. A key challenge for building such algorithms is the inherent trade-off between cost and precision: given a large program, how can one determine complex program properties and interactions with practical cost and high precision?

In research supported by an NSF CAREER Award, Dr. Rountev investigates new algorithms that take advantage of the component structure of...
Message from the Department Chairperson

Dear CSE Alumni, parents, friends and colleagues,

I welcome you again to the Buckeye Blog. This year, the department experienced three different evaluations: the Ph.D. program was assessed by the graduate school at Ohio State, the department was comprehensively reviewed by an external academic team; and our national ranking was updated by the US News and World Report’s Special Issue on Best Graduate Schools. All of the evaluation results are very encouraging.

Besides learning more about your fellow alumni and other new developments in the department in this issue, you will see a special call from us for contributions to establish an Alumni Undergraduate Scholarship Fund. The selected outstanding students will receive the scholarships in the CSE Annual Awards Banquet to be held in May of each year. I hope you view this as a unique opportunity to help the department and to reward and inspire our future CSE alumni. We need your help in making this important endeavor a success. Your support will be published in our biannual newsletter, in a letter to the undergraduate awardees and recognized at the CSE Annual Awards Banquet.

Please keep us informed about your accomplishments in your work and interesting experiences in your life, and we can learn about each other in the next issue.

Xiaodong Zhang
Chair and Robert M. Critchfield Professor

CSE Updates Master’s Program

The CSE department has recently approved a number of changes in the master’s program requirements. These changes follow a significant increase in the enrollment in the masters program.

A key feature of the new requirements is the introduction of an applied core, which includes graduate level classes in Artificial Intelligence, Compilers, Computer Networking, Databases, Graphics and High Performance Computing. Together with the traditional foundational core, which includes classes in Architecture, Algorithms, Operating Systems, Programming Languages and Theory of Computation, the goal of the applied core is to ensure sufficient breadth in master’s students’ coursework. Each student must choose a certain number of classes from both the foundation core and the applied core. Another change in the master’s program introduces a project option for non-thesis master’s students. Under this option, a student may carry out a two quarter implementation project, in lieu of two graded classes. These changes, along with escalating enrollment, show an increasing professional emphasis in the CSE master’s program, with the goal of preparing students for advanced development jobs in the computer industry. More information regarding the master’s program may be found at www.cse.ohio-state.edu/grad/ms.shtml.

CSE Goes to Washington

Each year, Ohio State helps to sponsor the Coalition for National Science Funding (CNSF) reception for members of Congress and their staff. This reception showcases the role that NSF plays in supporting basic scientific research. Ohio State selected Professor Eric Fosler-Lussier, and his student Ilana Heintz, to represent OSU at this year’s reception, held June 25th in the Rayburn House Office Building. Eric and Ilana presented an overview of his three active NSF grants, which cover modeling of speech recognition both in terms of child language acquisition and computer modeling of speech, and demonstrated the effects of background noise on speech processing. Dignitaries visiting the exhibit included Rep. Dennis Kucinich and NSF Director Dr. Arden L Bement. OSU Assistant Vice President for Foreign Relations Stacy Rastauskas also facilitated one-on-one meetings for Ilana and Eric with the Ohio congressional and senate delegations, where they described the research taking place at Ohio State.
programs to achieve high scalability. This work targets fundamental problems for analysis of types, pointers, side effects and dependences; such problems are pervasive in modern software tools. Recent results show that these new component-level algorithms can achieve dramatically lower running time and memory usage without sacrificing any precision, making them practical and attractive for analysis of large applications containing millions of lines of source code.

This work has direct applicability in real-world software tools such as the widely-popular Eclipse development environment. In a project supported by an IBM Eclipse Innovation Award, Dr. Rountev and his students designed and built a proof-of-concept Eclipse plug-in component for performing type analysis and for constructing the call graph of a Java program. Information about types of expressions and calling relationships plays an essential role in program understanding, refactoring, and checking for bugs. This work highlighted the critical importance of component-level algorithms. For example, since the standard libraries for modern languages are very large, it is essential to perform separate analysis of library components and to efficiently compose these results with the analysis of the client application. An extension of this work considered the recovery of software design from source code through novel algorithms for reverse engineering of UML sequence diagrams. The industry standard Unified Modeling Language (UML) is widely used to describe object-oriented design and code analysis for extracting UML diagrams plays an important role in a number of commercial software tools.

Analysis of program code is not always sufficient to uncover problematic software behavior, and it often becomes necessary to perform run-time analysis of actual program execution. One typical example is run-time analysis for finding memory leaks. While garbage-collected languages can reduce memory-related bugs such as dangling pointers, programs can still suffer from memory leaks caused by keeping references to useless objects. Leaks degrade run-time performance, cause the program to run out of memory and crash, and are notoriously difficult to find.

Recent PRESTO work defines a novel technique that detects memory leaks for Java using container profiling. Misuse of containers is a major source of memory leak bugs in Java applications. The technique performs run-time sampling of the size of container data structures and tracks operations such as adding or removing an element. Each container is ranked based on its memory consumption and the staleness (time since last access) of its data elements. This container-centric view is a departure from existing leak detection approaches and leads to more precise bug reports and to more effective debugging. This work received an ACM SIGSOFT Distinguished Paper Award at the flagship International Conference on Software Engineering in 2008.

Another recent project, in collaboration with Professor Feng Qin’s research group, considers the challenging problem of analysis, testing, and debugging of long-running applications. For example, how can a programmer effectively debug a program what crashes after running for several hours? Since the cost of multiple debugging runs is prohibitive, checkpointing can be used to capture intermediate program state and later to replay the execution from that state. This project proposes a novel checkpointing and replaying technique for Java that operates purely at the language level, without the need for any support from the operating system or the Java virtual machine. This makes the approach easier to deploy and enables better debugging, testing and analysis of long-running programs.

From its humble beginnings as a narrow research topic in programming languages, compilers and software engineering, program analysis has evolved into a valuable technology employed widely by companies such as IBM and Microsoft. The goal of the PRESTO group is to be at the forefront of novel research advances in this field, aiming to improve programmer productivity and software quality for complex real-world software applications.

More details about PRESTO’s research projects are available at http://www.cse.ohio-state.edu/~rountev/presto.
Julie Hartigan, Chief Information Officer, Teradata

I graduated in 1994 with a PhD in the area of artificial intelligence, with an emphasis in natural language processing. Immediately following my dissertation defense, I was offered my first job, as a lecturer in the department. It was a godsend, really, since I had no other job offers as a result of not bothering to apply anywhere!

After a year of teaching, I accepted a position with TASC, which is now a Northrop Grumman company. I worked beside a former Ohio State faculty member, Terry Patten, to develop a text extraction technology. My role morphed into one of technical sales – and that is when I discovered the “vendor lifestyle.” As a vendor, I could satisfy my aspirations of meeting with senior executives, walking the halls of large corporations, and making a difference in national security. My efforts would generate revenue. Being able to combine technology, teaching, acting, selling and traveling was a dream come true, and I knew I had found my calling.

In 1998, I was asked to start the US Federal team for Autonomy, Inc. The role fit my education and passions perfectly. I traveled the country, selling and installing a knowledge management tool. I had the opportunity to work in a variety of places like: the US Intelligence agencies (CIA, NSA, DIA,) various military commands and forts, Secret Service, FBI, NYSE, XM Satellite, Bank of Montreal, Halliburton, United Nations, as well as a number of financial institutions, insurance companies and pharmaceutical agencies. Because of my capabilities and knowledge, I was quickly promoted to VP of Technology for North America.

While I held this role, the attack of 9/11 occurred. I was working in Toronto, Canada, and received two phone calls that morning. One was from a Major in the Air Force with whom I had worked. He only said, “I don’t know where you are right now, but do not get on a plane.” and hung up. At that time, I had not yet heard about the World Trade Center, so I was confused. The next call was from my corporate headquarters asking, “Where are you?” and they explained what was happening. To this day, I still quietly count my blessings – due to additional technical questions from the Canadian customer, I had been forced to postpone a meeting in New York City to September 12th. That meeting had been scheduled for 9am in the building next to the World Trade Center. It, too, had collapsed.

I am currently working at Teradata where I am the Chief Technology Officer over Government Systems. Teradata’s technology is capable of performing analytics on structured data, providing active enterprise intelligence and has proven linear scalability. I use my background and knowledge of text processing to talk to customers about the wealth of information that is “trapped” in textual data, the capability of converting it into structured information, and the benefits that they will derive from integrating their unstructured and structured repositories.

My career also has enabled me to go places, experience things and meet people who I would not have had a chance to otherwise: I was in a government building during an “anthrax lockdown.” I worked and lived in Australia. I traveled all over Europe – including a flight on a commercial 737 where I was asked to sit in the cockpit with the pilots. I stayed in Christian Dior’s Chateau. I spent a week traveling in a Learjet to IPO a company on NASDAQ. And I spent three days between technical conferences with “Heaven and Hell” (“Black Sabbath” with Ronnie James Dio). They adopted me, and saw to it that I had tickets to their shows, and I was permitted backstage and in the dressing room.

I have been blessed to be able to follow my passions of technology, acting and travel. My other passion has always been working with dogs. During graduate school I had a basenji, a barkless African dog, named Cindy. I own a kennel, Marjani Basenjis, and I show and work with my dogs. They have also made a “name” for themselves as canine models – a local photographer uses them in his stock photography portfolio, where their pictures have been purchased and downloaded numerous times. I also co-own and operate the international magazine called “The Basenji.”

If it were not for my years at Ohio State, earning my degrees, learning to believe in myself, following my heart’s desire and living every moment, my life would have turned out very differently. I never dreamt that I would see and do the things I have done. My time at Ohio State was rewarding and I reflect on it fondly; the faculty that nurtured my personal growth and taught me more than just the concepts in books, my friends who kept my life balanced and my students who unknowingly taught me to speak in public without a script. I can honestly say that my experience was a vital stepping-stone to who I have become, and what I will do in the future.
Two Young CSE Alums Receive Prestigious Awards for their Academic Research

**Dr. Susan Hohenberger Awarded Microsoft New Faculty Fellowship**

**Susan Hohenberger**, BS ’00, has received a 2008 Microsoft New Faculty Fellowship Award for her research on cryptography: the art of securely communicating. She is interested in designing secure solutions for pervasive settings, where devices everywhere are constantly talking to their environments, which may require low energy, short overhead and the ability to quickly process a large number of incoming messages. Her research includes an emphasis on developing privacy-friendly technologies, such as anonymous communication and electronic cash. Susan is an Assistant Professor at Johns Hopkins University. She received her MS and PhD from MIT in ’03 and ’06, respectively.

**Dr. Jason Hallstrom Receives NSF CAREER Award**

**Jason Hallstrom**, PhD ’04, has been awarded a prestigious NSF CAREER award for his research entitled *Supporting Patterns for Embedded Networks Systems*.

At Ohio State, Jason’s dissertation work with Professor **Neelam Soundarajan** focused on the development of formal foundations for reasoning about software behavior. At the same time, he was a member of Professor **Anish Arora’s** research group, where he was exposed to some of the first work on wireless sensor network systems. Jason now serves as an Assistant Professor in the School of Computing at Clemson University and is working to join these two research paths. His work is focused on adapting and extending software engineering principles and tools to the emerging area of embedded network systems engineering. He is in the fifth year of his tenure-track appointment.

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**Amit Sheth, LexisNexis Ohio Eminent Scholar for Advanced Data Management and Analysis**

Amit Sheth came to the US in 1981 after completing his BE in Electrical and Electronics Engineering at BITS, Pilani, India. He became the 26th student to complete a PhD at Ohio State under Professor Mike Liu in 1985. Since then, he has had the opportunity to be a researcher in industry, an educator as well as an entrepreneur. For the first 9 years of his career, he worked in the research and development labs of Honeywell, Unisys and Bellcore. Three significant commercial products and several large applications resulted from this research and development.

In 1994, he moved to the University of Georgia (UGA). While at UGA, Professor Sheth founded Infocosm, Inc. and Taalee, Inc. based on the technological outcomes of his research at UGA’s LSDIS lab which he also directed. He also performed various roles (founder, CEO, CTO, etc.) for these two companies. Taalee, Inc was a venture capital funded company and took the names of Voquette and Semagix through mergers/acquisitions, until it became part of Fortent.

In 2007, Professor Sheth moved with 10 of his PhD students to Wright State University where he is the LexisNexis Ohio Eminent Scholar for Advanced Data Management and Analysis. He now directs the Kno.e.sis Center for Knowledge Enabled Information & Services Science, a world leader in Semantic, Social and Services computing over Web infrastructure (also called Semantic Web, Web 2.0 and Web 3.0). Kno.e.sis’s extensive collaborations currently focus on biomedical research (data analysis, text mining, scientific workflows and knowledge discovery), health care informatics (clinical data reconciliation and analysis, electronic medical records), and defense intelligence (sensor web and human performance enhancement).

He has received awards such as the IBM Faculty award, has received well over $12 million in research funds (from NIH, NSF, AFRL, DoD as well as several major Internet companies including IBM, HP and Microsoft), has published extensively (250+ publications), and has given more than 200 invited talks including 30+ keynotes. He is an IEEE fellow, Editor-in-Chief of the International Journal of Semantic Web & Information Systems, joint- Editor-in-Chief of Distributed & Parallel Databases and serves on several editorial boards. He is among the best-cited authors in computer science (over 14,000 citations, h index = 55, 25 publications with 100+ citations each, coauthor of most cited papers on two topics-- information integration and workflow management). His favorite activity is brainstorming with his students; he finds the most satisfaction in seeing his PhD students become successful researchers and educators.

More information about Professor Sheth can be found at http://knoesis.org/amit

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**Buckeye Blog Autumn 2008**

**Two Young CSE Alums Receive Prestigious Awards for their Academic Research**

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Bruce Smith, BS ’74, retired from Roadway in 2005 and resides in Silver Lake, Ohio.

John Tolbert, BS ’74, is president and CEO of First in Solutions, Inc., a government contracting firm in the Washington D.C. area that specializes in information technology and business consulting services.

Wasim Hanna, BS ’07, works in application service delivery for JP Morgan Chase in Columbus, Ohio.

Ryan Williams, BS ’05, is a systems integration analyst at Lockheed Martin in Akron, Ohio.

Doug Roble, PhD ’92, was inducted into the Academy of Motion Pictures Arts and Sciences. As a member, he’ll be able to participate in the Oscar process by screening, voting on and attending the Academy Awards.

Karl Shaffer, MS ’70, is now retired from Bell Labs and enjoying life in Tennessee. Karl was one of the student operators of CSE’s then student-manned, time-sharing computer, DEC PDP-10.

John Paxton, BS ’86, was promoted to the Computer Science Department Head at Montana State University. His research interests lie in computer science education and artificial intelligence and machine learning. He received a Fulbright Award in 2006.

Antoinette Jackson, BA ’82, is currently an Assistant Professor of Anthropology at the University of South Florida. She was recently appointed by the U.S. Department of the Interior to represent Florida on the Gullah/Geechee Cultural Heritage Corridor Commission. The Commission has been established to carry out functions authorized and specifically assigned by the National Heritage Act of 2006. Dr. Jackson’s expertise in anthropology and cultural heritage in the Southeast coastal region of the United States is recognized as an important asset for the Commission.

Arun Welch, PhD ’86, lives in Missouri City, Texas. He is the Director of Engineering Services for En genuity, LLC, a company that provides communication consulting and contract work, primarily for the Department of Defense.

Sriram Chellapan, PhD ’07, is currently an Assistant Professor in the Department of Computer Science at Missouri University of Science and Technology. His research interests are in the areas of network security, wireless networks and distributed systems.

Karthik Krishnamurthy MS ’00, currently works as a senior programmer analyst in Michigan. He was recently married and will be moving to Washington DC in the near future. In his spare time, he teaches stress management programs through The Art of Living Foundation.

After graduating, Dean Allemang, PhD ’90, lived in Switzerland for six years, first as a post-doc at the University of Zurich and then at the Swiss Federal Institute of Technology in Lausanne. Later, he worked as a tenured researcher for Swiss Telecom. Dean currently works for TopQuadrant, www.topquadrant.com, the first company in the US to specialize in products and consulting concerning the Semantic Web. He just published his first book, with co-author Jim Hendler, entitled Semantic Web for the Working Ontologist.

From left, CSE Professor Steve Lai, Yu-Chee Tseng, PhD ’94, CSE Professor and Chair, Computer Science Department, National Chiao-Tung University, Taiwan, Wang-Chien Lee PhD ’96, Associate Professor of Computer Science and Engineering, Penn State University, and CSE Professor Emeritus Douglas Kerr pose during Professors Lee and Tseng’s visit to the CSE department in the spring. Both alumni gave a distinguished lecture as part of our Homecoming Lecture Series.

Do you have any suggestions or news about yourself or other alumni for the newsletter? Email us! Send your suggestions to alumni@cse.ohio-state.edu.
Dr. Tamer Ozsu is Awarded OSU College of Engineering Distinguished Alumnus Award

M. Tamer Özsu is a professor of computer science and director of the David R. Cheriton School of Computer Science at the University of Waterloo. He earned a master of science degree from The Ohio State University in 1981 and his PhD in 1983 in computer and information science. He is a fellow of the Association for Computing Machinery (ACM), a senior member of the Institute of Electrical and Electronics Engineers (IEEE), and a member of Sigma Xi. He was awarded the ACM SIGMOD Contributions Award in 2006.

Özsu’s current research focuses on Internet-scale data distribution that emphasizes stream data management, peer-to-peer databases and Web data management; multimedia data management, concentrating on similarity-based retrieval of time series and trajectory data; and the integration of database and information retrieval technologies, focusing on XML query processing and optimization.
Student News

2nd Annual CSE Graduate Student Research Exhibition

In April, the department hosted the 2nd Annual CSE Graduate Student Research Exhibition. The event showcased the research of over forty CSE PhD candidates. The students presented their research posters and gave demonstrations of their work.

Two Best Papers Awarded at Cluster 2008

CSE Department researchers have been recognized by two best paper awards at the IEEE Cluster 2008 conference held in Tsukuba, Japan. The papers are Efficient One-Copy MPI Shared Memory Communication in Virtual Machines by Wei Huang, Matthew Koop (above), DK Panda (above) and Are Non-Blocking Networks Really Needed for High-End-Computing Workloads? by Pavan Balaji (CSE alum PhD ’04) and Narayan Desai (Argonne National Laboratory), P. Sadayappan, Mohammed Islam. The IEEE Cluster conference is a forum for fellow cluster researchers to present and discuss new directions, opportunities and ideas that will shape Cluster Computing. The department also received a best paper award at Cluster 2007 entitled High Performance Virtual Machine Migration with RDMA over Modern Interconnects by Wei Huang, Qi Gao, Jiuxing Liu and DK Panda.

NSF Honorable Mention

Adam Champion, CSE PhD student, received Honorable Mention for the NSF Graduate Research Fellowship competition. Adam’s research with Professor Dong Xuan, proposes to improve the automated detection ability of data mining computer programs in distinguishing benign from malicious programs. For receiving honorable mention, Adam will have access to the TeraGrid Supercomputer and other resources on the nation’s cyberinfrastructure. Adam received his BS in CSE from Ohio State in 2007.

Undergraduate Spotlight: Binaebi Akah

Binaebi Akah, a new alumnus of the computer science engineering department, would be the first to say that she never thought she would “go into computer science.” She thought that she would become an English or History major, and perhaps teach. But then, things don’t always go to plan. Akah began her computing career by teaching herself HTML, which soon led to taking a minor programming elective in high school. “I never thought I’d take a programming course, since I knew writing was my passion,” she said. “But my father encouraged me to at least try it. I was on the computer so much for writing; he thought maybe I should learn a little about how it worked.” With the encouragement of her parents and high school programming teacher, Akah decided to try computer science.

Akah’s internship with the Ohio Supercomputer Center changed the focus for her computing career. Her assignment consisted of transcribing and improving an existing graphical user interface from Python into Java. “It completely changed how I think about programs. I realized someone had to decide the placement of the widgets, and more importantly, have a reason behind it. I care so much about people, and I didn’t really see the human element in the CSE program. That internship definitely reignited my interest in computers.”

Currently, Akah is pursuing an Informatics graduate degree from the Human Computer Interaction Design program at Indiana University. When interviewed about what she’s taken from OSU’s computer science program, she admitted that the extensive group work has been “immensely helpful. This is a very interdisciplinary program, and many of the students have never done group work and don’t really know how to collaborate without stepping on others’ toes.” She also mentioned that the 757 course with Rajiv Ramnath really prepared her for the amount of reading required in graduate school. “It was a lot of reading at the time, and sometimes heavily technical, but it was definitely worth the struggle, because now I feel like I’ve done this before.”
Congratulations to CSE Spring and Summer quarter graduates!

The Department wishes you the best of luck in your future endeavors.

Bachelor’s CIS
- Christopher Anderson
- Deepak Bal
- John Battagline
- Morgan Bode
- Nicholas Coats
- Alan Delong
- Zachary Evans
- Elise Faubel-Ravely
- Andrew Fedus
- Nicholas Fontanini
- David Hadaway
- Keith Hill
- Daniel Mack
- Nicolas McCowin
- Nicholas McKay
- Davis Ortiz
- Junan Pang
- Ian Robinette
- Ryan Sanders
- Jonathan Schragal
- Sean Sexton
- Chun-Min Yu

Bachelor’s CSE
- Binaebi Akah
- Kevin Alderman
- Blas Asenjo
- Joseph Beard
- Matthew Bobulski
- Matthew Boston
- Jason Chang
- Brandon Childers
- Brad Condo
- Willima Cuhane
- Ryan Finneran
- Aaron Fleischer
- John Fontaine
- Gregory Forrest
- Robert Galehouse
- Mark Geise
- Raymond Gerard
- Marc Gold
- Tobias Gordon
- Kyle Hawk
- Thomas Henretty
- Yun Pyo Hong
- Adam Kunk
- Bryan Kunk
- Stephen Landers
- Shawn Lee
- Thomas Loffing
- Christopher Lohmeyer
- William Malinowski
- Carol McKe

PhD
- Nicholas Mitchell
- Dustin Perzanowski
- Tyler Rausch-Davis
- Christopher Reiner
- Michael Ryan
- Farhad Salehi
- Nathan Schey
- Adam Schultz
- Jonathan Solove
- Jared Speno
- Bo Sun
- Benjamin Trube
- Gabriel Wagner
- Sijia Wang
- David Weinberg

Master’s
- Muthu Baskaran
- Adriane Boyd
- Ai Chen
- Golam Kawsar
- Rahul Kumar
- Matthew Lang
- Domin Lee
- Sha Liu
- Karen Manukyan
- Ranjit Noronha
- Shansi Ren
- Jason Sawin
- Ambrish Tyagi
- Qian Zhu

CSE Receives ACM SIGSOFT Distinguished Paper Award

CSE PhD student Guoqing (Harry) Xu (left) and Professor Atanas Rountev received an ACM SIGSOFT Distinguished Paper Award at the 30th International Conference on Software Engineering held in Leipzig, Germany for their paper ‘Precise Memory Leak Detection for Java Software using Container Profiling’. SIGSOFT, ACM’s Special Interest Group on Software Engineering, is the premier professional society for software engineering research, and ICSE is one of its flagship conferences. The acceptance rate for this year’s ICSE was 15%.

Harry started with the department in 2005. His primary research interests are static and dynamic program analyses for compiler optimizations and software engineering tasks; more generally, he is interested in approaches to help programmers write and maintain reliable and reusable software. This summer, Harry interned with the Dynamic Optimization Group at the IBM TJ Watson Research Center. He received both MS and BS with distinction degrees in Computer Science from East China Normal University, Shanghai, China.

Dr. Rountev joined the department in 2002 and recently earned an NSF CAREER Award (2007). His research interests are in software engineering and programming languages, and specifically in static and dynamic program analysis, component-based software, parallel and distributed software, high-performance computing, software understanding and evolution, and software testing.

From left, newly minted CSE graduates include Ranjit Noronha PhD ’08, Rahul Kumar MS ’08, CSE Professor and the student’s advisor, DK Panda and Amitsh Mamidala PhD ’08. Ranjit will join a start-up company in Seattle, Rahul is joining Microsoft and Amitsh has started at IBM TJ Watson Research Center. We wish them great success in their careers ahead!
Faculty Grants, Awards & Publications

Google has presented David Lee with a Google Research Award to conduct basic research on formal analysis of security protocols in terms of modeling, verification and testing. A case study of this research is OUauth, an API authentication protocol that Google is going to standardize and push to market for commercial applications. According to Google, the Google Research Award is to maintain strong ties with academic institutions that are doing world-class research in areas such as information retrieval, artificial intelligence and systems. As part of their mission to develop the most advanced and usable methods for information access, they have developed the Google Research Awards program to provide funding support to researchers at academic institutions working on problems relevant to Google’s mission. David is also serving as the Senior Editor of the IEEE Journal of Selected Areas and serves as the Steering Committee Chair for IEEE International Conference on Network Protocols.

NSF awarded Gagan Agrawal a HECURA grant entitled A Language Independent Framework for Compiling Data-intensive Applications on Highly Parallel Systems. This project targets a language-independent compiler and runtime framework for enabling data-intensive applications to be scaled on a variety of modern and emerging highly parallel systems.

Congratulations to Atanas (Nasko) Rountev for his promotion to Associate Professor. He and Professor Sadayappan received an NSF award entitled An Effective Automatic Parallelization Framework for Multi-core Architectures.

P. Sadayappan received a DOE award entitled SFT-2: Scalable Fault Tolerance Runtime Technology for Petascale Computers. The project is in collaboration with Pacific Northwest and Oak Ridge National Laboratories, IBM and Quadrics.

The Air Force Research Lab awarded a grant to Jim Davis for a joint project studying how to exploit persistent, layered sensing architectures for behavior modeling in wide-area surveillance and monitoring scenarios. He has spent the past year on sabbatical at AFRL in Dayton.


The 2008 IEEE INFOCOM award for best paper was presented to Ness Shroff, CSE Eminent Scholar, Changhee Joo (left), CSE post-doctoral researcher and Xiaojun Lin, Purdue University, for their paper, Understanding the Capacity Region of the Greedy Maximal Scheduling Algorithm in Multi-hop Wireless Networks. IEEE INFOCOM is the premier conference in networking.

In addition, Ness Shroff and Prasun Sinha (left), along with Can Emre Koksal from the ECE department, received an NSF NeTS-NECO award entitled A New Resource Management Paradigm for Sensor Networks with Energy Replacement. Professor Sinha is serving as the Editor of the IEEE Transactions on Mobile Computing.

Bruce Weide, with Harvey Friedman, Math, received an NSF award entitled Continuing Progress Towards Verified Software to identify how verified software challenge can be solved and to form a better understanding of what the next generation of software engineers need to be taught to produce verified software.

DK Panda received an NSF HECURA award entitled Extending One-sided Communication in MPI Programming Model for Next-generation Ultra-scale HEC. He also received a DOE SBIR in collaboration with Ohio-based RNET Technologies, Inc. and CSE alum Gerald Sabin, PhD ’06. Professor Panda delivered the plenary talk at Cluster ’08 in Tsukuba, Japan on Designing Next Generation Clusters with InfiniBand and 10GE/iWARP: Opportunities and Challenges.
Tamal Dey has received an NSF Theoretical Foundations award, *Inferring geometry and topology for dynamic shapes*, to investigate how to maintain meshes and complexes for representing geometry and topology of shapes under motion. Professor Dey gave a colloquium talk at Pennsylvania State University on *Computing Tunnels and Handles for 3D Models*. In addition, *Computing Geometry-aware Handle and Tunnel Loops in 3D Models*, Tamal Dey, Kuiyu Li, Jian Sun and David Cohen-Steiner, will appear at SIGGRAPH 2008.

Leon Wang was awarded a research grant from Oticon entitled *Integrating Monaural CASA and Binaural Localization for Robust Speech Separation*. To the left, Professor Wang receives the Helmutz Award from the INNS President, Fredrick Ham.

In collaboration with Kitware and Mississippi State University, Raghu Machiraju has received a DOD STTR award entitled *A Framework for Analyzing Unsteady Large-Scale Computational Fluid Dynamics Simulation Data*.

Xiaodong Zhang, in collaboration with Zhao Zhang from Iowa State, received an NSF award entitled *Effective Resource Sharing and Coordination inside Multicore Processors for High Throughput Computing*. This research will help existing operating systems to effectively handle the new complexities in multi-core processors.

Jay Ramanathan and Rajiv Ramnath, co-directors of the CSE Department’s Collaborative for Enterprise Transformation and Innovation, have been awarded an NSF IUCRC grant of $250,000. Together with required industry sponsorship of $750,000 over a period of five years, this provides the potential of one million dollars to operate as a Research Site affiliated with Georgia Tech’s Center for Experimental Research in Computer Systems (CERCS). CERCS brings together computer science researchers and graduate students from Georgia Tech, OSU and a network of national institutions to address the challenges of design and management of complex systems, including their hardware, communications and system-level software and applications. The focus of the OSU team is research, new IT applications and requirements through industry sponsorships from both public and private organizations like the City of Columbus, IBM, Nationwide Insurance, Motorola, Ohio Health, OSU IT, OSU Medical Center, Ohio Supercomputer Center and others.

Hakan Ferhatosmanoglu and Yusu Wang were awarded an NSF BDI grant for their work in *Similarity-based Indexing of Protein Sequence and Structure Databases* to develop database indexing and similarity search technologies to manage, analyze and integrate protein sequence and structure databases. The project incorporates biochemical properties of molecules into feature extraction to discover functional sites of proteins and to return biologically relevant query results. The results benefit a wide range of application areas in protein modeling, drug design, and personalized medicine. The software is made available at http://bio.cse.ohio-state.edu.

NSF awarded Anish Arora and Rajiv Ramnath a national GENI award entitled *GENI-fying and Federating Autonomous Kanset Wireless Sensor Networks*. GENI seeks to make it possible to discover new virtual internets in the field, in other words, the next internet will not be developed in a lab and then fielded, it will be refined in the field itself. Edge networks, such as wireless sensor networks, will be of core importance to GENI.

Anish also received a grant from the Air Force Research Lab entitled *Decision Support for Persistent Layered Sensing*. This project seeks to design an alternative, comprehensive framework for achieving security by exploiting physical characteristics of the communication medium.

CSE Welcomes New Assistant Professor, Dr. Radu Teodorescu

Radu received his PhD in Computer Science from the University of Illinois at Urbana-Champaign. His research interests include computer architecture, nanoscale technology scaling, reliability, variability and power management and hardware support for software debugging. He developed solutions for efficiently enhancing the reliability of software and proposed techniques for ensuring the continued improvement in microprocessor performance and power consumption in the face of increasing technological challenges.

Radu has co-authored over 15 research papers. He received the W. J. Popplebaum award in 2008 for his research in computer architecture and has also held an Intel Foundation Fellowship during his graduate studies.
Richard Baum, PhD ’75, is Vice President, Server Technology for the IBM Server Group where he leads strategy, architecture and design efforts for future server systems. He was named an IBM Fellow in 1991.

James Cates, MS ’71, is currently CIO of Altera, Corp., the world’s pioneer of system-on-a-programmable-chip (SOPC) solutions, and is a keen advocate of converging IT to business goals.

Wayne Clark, BS ’75, is currently an architect within the CTO office of the Network Management Technology Group at Cisco Systems. In his current role at Cisco, he is focusing on the next generation network management infrastructure, autonomic computing and intelligent networking.

David Cohen, PhD ’77, has over 30 years of experience in software development and systems engineering. He is the co-founder and president of sente.com, Inc. sente deployed a requirements validation toolkit to significantly improve return on software investments (ROI). He has authored many publications in the area of database security, distributed database management for new network services, software reliability, software development and operations center productivity.

Bruce Flinchbaugh, PhD ’80, is a TI Fellow and manager of Video & Image Processing R&D in the DSP R&D Center of Texas Instruments. Bruce and his team develop technology for TI processors in camera, cell phone, HDTV, video surveillance and automotive applications.

Shivnandan (Shiv) Kaushik, MS ’91, PhD ’95, excels as the Director of the Systems Software and a member of the Solutions Group where he directs work on the definition and optimization of platform and firmware interfaces to operating systems and core virtualization software. Recently named an Intel Fellow, Kaushik holds 12 patents with 29 patents pending in the areas of system software and platform architecture. He has received three Intel Achievement Awards.

Doug Roble, MS’87, PhD ’93 is the Creative Director of Software at Digital Domain. He has received two technical awards from the Academy of Motion Pictures and Sciences. In service to the greater graphics technology community, he is Chief Editor of the Journal of Graphics Tools and is on several panels and committees of SIGGRAPH, the most prestigious computer graphics conference, including its Advisory Board.

Feng Zhao, PhD ’92, former CSE faculty member (1992-2000), is a Principal Researcher at Microsoft Research and manages the Networked Embedded Computing Group. His current research focuses on the programming and information processing aspects of networked embedded systems such as sensor networks.
The Computer Science and Engineering Department held their 12th Annual Awards Banquet on May 14, 2008 at the OSU Faculty Club. This is an important departmental event to honor our students’ academic achievements and the successes of our faculty and staff. The department wishes to thank those alumni and industry donors who helped make this event possible – either by contributing to the undergraduate scholarship awards or by sponsoring a table. Wayne Clark ’73, Raytheon Company, Conleth PhD ’90 and Christina “Curby” O’Connell, The Leggett Family including Ester ’45, Robert ’72 and Susan Leggett ’72 and the ACM Central Ohio Chapter all contributed financially to make this event a success.

### Alumni Undergraduate Scholarship Fund

As a public institution, the OSU CSE Department must find ways to ensure that an education at a top computer science program remains accessible to our outstanding undergraduate students, regardless of their financial situation. Therefore, the department is formally establishing an Alumni Undergraduate Scholarship Fund as a way for our alumni to make an impact on CSE and CIS undergrads, to contribute to the department’s continued emphasis on a robust undergraduate program and as a means for alumni to meet their philanthropic objectives. We need your help in making this important endeavor a success. Your support will be published in our biannual newsletter, in a letter to each of the undergraduate awardees and recognized at the CSE Annual Awards Banquet.

If you are interested in donating a named endowment, helping to launch The Alumni Undergraduate Scholarship Fund or donating toward the endowment, please contact Chair Xiaodong Zhang at zhang@cse.ohio-state.edu or 614-292-5841. For more information on giving to CSE, please visit the department’s development website at www.cse.ohio-state.edu/giving.

Thanks to the university’s Corporate Matching Gifts program, you can ensure that your contribution will go as far as possible. To see if your employer participates, please visit www.matchinggifts.com/osu/.
Alumni - show your Buckeye Pride! Send us your Buckeye Pride photographs to alumni@cse.ohio-state.edu! We'll post them in the next Buckeye Blog. We'll also give a prize for the "Most Spirited Photo."

Congratulations to the winners of our Remember When? contest. Arun Welch and Dean Allemang both had the most correct responses. The answers are below. This photo of LAIR, Laboratory for Intelligence Research, was taken in 1989.

Front row, left to right: Susan Josephson, Cindy Sergeant, Todd Johnson, Kathy Johnson and Wendy Cook
Row 2: Diane Smetters, Elizabeth Fannin, Olivier Fischer, Gayle Northrup and Anne Keuneke
Row 3: Dean Allemang, John Josephson, Beverly Mullet and Mike Tanner
Row 4: Richard Fox, Arun Welch, Dave Herman, Ashok Goel, William Punch, III, Tom Bylander and B. Chandrasekaran
Row 5: Jordan Pollack, Mike Weintraub, Jack Smith, Matt De-Jongh and Dale Moberg
Many Thanks to Our Alumni and Friends!

We appreciate the following alumni/ae, faculty, staff, and friends who directed their Ohio State gifts to the Computer Science and Engineering Department. Listed below are our benefactors over the past 6 months. These donations are making a difference. Private support can help us to attract outstanding students and promising young faculty. We have used gift dollars to improve research and teaching labs, as well.

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For more information about various means of giving, contact:  
Xiaodong Zhang, Chair, at (614) 292-5841 or zhang@cse.ohio-state.edu

CSE Alumni Fund Donation Form

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CSE Alum...What’s new with you?

We’d like to hear from you and so would your classmates! Please submit information about your new employment, retirement, marriage, honors earned, civic and organizational office, and/or family addition by completing the following and returning to the address below.

Name:__________________________________________________________

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What have you been doing since you left Ohio State? (attach additional paper if necessary)

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May we include your news in the CSE Newsletter?   Yes    No

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Thank you for taking time to complete this form...we look forward to hearing from you!