ADVANCING TECHNOLOGY
TO ADVANCE HUMAN SOCIETY
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**Mission Statement**

- The Department of Computer Science and Engineering will impact the information age as a national leader in computing research and education.
- We will prepare computing graduates who are highly sought after, productive, and well-respected for their work, and who contribute to new developments in computing.
- We will give students in other disciplines an appropriate foundation in computing for their education, research, and experiences after graduation, consistent with computing’s increasingly fundamental role in society.
- In our areas of research focus, we will contribute key ideas to the development of the computing basis of the information age, advancing the state of the art for the benefit of society, the State of Ohio, and The Ohio State University.
- We will work with key academic partners within and outside of OSU, and with key industrial partners, in pursuit of our research and educational endeavors.

Dear Colleagues, Alumni, Friends, and Parents,

Welcome to the 2010-2011 Department of Computer Science and Engineering annual report.

You will read many stories of how CSE faculty, students and alumni have accomplished exceptional things and impacted the computer fields and Society as scholars, inventors, entrepreneurs, and academic and industrial leaders. A key solution to address the economic crisis of the country is to make strong efforts to maintain the world leadership of the U.S. in science and technology, in higher education, in medical research and practice, in entrepreneurships, and in the entertainment businesses. Information technology is the foundation of all these areas. Our faculty, students and alumni are working hard in various I.T. fields, all making positive impact on all areas of the society.

Here are several selected accomplishments presented in this annual report.

1. The CSE faculty and students set a record of receiving eight best paper awards in the past academic year in different computer science fields. (page 4)
2. Our research expenditure continues to increase, which is 50% higher than that of 5 years ago. (page 15)
3. We welcome four new assistant professors to join the department: Brian Kulis (machine learning), Arnab Nandi (databases), Kannan Srinivasan (networking), and Huamin Wang (graphics). (page 57)
4. Several alumni have been recognized with various prestigious awards. (page 1)
5. I would like to give my congratulations to Mikhail Belkin and Yusu Wang for their promotions to the rank of Associate Professor with tenure. (page 7)

I hope you enjoy reading this report, and will communicate with you again with our new accomplishments and progress.

Sincerely yours,

Xiaodong Zhang
Department Chairperson
Robert Critchfield Chair Professor
ALUM SELECTED FOR BRILLIANCE

The natural consensus in CSE is that all department graduates are brilliant. Now Popular Science magazine has declared Santosh Kumar (Ph.D. ’06) as one of its Brilliant 10, America’s Young Geniuses. During a six-month process, Popular Science approaches hundreds of scientists, university department heads and journal editors asking for the names of those researchers who are working beyond the norm. They define brilliant as not just being smart. “Brilliance is marked by insight, creativity and tenacity. It’s the confidence to eschew established wisdom in order to develop your own. It’s the foolishness needed to set out for the edge of understanding and sail right past it.”

Dr. Santosh Kumar is researching sensors with life improving abilities. Dr. Kumar does not want to do work that will only affect Society on the macro level but also the micro level. His AutoWitness program, working at a macro level, may give police a tool to capture thieves and reclaim property faster and more efficiently. Small sensors are attached to large, valuable items that emit a data pulse if they are removed from home. Police departments in Memphis and Jackson, Tennessee, are testing the units. At a more personal or micro degree, AutoSense is a system for humans to wear that monitors the activities and basic life signs. It notifies a doctor or therapist of significant changes in stress levels or, with addicts, the behavior is becoming self-destructive.

Dr. Kumar expressed his pleasure about Popular Science’s Brilliant 10 designation saying, “It is very kind of Popular Science to recognize the potential societal impact of our research on the AutoWitness and AutoSense systems. The mission is yet to be accomplished though. The real satisfaction will come when these projects are adopted widely and make a difference to real people for AutoWitness when it helps reduce burglary incidents in Memphis and elsewhere, and for AutoSense when it helps individuals reduce their daily stress level and help them abstain from addictive behavior.

As for the recognition, while I am named in the article, this selection recognizes the hard work of my students and postdocs and generous contributions of my esteemed collaborators that together has translated the vision of AutoWitness and AutoSense systems into reality that it is today.”

Santosh Kumar is an Assistant Professor of Computer Science at the University of Memphis, where he received an Early Career Research Award from the College of Arts and Sciences in 2008. He received his Ph.D. in Computer Science and Engineering from the Ohio State University in 2006, where his dissertation work won the SBC Presidential Fellowship award. His adviser was Dr. Ten-Hwang Lai.

ALUM NAMED IN 100 MOST CREATIVE LIST

For several years Fast Company magazine has named the 100 Most Creative People in Business. In 2011, Sitaram Asur (Ph.D., ’09) made the list at #26. Past luminaries receiving this recognition include Ray Kurzweil, James Cameron, Oprah Winfrey, Jay-Z and many others.

Fast Company recognized Dr. Asur for the work he is currently doing with social media at HP Labs. He is deriving value information from streams on Twitter and Facebook; i.e., what movies will be box-office successes on any given weekend. It comes from an algorithm he developed with Bernardo Huberman. He enjoys working with the new social media. He told the magazine, “I don’t just sit in a lab closed away from the world. I like to be aware of what’s happening around me.”

As for winning the list placement, Sitaram says, “It feels absolutely wonderful. It is a great honor to be on this list with distinguished people from all over the world, many of whom I am a fan of.”

Currently a researcher in the Social Computing Lab at HP Labs, he started there as a Postdoc as part of the
2009 NSF Computation Innovations Fellowship. At Ohio State, he was part of the Data Mining Research Lab, advised by Dr. Srinivasan Parthasarathy.

**Alum Answers President's Call**
The White House appointed Matt Desch (BS in CSE, '80) to the President's National Security Telecommunications Advisory Committee (NSTAC).

Mr. Desch is the CEO of Iridium Communications Inc., an international satellite communications company offering voice and data communications coverage. This position is the most recent in a career that has always been in ascendency. Before joining Iridium, Desch served as CEO of Telcordia Technologies, Inc., a supplier of software and services for the telecommunications industry. From 1987 to 2000, Desch worked for Nortel Networks, where among other roles he served as president of global service providers and was in charge of Nortel’s business in Europe and Asia.

This career began in Columbus doing software development with AT&T Bell Laboratories, which became Lucent Technologies, now Alcatel-Lucent. In addition to his B.S. in Computer Science from The Ohio State University, he earned an M.B.A. from the University of Chicago.

Matt is excited about his new role, commenting, “The NSTAC committee was created by Ronald Reagan in response to the threat of nuclear war on the nation’s telecom infrastructure. It’s served four Presidents since then, and while nuclear war might be possible, the threats to our infrastructure are even more diverse today - including cyber attacks, natural disasters, and terrorism. I’m pleased to be working with this committee at this time - it’s also great recognition of the growing stature of Iridium and the importance of satellite communications as part of the overall telecommunications picture.”

**Two CSE Alumni Received NSF Career Awards**

CSE graduates Susan Hohenberger, BS, ’00, and Hongwei Zhang, Ph.D., ’06 have received Career Awards from the National Science Foundation. The NSF CAREER grant is a highly competitive and prestigious, Ph.D., ’06 have received Career Awards, Susan Hohenberger and Hongwei Zhang. In addition to his B.S. in Computer Science from The Ohio State University, he earned an M.B.A. from the University of Chicago.

Susan Hohenberger is an assistant professor of Computer Science at Johns Hopkins University. Her Career award for “Practical Cryptography for the Cloud” will support the development of cryptographic schemes for the cloud environment, including methods to protect the privacy and integrity of data for the growing number of consumers who utilize cloud services. Dr. Hohenberger received her Ph.D. and Masters degrees from Massachusetts Institute of Technology (MIT). As a undergraduate in CSE, Susan worked with Dr. Bruce Weide.

Wayne State University serves as Hongwei Zhang’s academic home where he is an assistant professor in the Department of Computer Science. His award for “Taming Uncertainties in Reliable, Real-Time Messaging for Wireless Networked Sensing and Contro” will support his two research projects: (1) to address the challenges of large interference range as well as anisotropic, and asymmetric wireless communication, and (2) to develop a lightweight approach to computing probabilistic path delays followed by a multi-timescale adaptation framework for real-time messaging. As a Ph.D. student, Dr. Zhang was mentored by Professor Anish Arora. Hongwei received his Masters and undergraduate B.S. degrees from Chongqing University, China.

**Two CSE Alums Elected to IEEE Fellows**

Guohong Cao, Ph.D. ’99 and Tamer Ozsu Ph.D. ’83 join the elite group of CSE faculty and alums who have achieved the rank of IEEE Fellow. The grade of Fellow recognizes unusual distinction in the profession and is conferred by the Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest.

Guohong Cao, a professor of Computer Science and Engineering at the Pennsylvania State University, became IEEE Fellow for his contributions to algorithm and protocol design for mobile ad hoc and sensor networks. Guohong received his Ph.D. in Computer and Information Science (CSE’s former name) in 1999 from the Ohio State University. He is has been on faculty at Penn State since then.

Tamer Ozsu, a professor of Computer Science and University Research Chair at the University of Waterloo, became IEEE Fellow for his contributions to distributed data management and multimedia database systems. Tamer received his Ph.D. in Computer Science and Engineering (called Computer Information Sciences then) in 1983 from the Ohio State University. Tamer was the Director of the Cheriton School of Computer Science from January 2007 to June 2010. He is also a Fellow of ACM. He is the recipient of 2006 ACM SIGMOD Contributions Award, and the 2008 Distinguished Engineering Alumnus Award from the Ohio State University.
Faculty Member Selected for Education Symposium
Dr. Paul Sivitlli was invited to participate in the 2010 Frontiers of Education Symposium. This symposium, only the second to be held, is offered by the National Academy of Engineering and is designed to provide young educators with "opportunities to share ideas, learn from research and best practices in education and return with a charter to bring about improvement in their home institution."

Dr. Sivitlli presented a collection of learning activities designed around kinesthetic learning. As he explains, "At Ohio State, we’ve developed a series of kinesthetic learning activities to reinforce assertional thinking about distributed algorithms. These activities have been effective in graduate courses, undergraduate courses, and even in outreach events with middle school students. The activities have been designed over the course of many years, in collaboration with past graduate students including Scott Pike, Hillary Pike, Nigamamh Sridhar, Murat Demirbas, and Matt Lang. ... The NAES Frontiers symposium was a unique opportunity to share these innovations with the larger engineering education community. In speaking with various thought-leaders in engineering education, I learned how this kinesthetic style might be applied in engineering disciplines outside of computer science."

Two IBM Faculty Awards Received
Dr. Hakan Ferhatosmanoglu and Dr. Srinivasan Parthasarathy received the 2010 IBM Faculty Awards. To be eligible for this award, an IBM staff member must nominate the faculty member. Generally, IBM Faculty Awards are intended to recognize outstanding achievement and encourage exploratory projects of interest to IBM. Equally important, because it is a highly competitive worldwide program, IBM means for them to:

- Foster collaboration between researchers at leading universities worldwide and those in IBM research, development and services organizations; and
- Promote courseware and curriculum innovation to stimulate growth in disciplines and geographies that are strategic to IBM.

Associate Professor Hakan Ferhatosmanoglu received the award in recognition of his recent work in data management systems. His work is primarily done through the Database Research Group. Studying mostly environmental and biomedical sciences, the lab investigates a broad spectrum of database and management systems. His work is primarily done through the Database Research Group. Studying mostly environmental and biomedical sciences, the lab investigates a broad spectrum of database and management systems.

IBM selected Professor Srinivasan Parthasarathy as the reward for his work in high performance data mining. Within the area of data mining, the Data Mining Research Laboratory investigates; Structure Mining, the development of novel algorithms for frequent pattern mining particularly in the context of mining structured data (e.g., graphs, 3D structures, and XML data); Anomaly Detection, the design and development of novel anomaly detection algorithms; and Data Preprocessing, the development of novel data preprocessing strategies that address issues such as how to effectively use sampling in the context of data mining, how to handle missing data, and how to discretize continuous attributes in an effective manner.

Octet of Best Papers at Top Conferences
2010 IEEE Signal Processing Society
Dr. Eric Foster-Lussier (left in pic) and Jeremy Morris (right) have been honored with a 2010 IEEE Signal Processing Society Best Paper Award for their 2008 paper, "Conditional Random Fields for Integrating Local Discriminative Classifiers," published in the IEEE Transactions on Audio, Speech, and Language Processing. In this work, Morris and Foster-Lussier explore the novel use of the Conditional Random Field (CRF) paradigm in an Automatic Speech Recognition (ASR) system. CRFs are a statistical framework that allows for combination of correlated sources of evidence in a time sequence; the article examines how this framework can be used to incorporate short-term estimates of speech sounds in determining what was said in a speech utterance. These estimates can express probabilities over sound classes (e.g., is this snippet of sound a "y" or "ah"?) or phonological classes (e.g., is this snippet a vowel? a nasal consonant?). They compare phonetic recognition using CRFs to a standard Hidden Markov Model (HMM) ASR system, and show comparable or better performance in their system while minimizing the number of free parameters in the system.

Jeremy Morris is a Senior Lecturer in the Department of Computer Science and Engineering at the Ohio State University. He received his Ph.D. from the department in June 2010; his thesis examined several aspects of Conditional Random Fields for ASR systems. He also received the B.S. degree from Bowling Green State University in 1996.

Eric Foster-Lussier is an Associate Professor of Computer Science and Engineering, with a courtesy appointment in Linguistics, at The Ohio State University. After receiving a B.A.S. (Computer and Cognitive Science) and B.A. (Linguistics) from the University of Pennsylvania in 1993, he received his Ph.D. in 1999 from the University of California, Berkeley, performing his dissertation research at the International Computer Science Institute under the tutelage of Prof. Nelson Morgan. He has also been a Member of Technical Staff at Bell Labs, Lucent Technologies, and a Visiting Researcher at Columbia University. In 2006, Prof. Foster-Lussier was awarded an NSF CAREER award, and in 2010 he was presented with a Lumley Research Award by the Ohio State College of Engineering. He has published over 90 papers in speech and language processing, is a member of the Association for Computational Linguistics, the International Speech Communication Association, and a senior member of the IEEE.

17th International Symposium on Formal Method
Ph.D. Student Derek Bronish was one of several authors on the paper, "The 1st Verified Software Competition: Experience Report" which earned the Best Paper nod at the 17th International Symposium on Formal Methods in Limerick, Ireland, June 20-24, 2011. This is the fifth best paper to be earned by CSE faculty and students in the 2010-2011 academic year.

This paper was a large group effort; 23 authors, including many distinguished scientists from both sides of the Atlantic. It summarized the experiences of a number of teams in solving a set of challenge problems for software verification at the 1st Verified Software Competition, held in August 2010 in Edinburgh at the 2nd International Conference on Verified Software: Theories, Tools and Experiments (VSTTE).

This was an exceptional opportunity for a graduate student and Derek was appreciative. "I’m honored to have had the opportunity to co-author a paper with so many distinguished researchers. I’m proud of our work on software verification exemplified in this paper, and I’m thankful to my advisor Dr. Weide and all of my colleagues in RSRG for the innumerable ways they’ve guided me as a graduate student."

6th International Symposium on Visual Computing
Karthik Sankaranarayanan (CSE Ph.D. Candidate) and Jim Davis (Associate Professor) received a Best Paper Award at the 6th International Symposium on Visual Computing (ISVC) 2010, for their paper, "Attention-based Target Localization using Multiple Instance Learning." It explores the use of Multiple Instance Learning (MIL) to perform target localization from image sequences. The basis of this approach uses a softmax logistic regression MIL algorithm that automatically learns the model of a target that persists across input frames. This approach can allow commercial grade surveillance cameras to automatically localize targets in various scenes. The award was sponsored by Mitsubishi Electric Research Labs (MERL).
31st International Conference on Distributed Computing Systems

The Best Paper Award at the 31st International Conference on Distributed Computing Systems (ICDCS 11) went to Rohan Lee (postdoctoral fellow, CSE at Ohio State), Tian Luo (CSE Ph.D. student), Xin Hua (CSE Ph.D. student at Ohio State), Xiaodong Zhang (OSU-CSE Chairman), Fusheng Wang (research scientist at Emory University), and Yongqiang He (software engineer at Facebook) to their paper entitled "Ysmart: Yet another SQL-to-MapReduce Translator."

MapReduce has become a standard software framework for big data analytics in distributed systems, where system execution of SQL queries is a critical data processing task. An SQL-to-MapReduce translator automatically converts database queries to MapReduce jobs for their execution in distributed systems. Complex SQL query jobs generated by existing translators, such as the one in a data warehouse Hive developed in Facebook, and in MapReduce programming environment of Pig developed by Yahoo!, are executed at unacceptable slow speed. The authors of the paper demonstrate that the poor performance of these translators is caused by the framework of one-operation-to-one-job mapping, which does not consider correlations of input data and input keys among the queries. The authors design and implement a correlation-aware SQL-to-MapReduce translator, called Ysmart. The translator achieves superior performance compared with the existing translators in Hive and Pig. The translator has been patched in Hive for adoption, and an independent version of Ysmart will be released for public usage.

20th International ACM Symposium on High-Performance Parallel and Distributed Computing

A team of researchers under the mentorship of Dr. Gagan Agrawal received the best paper award at the 20th International ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC '11). This award is for the paper titled: “Supporting GPU Sharing in Cloud Environments with a Transparent Runtime Consolidation Framework”, authored by Vignesh Ravi, Michela Becchi, Gagan Agrawal, and Srimat Chakradhar. Vignesh Ravi is a CSE graduate student (working under Agrawal), whereas Michela Becchi and Srimat Chakradhar are from University of Missouri and NEC research, respectively.

This paper represents more of the ongoing innovations related to GPU computing from Agrawal's group. GPUs or Graphics Processing Units were originally designed for games and other graphics applications, but in the last 3-4 years, have been identified to be suitable for general purpose computations, essentially providing "supercomputing" at a very cheap price. This specific work from Agrawal's group takes GPUs even a step further, as each GPU is now shown capable of scaling multiple general purpose computations at the same time. A software framework and mechanisms have been developed, which allow programs from independent users to transparently share a single GPU. The net result is significant advantage in cost-effectiveness and throughput of the device.

25th ACM International Conference on Supercomputing

The 25th ACM International Conference on Supercomputing (ICS 2011) presented the Best Paper Award to Feng Chen (Ph.D., Intel Labs), David A. Koufaty (Intel Labs), and Xiaodong Zhang (OSU-CSE Chairman) for their paper entitled: "Hystor: Making the Best Use of the Solid State Drives in High Performance Storage System."

In this paper, the authors present a unique and effective storage-based solution to maximize the SSD performance in a scalable and large storage system at low cost. Most existing solutions including commercial systems treat SSDs as buffer caches, which is easy to implement, but often not very cost- and space efficient in practice. The Hystor system presented in the paper has been implemented and tested as a prototype for a next generation storage solution at Intel Labs.

IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems

Dr. Christopher Stewart won the Best Paper Award at the IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS 2010). The paper entitled EntomoModel: Understanding and Avoiding Performance Anomaly Manifestations presents a rigorous study of real performance bugs taken from MySQL, JBoss, and other popular software, finding interesting patterns. Prof. Stewart collaborated with colleagues Kai Shen (University of Rochester), Arun Iyengar (IBM T.J. Watson), and Jian Yin (Pacific Northwest National Laboratory). The acceptance rate for extended papers at MASCOTS 2010 was 16%.

Chris Stewart joined CSE in October 2009 as a member of the Systems area. His research interests cover systems support for sustainable datacenters, i.e., datacenters that can operate profitably and have a zero-carbon footprint, empirical studies about the performance, performance dependability, and energy consumption of emerging networked applications, and scalable, self-sustaining programs that encourage membership of underrepresented groups (broadly construed) to consider research careers. Stewart received his PhD from the University of Rochester in 2008 where his adviser was Kai Shen. He earned his undergraduate degrees at Morehouse College in Atlanta, GA.

17th International IEEE Conference on High Performance Computing

Students Xin Hua, Vignesh Ravi, and Wenjing Ma with their advisor, Gagan Agrawal, garnered a best paper award at the 17th International IEEE Conference on High Performance Computing (HiPC 2010). The paper, "Approaches for Parallelizing Reductions on Modern GPUs," is part of ongoing work in Agrawal's group on understanding systematic mechanisms for porting applications with specific types of communication patterns on modern general-purpose computing on graphics processing units (GPUs). This particular work considers reduction computations arising from the data mining domain, and develops and evaluates several methods for parallelizing them on modern GPUs. Another piece of work from the same authors, which has focused on irregular reductions, was a finalist for the best paper award at International Conference on Supercomputing (ICS), May 2011.

A second year Ph.D. student, Xin Hua received a bachelor and a masters degree from Beijing Institute of Technology. His research interest is in High Performance Computing. Currently he is focusing on GPU. Vignesh Ravi, 4th year Ph.D. candidate, received his Bachelors degree in Computer Science from P.S.G College of Technology, Coimbatore, India. His research interests include Runtime Systems for Heterogeneous Clusters and GPU Virtualization in the cloud.

A 6th year candidate, Wenjing Ma focuses her research on GPGPU, high performance computing, parallel computing and compiling. She earned her Bachelor's Degree in Computer Science and Technology from Nankai University, Tianjin, China.

Professor Gagan Agrawal leads the Data-intensive and High-performance Computing Lab. His recent research ventures have been into the areas of data mining algorithms, parallel data mining and OLAP algorithms, compiling scientific data intensive computations, compilation and application development for multithreaded architectures, and program analysis for object-oriented software. Dr. Agrawal received his Masters and Ph.D. degrees University of Maryland, College Park (1994 and 1996) and his undergraduate B.Tech. from the Indian Institute of Technology, Kanpur, India in 1991.

Two New Associate Professors in October 2011

Effective October 2011, Mikhail “Misha” Belkin and Yusu Wang will become Associate Professors.

Dr. Belkin is a member of the Artificial Intelligence group specializing in designing and analyzing practical
algorithms for machine learning based on non-linear structure of high dimensional data, in particular manifold and spectral methods.

The Graphics Area is where Yusu Wang finds her home. Her research focuses on computational geometry and topology, shape analysis, geometric computing, and computational biology.

Khoury Wins TechTomorrow Scholarship

TechColumbus chose Marc Khoury, CSE junior, to receive their TechTomorrow scholarship.

Marc Khoury, originally from Strongsville, Ohio, is a very active undergraduate. He excels in the classroom. His research is in computational geometry, particularly in Isosurfaces. Extra-curricularly, he works as a math tutor and has served on two committees: last year he was the student representative on CSE’s semester task force, which designed the semester curriculum for the semester switch; and this year, undergraduate representative on the engineering undergraduate honors committee, which deals with the honors program and undergraduate research. He is also a member of the Association of Computing Machinery (ACM) programming contest team.

He began researching Isosurfaces with Rafe Wenger when he was a new freshman. This investigation delves into the representation of the boundaries of objects in three dimensional volumetric data sets such as the data sets produced by MRI or CT scanners. Marc co-authored a paper, “On the Fractal Dimension of Isosurfaces” with Dr. Wenger, which has just been presented at the 2010 IEEE Visualization Conference. The paper analyzes the complexity of isosurfaces and its relationship to noise in the data. The IEEE Visualization Conference is the leading conference in computer visualization and accepted only 25% of the 185 papers submitted.

Scholarships

Central Ohio Chapter of Association of Computing Machinery (ACM)
Ben Gilbert
Crowe Horwath Inc.
Christopher Dean
Ernest William Leggett, Jr. Scholarship
Andrew Balderas
Chirantan Ekbote
Justin Harrison
The Leggett Family Award
Zachary Boerger
Jacqueline Telljohann
The O’Connell Family Award
Stephen Glancy
Christopher Mayer
Adam Zink
Raytheon Corporation
Natalie O’Connel
Andrew Thayer
Department Founders Scholarship
Marc Khoury
CSE Undergraduate Scholarships
Alexander Bunch
Dillon Courts
Michael Diekema
Dwian Rahamim
Daniel Saunders

For the past 15 years, CSE has celebrated the achievements of its members with an annual banquet. This year was no exception. More than 160 people attended to applaud the recipients who earned over $17,000 in scholarships, as well as the staff and faculty recognitions.

Faculty & Staff Awards

The Department of Computer Science & Engineering
Undergraduate Research Award
Marc Khoury
Eleanor Quinlan Memorial Awards
Annatala Wolf
B. Chandrasekaran & Sandra Mamrak Graduate Fellowship
Venu Sataluri
Mike Liu Graduate Fellowship Award
Teng-Yok Lee
Outstanding Service Award
Catherine Collins
Bruce Weide
Outstanding Teaching Award
J. Eric Fosler-Lussier
Paul Svilotti

Guests of the 2011 Awards Banquet:
Benjamin Gilbert; Clint Foulk; Michael Compton; Christopher Mayer; Al Stutz; Jiedan Zhu; Yan Zhang He.

Awards were presented. Above, Lorraine Cherry of Raytheon presents a certificate of achievement to Andrew Thayer.
The CSE Industrial Advisory Board met at OSU on May 27th, 2011. Chairperson Xiaodong Zhang welcomed new member to the board, Ray Harishankar MS ’90, IBM Fellow, Vice President of Technology and Innovation, Global Solutions and Asset Management, and Robert A. Eades, PhD, Lead for High Performance Computing, IBM Americas East Sector Program Manager, Blue Waters – Sustained Petascale Computing.

This year’s meeting focused on the state of the department, improving undergraduate education and increasing university-industry collaboration. In addition, the group met with a group of current undergraduate and graduate students to answer questions and give career and research related advice.

Professor Zhang charged the group to develop relationships with donors for increased research funding and expansion as well as scholarship funds and student internship and job opportunities. In addition, they will communicate with the department regarding changes and new trends within the computing field and suggest adjustments in strategic planning to meet these shifts. The department thanks the board members for their diligent service and looks forward to fruitful collaboration in the future.

Members include:

James Cates (MS ’71, OSU-CSE), President, LOBI Group, LLC; Wayne Clark (BS ’75, OSU-CSE), Associate Research Director, Institute for Next Generation IT Systems (ITng); David Cohen (PhD ’77, OSU-CSE), co-founder and president of sente.com, Inc.; Matt Desch (BS ’80, OSU-CSE), is Chairman and CEO of Iridium Satellite LLC; Robert Eades (a parent representative of CSE students), Lead for High Performance Computing, IBM Americas East Sector Program Manager, Blue Waters – Sustained Petascale Computing; Bruce Flinchbaugh (PhD ’80, OSU-CSE ), TI Fellow and manager of Video & Image Processing R&D in the DSP R&D Center of Texas Instruments; Ray Harishankar (MS ’90, OSU-CSE), IEEE, Fellow, Vice President of Technology and Innovation, Global Solutions and Asset Management; Julie Hartigan (MS ’89, PhD ’94, OSU-CSE) Chief Technology Officer of Federal Programs, Expert Systems; Shivnandan (Shiv) Kaushik (MS ’91, PhD ’95, OSU-CSE), Director of the Systems Software and a member of the Solutions Group, Intel; Jai Menon (MS, ’78; PhD. ’81, OSU-CSE) IEEE Fellow, Vice-President for Technical Strategy, IBM; Doug Roble (MS ’87, PhD ’93, OSU-CSE), Creative Director of Software, Digital Domain; and Feng Zhao (former CSE faculty member 1992-2000), Principal Researcher, Microsoft Research.

In attendance at this years meeting, from left, Mike Fortin, Wayne Clark, Bruce Flinchbaugh, Julie Hartigan, Jai Menon, David Cohen, Ray Harishankar, Rob Eades and Xiaodong Zhang.
**General Purposing Graphical Processing Units**

The main focus of Gagan Agrawal’s research has been improving programmer productivity and application throughput on parallel and distributed computing environments. Throughout his career, he has considered a number of different platforms, like the earlier distributed memory supercomputers (IBM SP-2 or Intel Paragon), clusters, grid and cloud environments, and multi-core machines.

Much of the recent work from Agrawal’s group has targeted the use of Graphical Processing Units (GPUs) for general purpose applications. Though GPUs, as the name suggests, were designed for accelerating graphics operations, recent trends have made them attractive for general purpose applications as well. This is because of their very favorable price to performance ratio. Yet another factor is the power to performance ratio of these devices, this has lately become a crucial factor in building more and more powerful supercomputers.

Agrawal’s work on GPUs continues to be aligned with the overall focus he has maintained throughout his career, which is improving programmer productivity and application throughput. In terms of the former, his research group has taken a ‘communication pattern’ driven approach, i.e. showing how one can automate the generation of efficient code by considering different application patterns. So far, their work has considered three different patterns, which are the generalized reductions, irregular computations, and stencil computations.

Generalized reductions arise in a variety of scientific and data-intensive applications. Prior to the availability of support for locking on GPUs, these applications could only be parallelized using full replication, i.e., by creating a copy of the reduction object for each thread. Agrawal’s group introduced a novel hybrid scheme for parallelization of these applications. In this scheme, a group of threads use atomic operations to update one copy of the reduction object. Thus, this scheme chooses the tradeoff between the overheads of locking and replications. Using several applications, it has been demonstrated that the hybrid approach introduced clearly outperforms other approaches in several cases. A paper based on this work was recognized as the best paper at HiPC 2010.

A follow-up study considered irregular applications arising from unstructured grids.

There are at least two significant challenges associated with porting this class of applications on modern GPUs. The first is related to correct and efficient parallelization while using a large number of threads.

The second challenge is effective use of shared memory on GPUs. Since data accesses cannot be determined statically, runtime partitioning methods are needed for effectively using the shared memory. Agrawal’s group has proposed a novel execution methodology that can address the above two challenges. They have also developed optimized runtime modules to support this execution methodology. A paper based on this work was one of three finalists for the best paper award at ICS 2011.

Recent work on improving reliability of GPU programs has been in collaboration with Dr. Feng Qin. Like any multithreaded environment, data races on GPUs can severely affect the program reliability. Thus, tool support for detecting race conditions can significantly benefit GPU application developers. Qin and Agrawal, working with their students, have proposed GRACE (Gpu RACE detection), a new mechanism for detecting races in GPU programs that combines static analysis with a carefully designed dynamic checker for logging and analyzing information at runtime. Their design utilizes GPUs memory hierarchy to log runtime data accesses efficiently. They also reduce the runtime overhead by using static analysis to reduce the number of statements that need to be instrumented.

Another direction has been improving application throughput. This is particularly driven by the observation that GPU instances are now being offered by cloud providers. Agrawal’s group and collaborators have developed framework to enable applications executing within virtual machines to
His current research in biological image analysis focuses on providing computational support for various
areas of interest including the study of medical images and the analysis of biological tissues. His research spans several areas of expertise, such as signal processing, imaging, and computational biology. Dr. Machiraju has contributed to numerous projects related to medical imaging and computational fluid dynamics. His work on fluid flow, particularly in the context of complex geometries, has been instrumental in advancing the field of computational fluid dynamics.

Changes in Focus

The early research of Dr. Raghu Machiraju focused on the analysis of spatio-temporal data from the physical sciences, especially those that are computationally intensive. His work on problems of feature detection, especially on the vexing problem of detecting vortices in complex flow data, demonstrates his early interest in developing robust algorithms for analyzing complex data. This work was foundational in the development of techniques for the analysis of medical images, particularly those related to the study of fluid flow in biological systems.

Later, Dr. Machiraju’s research has shifted to focus on the characterization of the tumor microenvironment. His work on the study of endothelial cell behavior in ischemic wounds is particularly noteworthy. His studies have shown that endothelial cells in ischemic wounds are often malformed, leading to poor vascularization and wound healing. This work has implications for understanding the progression of disease and developing new therapeutic strategies.

Additionally, Dr. Machiraju has collaborated with Dr. Clark Anderson to understand the dynamics of the tumor microenvironment. They are examining the signaling pathways that control cell behavior in the tumor microenvironment, including the role of endothelial cells in angiogenesis. This research has implications for the development of new strategies for treating cancer.

Finally, Dr. Machiraju’s research has also focused on the analysis of spatiotemporal data from the physical sciences, especially those related to the study of fluid flow in biological systems. His work on the analysis of fluid flow in complex geometries has been instrumental in advancing the field of computational fluid dynamics.

In conclusion, Dr. Machiraju’s research has been characterized by a focus on the development of robust algorithms for the analysis of complex data, particularly in the context of medical imaging and computational fluid dynamics. His work has had a significant impact on the field, and his contributions continue to shape the future of these areas of research.
used at the Wright Center of Innovation for Imaging (WCI) headed by Dr. Michael Knopp and elsewhere.
Dr. Steffen Sammett previously of WCI and now at University of Chicago was an important collaborator on this project.

**Biology is Different**
It is reductionist in nature and very different from computer science where abstraction plays a more larger role. There is a need for encyclopedic understanding of processes and factors in biology. Another challenge is the variability that exists at all levels. Although there is more use of computational methods, biology is certainly an observational science and is very much hypothesis driven. The latter aspect is often foreign to many computing researchers. Tools are built to explore and interact with data. Although the scientific method is taught to all in school, it is something that computer scientists are not extremely aware of.

**Student Mentorship and Training**
When interacting with scientists, students in Computer science rarely interact at a deep scientific level. They collect the data, process it, and then provide them results. This was often the situation when Dr. Machiraju’s team worked with other sciences. However, such interaction does not help to provide viable results for biologists. The need for validation and provability is paramount. For instance, cell nuclei can be delineated and segmented from confocal images. There are many algorithms that can be used to complete this task. A typical biologist would like to be very certain that the cell was correctly segmented and its type quite accurately determined. Thus to be successful, it is not enough to build representations of the uncorrupted signal. All confounds should be included and all outliers should be dealt with. Robust analysis requires a good understanding of the biological structures, the necessary instrumentation, etc. That requires that the student is embedded in the biology laboratory, works closely with his/her peers in the biology lab, knows how instruments corrupt the basic signal and can at least understand the implications of his work. Several of Dr. Machiraju’s students know how to operate scanners/microscopes, know the subtleties of the processes (staining), and are at home while reading leading biology/radiological/neuroscientific journals.

This sort of embedded training has paid off for Machiraju’s students. The recent graduates from this group have been well placed. Over the last four years Dr. Machiraju has placed two students at Harvard Medical School (Kishore Mosaliganti, Firdaus Janoos), a student at MIT/Harvard Broad Institute (Shantanu Singh), and finally another student at NIH (Okan Irfanoglu). Additionally, one of his graduate student, Sundaresan Raman, was selected to be a 2010 Pelotonia Graduate Fellow. Sundar is one of the few students who know the subtleties of the processes (staining), and are at home while reading leading biology/radiological/neuroscientific journals.

**New Awards Received July 1, 2010 thru June 30, 2011**

**Co-PI: James W. Davis**
- **PI: raghu Machiraju**
  - CATR Task 0006
  - Air Force Research Laboratory (AFRL)
  - 11/16/10 – 11/19/12
  - $75,000

**Co-PI: Raghu Machiraju**
- **PI: Yusu Wang**
  - National Science Foundation (NSF)
  - $499,761
  - 6/1/11 – 5/31/14

**Co-PI: Han-Wei Shen**
- **PI: Raghu Machiraju**
  - G&V: Medium: Collaborative Research: Large Data Visualization Using an Interactive Machine Learning Framework
  - National Science Foundation (NSF)
  - $542,002
  - 6/1/11 – 5/31/14

- **PI: D. K. Panda**
  - AF: Small: Analyzing Spaces and Scalar Fields via Point Clouds
  - National Science Foundation (NSF)
  - $49,000
  - 1/1/10 – 3/31/11

- **PI: Tamal Dey**
  - Study of WAN-level Storage and Distributed Computing with Obisdian Longbow Routers with Encryption
  - Sandia labs
  - $115,885
  - 5/10/10 – 9/30/11

- **PI: Kun Huang**
  - Green Storage for HPC with Solid State Disk Technologies
  - RNET Technologies (Department of Energy (DOE) STTR)
  - $33,000
  - 6/19/10 – 3/18/11

- **PI: Sayantan Sur**
  - Scalability and Fault-tolerance Properties of InfiniBand Subnet Management
  - RNET Technologies (Department of Energy (DOE) STTR)
  - $33,000
  - 6/19/10 – 3/18/11

- **PI: Rebecca Jackson**
  - Performance Evaluation of Obisdian Longbow Routers with Encryption for Parallel File Systems
  - AVETEC
  - $55,389
  - 6/1/10 – 6/30/11

- **PI: Yusu Wang**
  - HPC Application Energy Profiling for Energy Optimization Tools
  - RNET Technologies (Department of Energy (DOE) STTR)
  - $33,000
  - 6/19/10 – 3/18/11

- **PI: Kun Huang**
  - Bioinformatics: Automatic Target Recognition Research
  - CATR Task 0006
  - Air Force Research Laboratory (AFRL)
  - $43,000
  - 11/16/10 – 11/19/12
  - $75,000

- **PI: Anish Arora**
  - Air Force Research Laboratory (AFRL)
  - $149,424
  - 7/1/10 – 6/30/11

- **PI: D. K. Panda**
  - Center for Automatic Target Recognition Research
  - CATR Task 0002
  - Air Force Research Laboratory (AFRL)
  - $44,000
  - 5/1/10 – 9/30/12

- **PI: James W. Davis**
  - Center for Automatic Target Recognition Research
  - CATR Task 0004
  - Air Force Research Laboratory (AFRL)
  - $100,000
  - 7/1/10 – 9/30/10

- **PI: Tamal Dey**
  - Air Force Research Laboratory (AFRL)
  - $44,000
  - 5/1/10 – 9/30/12

- **PI: Kun Huang**
  - National Library of Medicine
  - $43,000
  - 11/16/10 – 11/19/12

- **PI: Kun Huang**
  - Center for Automatic Target Recognition Research
  - CATR Task 0006
  - Air Force Research Laboratory (AFRL)
  - $58,003
  - 7/1/10 – 6/30/11

- **PI: Kun Huang**
  - Los Alamos National Labs
  - $13,000
  - 11/16/10 – 11/19/12

- **PI: Kun Huang**
  - National Center for Research Resources (OSU CCTS)
  - $149,424
  - 7/1/10 – 6/30/11

- **PI: Kun Huang**
  - Center for Automatic Target Recognition Research
  - CATR Task 0002
  - Air Force Research Laboratory (AFRL)
  - $44,000
  - 5/1/10 – 9/30/12

- **PI: James W. Davis**
  - Center for Automatic Target Recognition Research
  - CATR Task 0004
  - Air Force Research Laboratory (AFRL)
  - $100,000
  - 7/1/10 – 9/30/10

- **PI: Tamal Dey**
  - Air Force Research Laboratory (AFRL)
  - $44,000
  - 5/1/10 – 9/30/12

- **PI: Kun Huang**
  - National Library of Medicine
  - $150,000
  - 4/1/11 – 9/23/11

- **PI: Anish Arora**
  - Air Force Research Laboratory (AFRL)
  - $150,000
  - 4/1/11 – 9/23/11
PI: Rajiv Ramnath

- Collaborative Research: Dynamic Staging Architecture for Accelerating I/O Pipelines
  National Science Foundation (NSF) $90,000 5/1/10 – 4/30/13

- Research on High Performance and Scalable MPI over InfiniBand
  Mellanox Technologies, Inc. $117,890 4/4/10-3/31/11

PI: Atanas Rountev

- $90,000 5/1/10 – 4/30/13
  National Science Foundation (NSF)
  Collaborative Research: Dynamic Staging over InfiniBand

PI: P. Sadayappan

- $117,890 4/4/10-3/31/11
  National Science Foundation (NSF)
  Collaborative Research: Dynamic Staging over InfiniBand

Grants Initiated Before July 1, 2009

Gagan Agrawal

- Data Intensive Computing Solutions for Neuroimaging Analysis
  Co-PI: Raghu Machiraju
  National Science Foundation $480,000 9/15/09 – 8/31/12

- A Language Independent Framework for Compiling Data-Intensive Applications on Highly Parallel Systems
  National Science Foundation (NSF) $510,000 9/1/08 – 8/31/11

Anish Arora

- Genotyping and Federating Autonomous Kansai Wireless Sensor Networks
  Co-PI: Rajiv Ramnath
  BBNT Solutions, LLC, $500,000 9/1/08 – 8/31/11

PI: Ness B. Shroff

- An Information Framework for Enabling Extreme-scale Science Discovery
  Department of Energy (DOE) $462,095 9/1/08 – 8/31/13

- Very Large 3D Flow Field Visual Analysis
  Department of Energy (DOE) $461,074 10/28/10 – 9/30/11

- An Information Framework for Enabling Extreme-scale Science Discovery
  Department of Energy (DOE) $462,095 9/1/08 – 8/31/13

PI: Leon Wang

- A Polyhedral Transformation Framework for Compiler Optimization
  Co-PI: Atanas Rountev
  Department of Energy (DOE) $399,842 9/1/10 – 8/31/13

PI: Yusu Wang

- An Auditory Scene Analysis Approach to Speech Segregation
  Kuzer Co. (AFOSR STTR) $40,000 7/1/10 – 3/31/11

PI: Han-Wei Shen

- GV: Small: Collaborative Research: An Information Theoretic Framework for Large-scale Data Analysis and Visualization
  National Science Foundation (NSF) $292,147 9/1/10 – 8/31/13

- Very Large 3D Flow Field Visual Analysis
  Department of Energy (DOE) $461,074 10/28/10 – 9/30/11

James W. Davis

- IRWIN Research in Wireless
  Los Alamos National Labs $57,339 10/1/09 – 9/30/10

- Center for Automatic Target Recognition Research
  (task 4)
  Air Force Research Laboratory (AFRL) $53,000 1/1/10 – 9/30/10

Tamal Dey

- MCS: Reconstructing and Inferring Topology and Geometry From Point to Point Cloud Data
  Co-PI: Dan Burghelea (OSU-Dept. of Mathematics)
  National Science Foundation (NSF) $462,000 9/1/09 – 8/31/11

- Inferring Topology and Geometry for Dynamic Shapes
  National Science Foundation (NSF) $220,000 9/1/08 – 8/31/11

- Nonsmoothness in Meshing and Reconstruction
  National Science Foundation (NSF) $429,402 10/1/06 – 9/30/10

- MCTS: Reconstructing and Inferring Topology and Geometry From Point to Point Cloud Data
  Co-PI: Dan Burghelea (OSU-Dept. of Mathematics)
  National Science Foundation (NSF) $462,000 9/1/09 – 8/31/11

- Inferring Topology and Geometry for Dynamic Shapes
  National Science Foundation (NSF) $220,000 9/1/08 – 8/31/11

- Nonsmoothness in Meshing and Reconstruction
  National Science Foundation (NSF) $429,402 10/1/06 – 9/30/10

- MCTS: Reconstructing and Inferring Topology and Geometry From Point to Point Cloud Data
  Co-PI: Dan Burghelea (OSU-Dept. of Mathematics)
  National Science Foundation (NSF) $462,000 9/1/09 – 8/31/11

- Inferring Topology and Geometry for Dynamic Shapes
  National Science Foundation (NSF) $220,000 9/1/08 – 8/31/11

- Nonsmoothness in Meshing and Reconstruction
  National Science Foundation (NSF) $429,402 10/1/06 – 9/30/10
**Hakan Ferhatosmanoglu**
- Similarity-Indexed and Integration of Protein Sequence and Structure Databases DBI Co-PI: Yusu Wang, Li National Science Foundation (NSF) $498,117 8/15/08 – 7/31/11
- CAREER: Exploration of Dynamic Sequences in Scientific Databases National Science Foundation (NSF): $455,000 8/1/06 – 8/31/11

**Eric Fosler-Lussier**
- **Explicit Articulatory Models of Spoken Language,** National Science Foundation (NSF) $334,469 7/1/09 – 6/30/12
- **Automatic Speech Recognition**
  - **Acoustic-Lexical Modeling Techniques for Robust Automatic Speech Recognition** National Science Foundation (NSF) $502,952 12/15/06 – 11/30/11
  - **Sing Machine Learning to Model the Interplay of Production Dynamics And Perception Dynamics in Phonological Acquisition** National Science Foundation (NSF) $273,284 1/15/08 – 12/31/10
  - **Establishing and Breaking Conceptual Pacts with Dialog Partners**
    - National Science Foundation Human-Robot Interaction (HRI) (Northeastern University sub-award) $149,084 1/28/08 – 9/30/10

**Raghu Machiraju**
- **Modeling and Rendering of Urban Environments** Lawrence Livermore National Lab $43,050 01/04/10 – 9/30/10
- **Interrogating Epigenetic Changes in Cancer Genomes** PI: Tim Huang (OSU- Dept. of Molecular Virology, Immunology & Medical Genetics – Human Cancer Genetics) Co-Pi: Kun Huang (OSU- Dept. of Biomedical Informatics), Raghu Machiraju, Lin, Wang, Yan National Cancer Institute $1,596,781 1/10/08 – 2/28/11
- **High-end Computing and Networking Research Testbed for Next Generation Data Driven, Interactive Applications** Co-Pls: Gagan Agrawal, P. Sadayappan, Joel H. Saltz (Emory University), Han-Wei Shen National Science Foundation (NSF) $1,529,997 9/15/04 – 8/31/10
- **Collaborative Research: Dynamic Staging Architecture for Accelerating I/O Pipelines** National Science Foundation (NSF): $90,000 5/1/10 – 4/30/13

**Srinivasan Parthasarathy**
- **Global Graphs: A Middleware for Data Intensive Computing** Co-PI: P. Sadayappan National Science Foundation (NSF) $499,997 9/1/09 – 8/31/12

**Feng Qin**
- **CAREER: Building Immunity to Memory Management Bugs During Production Runs** National Science Foundation (NSF): $420,000 3/31/10 – 2/28/15

**Jay Ramanathan**
- **Co-PI – Rajiv Ramnath** CETI IUCRC Memberships $281,904.31 10/1/06 – 4/30/11
- **AGOV Server Migration/Hosting, Content Management, Security and BMP** Co-PI – Rajiv Ramnath City of Columbus: $80,000 12/06/07 – 4/30/11
- **Center for Experimental Research in Computer Systems - Research Site** Co-PI: Rajiv Ramnath National Science Foundation (NSF) $140,000 5/1/08 – 4/30/11

**Rajiv Ramnath**
- **Curriculum for Accelerated Services Engineering (CASE)** Co-Pls: Jay Ramanathan, Neelam Soundarajan, Jerome D’Agostino (OSU-CoEHE, Quantitative Research, Evaluation and Measurement) National Science Foundation (NSF) $149,981 9/1/09 – 2/28/11
- **Pandemic Influenza Program Initiative B - Project 7: Evaluating Feasibility of the Distribution and Dispensing of Antiviral Drugs to Self-Isolated or Self-Quarantined Persons as Part of a Community Containment Strategy in Ohio** Co-PI: Rajiv Ramnath Cuyahoga County Board of Health: $700,000 8/10/08 – 8/9/09
- **Pandemic Influenza Program Initiative B-project 6 program: Addressing Vulnerabilities in Populations** Co-Pl: Rajiv Ramnath OSU-John Glenn School of Public Affairs
- **NW Ohio REMS Project** Co-Pl: Anand Desai (OSU-John Glenn School of Public Affairs)

**David Lee**
- **Internet Attack Traceback-Cross-Validation and Pebble-Trace** Air Force Office of Scientific Research (AFOSR) $500,000 4/1/09 – 11/30/12
- **CPATH T: NEWPATH: Nurturing, Through Entrepreneurship, IT World Leaders**
  - Co-PI: Stephen Camp (OSU-COB), Eyfem Ekici (OSU-ECE), Walleed Muhanna (OSU-COB), Rajiv Ramanath, Han-Wei Shen, Neelam Soundarajan, Bruce Weide, Dong Xuan National Science Foundation (NSF) $605,822 7/1/07 – 6/30/12

**NW Ohio REMS Project**
- **Atanas Rountev**
  - **CAREER: Dataflow Analysis for Modern Software Systems** National Science Foundation (NSF): $407,000 9/15/06 – 8/14/11
  - **A Platform-Aware Compilation Environment** Co-Pl: Atanas Rountev Defense Advanced Research Projects Agency (DARPA) (Rice University Sub-award) $630,438 4/1/09 – 3/31/11

**David Lee**
- **Internet Attack Traceback-Cross-Validation and Pebble-Trace**
  - Co-PI: Stephen Camp (OSU-COB), Eyfem Ekici (OSU-ECE), Walleed Muhanna (OSU-COB), Rajiv Ramanath, Han-Wei Shen, Neelam Soundarajan, Bruce Weide, Dong Xuan National Science Foundation (NSF) $605,822 7/1/07 – 6/30/12
**Programming Models for Scalable Parallel Computing**
Dept. of Energy (DoE)
$500,000 9/15/06 – 8/31/11

**Scalable Fault Tolerant Runtime Technology for Petascale Computers**
Dept. of Energy (DoE)
$375,820 8/1/08 – 7/31/11

**Collaborative Research: CPA-CPL-T: An Effective Automatic Parallelization Framework for Multi-Core Architectures**
Co-PI: Atanas Rountev
National Science Foundation (NSF)
$500,000 8/1/08 – 7/31/11

**Computing Programming Models for Scalable Parallel**

**Design Of Urban Sensor Networks**
Multidisciplinary University Research Initiative (MURI - DoD) (Pennsylvania State University Sub-award)
$300,000 6/15/07 – 11/14/10

**Find: Collaborative Research: Towards an Analytical Foundation for Network Architectures**
National Science Foundation (NSF)
$200,000 9/1/07 – 8/31/11

Co-PI: Prasun Sinha, Can Emre Koksal (OSU - Dept. of Electrical & Computer Engineering) National Science Foundation (NSF)
$346,426 9/1/08 – 8/31/12

**Nets-NSS: Robust Sensor Network Architecture Through Neighborhood Monitoring and Isolation**
National Science Foundation (NSF)
$350,000 07/01/07 – 08/31/10

**Workshop on Future Wireless Communication Networks**
National Science Foundation (NSF)
$145,000 10/01/09 – 9/30/10

**NeTS-Medium: Collaborative Research: Unifying Network Coding and Cross-Layer Optimization for Wireless Mesh Networks: From Theory to Distributed Algorithms to Implementation**
National Science Foundation (NSF)
$350,000 09/01/09 – 08/31/13

**CT-JSSG: Collaborative Research: Router Models and Downsizing Tools for Scalable Security Experiments**
National Science Foundation (NSF)
$125,000 10/01/09 – 9/30/10

**Nets-NBD: A High-Performance Control Plane for Mesh Networks: Theory and Implementation**
National Science Foundation (NSF)
$553,417 9/1/06 – 8/31/10

**Stochastic Control of Multi-Scale Networks: Modeling, Analysis and Algorithms**
Army Research Office
$6,456,625 5/1/08 – 5/28/11

**DeSs: Developing Scalable Security Solutions**
Co-PI: Ness Shroff
National Science Foundation (NSF)
$491,661 9/1/07 – 8/31/10

**DeLiang Wang**

**Sequences and Arrangement of Room Reverberation in Speech Segregation**
Air Force Office of Scientific Research (AFOSR)
$874,369 2/1/08 – 11/30/10

**Integrating Monaural CASA and Binaural Localization for Robust Speech Separation**
National Science Foundation (NSF)
$180,000 7/1/08 – 6/30/10

**Robust Speaker Recognition Using Auditory-Based Features And Computational Auditory Scene Analysis**
Research Associates for Defense Conversion Inc.
$300,000 2/20/09 – 2/19/11

**Study of Speech and Nonspeech Separation in Aging**
Veteran’s Affairs
$600,000 7/1/06 – 09/30/10

**Biologically-Inspired Target Recognition Methods for Multispectral/Hyperspectral and Multispectral Image Analysis**
Co-PI: Rongzun Li (OSU - Dept. of Civil and Environmental Engineering and Geodetic Science)
National Science Foundation (NSF)
$450,000 8/15/07 – 8/14/10

**Yasu Wang**

**CAREER: On-the-fly Protocols for Data Dissemination in Wireless Mesh Networks**
National Science Foundation (NSF)
$412,000 1/15/06 – 12/31/11

**OSS: Doing More with Less: Tracking Movements Using a Sparse Sensor Network**
National Science Foundation (NSF)
$216,017 9/1/07 – 8/31/11

**NeTS-NSS: Collaborative Research: Energy-Efficient Distributed Sensor Network Control: Theory to Implementation**
Co-PI: Ness Shroff
National Science Foundation (NSF)
$491,661 9/1/07 – 8/31/10

**DeLiang Wang**

**Sequential Organization and Room Reverberation in Speech Segregation**
Air Force Office of Scientific Research (AFOSR)
$874,369 2/1/08 – 11/30/10

**Note: The above list is not exhaustive and does not cover all the projects.
10-11 PUBLICATIONS

AI


SE/Programming Languages


Systems

T. Liu and G. Agrawal, "Active Learning Based Frequent Itemset Mining Over the Deep Web," In the Proceedings of International Conference on Data Engineering (ICDE), April 2011.


X. Hua, V. T. Ravi, and G. Agrawal, "Approached for Parallelizing Reductions on Modern GPUs" In the Proceedings of the conference on High Performance Computing (HiPC), December 2010. (Best Paper Award).


Distinguished Guest Lecturer
Douglas O’Shaughnessy
INRS-EMT, University of Quebec, Montreal
Modern Methods of Automatic Speech Recognition (ASR): How and Why

Group Talk: Systems
Feng Chen
Intel Laboratories, Hillsboro, Oregon
Hystor: Making the Best Usage of Solid State Drives in High Performance Storage Systems
Mary Hall
School of Computing, University of Utah
Compiler-Based Autotuning for Productivity and High Performance

Guest Speaker
Geoff Webb
Centre for Research in Intelligent Systems, Monash University
Learning Without Search

Lorenzo Rosasco
IIT-MIT lab, Center for Biological and Computational Learning, Massachusetts Institute of Technology
Spectral Methods for Learning High Dimensional Data

Alper Yilmaz
Civil, Environmental Engineering & Geodetic Science, The Ohio State University
3D Shape Recovery by Exploiting Planar Topology in Projective Space

Phillipos C. Loizou
Dept. of Electrical Engineering, University of Texas at Dallas
Time-Frequency Masks and Speech Intelligibility

Santosh Kumar
Dept. of Computer Science, The University of Memphis
Addressing Stress and Addictive Behavior in the Natural Environment Using AutoSense

Sonia Fahmy
Dept. of Computer Science, Purdue University
Scalable Network Monitoring: When to Measure and When to Infer?

Navin Goyal
Algorithms Group, Microsoft Research India
Deterministic Algorithm for the Lovasz Local Lemma

Brian Kulis
EECS Department and ICSI, University of California, Berkeley
Learning for Search and Adaptation in Large-scale Data

Huamin Wang
Computer Science Div., Dept. of EECS, University of California, Berkeley
Data-Driven Approaches for Physically Based Animation and Visualization

Imre Risi Kondor
Center for the Mathematics of Information, Caltech
Non-Commutative Harmonic Analysis in Machine Learning

Marcos Vaz Salles
Department of Computer Science, Cornell University
A Database Approach to Programming Large-Scale Behavioral Simulations

Li-Yi Wei
Microsoft Research
Computing Natural Repetitions

Wolfgang Gatterbauer
Dept. of Computer Science, University of Washington
Community Databases: Managing Data Contributed by the Masses

John H.L. Hansen
Erik Jonsson School of Engineering & Computer, University of Texas at Dallas
Who Said What When and How?: “Advances in Phonological Feature based Speech Recognition & Whisper based Speaker ID”
Looking north on the Olentangy River. Photo from Ohio State “Image of Day” selections.
Historical View

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Thanks to Raghunath Rajachandrasekar for sharing this wonderful panorama photo of the Spring 2011 Commencement.

Graduate Program

The Department of Computer Science and Engineering Graduate Program remains in-demand. The increase in graduate students and, especially supported students, generates an exciting and driven environment.

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Doctorates Bestowed

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<th>Name</th>
<th>Post - Graduation Destination</th>
<th>Advisor</th>
<th>Vita</th>
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<tbody>
<tr>
<td>Bruce M. Adcock</td>
<td>Google, Mountainview, California, USA</td>
<td>Dr. Bruce Weide</td>
<td>B.S., Lafayette College; M.S., The Ohio State University</td>
</tr>
<tr>
<td>Feng Chen</td>
<td>Intel Labs, Hillsboro, Oregon, USA</td>
<td>Dr. Xiaodong Zhang</td>
<td>B. Eng., Masters, Zhenjiang University, Genghu, Hangzhou, China; M.S., The Ohio State University</td>
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<tr>
<td>Lei Ding</td>
<td>Columbia University, New York City, New York, USA</td>
<td>Dr. Xiaodong Zhang</td>
<td>B.S., Lafayette College; M.S., The Ohio State University</td>
</tr>
<tr>
<td>Xiaoning Ding</td>
<td>Intel Labs, Pittsburgh, Pennsylvania, USA</td>
<td>Dr. Xiaodong Zhang</td>
<td>B.S., Lafayette College; M.S., The Ohio State University</td>
</tr>
<tr>
<td>Okan Mustafa Irfanoglu</td>
<td>National Institutes of Health, Bethesda, Maryland, USA</td>
<td>Dr. Xiaodong Zhang</td>
<td>B. Eng., University of Pune; M.S., The Ohio State University</td>
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<tr>
<td>Firdaus Husain Janoos</td>
<td>Harvard Medical Center, Cambridge, Massachusetts, USA</td>
<td>Dr. Raghu Machiraju</td>
<td>B.S., University of Pune; M.S., The Ohio State University</td>
</tr>
<tr>
<td>Zhaozhang Jin</td>
<td>Infinium Capital Management, Chicago, Illinois, USA</td>
<td>Dr. Deliang Wang</td>
<td>B.Elec. Eng., Shanghai Jiao Tong University, Shanghai, China; M.S., The Ohio State University</td>
</tr>
<tr>
<td>Thomas F. Kerwin</td>
<td>Ohio Supercomputer Center (OSC), Columbus, Ohio, USA</td>
<td>Dr. Han-Wei Shen</td>
<td>B.S., The Ohio State University</td>
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<tr>
<td>Rafi Takvor Khatchadourian</td>
<td>Apple, Inc., Cupertino, California, USA</td>
<td>Dr. Nielam Soudaranajan</td>
<td>B.S.Cptr.Infosc., Monmouth College; M.S., The Ohio State University</td>
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<tr>
<td>Jason P. Kirschbaum</td>
<td>Intel, Inc., Austin, Texas, USA</td>
<td>Dr. Bruce Weide</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
<tr>
<td>Vijay Kumar</td>
<td>HP Labs, Palo Alto, California, USA</td>
<td>Dr. P. Sadayappan</td>
<td>B.Eng., M.S., Birla Institute of Technology and Science; M.S., The Ohio State University</td>
</tr>
<tr>
<td>Darrell Brian Larkins</td>
<td>Coastal Carolina University, Conway, South Carolina, USA</td>
<td>Dr. P. Sadayappan</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
<tr>
<td>Kuiyi Li</td>
<td>Texas A&amp;M University, College Station, Texas, USA</td>
<td>Dr. Xiaodong Zhang</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
<tr>
<td>Wenjing Ma</td>
<td>Pacific Northwest National Lab, Richland, Washington, USA</td>
<td>Dr. Dagan Agrawal</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
<tr>
<td>Shantanu Singh</td>
<td>Borad Institue of MIT, Cambridge, Massachusetts, USA</td>
<td>Dr. Dagan Agrawal</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
<tr>
<td>Kaushik Sinha</td>
<td>University of California, San Diego, California, USA</td>
<td>Dr. Dagan Agrawal</td>
<td>B.S., M.S., The Ohio State University</td>
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<tr>
<td>Mukundan Sridharan</td>
<td>OARnet, Columbus, Ohio, USA</td>
<td>Dr. Dagan Agrawal</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
<tr>
<td>Fan Wang</td>
<td>Microsoft, Redmond, Washington, USA</td>
<td>Dr. Dagan Agrawal</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
<tr>
<td>Timothy E. Weele</td>
<td>Department of Defense, Bethesda, Maryland, USA</td>
<td>Dr. Dagan Agrawal</td>
<td>B.S., M.S., The Ohio State University</td>
</tr>
</tbody>
</table>

Techiques for Automated Software Evolution

Dr. Bekele Chen

Enhancements in Volumetric Surgical Simulation

Dr. Han-Wei Shen

Monosens SIGNAL Segregation in Reverberant Environments

Dr. Deliang Wang

On Performance Optimization and System Design of Flash Memory Based Solid State Drives in Storage Hierarchy

Dr. Xiaodong Zhang

From Pixels to People: Graph Based Methods for Grouping Problems in Computer Vision

Dr. Xiaodong Zhang

Architecture Advancement of Operating System to Manage Critical Resources in Increasingly Complex Computer Architecture

Dr. Xiaodong Zhang

A Motion Capture Based Performance Animation System and Compression Scheme for Streaming 3D Animation Data

Dr. Raghu Machiraju

Advancement of Operating System to Manage Critical Resources in Increasingly Complex Computer Architecture

Dr. Xiaodong Zhang

Spatio-Temporal Representations and Analysis of Brain Function from fMRI

Dr. Raghu Machiraju

Robust Variability Analysis Using Diffusion Tensor Imaging

Dr. Raghu Machiraju

New Directions in Gaussian Mixture Learning and Semi-Supervise Learning

Dr. Dagan Agrawal

Specification, Configuration and Execution of Data-intensive Scientific Applications

Dr. Dagan Agrawal

Investigations in Automating Software Verification

Dr. Bruce Weide

Efficient Run-Time Support for Global View Programming of Linked Data Structures on Distributed Memory Parallel Systems

Dr. P. Sadayappan

Spatio-Temporal Representations and Analysis of Brain Function from fMRI

Dr. Raghu Machiraju

Term Relatedness from Wiki-Based Resources Using Sourced PageRank

Dr. Eric Fosler-Lussier
Name
Home
Vita

Abhijat Agarwal
Meerut, UP, India
Bachelor’s, Amity University

Artika Agarwal
Columbus, Ohio USA
Bachelor’s, Uttar Pradesh Technical University

Meshal Musaed Almashan
Faiha, Kuwait
Civil.Eng., Kuwait University

Erdemiz Ogun Bas
Columbus, Ohio, USA
B.A., Ege University

Anand Joseph Bernard Selvaraj
Madurai, Tamil Nadu, India
B.Eng., Anna University

Di Cao
Shanghai, China
B.S., Fudan University, Shanghai, China

Kartthiyayini Chinnaswamy
Coimbatore, India
B.Eng., Anna University, Chennai, India

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Roshni Datta
Hooghly, India
B.Tech., West Bengal University of Technology

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B.S.Comm., Master’s, University of Mumbai

Shubhankar Deshpande
Pune, India
B.Eng., University of Pune

Shweta Ravindra Deshpande
Pune, India
B.Eng., University of Pune

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Nagpur, India
B.Eng., M.B.A., Nagpur University

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Bachelor’s, Anna University

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B.Tech., Jiwaji University, Gwalior, Madhya Pradesh

Neelima Kanan
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B.Tech., Jiwaji University, Gwalior, Madhya Pradesh

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Amit Modi
Jaipur, India
B.Eng., Bharati Vidyapeeth University

Iyappaa Thir Marugandhi
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B.Eng., Madurai Kamaraj University, Madurai, Tamil Nadu, India

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Rohit Patali
Thane, India
Bachelor’s, University of Mumbai

Dheeraj Pulluri
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B.Eng., Osmania University

Sundaresan Raman
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B.Eng., University of Pune

Yuri Rajendra Shelke
Amravati, India
B.Eng., Amravati University, Amravati, India

Apeksha Shrinath Shetty
Mumbai, India
B.Eng., University of Mumbai, Mumbai, India

Andrew Weinmann
Cleveland, Ohio, USA
Bachelor’s, Youngstown State University

Kevin Wells
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B.S.Elect.Cptr.Eng., The Ohio State University

Karthik Sankaranarayanan
Pune, India
B.Eng., University of Pune

Cenny Taslim
Jakarta, Indonesia

Yisong Wang
Columbus, Ohio, USA
B.S., Beijing University of Posts and Telecommunications

Kevin Wells
Mcmurray, Pennsylvania, USA
B.S.Elect.Cptr.Eng., The Ohio State University

Huajian Zhang
Yangzhou, China
B.S., University of Science and Technology of China
<table>
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<tr>
<th>Student</th>
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<tr>
<td>Abhijat Agarwal</td>
<td>Srinivasan Parthasarathy</td>
<td>Kriging Based Predictor for Spatiotemporal Weather Data</td>
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<td>Arindam Bhattacharya</td>
<td>Rehael Wenger</td>
<td>Sharp Marching Cubes</td>
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<td>Matt Boggis</td>
<td>Roger Crawfis</td>
<td>Modeling of Three Dimensional Caves for Computer Games</td>
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<td>Joe Bolinger</td>
<td>Jay Ramanathan</td>
<td>Blacktie: Injecting Elements of Formality into Enterprise Social Software</td>
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<td>Derek Bronish</td>
<td>Bruce Weide</td>
<td>Issues in Modular Verification for a Component-Based Functional Programming Language</td>
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<td>Zhezhe Chen</td>
<td>Feng Qin</td>
<td>Flowchecker: Detecting Bugs in MPI Libraries Via Message</td>
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<td>Joshua Eckroth</td>
<td>John Josephson</td>
<td>Abductive Reasoning with Abductive Meta-Reasoning</td>
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<td>Rick Parent</td>
<td>Evolving Gestural Controllers for Cartoon Animation</td>
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<td>Eric Fosler-Lussier</td>
<td>Investigations into the Incorporation of the Ideal Binary Mask in Asr</td>
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<td>DOT: A Matrix Model For Analyzing, Optimizing and Deploying Big Data Analytics in Distributed Systems</td>
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<td>Yin Huai</td>
<td>Xiaodong Zhang</td>
<td>RCFile: A Fast and Space-Efficient Data Placement Structure in MapReduce-Based Warehouse Systems</td>
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<td>Michael Bond</td>
<td>Dynamic Program Analysis for Reliable Concurrent Software</td>
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<td>Chris Stewart</td>
<td>A Web Platform for Teaching Cloud Management</td>
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<td>Automatic Scoring and Interactive Analysis of Multivolume Medical Datasets</td>
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<td>Raffi Khatchadourian</td>
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<td>Fraglight: Shedding Light on Broken Pointcuts in Evolving Aspect-Oriented Software</td>
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<td>Jason Kirschenbaum</td>
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<td>CapFl: a Content-Aware Flash Translation Layer Enhancing The Lifespan of Flash Memory Based Solid State Drives</td>
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<td>Tian Luo</td>
<td>Xiaodong Zhang</td>
<td>YSmart: Yet Another SQL-to-Map Reduce Translator</td>
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<td>Wenjing Ma</td>
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<td>Radu Teodorescu</td>
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<td>PTZ Camera Modeling And Panoramic View Generation Via Focal Plane Mapping</td>
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<td>Symmetrizations for Clustering Directed Graphs</td>
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<td>Benjamin Schroeder</td>
<td>Richard Parent</td>
<td>A Comparison of Several Musical String Implementations</td>
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<td>Reliable Energy Efficient Predictive Routing For Delay Tolerant Networks</td>
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<td>Enhua Tan</td>
<td>Xiaodong Zhang</td>
<td>Online Spam Detection In Social Networks</td>
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<td>Jin Teng</td>
<td>Dong Xuan</td>
<td>E-Shadow: Lubricating Social Interaction Using Mobile Phones</td>
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<td>Kaibo Wang</td>
<td>Xiaodong Zhang</td>
<td>SRM-buffer: An Os Buffer Management Technique to Prevent Last Level Cache from Thrashing in Multicores</td>
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<tr>
<td>Kaibo Wang</td>
<td>Xiaodong Zhang</td>
<td>ULCC: A User-Level Facility for Optimizing Shared Cache Performance On Multicores</td>
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<td>John Woodruff</td>
<td>DeLiang Wang</td>
<td>Directionality-based Speech Enhancement for Hearing Aids</td>
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<td>Xintian Yang</td>
<td>Srinivasan Parthasarathy</td>
<td>Fast Sparse Matrix-Vector Multiplication on GPUs: Implications for Graph Mining</td>
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<td>Cheng Zhang</td>
<td>Rick Parent</td>
<td>An Enhancement of High-Speed Motion Illustration Based on the Principles of Motion Perception</td>
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<td>Boying Zhang</td>
<td>Dong Xuan</td>
<td>P3-Coupon: A Probabilistic System for Prompt and Privacy-Preserving Electronic Coupon Distribution</td>
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</tbody>
</table>
Undergraduate Program

“Keeping up with demand” is generally an inventory industry problem. But currently it is a challenge being faced by CSE as we experience another growth year.

Undergraduate students joining the Department of Computer Science and Engineering have three options for their education: a Bachelor of Science from the College of Engineering and a Bachelor of Science or a Bachelor of Arts from the College of Natural & Mathematical Sciences. Each gives the student flexibility in how they wish to work with computers and opens up options for post graduation careers.

The Department is also responsible for many courses for students in multiple majors across the University. CSE 101 is accepted for all OSU majors as a General Education Course. For the Construction Systems Management majors from the Department of Food, Agriculture and Biological Engineering, Computer-Assisted Problem Solving for Construction Management (#105) is taught where students learn how to use productivity software, especially spreadsheets and databases, to solve problems for construction management; relative/absolute cell referencing, logic, functions, relational databases, querying, project integration. Meanwhile, all Fisher College of Business students take CSE’s Computer Assisted Problem Solving for Business (#200), as well as these courses for the Information Systems specialization: Data Structures for Information Systems (#214), and Business Programming with File Processing (#314).

CSE students have multiple language options. CSE teaches C, C++, LISP, PERL, and Java.

For more information on individual classes please see the CSE website. (www.cse.ohio-state.edu)

Undergraduate Academic Advising Office

The Undergraduate Academic Advising Office is always a very busy place and it is becoming increasingly so. As The Ohio State University moves its academic calendar from quarters to semesters in Summer 2012 and the pivotal position of Undergraduate Academic Advisor becomes essential for every undergraduate student. The Advisors will be working with numerous committees as CSE restructures its programs for the new calendar.

Very knowledgeable staff assist students in attaining their educational and career goals.

Peg Steele, Coordinator of Academic Advisement. Ms. Steele is active at the local and national levels of academic advising. The National Academic Advising Association awarded her the 2009 NACADA Service to Commission Award for her work on the Engineering & Science Advising Commission. In 2004, NACADA named Ms. Steele “Outstanding Advisor” and twice she received the same recognition from the local OSU chapter. She will be serving on the Board of Directors for the next two years for the National Academic Advising Association.

Nikki Strader, Academic Advisor & Staff Assistant. From 2006 through 2008, Nikki served as the President of the Academic Advising Association of Ohio State (ACADAOS), and in May 2007, was named one of two Outstanding Advisors at Ohio State by ACADAOS. She is the primary contact for all freshman pre-CSE students.

Mary Jo Deerwester, Academic Advisor & Staff Assistant. Mary Jo is new to the Department in 2010 Academic year, but is not stranger to The Ohio State University. She graduated from OSU in 1971 with a Bachelor of Science degree in Education. (Major: English; Minor: Psychology) She followed that in 1983 with a Master’s Degree in Guidance and Counseling. Mary Jo previously worked as an Academic Advisor at Columbus State Community College and as an Academic Advisor/Staff Assistant for the OSU College of Engineering.

Keith Chima, Graduate Advising Assistant. He is working on his Master’s degree in Computer Science & Engineering, with a focus on software engineering, and he intends to graduate after Autumn quarter 2011.

Bachelor Degrees Awarded

Colleges of the Arts and Sciences
- Michael Anderson (BS) Columbus, Ohio, USA
- Cody Baith (BS) Magna Cum Laude Lexington, Ohio, USA
- Ryan Blatz (BS) Kettering, Ohio, USA
- Brian Bolte (BS) Cincinnati, Ohio, USA
- David Brasser (BS) Columbus, Ohio, USA
- Jessica Brohard (BS) Westerville, Ohio, USA
- Daniel Carpenter (BA) Brooksville, Ohio, USA
- Travis Casper (BS) Copley, Ohio, USA
- Jamie Colley (BS) Summa Cum Laude, with Honors in Arts and Sciences Hilliard, Ohio USA
- Mary Copas (BA) St. Clairsville, Ohio, USA
- Daniel Corson (BS) Upper Arlington, Ohio, USA
- Meghan Day (BA) Cum Laude, with Honors in the Arts and Sciences Blacksburg, Virginia, USA
- John Doolittle (BS) Magna Cum Laude with Honors in the Arts and Sciences Bellbrook, Ohio, USA
- Matthew Dunson (BS) Columbus, Ohio, USA
- Ryan Eiger (BA) Columbus, Ohio, USA
- Carlos Escobedo (BA) Delaware, Ohio, USA
- Noah Firestone (BS) Westerville, Ohio, USA
- Skyler Fox (BS) Shelby, Ohio, USA

- Laura Houseley (BS) Magna Cum Laude, with Honors in the Arts and Sciences Avon Lake, Ohio, USA
- Megan Johns (BA) Cum Laude with honor in the Arts and Sciences Columbus, Ohio, USA
- Alexander Kostanski (BS) Columbus, Ohio, USA
- Kirk Lammers (BA) Port Clinton, Ohio, USA
- David Landerman (BS) Columbus, Ohio, USA
- Jeffrey Lemberg (BS) Yakima, Washington, USA
- Jason Link (BS) Magna Cum Laude Ostrander, Ohio, USA
- Michael Lukach (BS) Columbus, Ohio, USA
- Gregory Maag (BS) Ottawa, Ohio, USA
- Max Manofsky (BS) Columbus, Ohio, USA
- Edward Modecki-Mellot (BS) Cum Laude Columbus, Ohio, USA
- Adam Morello (BS) Cordova, Ohio, USA
- Joseph Mudge (BS) Hilliard, Ohio, USA
- Patrick Mulac (BS) Cum Laude, with Honors in the Arts and Sciences Brecksville, Ohio, USA
- Jonathan Musser (BS) Marietta, Georgia, USA
- Steven Myers (BS) Lexington, Kentucky, USA
- Donald Olaszewski, II (BS) Pittsburgh, Pennsylvania, USA
- Michael Pettiford (BS) Dublin, Ohio, USA
- Benjamin Priest (BS) Cum Laude, with Honors in the Arts and Sciences Dayton, Ohio, USA
College of Engineering
(all degrees are Bachelors of Science)

- Ross Amore
  Magna Cum Laude
  Washington Courthouse, Ohio, USA

- Darij Andersen
  Kirkman, Iowa, USA

- Brian Arand
  Summa Cum Laude
  West Chester, Ohio, USA

- Andrew Arnold
  North Canton, Ohio, USA

- Silas Baronda
  London, Ohio, USA

- Joseph Belisle
  Magna Cum Laude
  Newark, Ohio, USA

- Shaun Brady
  Lima, Ohio, USA

- David Brickey
  Magna Cum Laude
  Beavercreek, Ohio, USA

- Kevin Brooxhaugh
  Summa cum Laude
  Cincinnati, Ohio, USA

- Matthew Bromley
  Broadview Heights, Ohio, USA

- Tam Minh Bui
  Columbus, Ohio, USA

- Kyle Casper
  Galloway, Ohio, USA

- Zhitu Chen
  Summa cum Laude
  Guangzhou, China

- Zhanpeng Cheng
  Summa Cum Laude
  Fairfield, Ohio, USA

- Alex Clifford
  Englewood, Ohio, USA

- Gustav Coladis
  Canfield, Ohio, USA

- Braden Couch
  Perrysburg, Ohio, USA

- Angela Deady
  Magna Cum Laude
  Reynoldsburg, Ohio, USA

- Bradley Dement
  Hudson, Ohio, USA

- Sean Dunn
  Stow, Ohio, USA

- Benjamin Ebel
  Canton, Ohio, USA

- Esteban Escobar
  Rancagua, Chile

- Bryce Fisher
  Mansfield, Ohio, USA

- Devon Garrett
  Dayton, Ohio, USA

- Eric George
  Summa Cum Laude
  Liberty Township, Ohio, USA

- Jason Hall
  Hilliard, Ohio, USA

- Brandon Halloran
  Olmstead Falls, Ohio, USA

- Briiana Hemeyer
  Cum Laude
  Bellevue, Ohio, USA

- Matthew Hibbard
  Southbury, Connecticut, USA

- Daren Hrelas
  Bridgewater, Connecticut, USA

- Liang Qing Hu
  Kai Ping, China

- Zul Fahrni Jemaat
  Jasin, Malaysia

- Grand Johnson
  Sidney, Ohio, USA

- Samuel Jones
  Ravenna, Ohio, USA

- Sterling Keaton, III
  Euclid, Ohio, USA

- Stephen Kemerly
  Cum Laude
  Hilliard, Ohio, USA

- Matthew Kern
  Mentor, Ohio, USA

- Viktor Kitsis
  Cleveland, Ohio, USA

- Matthew Kolesaric
  Westerville, Ohio, USA

- Gregory Landrum
  Fairfield, Ohio, USA

- Jeremy Lange
  Marysville, Ohio, USA

- Jacob Ledel
  Rocky River, Ohio, USA

- Junghun Lee
  Seoul, Korea

- Michael Lucia
  Mildford, Ohio, USA

- Razvan Lupusorul
  Summa Cum Laude
  North Canton, Ohio, USA

- Taylor Mackinder
  Jackson, Michigan, USA

- Christopher Magnacca
  Columbus, Ohio, USA

- Stephen Mayo
  Dublin, Ohio, USA

- Ryan McDonald
  Copley, Ohio, USA

- Mitch McBrath
  Cum Laude
  Milan, Ohio, USA

- Dylan Miller
  Columbus, Ohio, USA

- Ian Miller
  Hilliard, Ohio, USA

- Abdul Mod-Rokbi
  Kuala Lumpur, Malaysia

- William Mohr
  Scotia, New York, USA
### COURSE LISTING FOR ACADEMIC YEAR 2010-2011

<table>
<thead>
<tr>
<th>#</th>
<th>NAME OF COURSE</th>
<th>CREDIT HOURS</th>
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<tbody>
<tr>
<td>101</td>
<td>Computer-Assisted Problem Solving</td>
<td>4</td>
</tr>
<tr>
<td>102</td>
<td>Introduction to the Internet and the World-Wide Web</td>
<td>4</td>
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<tr>
<td>105</td>
<td>Computer-Assisted Problem Solving for Construction Management</td>
<td>4</td>
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<td>200</td>
<td>Computer-Assisted Problem Solving for Business</td>
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<tr>
<td>201</td>
<td>Elementary Computer Programming</td>
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<tr>
<td>202</td>
<td>Introduction to Programming and Algorithms for Engineers and Scientists</td>
<td>4</td>
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<tr>
<td>203</td>
<td>Computational Thinking in Context: Interactive Animations and Games</td>
<td>4</td>
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<tr>
<td>204</td>
<td>Computational Thinking in Context: Digital Images and Sound</td>
<td>4</td>
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<tr>
<td>205</td>
<td>Computational Thinking in Context: Science and Engineering</td>
<td>4</td>
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<tr>
<td>214</td>
<td>Data Structures for Information Systems</td>
<td>4</td>
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<tr>
<td>221</td>
<td>Software Development Using Components</td>
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<tr>
<td>222</td>
<td>Development of Software Components</td>
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<td>230</td>
<td>Introduction to C++ Programming</td>
<td>4</td>
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<tr>
<td>314</td>
<td>Business Programming with File Processing</td>
<td>4</td>
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<tr>
<td>321</td>
<td>Case Studies in Component-Based Software</td>
<td>4</td>
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<td>360</td>
<td>Introduction to Computer Systems</td>
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<td>421</td>
<td>Software Development in Java</td>
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<td>459.11</td>
<td>Programming Languages for Programmers: The UNIX Programming Environment</td>
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<tr>
<td>459.21</td>
<td>Programming Languages for Programmers: Programming in C</td>
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<tr>
<td>459.22</td>
<td>Programming Languages for Programmers: Programming in C++</td>
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<tr>
<td>459.23</td>
<td>Programming Languages for Programmers: Programming in JAVA</td>
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<tr>
<td>459.24</td>
<td>Programming Languages for Programmers: Programming in C#</td>
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<tr>
<td>459.31</td>
<td>Programming Languages for Programmers: Programming in C++</td>
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<td>459.32</td>
<td>Programming Languages for Programmers: Programming in JAVA</td>
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<tr>
<td>459.33</td>
<td>Programming Languages for Programmers: Programming in C#</td>
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<tr>
<td>459.51</td>
<td>Programming Languages for Programmers: Programming in JAVA</td>
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<tr>
<td>489</td>
<td>Professional Practice in Industry</td>
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<tr>
<td>493</td>
<td>Individual Studies</td>
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<tr>
<td>502</td>
<td>Object-Oriented Programming for Engineers and Scientists</td>
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<tr>
<td>541</td>
<td>Elementary Numerical Methods</td>
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<tr>
<td>555</td>
<td>Introduction to Information Security</td>
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<tr>
<td>560</td>
<td>Systems Software Design, Development, and Documentation</td>
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<tr>
<td>581</td>
<td>Interactive Computer Graphics</td>
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<tr>
<td>601</td>
<td>Social and Ethical Issues in Computing</td>
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<tr>
<td>602</td>
<td>Introduction to Cognitive Science</td>
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<td>616</td>
<td>Object-Oriented Systems Analysis</td>
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<td>621</td>
<td>Introduction to High-Performance Computing</td>
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<td>625</td>
<td>Introduction to Automata and Formal Languages</td>
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<td>630</td>
<td>Survey of Artificial Intelligence I: Basic Techniques</td>
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<tr>
<td>634</td>
<td>Computer Vision for Human Computer Interaction</td>
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<td>651</td>
<td>Network Security</td>
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<td>652</td>
<td>Applied Information Security Project</td>
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<td>655</td>
<td>Introduction to the Principles of Programming Languages</td>
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<tr>
<td>660</td>
<td>Introduction to Operating Systems</td>
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<tr>
<td>662</td>
<td>Operating Systems Laboratory</td>
<td>4</td>
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</tbody>
</table>
CSE hosted several members of the Delaware County Senior Center, led by director, Sandy Miller. It was the final event in a day of activities for the group in which the day’s theme was computers and communication.

Undergraduate Amanda Kauppila (standing right) gave them a presentation on how the Internet works and samples of some information available in cyberspace. Amanda volunteered for the project in part because of high school service work in senior center as well as her work prior to becoming a CSE major; she worked as a nurse’s aide in a nursing home.

“I enjoy working with older citizens. They are interesting and always have the best stories to tell. This group especially had great questions. It was a lot of fun.”

And from the smile on the seniors’ faces, they enjoyed the visit as well.

<table>
<thead>
<tr>
<th># &amp; Name of Course</th>
<th>Credit Hours</th>
</tr>
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<tbody>
<tr>
<td>788.03 Symbolic Computation</td>
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<tr>
<td>788.04 Artificial Intelligence</td>
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<tr>
<td>788.06 Operating Systems and Systems Programming</td>
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<tr>
<td>788.07 Programming Languages</td>
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<tr>
<td>788.08 Computer Organization</td>
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<td>788.09 Numerical Analysis</td>
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<tr>
<td>788.10 Human-Computer Interaction</td>
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<tr>
<td>788.11 Parallel and Distributed Computing</td>
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<tr>
<td>788.12 Software Engineering</td>
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<tr>
<td>788.14 Computer Graphics</td>
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<tr>
<td>793 Individual Studies</td>
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<tr>
<td>794/790 Advanced Algorithms</td>
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<tr>
<td>861 Computer Communication Networks I</td>
<td>3</td>
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<tr>
<td>862 Computer Communication Networks II</td>
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<tr>
<td>875 Advanced Computer Architecture</td>
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<tr>
<td>885 Seminar on Research Topics in Computer and Information Science</td>
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<tr>
<td>888 Advanced Studies in Computer and Information Science</td>
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<tr>
<td>888.01 Computational Complexity</td>
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<tr>
<td>888.02 Information Systems and Database Systems</td>
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<tr>
<td>888.03 Symbolic Computation</td>
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<tr>
<td>888.04 Artificial Intelligence</td>
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<tr>
<td>888.06 Operating Systems and Systems Programming</td>
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<tr>
<td>888.07 Programming Languages</td>
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<tr>
<td>888.08 Computer Organization</td>
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<td>888.09 Numerical Analysis</td>
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<td>888.10 Human-Computer Interaction</td>
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<td>888.11 Parallel and Distributed Computing</td>
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<td>888.12 Software Engineering</td>
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<td>888.14 Computer Graphics</td>
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<tr>
<td>891.01 Interdisciplinary Seminar on Biomedical Images</td>
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<tr>
<td>999 Research</td>
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</tr>
</tbody>
</table>

Jeremy Morris teaching class.
GAGAN AGRAWAL Full Professor
B.S., Computer Science & Engineering, Indian Institute of Technology, Kanpur, India, 1991; M.S., Computer Science, University of Maryland, College Park, Maryland, 1994; Ph.D., Computer Science, University of Maryland, College Park, Maryland, 1996
Department Research Area: SYSTEMS
Interests: System Software for Parallel and Distributed Environments; Compiler and Runtime Support for Data Intensive Computing, Middleware for Grid and Cloud Environments, Data Integration and Deep web mining.

ANISH ARORA Full Professor
B.Tech., Computer Science and Engineering, Indian Institute of Technology, New Delhi, 1986; M.S., Computer Science, University of Texas, Austin, 1988; Ph.D., Computer Science University of Texas, Austin, 1992.
Department Research Area: NETWORKING
Interests: Wireless Sensor Networks; Fault-tolerant, Secure And Timely Computing; Distributed Systems and Networks; Cyberphysical Systems; Component-Based Design; Formal Methods; Concurrency Semantics.

MIKHAIL BELKIN Associate Professor
Hon.B.Sc. with High Distinction, Mathematics, University of Toronto, 1995; M.S., Mathematics, University of Chicago, 1997; Ph.D., Mathematics, University of Chicago, 2003.
Department Research Area: ARTIFICIAL INTELLIGENCE
Interests: Machine Learning And Statistical Analysis Of Natural Data; Manifold And Spectral Methods For Machine Learning; Algorithms For Semi-Supervised Learning And Clustering; Understanding The Value Of Unlabeled Data In Pattern Recognition; Theoretical analysis of algorithms, particularly in high dimension; Connections to Human Cognition

MICHAEL BOND Assistant Professor
B.S., Computer Science, University of Illinois at Urbana-Champaign, 2002; M.C.S., Computer Science, University of Illinois at Urbana-Champaign, 2003; Ph.D., Computer Sciences, The University of Texas at Austin, 2008
Department Research Area: SOFTWARE ENGINEERING
Interests: Research Interests: Developing program analyses and software systems that make complex, concurrent software reliable, scalable, and secure. Programming languages, software systems, runtime systems, program analysis, compilers, security.

CHRISTOPHER BREW Associate Professor
Associate Professor of Linguistics and Cognitive Science
B.Sc. in Chemistry, University of Bristol, 1980; M.Sc in Experimental Psychology, University of Sussex, 1985; D.Phil, Computational Approaches to Parsing in Dialogue, University of Sussex, 1991.
Department Research Area: ARTIFICIAL INTELLIGENCE
Interests: Statistical Natural Language Processing, particularly Corpus-based Methods for Lexical Acquisition; Data-driven Speech Synthesis and Spoken Language Generation; Infrastructure for Statistical NLP Corpus Creation, Annotation, Indexing and Processing.
ROGER CRAWFIS Associate Professor  
B.S., Computer Science and Applied Mathematics, Purdue University, 1984; M.S., Computer Science, University of California, Davis, 1989; Ph.D., Computer Science, University of California, Davis, 1995.  
Department Research Area: GRAPHICS  
Interests: Computer Graphics; Video Game Technology; Scientific Visualizations; Medical Imaging; and Volume Rendering.

JAMES W. DAVIS Associate Professor  
B.S., Computer Science, University of Central Florida, 1994; M.S., Media Laboratory, Massachusetts Institute of Technology, 1996; Ph.D., Media Laboratory, Massachusetts Institute of Technology, 2000.  
Department Research Area: ARTIFICIAL INTELLIGENCE  
Interests: Computer Vision; Automatic Visual Surveillance and Monitoring; Human Activity Recognition; Video Understanding; and Human-Computer Interaction.

TAMAL K. DEY Full Professor  
B.E., Electronics, Jadavpur University, 1985; M.Tech., Computer Science, Indian Institute of Science-Bangalore, 1987; Ph.D., Computer Science, Purdue University, 1991.  
Department Research Area: GRAPHICS  
Interests: Computational Geometry; Computational Topology; Geometric Modeling; Meshing; Data Analysis.

HAKAN FERHATOSMANOGLU Associate Professor  
B.S., Computer Information Science, Bilkent University, Turkey, 1997; Ph.D., Computer Science, University of California, Santa Barbara, 2001.  
Department Research Area: SYSTEMS  
Interests: Bioinformatics; Data Streams; High Performance Databases for Multi-dimensional and Scientific Applications, and Multimedia and Spatial Data.

ERIC FOSLER-LUNNER Associate Professor  
Department Research Area: ARTIFICIAL INTELLIGENCE  
Interests: Automatic Speech Recognition; Computational Linguistics; Machine Learning.

TEN-HWANG (STEVE) LAI Full Professor  
B.S., Mathematics, Fu-Jen University, Taiwan, 1972; M.S., Mathematics, Fordham University, 1976; Ph.D., Computer Science, University of Minnesota, 1982.  
Department Research Area: NETWORKING  
Interests: Cryptography; Network Security; and Parallel and Distributed Computing.

DAVID LEE Full Professor  
Department Research Area: NETWORKING  
Interests: Communications and Network Protocol Security and Reliability.

RAGHU MACHIRAJU Associate Professor  
B.Sc., Electrical Engineering, Delhi University, 1982; M.S., Automation, Indian Institute of Science, Bangalore, 1984; Ph.D., Computer Science, The Ohio State University, 1996.  
Department Research Area: GRAPHICS  
Interests: Interests: Scientific and Medical Visualization; Imaging; Computational Biology

DHABALESHWAR K. (DK) PANDA Full Professor  
Department Research Area: SYSTEMS  
Interests: Parallel Computer Architecture; High Performance Networking; Network-Based Computing; Cluster Computing; High Performance File/Storage Systems; Lan-Wan Interfacing and Communication; and Resource Management.

RICHARD E. PARENT Full Professor  
B.S., Computer Science and Mathematics, University of Dayton, 1972; M.S., Computer Science, The Ohio State University, 1973; Ph.D., Computer Science, The Ohio State University, 1977.  
Department Research Area: GRAPHICS  
Interests: Computer Graphics; Computer Animation; Modeling and Animating Human Figure; Tracking Human Figures in Video; Perception of Synthetic Imagery.
SKRINIVASAN PARMASARATHY Full Professor
B.E., Electrical Engineering, University of Roorkee, India, 1992; M.S., Electrical Engineering, University of Cincinnati, 1994; M.S., Computer Science, University of Rochester, 1996; Ph.D., Computer Science, University of Rochester, 2000.
Department Research Area: SYSTEMS
Interests: Data Mining; Database Systems; Network Analysis; Bioinformatics; High Performance Computing Systems.

PONNUSWAMY (SADAY) SADAYAPAN Full Professor
Department Research Area: SYSTEMS
Interests: Compiler/Runtime Systems For High-Performance Computing; Performance Optimization; High-Productivity, High-Performance Scientific Computing.

FENG QIN Assistant Professor
B.E., University of Science and Technology of China, 1998; M.E., Chinese Academy of Sciences, 2001; Ph.D., the University of Illinois, Urbana-Champaign, 2006.
Department Research Area: SYSTEMS
Interests: Operating Systems; Software Reliability; Security and Distributed Systems

HAN-WEI SHEN Associate Professor
B.S., Computer Science, National Taiwan University, 1988; M.S., Computer Science, State University of New York, Stony Brook, 1992; Ph.D., Computer Science, University of Utah, 1998.
Department Research Area: GRAPHICS
Interests: Computer Graphics; Information Visualization; Parallel Visualization Scientific Visualization; Visual Analytics.

LEO RADEMACHER Assistant Professor
Bachelor in Engineering Sciences, Mathematics, Universidad de Chile; Santiago, Chile, 2002; Mathematical Engineering Title (Masters Equivalent) Universidad de Chile. Santiago, Chile, 2002; Ph.D., Applied Mathematics, Massachusetts Institute of Technology, 2007.
Department Research Area: THEORETICAL COMPUTER SCIENCE
Interests: Algorithmic convex geometry; random structures; computational complexity; matrix approximation; game theory; mathematical economics; optimization.

NESS B. SIBOFF Ohio Eminent Scholar of Networking and Communications Endowed Chaired Professor
B.S., University of Southern California, 1988; M.S.E, University of Pennsylvania, 1990; M.Phil, Columbia University, 1993; Ph.D., Columbia University, 1994.
Department Research Area: NETWORKING
Interests: Interests: Wireless Networks; Next Generation Internet; Sensor Networks; Cloud Computing; Network Optimization; Network Design and Dimensioning; Network Security; Information Theoretic Security; Queueing Theory; Dynamic Control; Network Coding; Scaling Laws; Distributed Algorithms; Complexity and Approximability; Game Theory; Pricing.

NICOLETA ROMAN Assistant Professor, Lima Campus
B.S., Computer Science, University of Bucharest, Romania, 1996; M.S., Computer Science, University of Bucharest, Romania, 1997; Ph.D., Computer Science and Engineering, The Ohio State University, Columbus, Ohio, 2005.
Department Research Area: ARTIFICIAL INTELLIGENCE
Research interests: Computational Auditory Scene Analysis; Binaural sound localization and separation; Automatic Speech Recognition; Machine Learning.

PRASUN SINHA Associate Professor
B.Tech., Computer Science and Engineering, Indian Institute of Technology, Delhi, India, 1995; MS, Computer Science, Michigan State University, 1997; PhD, Computer Science, University of Illinois, Urbana-Champaign, 2001.
Department Research Area: NETWORKING
Interests: Sensor Networking; Ad-hoc Networking; Mobile Computing; Wireless Networking

PATEL AG SIVILOTTI Associate Professor
Department Research Area: SOFTWARE ENGINEERING
Interests: Distributed Systems; Software Engineering; and Tool-based Support for Testing Component Implementations.
NEELAM SOUNDARAJAN Associate Professor
B.S., Physics, Bombay University, India, 1970; M.S., Physics, Bombay University, India, 1972; Ph.D., Computer Science, Bombay University, India, 1978.
Department Research Area: SOFTWARE ENGINEERING
Interests: Software Engineering; Reasoning about Program Behavior; Specification; Verification; Testing; Issues in Engineering Education.

YURI WANG Associate Professor
Department Research Area: GRAPHICS

CHRISTOPHER STEWART Assistant Professor
B.S., Computer Science, Morehouse College, 2003; M.S., Computer Science, University of Rochester, 2005; Ph.D., Computer Science, University of Rochester, 2008
Department Research Area: SYSTEMS
Interests: Operating Systems; Distributed Systems; Performance Management; and Power Management.

BRUCE W. WEIDE Full Professor and Associate Chairperson
B.S.E.E., Electrical Engineering, University of Toledo, 1974; Ph.D., Carnegie Mellon University, 1978.
Department Research Area: SOFTWARE ENGINEERING
Interests: Component-Based Software; Verified Software.

KENNETH J. SUPOWIT Associate Professor
A.B., Linguistics, Cornell University, 1978; Ph.D., Computer Science, University of Illinois, 1981.
Department Research Area: SOFTWARE ENGINEERING
Interests: Combinational Algorithms

REPHAEL WEBER Associate Professor
B.S.E., Computer Science, Princeton University, 1984; Ph.D., Computer Science, McGill University, 1988.
Department Research Area: COMPUTER GRAPHICS
Interests: Computational Geometry; Computer Visualization; Isosurface Reconstruction; and Image Processing.

RADU TEODORESCU Assistant Professor
Dipl. Eng. in Computer Science, Technical University of Cluj-Napoca, Romania, 2002; M.S., Computer Science, University of Illinois at Urbana-Champaign, 2005; Ph.D., Computer Science, University of Illinois at Urbana-Champaign, 2008.
Department Research Area: SYSTEMS
Interests: Computer Architecture, Multicore and Parallel Architectures; Support for Software Debugging; Nanoscale Technology; Scaling, Reliability, Variability and Power Management.

DONG XUAN Associate Professor
B.S., Electronic Engineering, Shanghai Jiao Tong University, China, 1990; M.S., Electronic Engineering, Shanghai Jiao Tong University, 1993; Ph.D., Computer Engineering, Texas A&M University, 2001.
Department Research Area: NETWORKING
Interests: Distributed Computing, Computer Networks and Cyber Space Security

DELiang (Leon) Wang Full Professor
B.S., Computer Science, Beijing University, 1983; M.S., Computer Science, Beijing University, 1986; Ph.D., Computer Science, University of Southern California, Los Angeles, 1991.
Department Research Area: ARTIFICIAL INTELLIGENCE
Interests: Machine Perception and Neurodynamics

XIAODONG ZHANG Chairperson of Computer Science & Engineering
Robert M. Critchfield Professor
B.S., Electrical Engineering, Beijing University of Technology, 1982; M.S., Computer Science, University of Colorado at Boulder, 1985; Ph.D., Computer Science, University of Colorado at Boulder, 1989.
Department Research Area: SYSTEMS
Interests: Distributed and High Performance Systems

NEELAM SOUNDARAJAN Associate Professor
B.S., Physics, Bombay University, India, 1970; M.S., Physics, Bombay University, India, 1972; Ph.D., Computer Science, Bombay University, India, 1978.
Department Research Area: SOFTWARE ENGINEERING
Interests: Software Engineering; Reasoning about Program Behavior; Specification; Verification; Testing; Issues in Engineering Education.

YURI WANG Associate Professor
Department Research Area: GRAPHICS

CHRISTOPHER STEWART Assistant Professor
B.S., Computer Science, Morehouse College, 2003; M.S., Computer Science, University of Rochester, 2005; Ph.D., Computer Science, University of Rochester, 2008
Department Research Area: SYSTEMS
Interests: Operating Systems; Distributed Systems; Performance Management; and Power Management.

BRUCE W. WEIDE Full Professor and Associate Chairperson
B.S.E.E., Electrical Engineering, University of Toledo, 1974; Ph.D., Carnegie Mellon University, 1978.
Department Research Area: SOFTWARE ENGINEERING
Interests: Component-Based Software; Verified Software.

KENNETH J. SUPOWIT Associate Professor
A.B., Linguistics, Cornell University, 1978; Ph.D., Computer Science, University of Illinois, 1981.
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Interests: Combinational Algorithms

REPHAEL WEBER Associate Professor
B.S.E., Computer Science, Princeton University, 1984; Ph.D., Computer Science, McGill University, 1988.
Department Research Area: COMPUTER GRAPHICS
Interests: Computational Geometry; Computer Visualization; Isosurface Reconstruction; and Image Processing.

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Dipl. Eng. in Computer Science, Technical University of Cluj-Napoca, Romania, 2002; M.S., Computer Science, University of Illinois at Urbana-Champaign, 2005; Ph.D., Computer Science, University of Illinois at Urbana-Champaign, 2008.
Department Research Area: SYSTEMS
Interests: Computer Architecture, Multicore and Parallel Architectures; Support for Software Debugging; Nanoscale Technology; Scaling, Reliability, Variability and Power Management.

DONG XUAN Associate Professor
B.S., Electronic Engineering, Shanghai Jiao Tong University, China, 1990; M.S., Electronic Engineering, Shanghai Jiao Tong University, 1993; Ph.D., Computer Engineering, Texas A&M University, 2001.
Department Research Area: NETWORKING
Interests: Distributed Computing, Computer Networks and Cyber Space Security

DELiang (Leon) Wang Full Professor
B.S., Computer Science, Beijing University, 1983; M.S., Computer Science, Beijing University, 1986; Ph.D., Computer Science, University of Southern California, Los Angeles, 1991.
Department Research Area: ARTIFICIAL INTELLIGENCE
Interests: Machine Perception and Neurodynamics

XIAODONG ZHANG Chairperson of Computer Science & Engineering
Robert M. Critchfield Professor
B.S., Electrical Engineering, Beijing University of Technology, 1982; M.S., Computer Science, University of Colorado at Boulder, 1985; Ph.D., Computer Science, University of Colorado at Boulder, 1989.
Department Research Area: SYSTEMS
Interests: Distributed and High Performance Systems
NEW FACULTY MEMBERS ARRIVING AUTUMN 2011

BRIAN KULIS
B.A., Computer Science and Mathematics, Cornell University; Ph.D., Computer Science University of Texas at Austin, 2008.
Research Interests: Machine learning, data mining, large-scale data analysis, numerical optimization, applications to computer vision and other domains.

ARNAB NANDI
Bachelors in Information Science, University of Delhi, India, 2005; M.S., University of Michigan, Ann Arbor, 2007; Ph.D., University of Michigan, Ann Arbor, 2011.
Research Interests: structured search and large-scale data analysis Efficient interaction with databases and the management of large, diverse data collections.

KANNAN SRINIVASAN
B.S., Electronics & Communications Engineering, University of Madras, Chennai, India, 2000; M.S., Electrical & Computer Engineering, Stanford University, Stanford, CA, USA, 2002; Ph.D., Electrical Engineering, Stanford University, Stanford, CA, USA, 2010

HUAMIN WANG
B.Eng., Computer Science and Engineering, Zhejiang University Hangzhou, China, 2002
M.S., Computer Science, Stanford University Stanford, CA, USA, 2004; Ph.D. in Computer Science Georgia Institute of Technology Atlanta, GA, USA, 2009
Computer Graphics, GPU programming for high-performance graphics and general-purpose computation, Computer Vision, feature tracking, optical flow, 3D reconstruction, finite element method, numerical integration, model reduction, motion control and design, efficient data structures.
**Lecturers**

**GOEKO BABIC**

**BETTINA BAIR**
B.S., Business Administration, University of Phoenix, 1987; M.B.A., University of Denver, 1992. Research Interests: Women in Computing; Effects of Technology on Business and Culture; and Computer Education

**PAOLO BUCCI**
Laurea in Scienze Dell’ Informazione, Universita’ Degli Studi di Milano, Italy, 1986; M.S., Computer & Information Science, The Ohio State University, 1989; Ph.D., Computer & Information Science, The Ohio State University, 1997. Research Interests: Software Engineering; Computer Science Education

**DEBRY GROSS**

**WAYNE HEYM**
B.Phil., Miami University, 1978; M.S., Cornell University, 1980; M.S., Computer & Information Science, The Ohio State University, 1989; Ph.D., Computer & Information Science, The Ohio State University, 1995. Research Interests: Software Engineering and Computing Education

**NAFEM SHAREEF**

**Part-Time Lecturers**

Bruce Adcock  
Charles Giles  
Michelle Mallon

Thomas Bihari  
Steve Gomori  
Robert Mathis

Moze Chaabouni  
John Heimaster  
Jeremy Morris

Doreen Close  
Robert Joseph  
Judita Preissova

Michael Compton  
Perumal Krishnasamy  
Steven Romig

Matt Curtin  
Igor Malkiman  
AI Stutz

Annatala Wolf

**Emeritus Appointments**

**Professor Emeritus**

Balar Krishnan Chandrasekaran

Charles A. Curte

Ming-Tao (Mike) Liu

Sandy Mamak

Merwin E. Muller

Stuart Zweber

**Associate Professor Emeritus**

Clint R. Fouke

Douglas S. Kerr

William F. Ogden

Anthony E. Petrovca

**Adjunct Faculty**

**Emeritus Appointments**

Kikuo Fujimura

Wayne Carlson  Chair, Industrial Design

Harvey M. Friedman  Mathematics

Kun Huang  Biomedical Informatics

Furrukh Khan  Electrical and Computer Engineering

Michael Knopp  Chair, Radiology

Albert M. Lai  Biomedical Informatics

Virginia Nivar  Davis Heart & Lung Research Institute

Alan Saffield  Geodetic Science

Cathy Hongshui Xia  Integrated Systems Engineering

Tao Shi  Statistics

Alper Yilmaz  Civil, Environmental Engineering & Geodetic Science

**Administrative Staff**

Carrie Stern: Grants Administrator.

Catrena Collins: Human Resources Officer

Tamera Cramer: Public Relations Coordinator.

Tom Fletcher: Office Support Associate

Don Havard: Fiscal Officer

Z. Lynn Lyons: Graduate Admissions and Graduate Studies Coordinator.

Kitty Reeves: Academic Program Administrator

**Computing Services Staff**

Michael Compton -- Director, Computing Services

Aaron Jenkins – Systems Manager

Bob Joseph -- Systems Developer/Engineer, DBA

Tami King -- St. Systems Developer/Engineer

Milan Kopper -- Systems Administrator

Dave Kneisly -- Systems Administrator

Todd Lucell -- Systems Administrator

Shaun Rowland -- Manager, Software Support and Development

Ted Welch -- Systems Administrator

Kat Wenger -- Systems Manager
Retirement came to another long-term CSE member - staffer Tom Fletcher called it a day after 34 years. In his position of Office Assistant, he could often make many people's work day better or worse. He was liked by all; colleagues, such as Neelam Soundarajan (below, left) considered him friend. In honor of his perseverance dealing with the daily equipment frustrations, a special cake was ordered (right). Both current and former staff members returned for his send-off, like Marty Marlatt (left, below right) who retired 4 years ago. With Marty is current staffer Carrie Stein.

At the Spring CETI-CSE 758 Poster session, Interim Dean Greg Washington discusses with student Antonio Ubach the application Antonio’s team designed, iGreenSpot Mobile. This application is a support for the columbusgreenspot.org website, a local entity striving to “promote a cleaner, healthier, more sustainable city to the citizens of Columbus in the hopes they partake in making their homes, businesses, and other community groups and organizations more environmentally responsible.”

September 2010, New grad students at the Department orientation.