For Purdue Computer Science, 2002-03 was a year of celebration of special milestones and of people and their accomplishments!

Many of you know that the first degree-program in computer science was founded at Purdue in 1962-63. On March 28, 2003, the department celebrated its 40th anniversary and its proud tradition of providing outstanding computer science education and fostering groundbreaking research. During a day-long symposium, distinguished guests, including founding dean Dr. Felix (Phil) Haas and alumni from around the world, came to campus to look back at the earliest days in the field and to make predictions on the future of information technology. In the evening, Purdue University President Martin Jischke hosted a gala anniversary dinner at which Indiana Governor Frank O’Bannon was keynote speaker. It was a marvelous day of intellectual inspiration, renewal of friendships, and formation of new bonds.

For the new academic year, we welcomed four outstanding new faculty members: Daniel Aliaga, Cristina Nita-Rotaru, Daisuke Kihara, and Ninghui Li. The research interests of these four assistant professors are described in the faculty section. Their hire brings the size of our department to 40 tenure-track faculty members. I am proud to report that our faculty continue to earn praise and reward for their achievements. Highlights include:

• Professors Chris Bailey-Kellogg and Sonia Fahmy were awarded the prestigious Career Awards by the National Science Foundation.
• Professor Gene Spafford was appointed to serve on President Bush’s Information Technology Advisory Committee.
• Professor Chris Bailey-Kellogg received a 2003 Showalter Grant Award.
• Professor Wojciech Szpankowski was named a Fellow of the IEEE.
• Professors Bharat Bhargava and Gene Spafford were inducted into Purdue's Book of Great Teachers.
• Professor Doug Comer was selected as a Fellow of the Purdue Teaching Academy.
• Professor Tony Hosking and Dr. Gustavo Rodriguez-Rivera were selected as two of the Top 10 Outstanding Teachers in the School of Science.

Our enrollment followed the national trend and experienced a slight decrease. We are pleased, though, that our entering students have even higher standardized test scores — and smaller classes improve the quality education we can provide our students. In fall 2003, we had 221 freshmen and 747 total undergraduate majors. Among our 174 graduate students, we currently have a near record high 61 Ph.D. students. The department awarded 167 B.S., 62 M.S., and 8 Ph.D. degrees in 2002-03.

All of Purdue helped celebrate the completion of the campaign to raise $20 million for a new Computer Science building. Groundbreaking is scheduled for 2004 and we will open doors to students in fall 2006. Several leadership gifts, including an anonymous contribution of $4.7 million, were instrumental in bringing fundraising for the building to a close this year. At a ceremony on the stage of Elliott Hall of Music, President Jischke recognized the generosity of the State of Indiana and many alumni and friends who made the dream of a new facility come true. He introduced Mrs. Heddy Kurz, whose $2 million commitment put the campaign over the top, and took the audience on a virtual tour of the department's new home.

Our research expenditures for 2002-03 exceeded $7 million, with the National Science Foundation providing the largest source of research support. Financial support from individuals and from corporate partners continues to strengthen and grow. You will find a complete list of 2002-03 donors beginning on page 7. The department presented $265,000 in merit scholarships to new and continuing students at the April 2003 awards banquet.

As you look through this annual report, I think you will agree that Purdue Computer Science had many reasons to celebrate during the past year. I am honored to lead this extraordinary department.

Susanne Hambrusch
Professor and Department Head

P.S. To order a boxed DVD set of the 40th anniversary celebration or a DVD of the campaign completion celebration, please send e-mail to annual-report@cs.purdue.edu.
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Purdue University

Founded in 1869 as Indiana's land-grant university, Purdue is a public, doctoral-granting research university with just over 38,000 students on its West Lafayette campus, choosing from more than 5,300 courses in more than 350 specializations. Students come from 50 states and 136 countries. Purdue enrolls more international students than any public university in the United States.

Purdue's research and learning environment is a birthplace of great ideas and accomplishments where faculty and students discover together, push the boundaries of knowledge, and make significant contributions to virtually every aspect of contemporary life.

Extensive library, computing, and laboratory resources support the robust research and learning setting and provide multiple opportunities to explore interests and develop skills.

More than 325,000 living alumni are graduates of one of the University's highly regarded 10 schools — Science, Engineering, Management, Pharmacy, Nursing, Consumer and Family Sciences, Liberal Arts, Agriculture, Veterinary Medicine, and Technology — and are making a difference each day in myriad fields.

For more information, visit www.purdue.edu.

Lafayette-West Lafayette

The home of Purdue, Greater Lafayette is a friendly, spirited community located on Interstate 65, 150 miles southwest of Chicago and 65 miles northwest of Indianapolis. West Lafayette and Lafayette, situated along the scenic Wabash River in Tippecanoe County, are home to a total population of just over 150,000 people who enjoy a strong economic base; historic architecture; excellent schools; well-maintained parks, biking, and hiking trails; and several fine restaurants. The local arts scene, including performances by international artists presented throughout the year at Purdue, is thriving. Residents enjoy the changes of four seasons with an average mean temperature in January of 23 degrees and 73 degrees in July.

For more information, visit www.lafayette-in.com.
The department is dedicated to providing high-quality computing facilities for use by computer science faculty, students, and administrative personnel. The facilities are operated by a technical staff who are not only responsible for the installation and maintenance of the systems, but who also assist faculty and students in the development of software systems for research projects. The staff includes a director, facilities manager, administrative assistant, one network engineer, one hardware engineer, six system administrators, and several student assistants.

**General Facilities**

General computing facilities are available for both administrative activities (such as the preparation of research reports and technical publications) and research needs that are not supported by other dedicated equipment. The main systems each have 512 MB to 4 GB of main memory and a total of over 500 GB of disk storage. All faculty and many graduate students have a Sun, Intel, or Apple (Mac) workstation on their desk.

**Educational Facilities**

Computing systems used by students enrolled in both undergraduate and graduate computer science courses include over 100 Intel PCs running either Sun Solaris x86 or Windows XP. CS also offers over 60 Sun workstations for courses running Solaris Sparc OS. Four rooms in the Computer Science Building, two rooms in the Physics Building, and a room in the Recitation Building are dedicated to laboratory-based instruction using these facilities. A later section lists equipment owned and maintained by ITaP but used by computer science students.

**I/O Equipment**

The department operates special-purpose output devices as well as general output equipment, including about 75 laser printers, color printers, color scanners, video projectors, digital video editing capabilities, and video conferencing equipment.

**Networking Services**

The department is strongly committed to state-of-the-art networking technology to provide access to and communication among its systems, as well as to those elsewhere on campus and throughout the world. Over 60 100 Mbps and 1000 Mbps Ethernet switches installed in the Computer Science Building connect the workstations to the departmental computing facilities. Experimental wireless networks and production wireless networks are also used in the building. A dual gigabit link connects departmental systems to other systems on campus, as well as to the Internet community via both “commodity” and Internet2/Abilene connections. ADSL, cable, and cellular data services are widely used for remote access.

**Information Technology at Purdue (ITaP)**

In addition to the facilities described above, students and faculty have access to computing systems owned and operated by ITaP. General instructional facilities operated by ITaP include large Sun SPARC servers and several Sun and Intel workstation laboratories. In addition, ITaP provides systems for use in courses taught by the department. These systems include UNIX-based Sun SPARC stations for undergraduate computer science courses and Microsoft Windows-based Intel personal computers for use in an introductory course for non-majors (CS 110). Departmental research projects make use of other facilities provided by ITaP, including a large IBM SP cluster.
The Building Campaign: 
**A New Home for Computer Science at Purdue**

In 2003, Purdue and the Department of Computer Science celebrated the completion of the campaign to raise $20 million to build a new facility for CS.

With gifts topping $7 million from alumni and corporate and foundation friends, and an allocation from the State of Indiana of $13 million, the goal was reached and exceeded. Groundbreaking for this beautiful, state-of-the-art facility will take place in 2004 and doors will open in time for classes in fall 2006. The site of the new building will be on the northwest corner of Third and University streets on the main campus with a beautiful view of the Bell Tower and Engineering Mall to the east. It will be situated diagonally across University Street from the current CS building.

The impact of the new building on Purdue’s quest to become a Top 10 program in computer science will be immediate.

- In its new home, CS will be a magnet for the world’s brilliant minds in the field and achieve a competitive advantage in faculty growth.
- Outstanding students will follow great faculty to Purdue. The exterior of the new building will be stunning; and the thoughtful, people-friendly interior design that, among other features, includes break-out rooms, comfortable conversation areas, and upscale food service, will help attract the best and brightest students.
- Working in teams, students in the new building will be taught more often by faculty and less often by teaching assistants. There will be space and equipment for additional research projects for undergraduates as well as graduate students.
- Students will take coursework in smaller classrooms with the most technologically advanced equipment
- The new building will include a well-designed and fully equipped room intended to host university gatherings, corporate meetings, and academic conferences, one of the features that will help Purdue attain the preeminent, multidisciplinary environment it is striving to achieve.
Corporate Partners Program
The Corporate Partners Program (CPP) is a program encouraging corporate involvement in the Department of Computer Sciences.

Companies, which participate at membership tiers by making unrestricted donations, are involved in the everyday activity of the department. Company representatives have opportunities to speak in classes, sponsor student projects, and otherwise make contact with CS students and faculty. Members of the CPP include giants of the IT industry as well as smaller, specialized companies. Partner members represent companies in Indiana as well as across the United States. The diverse membership offers information and guidance about the vast career opportunities available to computer science students.

The Corporate Partners meet twice each year to provide input and feedback to departmental and school leadership. Recent contributions of the council include assistance in revising the undergraduate and graduate curriculums, ideas regarding retention and enrollment issues, collaborative efforts with faculty and student research, as well as alerting the department to industry areas of concern, such as global outsourcing.

Premier Corporate Partners
Eli Lilly and Company – Mike Rudicle
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Intel Corporation – Kevin Kahn
Lockheed Martin – Richard Schubert
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State Farm Insurance Companies – Luke Wellman

Corporate partners and CS faculty enjoy the view in the new Ross-Ade Stadium.

Dick Schubert, VP Engineering — Lockheed Martin, visits with CS students Carlie Bower, Sarah Shoup, and Alex Thaman.
With support from its alumni and friends, Purdue Computer Science competes for the best faculty, recruits top students, provides scholarships, supports research, and funds new program initiatives. The department is deeply grateful to these donors who made contributions and pledges in the 2002-03 academic year.

**Donor Honor Roll – Individuals**

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Mrs. Heddy H. Kurz

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Shreeram S. Abhyankar
Marshall Distinguished Professor of Mathematics
Professor of Computer Science and Industrial Engineering (1988)

B.S., Bombay, 1951
A.M., Harvard, 1952
Ph.D., 1955

Professor Abhyankar is a fellow of the Indian Academy of Science and an editorial board member of the *Indian Journal of Pure and Applied Mathematics*. He has won numerous awards and honors. Before coming to Purdue, he was an associate professor of mathematics at Johns Hopkins University and came to Purdue as a full professor. In 1967, he was appointed the Marshall Distinguished Professor of Mathematics.

His research areas of interest have included algebraic geometry, commutative algebra, local algebra, theory of functions of several complex variables, quantum electrodynamics, circuit theory, invariant theory, combinatorics, computer aided design, and robotics. His current research is in the area of computational geometry and algorithmic algebraic geometry.

Daniel G. Aliaga
Assistant Professor of Computer Science (2003)

B.S., Computer Science, Brown University, 1991
M.S., Computer Science, University of North Carolina at Chapel Hill, 1993
Ph.D., Computer Science, University of North Carolina at Chapel Hill, 1999

Dr. Aliaga’s research activities are in the area of computer graphics, in particular capturing and rendering large complex environments. Applications for his research include telepresence, computer-aided design, and education. Dr. Aliaga’s work into this general problem overlaps with several fields, including:

- computer graphics
- robotics
- system building
- computer vision
- data compression
- system building

Over the years, Dr. Aliaga has developed and published several new algorithms for interactively rendering massive geometrical models, recreating complex 3D environments, visibility culling, reconstructing images, estimating camera pose, calibrating cameras, and compressing images. In addition, he has designed several complete experimental research systems, in collaboration with researchers at University of North Carolina at Chapel Hill, Princeton University, Johns Hopkins University, and Bell Laboratories.

Dr. Aliaga has been a department coordinator for two Bell Labs scholarship programs, an organizer for a NSF-sponsored Science and Technology Student Collaboration Conference, a Brown University Faculty-Student Liaison, and invited speaker and guest lecturer at several institutions. Furthermore, he is a frequent reviewer of numerous ACM, IEEE, Eurographics, and NSF conferences and panels.

Selected Publications:
David C. Anderson  
Professor of Mechanical Engineering (1975)  
Professor of Computer Science  
Ph.D., Purdue University, 1974

Professor Anderson conducts research and teaches in the areas of computer-aided design, computer graphics and mechanical engineering design. His research focuses on problems in intelligent manufacturing systems, computer-aided engineering, design environments, high level shape representation, geometric modeling, and geometric reasoning.

He is currently deputy director and co-principal investigator of the National Science Foundation Engineering Research Center (ERC) for Collaborative Manufacturing, and chairman of the Mechanical Engineering Design Area. He is a member of the editorial boards of the *Journal of Research in Engineering Design* and the *Journal of Design and Manufacturing*. Dr. Anderson is a Fellow of the ASME.

Alberto Apostolico  
Professor of Computer Science (1984)  
Dr. Engineering, Electronic Engineering, University of Naples, 1973  
Dipl. Perf., Computer Science, University of Salerno, 1976

Professor Apostolico’s research interests are in the areas of algorithmic analysis and design and applications. His recent work deals with algorithms and data structures for combinatorial pattern matching and discovery problems as arising in text editing, data compression, picture processing, biomolecular sequence analysis, etc. He is a co-editor (with Z. Galil) of the books *Combinatorial Algorithms on Words* (Springer-Verlag) and *Pattern Matching Algorithms* (Oxford Univ. Press), serves on the editorial boards of *Parallel Processing Letters, Theoretical Computer Science, Journal of Computational Biology, Chaos Theory and Applications, Springer-Verlag Lecture Notes on Bioinformatics*, and was guest editor for a special issue of *Algorithmica* on string algorithms and their applications.

He also serves on the steering committee of the International Symposia on Combinatorial Pattern Matching, the proceedings of which he co-edited in 1993, 1994, 1997, and 2002, and of the International Conferences on Discovery Science, and was on the executive committees of the Fibonacci Institute for the Foundations of Computer Science and of the MSE Program in Software Engineering. He has served on the program committees of many international conferences, most recently, Research in Computational Biology (RECOMB), Workshop on Algorithms in Bioinformatics (WABI), IEEE Data Compression Conference, String Processing and Information Retrieval (SPIRE), Workshop on Algorithms and Data Structures (WADS), Combinatorial Pattern Matching (CPM), among others, and as an invited speaker at numerous international conferences and advanced research schools.

In his career, Professor Apostolico has also held appointments at Italian universities and spent extended stages at several other institutions, including C-MU, UIUC, Rensselaer Poly, U. of London, U. of Paris, IBM T.J. Watson, Renyi Institute, ZiF-Bielefeld. He has been the (co-)recipient of U.S. (Air Force, NIH, NSF, IBM), British, French, Italian, collaborative (Israel, Korea, Japan), and international (Fulbright, NATO, ESPRIT) research grants.

**Selected Publications:**
Walid G. Aref
Associate Professor of Computer Science (1999)
Ph.D., University of Maryland at College Park, 1993

Professor Aref’s research interests are in developing database technologies for emerging applications, e.g., spatial, multimedia, genomics, and sensor databases. He is also interested in indexing, data mining, and geographic information systems (GIS). Professor Aref’s research has been supported by the NSF, Purdue Research Foundation, CERIAS, Panasonic, and Microsoft Corp. In 2001, he received the CAREER Award from the National Science Foundation. Professor Aref is on the editorial board of the VLDB Journal and is a member of the ACM and the IEEE.

Selected Publications:

Mikhail Atallah
Professor of Computer Science (1982)
Ph.D., The Johns Hopkins University, 1982

Professor Atallah’s current research interests are in information security (in particular, software security, secure protocols, and watermarking). He received a Presidential Young Investigator Award from the National Science Foundation in 1985. A Fellow of the IEEE, he has served on the editorial boards of SIAM Journal on Computing, IEEE Transactions on Computers, Journal of Parallel and Distributed Computing, Information Processing Letters, Computational Geometry: Theory & Applications, International Journal of Computational Geometry & Applications, Parallel Processing Letters, Methods of Logic in Computer Science. He was guest editor for a special issue of Algorithmica on computational geometry, has served as editor of the Handbook of Parallel and Distributed Computing (McGraw-Hill), as editorial advisor for the Handbook of Computer Science and Engineering, (CRC Press), and as editor-in-chief for Handbook of Algorithms and Theory of Computation (CRC Press). He was selected to serve on the program committees of various conferences and workshops (including ACM Symposium on Computational Geometry, SIAM Symposium on Discrete Algorithms, Workshop on Algorithms and Data Structures, IEEE Symposium on Parallel and Distributed Processing, IEEE International Parallel Processing Symposium, International Symposium on Algorithms and Computation, and many others). He was keynote and invited speaker at many national and international meetings. In June 2001 he co-founded Arxan Technologies Inc., a startup in the software security products space that in 2002 secured funding from a top-tier venture capital firm.

Selected Publications:
Chris Bailey-Kellogg
Assistant Professor of Computer Science (2001)

B.S., Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 1993
M.S., Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 1993
Ph.D., Computer and Information Science, Ohio State University, 1999

Chris Bailey-Kellogg’s research focuses on intelligent systems in computational science and engineering. In the area of computational biology, he is pursuing a mixed computational-experimental approach to the structural and functional understanding of and control over the molecular machinery of the cell. He is developing algorithms and systems to automatically plan experiments, predict outcomes, interpret data, revise models, and so forth. In the area of qualitative reasoning about physical systems, he is focusing on analysis of spatially distributed data, for example, in phase portrait representations and for decentralized control design. He is developing and applying a general framework that navigates a hierarchy from input data to abstract description and back, using a mixture of numeric, symbolic, and geometric reasoning.

Selected Publications:

Bharat Bhargava
Professor of Computer Science (1984)
Professor of Electrical and Computer Engineering (Courtesy)

Ph.D., Electrical Engineering, Purdue University, 1984

Professor Bhargava is conducting research in security issues in mobile and ad hoc networks. This involves host authentication and key management, secure routing and dealing with malicious hosts, adaptability to attacks, and experimental studies. Related research is in formalizing evidence, trust, and fraud. Applications in e-commerce and transportation security are being tested in a prototype system. He has proposed schemes to identify vulnerabilities in systems and networks, and assess threats to large organizations. He has developed techniques to avoid threats that can lead to operational failures. The research has direct impact on nuclear waste transport, bio-security, disaster management, and homeland security. These ideas and scientific principles are being applied to the building of peer-to-peer systems, cellular assisted mobile ad hoc networks, and to the monitoring of QoS-enabled network domains. He serves on the editorial boards of five international journals.

His research group consists of nine Ph.D. students and two post-docs. He has six NSF funded projects. In addition, DARPA, IBM, Motorola, and CISCO are providing contracts and gift funds.

Professor Bhargava was the chairman of the IEEE Symposium on Reliable and Distributed Systems held at Purdue in October 1998. In the 1988 IEEE Data Engineering Conference, he and John Riedl received the best paper award for their work on “A Model for Adaptable Systems for Transaction Processing.”

Professor Bhargava is a Fellow of the Institute of Electrical and Electronics Engineers and of the Institute of Electronics and Telecommunication Engineers. He has been awarded the charter Gold Core Member distinction by the IEEE Computer Society for his distinguished service. He received Outstanding Instructor Awards from the Purdue chapter of the ACM in 1996 and 1998. In 1999, he received the IEEE Technical Achievement award for a major impact of his decade long contributions to foundations of adaptability in communication and distributed systems. In 2003, he was inducted into Purdue's Book of Great Teachers.
Selected Publications:

Christopher W. Clifton
Associate Professor of Computer Science (2001)

B.S., Computer Science and Engineering, Massachusetts Institute of Technology, 1986
M.S., Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 1986
M.A., Computer Science, Princeton, 1988
Ph.D., Computer Science, Princeton, 1991

Dr. Clifton works on challenges posed by novel uses of data mining technology, including privacy-preserving data mining, data mining of text, and data mining techniques applied to interoperation of heterogeneous information sources. Fundamental data mining challenges posed by these applications include extracting knowledge from noisy data, identifying knowledge in highly skewed data (few examples of "interesting" behavior), and limits on learning. He also works on database support for widely distributed and autonomously controlled information, particularly information administration issues such as supporting fine-grained access control.

Prior to joining Purdue, Dr. Clifton was a principal scientist in the Information Technology Division at the MITRE Corporation. Before joining MITRE in 1995, he was an assistant professor of computer science at Northwestern University.

Selected Publications:

Douglas E. Comer
Professor of Computer Science (1976)
Professor Of Electrical And Computer Engineering

Ph.D., The Pennsylvania State University, 1976

Professor Comer is an internationally recognized expert on computer networking and the TCP/IP protocols. He has been working with TCP/IP and the Internet since the late 1970s. Comer established his reputation as a principal investigator on several early Internet research projects. He served as chairman of the CSNET technical committee, chairman of the DARPA Distributed Systems Architecture Board, and was a member of the Internet Activities Board (the group of researchers who built the Internet).

Comer has created courses on TCP/IP and networking technologies for a variety of audiences, including in-depth courses for engineers and less technical courses for others; he continues to teach at various industries and networking conferences around the world. In addition, Comer consults for private industry on the design of corporate networks.
Professor Comer is well known for his series of groundbreaking textbooks on computer networks, the Internet, and computer operating systems. His books have been translated into 16 languages, and are widely used in both industry and academia. Comer’s three-volume series *Internetworking With TCP/IP* is often cited as an authoritative reference for the Internet protocols. More significantly, Comer’s texts have been used by 15 of the top 16 computer science departments listed in the *U.S. News & World Report* ranking.

Comer’s research is experimental. He and his students design and implement working prototypes of large, complex systems. The performance of the resulting prototypes are then measured. The operating system and protocol software that has resulted from Comer’s research has been used by industry in a variety of products.

For over 15 years, Professor Comer has served as North American editor of the research journal Software-Practice and Experience, which is published by John Wiley & Sons. Comer is a fellow of the ACM and the recipient of numerous teaching awards.

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**H. E. Dunsmore**

*Associate Professor of Computer Science (1978)*

B.S., Mathematics and Physics, University of Tennessee, 1968  
Ph.D., University of Maryland, 1978

Dr. Dunsmore’s research areas include the Internet, the World-Wide Web, Web browsers, Web site design and implementation, software engineering, Java, C++, C, JavaScript, and Perl programming, cgi software, object-oriented design and programming, and information systems.

Dr. Dunsmore is the Information Systems convenor for the Global Studies Program in the Office of International Programs. He coordinates research concerning international issues related to the development and the use of Information Systems.

Dr. Dunsmore is a 1996 recipient of the Charles B. Murphy Outstanding Undergraduate Teacher Award for Purdue University. He was selected in 1998 as a member of the Purdue University chapter of Mortar Board (national honor society that recognizes college students and faculty for their achievements in scholarship, leadership, and service). He was nominated in 1998 by Purdue University for the Carnegie Foundation U.S. Professor of the Year program. He was chosen as a Founding Fellow of the Purdue University Teaching Academy in 1997. He was selected Outstanding Teacher in the School of Science at Purdue University in 1980. Dr. Dunsmore was selected one of the Top 10 Teachers in the School of Science in 1994, 1995, and 2000. He is a member of the Phi Beta Kappa and Upsilon Pi Epsilon (honor society for the computing sciences). On May 18, 2001, Dr. Dunsmore was selected as one of three Outstanding Indiana Information Technology Educators by the Indiana Information Technology Association (INITA).

Dr. Dunsmore has extensive legal and industrial consulting experience. He has written over 60 technical articles. He is co-author of the books *Software Engineering Metrics and Models* (with Sam Conte and Vincent Shen) and *Internet Resources for Tourism and Leisure* (with William Theobald).
Ahmed K. Elmagarmid
Professor of Computer Science (1988)

B.S., Computer Science, University of Dayton, 1977
M.S., Computer and Information Science, Ohio State University, 1981
Ph.D., Computer and Information Science, Ohio State University, 1985

Professor Elmagarmid is the director of the Indiana Center for Database Systems and the Indiana Telemedicine Incubator. He received a Presidential Young Investigator award from the National Science Foundation, and distinguished alumni awards from Ohio State University and the University of Dayton in 1993 and 1995, respectively. Professor Elmagarmid is the editor-in-chief of Distributed and Parallel Databases: An International Journal, editor of IEEE Transactions on Knowledge and Data Engineering, Information Sciences Journal, Journal of Communication Systems, and editor of the book series on Advances in Database Systems. He has chaired and served on several program committees and served on several editorial boards.

Professor Elmagarmid's research interests focus on applications of database technology to telemedicine, digital government, and electric power management. He has done work in video databases, data quality and confidentiality, and multidatabase systems. He has over 10 active grants from state and federal government agencies as well as several grants from industry.

Professor Elmagarmid serves as an industry consultant in the areas of database systems. He has consulted with Telcordia Technology, Bellcore, IBM, CSC, Harris, D. H. Brown and Associates, MCC, Bell Northern Research, Molecular Design Labs, and UniSql to name a few. He is the owner of a recent patent on workflow database technology.

Selected Publications:

Sonia Fahmy
Assistant Professor of Computer Science (1999)

Ph.D., Computer and Information Science, The Ohio State University, 1999

Sonia Fahmy’s research interests are in the design and evaluation of network architectures and protocols. She is currently investigating Internet tomography, overlay networks, network security, and wireless sensor networks. Her work is published in over 50 papers, including publications in IEEE/ACM Transactions on Networking, Computer Networks, IEEE INFOCOM, IEEE ICNP, and ACM NOSSDAV. She received the National Science Foundation CAREER award in 2003, the Schlumberger foundation technical merit award in 2000 and 2001, and the OSU presidential fellowship for dissertation research in 1998. She has been very active in the Traffic Management working group of the ATM Forum, and has participated in several IRTF and IETF working groups. Some of the results of her work were incorporated in the ATM Forum traffic management specifications 4.0 and 4.1, and a patent has been awarded for her work on the ERICA algorithm for network congestion control. She has served on the organizing or technical program committees of IEEE INFOCOM, ICNP, ICDCS, ICC, GLOBECOM, ICPP, Hot Interconnects, and IPCCC, and co-chaired the first SPIE conference on scalability and traffic control in IP networks in 2001. She is a member of the ACM, IEEE, Phi Kappa Phi, Sigma Xi, and Upsilon Pi Epsilon.
Selected Publications:

Greg N. Frederickson
Professor of Computer Science (1982)

A.B., Economics, Harvard University, 1969
M.S., Computer Science, University of Maryland, 1976
Ph.D., Computer Science, University of Maryland, 1977

Professor Frederickson’s areas of interest include the analysis of algorithms, with special emphasis on data structures, and graph and network algorithms. His recent work has focused on designing data structures to dynamically maintain information about graphs, on designing optimal algorithms for parametric search problems on trees, and on discovering graph decompositions that facilitate fast algorithms for shortest path problems. Professor Frederickson has served on the editorial boards of SIAM Journal on Computing, SIAM Journal on Discrete Mathematics, and IEEE Transactions on Computers, and he currently serves on the editorial board of Algorithmica. He has published two books, Dissections Plane & Fancy, Cambridge University Press, 1997, and Hinged Dissections: Swinging & Twisting, Cambridge University Press, 2002.

Selected Publications:

Walter Gautschi
Professor Emeritus of Computer Science and Mathematics (1963)

Ph.D., Computer Science, University of Basel, 1953

Before coming to Purdue, Professor Gautschi did postdoctoral work as a Janggen-Pöhn Research Fellow at the National Institute of Applied Mathematics in Rome and at the Harvard Computation Laboratory. He also held positions at the National Bureau of Standards, the American University, the Oak Ridge National Laboratory, and the University of Tennessee. Since coming to Purdue, he has been a Fulbright Scholar at the Technical University of Munich and has held visiting appointments at the University of Wisconsin, Argonne National Laboratory, the Wright-Patterson Air Force Base, ETH Zurich, the University of Padova, and the University of Basel.

He has been a Fulbright Lecturer, an ACM National Lecturer, and a SIAM Visiting Lecturer. He is, or has been, on the editorial boards of SIAM Journal on Mathematical Analysis, Numerische Mathematik, Calcolo, and Mathematics of Computation, and has served as a special editor for Linear Algebra and Its Applications. From 1984 to 1995 he was the managing editor of Mathematics of Computation and, since 1991, has been an honorary editor of Numerische Mathematik. In 2001, Professor Gautschi was elected a corresponding member of the Bavarian Academy of Sciences and Humanities and, in the same year, a foreign member of the Academy of Sciences of Turin.
Selected Publications:

**Ananth Grama**
Associate Professor of Computer Science (1996)

B.E., Computer Science and Technology, University of Roorkee, 1989
M.S., Computer Engineering, Wayne State University, 1990
Ph.D., Computer Science, University of Minnesota, 1996

Professor Grama’s research interests span the areas of parallel and distributed computing architectures, algorithms, and applications. His work on distributed infrastructure deals with development of software support for dynamic clustered and multiclustered environments. More recent work has focused on resource location and allocation mechanisms in peer-to-peer networks. His research on applications has focused on particle dynamics methods, their applications to dense linear system solvers, fast algorithms for data compression and analysis.

Professor Grama has authored several papers and co-authored the textbook *Introduction to Parallel Computing: Design and Analysis of Algorithms* with Vipin Kumar, Anshul Gupta, and George Karypis. He is a member of the American Association for Advancement of Sciences and Sigma Xi.

Selected Publications:

**Susanne E. Hambrusch**
Department Head
Professor of Computer Science (1982)

M.S., Computer Science, Technical University of Vienna, 1977
Ph.D., Computer Science, The Pennsylvania State University, 1982

Professor Hambrusch’s research interests are in the area of parallel and distributed computation, data management and data dissemination in wireless environments, and analysis of algorithms. Her research contributions include parallel algorithms for image processing and graph problems, communication and data dissemination routines for distributed applications, and data management techniques for query processing in wireless, mobile environments. Professor Hambrusch’s research has been supported by NSF, ONR, DARPA, DoE, and Microsoft Corp.

Professor Hambrusch is a member of the editorial boards of *Parallel Computing and Information Processing Letters* and a member of the IEEE Technical Committee on Parallel Processing (TCPP). She has held visiting positions at the International Computer Science Institute, Berkeley, and at the Technical University of Graz, Austria. Professor Hambrusch is an inaugural member of the Purdue University Book of Great Teachers and was selected in 1999 as one of the 10 Best Teachers of Undergraduates. Since July 2002, she has served as the head of the Department of Computer Sciences.
Selected Publications:

**Christoph M. Hoffmann**
Professor of Computer Science (1976)
Co-director, Computing Research Institute

Ph.D., University of Wisconsin, 1974

Before joining the Purdue faculty, Professor Hoffmann taught at the University of Waterloo, Canada. He has also been visiting professor at the Christian-Albrechts University in Kiel, West Germany (1980), and at Cornell University (1984-1986). His research focuses on geometric and solid modeling, its applications to manufacturing and science, and the simulation of physical systems. The research includes, in particular, research on geometric constraint solving and the semantics of generative, feature-based design. Professor Hoffmann is the author of Group-Theoretic Algorithms and Graph Isomorphism, Lecture Notes in Computer Science, 136, Springer-Verlag and of Geometric and Solid Modeling: An Introduction, published by Morgan Kaufmann, Inc. Professor Hoffmann has received national media attention for his work simulating the 9/11 Pentagon attack.

Selected Publications:

**Antony Hosking**
Associate Professor of Computer Science (1995)

B.Sc., Mathematical Sciences, University of Adelaide, 1985
M.Sc., Computer Science, University of Waikato, 1987
Ph.D., Computer Science, University of Massachusetts, 1995

Dr. Hosking's research lies at the intersection between programming languages and database systems, focusing on the integration of language and database functionality for efficient data management. Particular topics of interest include interpretation, compilation, and optimization of object-oriented persistent/database programming languages, and empirical performance evaluation of experimental prototype systems. His current research explores language and compiler support for run-time object management (e.g., garbage collection, persistence, resilience, distribution and security) in the context of the Smalltalk, Modula-3, and Java programming languages.
Selected Publications:

Elias N. Houstis
Professor of Computer Science (1984)
B.S., Mathematics, University of Athens, 1969
Ph.D., Mathematics, Purdue University, 1974

E.N. Houstis has served as acting and associate head of the Department of Computer Science. He is on the editorial board of Neural, Parallel and Scientific Computational, Computational Engineering Science, and HPC Users Web-Based Journals and a member of the IFIP WG 2.5 Working Group in Numerical Software. Houstis’s current research interests are in the areas of problem-solving environments (PSEs), parallel computation, performance evaluation and modeling, computational intelligence, computational finance, and online learning. He is one of the principal designers of several domain specific PSEs (i.e., Parallel ELLPACK, PDELab) and numerous performance evaluation studies of PDE software and parallel architectures. He is leading the Parallel ELLPACK group, which is developing infrastructure and implementing methodologies for reusing “legacy” PDE software on a variety of physical and virtual parallel machines and designing a Web Parallel ELLPACK server.

Houstis has been involved in designing a knowledge-based framework (known as PYTHIA) to support the selection of algorithm and machine pairs for a given class of PDE problems based on performance knowledge. This framework has been applied to a simulation system for designing HPC systems (POEMS project), a virtual laboratory environment, and recommender system for mathematical software.

He has published several books and over 120 technical articles. He has supervised 14 Ph.D. students and several M.S. students. His research has been supported by the Air Force Office of Scientific Research, the Army Research Office, DARPA, DOE, ESPRIT, INTEL, IBM, AT&T, Kozo-Japan, Purdue University, National Science Foundation, and the Greek Research Foundation.

Suresh Jagannathan
Associate Professor of Computer Science (2002)
Associate Professor of Electrical and Computer Engineering (Courtesy)
B.S., State University of New York at Stony Brook, 1982
Ph.D., Massachusetts Institute of Technology, 1989

Professor Jagannathan is interested in the semantics and implementation of high-level programming languages like SML, Scheme, or Java. More specifically, his interests lie in formal methods for describing and implementing such languages, e.g., type theory, program analysis, abstract interpretation, etc.

He also has an active interest in coordination and distributed languages. One aspect of this research studies the semantics and implementation of lightweight transactions as an alternative to lock-based synchronization for expressing concurrency. The results of this work are used to devise scalable coordination and distributed systems.
His research also explores issues in the design and implementation of next-generation storage infrastructures. This work applies formal methods and software engineering principles to develop highly available scalable storage applications for wide-area deployment.

Selected Publications:

Daisuke Kihara
Assistant Professor of Computer Science (2003)
Assistant Professor of Biological Sciences

B.S., Biochemistry, University of Tokyo, 1994
M.S., Bioinformatics, Kyoto University, 1996
Ph.D., Bioinformatics, Kyoto University, 1999

Dr. Kihara’s research interest is in the area of bioinformatics. In the last decade, a large amount of biological data, such as genome/protein sequences, protein 3D structures, and pathway data have become available. This data now enables us to employ comprehensive analysis of relationship between protein sequence, structure and function, evolution of protein families, pathways, and organisms. He is particularly focusing on developing computational methods to predict and analyze protein structure/function, pathway structure, and their applications in genome-scale, or pathway/network scale. He has worked recently on protein structure prediction and comparison, development of prediction method of transmembrane proteins and its application to genome sequences.

Selected Publications:

Ninghui Li
Assistant Professor of Computer Science (2003)

B.S., Computer Science, University of Science and Technology of China, 1993
M.S., Computer Science, New York University, 1998
Ph.D., Computer Science, New York University, 2000

Professor Li’s research interests are in computer security and applied cryptography — e.g., security and privacy in distributed systems, networks, databases, and electronic commerce — with a focus on access control. One focus of Li’s work is on trust management, which is an approach to access control in decentralized, open, and distributed systems. He has designed, together with Professors John Mitchell and Will Winsborough, the RT Role-based Trust-management framework, efficient goal-directed algorithms to do distributed credential chain discovery, logic-based semantic foundations for security policy languages, and algorithms and computational complexity characterization for analyzing properties of security policies such as safety and availability.
Li is co-principal investigator of a recently-funded mid-size NSF ITR project titled “Automated Trust Negotiation in Open Systems” (2003-2008). Automated Trust Negotiation (ATN) is an approach to regulate the exchange of sensitive credentials by using access-control policies. He has been working with Professors Will Winsborough and Kent Seamons on ATN, using the RT family of trust-management languages.

Together with Professors Dan Boneh and Wenliang Du, Li introduced a cryptographic primitive called Oblivious Signature-Based Envelope (OSBE) and developed an efficient and provably secure OSBE protocol for credentials signed using RSA signatures. OSBE enables the sender to send an encrypted message to the receiver such that the receiver can decrypt if and only if it possesses the signature on a predetermined message, yet the sender does not learn whether the receiver has the signature or not.

Before joining the Purdue faculty, Li was a research associate in the computer science department at Stanford University. He has served on the program committees of the ACM Conference on Computer and Communications Security, IEEE Computer Security Foundations Workshop, and International Conference on Trust Management, and has reviewed papers for a number of international journals and conferences.

Selected Publications:

Zhiyuan Li
Associate Professor of Computer Science (1997)
Associate Professor of Electrical and Computer Engineering

B.S., Mathematics, Xiamen University, 1982
M.S., Computer Sciences, University of Illinois at Urbana-Champaign, 1985
Ph.D., Computer Sciences, University of Illinois at Urbana-Champaign, 1989

Zhiyuan Li has led a group to design and implement an interprocedural parallelizing Fortran compiler, called Panorama, which performs highly efficient array data flow analysis to enable aggressive loop parallelization and locality-enhancement program transformations. His group also designs and implements compiler-based programming environments and run-time systems for mobile computing on handheld devices.

Li received a National Science Foundation Research Initiation Award and a National Science Foundation Career Award in 1992 and 1995 respectively. In 1998, he co-edited with P.-C. Yew a special issue on Compilers and Languages for Parallel and Distributed Systems for IEEE Transaction on Parallel and Distributed Systems and two special issues on Compilers and Languages for Parallel Computing for the International Journal on Parallel Programming. Li, with P.-C. Yew, co-chaired the 10th International Workshop on Languages and Compilers for Parallel Computing in 1997. He has served a program committee member for several international conferences, including IEEE International Parallel and Distributed Processing Symposium (IPDPS), ACM International Conference on Supercomputing, International Conference on Parallel Processing, and ACM SIGPLAN Symposium on Languages, Compilers and Tools for Embedded Systems (LCTES).
Selected Publications:

Bradley J. Lucier
Professor of Mathematics and Computer Science (1981)

B.Sc., Mathematics, University of Windsor, 1976
S.M., Applied Mathematics, University of Chicago, 1978
Ph.D., Applied Mathematics, University of Chicago, 1981

Professor Lucier has worked for over 10 years on wavelet and multiresolution methods for image processing and other applications. He has a particular interest in applications in medical imaging (image compression for telemedicine, tomographic and MRI reconstruction, etc.).

The selected publications indicate some of these interests. The first paper relates variational problems to wavelet shrinkage, as introduced by David Donoho and Iain Johnstone. The second paper gives an interpretation of translation-invariant wavelet shrinkage, introduced by Donoho and Ronald Coifman, as gradient descent along a convex functional; Gaussian smoothing can be interpreted in the same way (with a different functional).

Finally, the third paper introduces several results about wavelet methods for medical tomography, especially for Positron Emission Tomography (PET) imaging. Basically, it again puts into a variational framework the wavelet-vaguelette method of Donoho; it shows that wide classes of computationally efficient wavelet transforms can be used for tomography; and it gives examples that show that wavelet techniques are much more effective than the usual filtered back-projection method for PET imaging.

This work has been supported continuously since 1990 by the Office of Naval Research.

Selected Publications:
Robert E. Lynch
Professor Emeritus of Computer Science and Mathematics (1967)

B.S., Engineering Physics, Cornell University, 1954
M.A., Mathematics, Harvard University, 1961
Ph.D., Applied Mathematics, Harvard University, 1963

Professor Lynch has held positions at Brookhaven National Laboratory, Los Alamos
Laboratories, Wright-Patterson Air Force Base, the University of Texas, and General Motors
Research Laboratories. His areas of research include differential equations, linear algebra,
software for solving elliptic partial differential equations, and computational biology. He and G. Birkhoff have

Aditya P. Mathur
Professor of Computer Science (1987)

B.E., Electrical Engineering, Birla Institute of Technology and Science, 1970
M.S., Electrical Engineering, Birla Institute of Technology and Science, 1972
Ph.D., Computer Science, Birla Institute of Technology and Science, 1977

Aditya Mathur conducts research in the areas of software testing, reliability, formal
approaches for software process control, and the management of smart spaces.

Mathur has been a crusader for the use of code coverage criteria in the estimation of software reliability
or as an orthogonal metric to assess confidence in the reliability estimates. He has proposed the
“Saturation Effect” as a motivating device for quantitative test assessment using an increasingly
powerful suite of criteria. This device is often used by vendors to enhance marketing of their test tools.

His research group has developed Home Wabash, a tool for the monitoring and control of Smart Spaces and for
ensuring the safety of people within such spaces.

In collaboration with Raymond DeCarlo, Mathur investigates the use of the theory of automatic control for control
of software development processes. He is also now researching the long-suspended work on the Listen project to
explore the use of sound in a variety of monitoring tasks.

Selected Publications:
- Joao Cangussu, Raymond DeCarlo, and Aditya P. Mathur, “A Formal Model of the Software Test
- Aditya P. Mathur, Baskar Sridharan and Steven G. Unger,"Digital Device Manuals for the Management
- Joao Cangussu, Raymond DeCarlo, and Aditya P. Mathur, “Effect of Disturbances on the Convergence
  of Failure Intensity”, Proceedings of the 13th International Symposium on Software Reliability
Cristina Nita-Rotaru
Assistant Professor of Computer Science (2003)

B.S., Computer Science, Politehnica University of Bucharest, 1995
M.S., Computer Science, Politehnica University of Bucharest, 1996
MSE, Computer Science, The Johns Hopkins University, 2000
Ph.D., Computer Science, The Johns Hopkins University, 2003

Cristina Nita-Rotaru worked at Johns Hopkins University under the guidance of her advisor, Dr. Yair Amir. While at Hopkins, she was a member of The Center of Networking and Distributed Systems (CNDS).

Cristina Nita-Rotaru’s thesis focused on a high-performance and robust secure architecture for group communication systems. The dissertation outlined two approaches taken when designing a secure group communication system: a layered architecture, where the security services are separated from the distributed systems protocols, and an integrated architecture that provides increased scalability and performance, while requiring a more complex system design. As opposed to previous work, she investigated the use of contributory key agreement protocols as building blocks for group security services. Such protocols have the advantage that they provide strong security services such as key independence and perfect forward secrecy. The security of the resulted system, Secure Spread, relies on a group key management protocol that is efficient, robust to process crashes and network partitions and merges, and protects confidentiality of the data even when long-term keys of the participants are compromised.

In addition to her thesis topic, Cristina investigated secure routing protocols resilient to byzantine failures for ad hoc wireless networks, was involved in the overall design and algorithms for a secure overlay network infrastructure and designed and developed a certified email system based on verifiable encryption of digital signatures, that requires the involvement of a third trusted party only in case of dispute.

Before coming to Johns Hopkins, Cristina Nita-Rotaru obtained both a B.S. and a M.Sc. from Politehnica University of Bucharest, Romania. Thanks to the TEMPUS scholarship program, she developed and finalized her graduation thesis at Politenico di Torino, Turin, Italy.

Selected Publications:
Jens Palsberg

Adjunct Professor of Computer Science (1996)

Ph.D., Computer Science, University of Aarhus, 1992

From 1992 to 1996, Professor Plasberg was a visiting scientist at various institutions, including MIT. His research interests span the areas of programming languages, compilers, software engineering, embedded software, and information security. He has authored over 60 technical papers, and co-authored with Michael Schwartzbach the book Object-Oriented Type Systems (1994). He is a co-author of the revised version of Appel's textbook on Modern Compiler Implementation in Java.

In 1998 Palsberg received a National Science Foundation CAREER award, in 1999 he received a Purdue University Faculty Scholar award, and in 2001 he received a National Science Foundation ITR award.

Dr. Palsberg's research has also been supported by DARPA, IBM, and British Telecom. He is a former member of the editorial board of IEEE Transactions on Software Engineering, he has served as a program chair for the Static Analysis Symposium, the Symposium on Requirements Engineering for Information Security, and the ACM Workshop on Program Analysis for Software Tools and Engineering, and he has served as a chair of the Compilers and Operating Systems program subcommittee for the International Conference on Compilers, Architectures and Synthesis for Embedded Systems.

Selected Publications:

Gopal Pandurangan

Assistant Professor of Computer Science (2002)

B.Tech., Computer Science, Indian Institute of Technology at Madras, 1994
M.S., Computer Science, State University of New York at Albany, 1997
Ph.D., Computer Science, Brown University, 2002

Professor Pandurangan’s research interests are generally in design and analysis of algorithms (both theoretical and experimental). He is especially interested in stochastic analysis of dynamic computer phenomena and associated algorithmic problems, randomized algorithms, and probabilistic analysis of algorithms.

Professor Pandurangan is currently working on algorithmic and modeling problems that arise in the following application areas: Peer-to-Peer (P2P) Computing, Communication Networks (especially wireless ad hoc networks), Web Measurement and Modeling, Computational Biology and Bioinformatics.

Selected Publications:
Kihong Park
Associate Professor of Computer Science (1996)

B.A., Management, Seoul National University, 1988
M.S., Computer Science, University of South Carolina, 1990
Ph.D., Computer Science, Boston University, 1996

Professor Park’s research centers on design and control issues in high-speed multimedia networks including quality of service provisioning architectures, congestion control, distributed scheduling, and the facilitation of adaptive, fault-tolerant computing on large-scale distributed systems.

He has over 40 technical publications, and has edited the book *Self-Similar Network Traffic and Performance Evaluation* (co-editor: Dr. Walter Willinger) published by Wiley-Interscience, 2000. His thesis, entitled “Ergodicity and Mixing Rate of One-Dimensional Cellular Automata” (advisor: Dr. Peter Gacs), was on a problem in theoretical probability going back to von Neumann, with applications to fault-tolerance and reliability in large-scale systems such as the Internet.

Dr. Park was a Presidential University Fellow at Boston University, is a recipient of the NSF CAREER Award, is a Fellow-at-Large of the Santa Fe Institute, has served on several international program committees, NSF panels, and is a member of ACM and IEEE. He serves on the editorial boards of *IEEE Communications Letters* and *Computer Networks* as associate editor.

In 2001, he organized an SFI/NSF Workshop titled “The Internet as a Large-Scale Complex System” (co-chair: Dr. Walter Willinger), March 29-31, held at the Santa Fe Institute. He also co-chaired a SPIE Conference titled “Scalability and Traffic Control in IP Networks” (co-chair: Dr. Sonia Fahmy), August 20-24, 2001, at the Colorado Convention Center in Denver.

Selected Publications:

Voicu S. Popescu
Assistant Professor of Computer Science (2001)

Ph.D., Computer Science University of North Carolina, 2001

Professor Popescu’s research field is computer graphics, focusing on image-based modeling and rendering and on graphics architectures. He and his collaborators have built a low-cost, hand-held device for creating 3D models of complex real-world scenes. The device consists of a video camera and 16 laser pointers that provide reference markings for the scene being scanned. The model is created dynamically during scanning, allowing the operator to control the model creation for greater accuracy and completeness.

Another project uses “reflection morphing” to render 3D reflectors, such as spheres and cylinders, in real-time. The technique uses a pre-processing phase that ray-traces the reflectors from a sparse set of views, then interpolates the datastructure at runtime to generate intermediate views.
Selected Publications:

Sunil Prabhakar
Assistant Professor of Computer Science (1998)

B.Tech., Electrical Engineering, Indian Institute of Technology, 1990
M.S., Computer Science, University of California, 1998
Ph.D., Computer Science, University of California, 1998

Dr. Prabhakar’s research focuses on performance and security issues in large-scale, modern database applications such as multimedia, moving-object, and sensor databases. The efficient execution of I/O is a critical problem for these applications. The scope of this research ranges from main memory to disks and tertiary storage devices. Sensor and moving object applications are also faced with the need to process large volumes of data in an online manner. The current research effort addresses efficient continuous query evaluation and novel techniques for managing the inherent lack of accuracy for these applications.

Dr. Prabhakar’s interest also lies in the design and development of digital watermarking techniques for structured (e.g. relational databases) and semi-structured (e.g. XML) data. Prior to joining Purdue, Dr. Prabhakar held a position from 1990 to 1994 with Tata Unisys Ltd.

Selected Publications:

Vernon J. Rego
Professor of Computer Science (1985)

Ph.D., Computer Science, Michigan State University, 1985
M.Sc., Mathematics, Birla Institute of Technology and Science,
M.S., Computer Science, Michigan State University,

Vernon Rego directs research in the Parallel Computation and Simulation Laboratory (PacsLab) in Purdue’s computer sciences department. His research interests include software systems for high-performance distributed computation, network protocols, threads systems, parallel stochastic simulation, computational probability and performance, and software engineering.
His current projects include the ACES software architecture for multi-threaded distributed computing and parallel simulation, including the EcliPSe replicated simulation system (for which he was awarded an IEEE/Gordon Bell Prize), the ParaSol process-oriented distributed simulation system, the Ariadne threads system and the CLAM protocol suite. He was also awarded a German Research Council Award for Computer Networking Research. He has been an invited researcher at the Oak Ridge National Laboratories and an ACM National Lecturer. He is an editor of the *IEEE Transactions on Computers* and an advisory board member of The DoD Advanced Distributed Simulation Research Consortium.

### John R. Rice

*W. Brooks Fortune Distinguished Professor of Computer Science (1964)*

**Ph.D., California Institute of Technology, 1959**

Professor Rice is founder of the *ACM Transactions on Mathematical Software* and is on several other editorial boards. He is the past chair of the Computing Research Association, a fellow of the AAAS, of the ACM, and a member of the National Academy of Engineering. For the past 15 years, Professor Rice has been analyzing numerical methods and problem solving environments for scientific computing. He has created a general methodology for performance evaluation of mathematical software and developed the ELLPACK system for elliptic problems. It is now being extended to Parallel ELLPACK and PDELab.


### Elisha Sacks

*Professor of Computer Science (1994)*

**Ph.D., Computer Science, Massachusetts Institute of Technology, 1988**

Dr. Sacks's research area is geometric reasoning in science and engineering. He is a problem solver who couples domain knowledge, mathematics, and computer science to solve real-world problems. He worked on qualitative analysis of nonlinear dynamical systems for his Ph.D. and for the next few years. He has worked on mechanical design since then and plans to continue for a while. He is also working with Matt Mason of Carnegie Mellon University on robot path planning with obstacles and steering constraints and with Victor Milenkovic of University of Miami on robust computational geometry. His unique skill is in combining (often esoteric) mathematics with (often inarticulated) domain knowledge with (often idealized) computational methods to solve real-world problems.

The mechanical design research addresses kinematic analysis and the related tasks of simulation, tolerancing, and parametric design. Kinematic analysis means computing the ways that mechanical parts interact: how gears mesh, how linkages transform motion, how robots grasp. Kinematic analysis is central to mechanical design because part contacts largely determine mechanical function and because other forms of analysis (dynamical simulation, stress, tolerance) presuppose it.

Prior to his research, a general, practical kinematic analysis algorithm was deemed impossible. He has developed and implemented such an algorithm based on configuration space computation. He is working with academic and industrial collaborators to develop practical mechanical design software based on his research, notably with Ford Motors on transmission design and with Sandia National laboratory on micro-mechanism design. Dr. Sacks is also the director of the Visualization Center.
Selected Publications:

Ahmed Sameh
Samuel D. Conte Professor of Computer Science (1997)
Ph.D., University of Illinois at Urbana-Champaign, 1968


He joined Purdue in 1997 as head of Computer Science, after being head of Computer Science at the University of Minnesota, Minneapolis, and the holder of the William Norris Chair for Large-Scale Computing. He was also a faculty member at the Department of Computer Science at the University of Illinois at Urbana-Champaign from 1968 to 1991 and 1992 to 1993. During his tenure at Illinois, he served as an associate director and director of the Center for Supercomputing Research and Development (CSRD).

He is a Fellow of ACM, IEEE, and AAAS, and a member of SIAM. He has also received the IEEE’s 1999 Harry Goode Award for “seminal and influential work in parallel numerical algorithms.”

Selected Publications:

Eugene H. Spafford
Professor of Computer Science (1987)
Professor of Philosophy (Courtesy)
Professor of Communication (Courtesy)
Professor of Electrical and Computer Engineering (Courtesy)
Executive Director, Purdue CERIAS

B.A., Mathematics and Computer Science, State University of New York at Brockport, 1979
M.S., Information and Computer Science, Georgia Institute of Technology, 1981
Ph.D., Information and Computer Science, Georgia Institute of Technology, 1986

Dr. Spafford's current research interests are focused on issues of computer and network security, computer crime and ethics, and the social impact of computing. He is currently the executive director of the Center for Education and Research in Information Assurance and Security (CERIAS). This university-wide center addresses the broader issues of information security and information assurance, and draws on expertise and research across all of the academic disciplines at Purdue.
Dr. Spafford has received recognition and many honors for his work, including being a charter recipient of the Computer Society’s Golden Core, and being named as a Fellow of the ACM, as a Fellow of the AAAS, and as a Fellow of the IEEE. He has been awarded status as a CISSP (Certified Information Systems Security Professional), honoris causa, by the Board of Directors of (ISC)²; named as a member of the ISSAs Hall of Fame; and awarded the 2001 William H. Murray Medal by the NCISSE. In October of 2000, Dr. Spafford received the field’s most prestigious award: the NIST/NCSC National Computer Systems Security Award.

In 2001, Professor Spafford received Purdue’s two highest honors for teaching: the Outstanding Undergraduate Teaching Award in Memory of Charles B. Murphy, and being named as a Fellow of the Purdue Teaching Academy. In 2003, Spafford was added to Purdue’s Book of Great Teachers.

Among many professional activities, Dr. Spafford is a member of the Computing Research Association’s board of directors and the President’s Information Technology Advisory Committee (PITAC). He is co-chair of ACM’s U.S. Public Policy Committee. Dr. Spafford is the academic editor of the journal Computers & Security, and on the editorial and advisory board of the ACM’s Transactions on Information and System Security. Among many other publications, Dr. Spafford is co-author of the award-winning book Practical Unix & Internet Security (with S. L. Garfinkel), published by O’Reilly and Associates (3rd edition, 2003), and the book Web Security, Privacy & Commerce (also with S. L. Garfinkel; 2nd edition, 2002).

Selected Publications:

Yinlong Sun
Assistant Professor of Computer Science (2001)

B.S., Physics, Beijing University, 1985
Ph.D., Physics, Simon Fraser University, 1996
Ph.D., Computer Science, Simon Fraser University, 2000

Dr. Sun’s research interests lie in computer graphics, scientific visualization, computer vision, color science, computational nanotechnology, and neuroimaging. He is taking on projects on spectral modeling and rendering, statistical local illumination, graphics standard and quality metrics, spectral vision, physical and chemical visualization, nanoscale simulation and visualization, and neural source imaging. He is particularly interested in combining analytical, numerical, and experimental approaches to solve complex, cross-disciplinary problems.

Dr. Sun has recently initiated the Photometric Graphics and Vision Lab, which involves spectral measurement of lights and objects for graphics and vision applications. He is a member of ACM, ACM SIGGRAPH, IEEE, IEEE Computer, and IS&T.

Selected Publications:
Wojciech Szpankowski
Professor of Computer Science (1985)

M.S., Electrical Engineering and Computer Science, Technical University of Gdansk, 1970
Ph.D., Electrical Engineering and Computer Science, Technical University of Gdansk, 1980

Before coming to Purdue, W. Szpankowski was assistant professor at the Technical University of Gdansk, and in 1984 was assistant professor at McGill University, Montreal. During 1992-1993, he was professeur invité at INRIA, Rocquencourt, France.

Professor Szpankowski’s research interests cover analysis of algorithms, data compression, information theory, analytic combinatorics, random structures, networking, stability problems in distributed systems, modeling of computer systems and computer communication networks, queueing theory, and operations research. His recent work is devoted to the probabilistic analysis of algorithms on words, analytic information theory, and designing efficient multimedia data compression schemes based on approximate pattern matching.

He is a recipient of the Humboldt Fellowship. He has been guest editor for special issues in *IEEE Transactions on Automatic Control, Theoretical Computer Science, Random Structures & Algorithms*, and *Algorithmica*. Currently, he is editing a special issue on “Analysis of Algorithms” in *Algorithmica*. He serves on the editorial boards of *Theoretical Computer Science, Discrete Mathematics and Theoretical Computer Science*, and the book series *Advances in the Theory of Computation and Computational Mathematics*.

Selected Publications:

Jan Vitek
Assistant Professor of Computer Science (1999)

B.S., University of Geneva, 1989
M.S., Computer Science, University of Victoria, 1995
Ph.D., University of Geneva, 1999

Professor Vitek is working in foundations and implementation of computer programming languages and has interest in program analysis, real time languages, object-oriented software engineering and information security. He is leading the Open Virtual Machines project to develop a framework for configurable and secure virtual machines for object-oriented languages. This research is being conducted in the Secure Software Systems (S3) Lab founded in early 2000 by Professors Vitek, Hosking, and Palsberg.

Dr. Vitek was born in Czechoslovakia and educated in Switzerland. He has authored over 30 papers and has edited two books on mobile objects and secure Internet programming. He has served on program committees for international conferences such as PLDI, OOPSLA, ECOOP, POPL, ESOP, ICALP, and SACMAT. Dr. Vitek is a member of CERIAS.
In his research, Professor Jeff Vitter investigates how to manage and process very large amounts of data. He helped pioneer the field of external memory algorithms, where the goal is to develop I/O-efficient algorithms that alleviate the bottleneck between small but fast internal memory and large but slow external storage. His work melds theory and practice to span a number of application areas, including geographic information systems (GIS), databases, computational geometry, data mining, and text indexing. For example, Professor Vitter and colleagues designed an I/O-efficient algorithm to help researchers in the Nicholas School of Environment at Duke compute how water flows and accumulates, based on satellite elevation data. The computation time for processing data from the Appalachian Mountain region was reduced from several days to just a few hours.

Another aspect of Vitter’s work involves novel prediction mechanisms based upon principles of data compression and locality; examples include algorithms for caching, prefetching, data streaming, database query optimization, data mining, and resource management in mobile computers. His interest in prediction comes from ongoing work in data compression (in which data can be represented succinctly when the patterns in the data are predictable) and machine learning (in which predictions can be made when prior data can be represented succinctly).

Professor Vitter is currently working on compressed indexes for long sequences of symbols, such as text. A recent theoretical breakthrough he worked on showed how to fully compress text and make it self-indexing at the same time. Experiments have shown the technique to be quite practical.

Honors and awards: Fellow, John Simon Guggenheim Foundation, 1986; Fellow, Institute of Electrical and Electronics Engineers (IEEE), 1993; Fellow, Association for Computing Machinery (ACM), 1996; National Science Foundation Presidential Young Investigator Award 1985; Fulbright Scholar, 1998; Recognition of Service Award, ACM, 1998 and 2001.

Selected Publications:
Samuel S. Wagstaff Jr.
Professor of Computer Science (1983)

B.S., Massachusetts Institute of Technology, 1966
Ph.D., Cornell University, 1970

Before coming to Purdue, Professor Wagstaff taught at the Universities of Rochester, Illinois, and Georgia. He spent a year at the Institute for Advanced Study in Princeton. His research interests are in the areas of cryptography, parallel computation, and analysis of algorithms, especially number theoretic algorithms. He and J. W. Smith of the University of Georgia have built a special processor with parallel capability for factoring large integers. He is the author of *Factorizations of $bn \pm 1, b = 2, 3, 5, 6, 7, 10, 11, 12$ up to high powers*, Contemporary Mathematics series, v. 22, Third edition, American Mathematical Society, 2002 (with John Brillhart, D. H. Lehmer, J. L. Selfridge and Bryant Tuckerman) (See www.ams.org/online_bks/conm22), and *Cryptanalysis of Number Theoretic Ciphers*, CRC Press, 2002.

Selected Publications:

Dongyan Xu
Assistant Professor of Computer Science (2001)
Assistant Professor Of Electrical And Computer Engineering (Courtesy)

B.S., Computer Science, Zhongshan University, 1994
Ph.D., Computer Science, University of Illinois at Urbana-Champaign, 2001

Professor Xu’s research focuses on protection, management, and quality of service of next generation distributed systems (such as overlay and peer-to-peer networks, autonomic utility computing platforms, and mobile and pervasive applications). He has conducted research in multimedia computing and networking, mobile computing and networking, and distributed OS and middleware, all with a focus on Quality of Service (QoS) provisioning issues. He is the Year 2000 recipient of the C.L. and Jane W-S. Liu Award in the Department of Computer Science at UIUC. He is a member of ACM, IEEE, IEEE Communications Society and e-Enterprise Center at Discovery Park.

Selected Publications:
David K. Y. Yau

Associate Professor of Computer Science (1997)
Associate Professor of Electrical and Computer Engineering (Courtesy)

B.S., Computer Science, Chinese University of Hong Kong, 1989
M.S., Computer Science, University of Texas at Austin, 1992
Ph.D., Computer Science, University of Texas at Austin, 1997

Dr. Yau's research interests are in network and operating system quality of service, network security, value-added services routers, and mobile wireless networks. A major goal is to improve the robustness and predictability of complex large-scale networks for heterogeneous applications.

Dr. Yau has been invited to serve as panelist and reviewer by the National Science Foundation (NSF), the Research Grants Council of Hong Kong, and the Research Council of Norway. His research has been funded by various government and industrial organizations including the NSF. He is a member of the ACM and IEEE, and has served on the program committee of many leading ACM and IEEE conferences in networking.

Dr. Yau currently holds a CAREER award from the NSF. He was the recipient of a Hong Kong Government Scholarship, a Swire Scholarship, a Microelectronics and Computer Development Fellowship (UT Austin), and an IBM Fellowship. As a graduating senior, he represented the graduating class to meet with the governor of Hong Kong. Prior to academia, he was employed as management associate and then assistant manager at Citibank, NA.

Selected Publications:
Walid G. Aref
Walid Aref, “Research and Development of Database Technologies for Modern Applications (Career Award)”, National Science Foundation, 9/15/2001-9/30/2006, $300,000


Walid Aref, “Technical Services for High Performance Knowledge Base, Data Mining and Non-Traditional Data Interfaces”, EG&G Services (CRANE), 10/18/2002-9/30/2003, $700,000


Mikhail Atallah
Christopher Clifton and Mikhail J. Atallah, “Collaborative Research: ITR Distributed Data Mining to Protect Information Privacy”, National Science Foundation, 8/15/2003-7/31/2006, $276,274


Chris Bailey-Kellogg

**Bharat Bhargava**

<table>
<thead>
<tr>
<th>Project Title</th>
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<th>Start Date</th>
<th>End Date</th>
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<tr>
<td>Vulnerability Analysis and Threat Assessment/Avoidance</td>
<td>National Science Foundation</td>
<td>6/1/2003</td>
<td>4/30/2006</td>
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<td>Secure Mobile Systems</td>
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<td>Adaptable Communication Software for Differential QoS</td>
<td>IBM</td>
<td>7/1/1999</td>
<td>8/15/2003</td>
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<td>CISE Post Doc: Experiments in Security and Quality of Service in Mobile Systems</td>
<td>National Science Foundation</td>
<td>8/1/2001</td>
<td>7/31/2005</td>
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<td>TTR: Scalable Edge Router for Differentiated Services Networks</td>
<td>National Science Foundation</td>
<td>10/1/2002</td>
<td>7/31/2005</td>
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<td>REU: ITR-Scalable Edge Router for Differentiated Services Networks</td>
<td>National Science Foundation</td>
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<td>Experiments in Adaptable Distributed Systems</td>
<td>National Science Foundation</td>
<td>8/15/1999</td>
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**Christopher W. Clifton**

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<th>Project Title</th>
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<tr>
<td>Technical Services for High Performance Knowledge Base, Data Mining and Non-Traditional Data Interfaces</td>
<td>EG&amp;G Services (CRANE)</td>
<td>10/18/2002</td>
<td>9/30/2003</td>
<td>$187,708</td>
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<td>Purdue Discovery Park – Management of Distributed E Enterprises a Prototype Integrated Transaction Data Analysis and Visualization Environment for the Transportation, Distribution and Logistics Sector</td>
<td>CERIAS</td>
<td>8/19/2002</td>
<td>5/10/2003</td>
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<td>Privacy Preserving Distributed Data Mining</td>
<td>Purdue Research Foundation</td>
<td>8/12/2002</td>
<td>8/11/2004</td>
<td>$26,403</td>
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<td>Transportation, Distribution and Logistics: a Strategic Opportunity for Indiana and Purdue</td>
<td>Central Indiana Corporate Partnership</td>
<td>7/7/2003</td>
<td>8/1/2004</td>
<td>$285,000</td>
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<td>Secure Programming: Add-on Course Module and Short Course</td>
<td>CERIAS</td>
<td>8/19/2002</td>
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<td>Collaborative Research: ITR Distributed Data Mining to Protect Information Privacy</td>
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<td>8/15/2003</td>
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*Kihong Park and research assistants.*
Douglas E. Comer

Douglas E. Comer, “Proposal to Develop a Network Systems Engineering Course and Instructional Materials”, Intel Corporation, 8/1/2001-7/31/2003, $315,000


Ahmed K. Elmagarmid


Sonia Fahmy


Ananth Grama


Ananth Y. Grama, “Fast Methods for Particle Dynamics and Their Applications (Career Award)”, National Science Foundation, 2/15/1999-1/31/2004, $234,947


Ananth Y. Grama, “Krell Institute/DOE Fellowship for Paul Ruth”, The Krell Institute, 1/15/2001-1/14/2004, $4,966


Susanne E. Hambrusch


Dwight Lewis and Susanne E. Hambrusch, “Faculty for the Future-Engineering and Science – GE Fund”, General Electric, 9/1/1997-12/31/2005, $18,000

Christoph M. Hoffmann
Christoph M. Hoffmann, “2003 Faculty Award”, IBM, 8/22/2003, $40,000


Mileta Tomovic, Karthik Ramani, and Christoph M. Hoffmann, “Short Run Tooling Advisor”, Ad Tech Inst, 12/14/2001-6/15/2004, $450,000


Karthik Ramani, Linda Katehi, Christoph M. Hoffmann, and Sunil K. Prabhakar, “Toolingnet: A Partnership for Enhancing the Tooling Industry in Indiana through the use of Information Technology in the Advanced Manufacturing Sector”, National Science Foundation, 1/1/2003-12/31/2004, $600,000

Mileta Tomovic, Karthik Ramani, and Christoph M. Hoffmann, “Short Run Tooling Advisor”, Ad Tech Inst, 12/14/2001-6/15/2004, $450,000


Karthik Ramani, Linda Katehi, Christoph M. Hoffmann, and Sunil K. Prabhakar, “Toolingnet: A Partnership for Enhancing the Tooling Industry in Indiana through the use of Information Technology in the Advanced Manufacturing Sector”, National Science Foundation, 1/1/2003-12/31/2004, $600,000

Antony Hosking
Jens Palsberg and Tony Hosking, “IBM Eclipse Innovation”, IBM, 1/1/2003, $28,000

Elias N. Houstis


Elias N. Houstis, “Agent Oriented Approaches to a Ubiquitous Grid”, National Science Foundation, 9/15/2002-8/31/2005, $117,012


Suresh Jagannathan


Suresh Jagannathan, “Distributed Storage System Research”, NEC Laboratories America, 11/7/2002, $94,000

Zhiyuan Li


Aditya P. Mathur


Jens Palsberg

Jens Palsberg, “IBM Eclipse Innovation”, IBM, 1/29/2003, $28,000

Graduate students enjoy a welcome back picnic.

**Vernon J. Rego**


**John R. Rice**


**Elisha Sacks**


Elisha P. Sacks, “ITR/HCI: Practical Robot Path Planning with Contact and Velocity Constraints”, National Science Foundation, 10/1/2000-9/30/2003, $185,173

**Ahmed Sameh**


Eugene Spafford


Eugene Spafford, “Forensic Evidence Capture and Analysis”, MITRE Corp, 1/1/2001-12/31/2003, $30,308


Wojciech Szpankowski


Jan Vitek


Jan Vitek, “Software Engineering”, Microsoft Corporation, 1/15/2002, $75,000


Jeffrey S. Vitter

Jeffrey Vitter, “Dynamic Optimization in Databases and Information Systems, 2002 Faculty Award”, IBM, 9/30/2002, $40,000


Dongyan Xu

Catherine Rosenberg and Dongyan Xu, “e-Courier: A Service for Enterprise Data Delivery”, CERIAS, 10/1/2002-7/15/2003, $30,000

Dongyan Xu, “Purdue Discovery Park-E-Courier: An Enhanced Service for Enterprise Data Distribution”, CERIAS, 8/1/2001-8/31/2004, $30,000


David K. Y. Yau


Graduate Students, Curriculum, and Learning

Graduate Instructors, Graduate Research Assistants, and Fellows

**Graduate Teaching Assistants**
- Saumya Agarwal
- Dan I. Ardelean
- Mehmet Derya Arikkam
- Daniel Armano
- Ethan Lee Blanton
- Marina Valeryevna Bykova
- Ji-Won Byun
- Sarah Ann Caruthers
- James Edward Cernak
- Sheetal Kumar Lalwani Chainraj
- Roman Chertov
- Tomasz Czajka
- Yu Dong
- Senthil Kumar Duraiswamy
- Knic Martin Ebel
- Ziad Zouheir El Bizri
- Hicham Galal Elmongui
- Mohamed Raouf Fouad
- Krzysztof Gniady
- Siddhartha Kartikaye Goel
- Robert Gwadera
- Md Ahsan Habib
- Matthew Craig Henkler
- Eirik Asbjorn Herskedal
- Lynn G. Hoffman
- Min Hou
- Sundararaman Jeyaraman
- Chun Jia
- Xuxian Jiang
- Ajay Prakash Kulkarni
- Benjamin Asher Kuperman
- Shan Lei
- Jiaganshe Li
- Min Li
- Hong Liang
- Hendry Lim
- Huagen Liu
- Yoandong Liu
- Yunhua Lu
- Gergana Vassileva Markova
- Scott David Miller
- Rupak Sanjel
- Amit Jayant Shirsat
- Manish Singh
- Andrew Brian Smith
- David John Spigarelli
- Baskar Sridharan
- Sriram Srinivasan
- Tiberiu Vasile Stef-Praun
- Benjamin Lawrence Titzer
- Fijoy George Vadakkumpadan
- Thomas John VanDrunen
- Pranathi Venkatayogi
- Ryan S. Wamsley
- Chin-Ying Wang
- Qi Qi Wang
- Jeffrey David Wassil
- John Bradford Woodfin
- Yan Wu
- Youchan Yao
- Xiaoduan Ye
- Punteet Zaroo
- Haiyu Zou

**Graduate Research Assistants**
- Sarika Agarwal
- Kailash Kumar Agrawal
- Daniel Alan Aiello
- Mohamed Hassan Ali
- Dan I. Ardelean
- Mahendra Babu Arugundram
- Hrikrishna
- Ashad Khan Awan
- Gleb Evgeny Bahmutov
- Jason Baker
- Krista Lynne Bennett
- Bhagyalaaxmi Bethala
- Deepak Rao Bobbarjung
- Dennis William Blyrow
- Florian Buchholz
- Marina Valeryevna Bykova
- Bogdan Carbunar
- Brian David Carrier
- Heung-Keung Chai
- Sheetal Kumar Lalwani Chainraj
- Srijan Chakraborty
- Chun-Kong Cheng
- Gang Ding
- Yonghua Ding
- Yu Dong
- James Patrick Early
- Mohamed Ahmed Yassin El Tabakh
- Mohamed Galal Elleky
- Ronaldo Alves Ferreira
- John Chapman Flack
- Keith Byron Friken
- Thanaa Mohamed Ghanem
- Siddhartha Kartikaye Goel
- Rajeev Gopalakrishna
- Jie Eric Gower
- Christian Grothoff
- Robert Gwadera
- Md Ahsan Habib
- Moustafa Mohamed Hammad
- Seung Chul Han
- Mohamed Mosaad Hefeeda
- Joon Woo Hong
- Ihab Francis Ilyas
- Ioannis Ioanidis
- Shireen Munir Javali
- Subramaniam Jayanti
- Sundararaman Jeyaraman
- Chun Jia
- Wei Jiang
- Xuxian Jiang
- Murat Kantarcioğlu
- Mucah Kazahan
- Issa M. I. Khalil
- Humayun Mukhtar Khan
- Md-Abdul Maleq Khan
- Hyeojeong Kim
- Mehmet Koyturk
- Abdunasser Mohamed Kremid
- Ali Yilmaz Kumcu
- Benjamin Asher Kuperman
- Minseok Kwun
- Shan Lei
- Jiaganshe Li
- Hong Liang
- Kuiyang Lou
- Ming Lu
- Yi Lu
- Yunhua Lu
- Di Ma
- Andrey A. Madan
- Maxim S. Martynov
- Christopher Felix McDonald
- Philip McGachey
- Krishneshwar Mokbel
- Mihai Mudure
- Mayur Hiru Naik
- Krishna Venkata Nandavada
- Arunkumar Navasivasakthivelasamy
- Peifeng Ni
- Krzysztof Palacz
- Jayesh Pandey
- Ga Hyun Park
- Shobha Chowdary Potluri
- Jorge R. Ramos
- Prathima Rama Rao
- Huan Ren
- Wenxi Ren
- Viduyt Samanta
- Piyush Shukla
- Radu Sion

**Fellows**
- Jason Baker
- Megan Carney
- Brian Joseph Denny
- Joseph-Patrick Roger Dib
- Baskar Sridharan
- Tiberiu Vasile Stef-Praun
- Hongmei Sun
- Christopher Taylor
- Vassilios Tsyrgou
- Uma Topkara
- Yi-Cheng Tu
- Hwa Young Um
- Jaideep Shrikant Vaidya
- Thomas John VanDrunen
- Olgka Vitek
- Cheng Wang
- Qi Qi Wang
- Weichao Wang
- Adam Welc
- Yuni Xia
- Changjiu Xian
- Xiaopeng Xiong
- Changhai Xu
- Huiying Xu
- Ossama Mohamed Younis
- Yuhui Zhong
- Krithigassree Ranganathan
- Gargi Sambamurthy
COURSES

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490N Network System Design
490S Secure Network Programming
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531 Computational Geometry
535 Interactive Computer Graphics
536 Data Communication and Computer Networks
541 Database Systems
542 Distributed Database Systems
543 Introduction to Simulation and Modeling of Computer Systems
555 Cryptography
580 Algorithm Design, Analysis, and Implementation
584 Theory of Computation and Computational Complexity
590A Advanced Database Systems
590B Topics in Computational Molecular Biology
590C Network Processor Seminar
590E Topical Lectures in Information Security
590G Image-Based 3D Computer Graphics
590N Topics in Peer-to-Peer Networks and Systems
590N Network System Design
590R Algorithms for Communication Networks
590S Programming Languages and Compilers Seminar
590V Programming Languages and Compilers Seminar: Resource-Aware Computing 2003
615 Numerical Solution of Partial Differential Equations
626 Advanced Information Assurance
636 Internetworking
641 Multimedia Database Systems

Ph.D. Graduates

August 2003
Dennis William Brylow
Static Checking of Interrupt-Driven Software
Advisor: J. Palsberg

Hoi Chang
Building Self-Protecting Software with Active and Passive Defenses
Advisor: M. J. Atallah

Md Ahsan Habib
Monitoring and Controlling QoS Network Domains: An Edge-to-Edge Approach
Advisor: B. Bhargava

Baskar Sridharan
Enforcing Safety in Pervasive Computing Environments
Advisor: A. P. Mathur

May 2003
Dmitri V. Kalashnikov
Efficient Querying of Constantly Evolving Data
Advisor: S. K. Prabhakar

Christopher Adam Telfer
Abstractions and Efficient Implementation of Automatically Reconfigurable Network Testbeds
Advisor: D. E. Comer

December 2002
Thomas Earl Daniels
Reference Models for the Concealment and Observation of Origin Identity in Store-and-Forward Networks
Advisor: E. H. Spafford

Huan Ren
Aggregate-Flow Scheduling: Theory and Practice
Advisor: K. Park
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<th>Date</th>
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<tr>
<td>Sep. 11</td>
<td>Prof. Thorsten Braun</td>
<td>University of Bern</td>
<td>Mobile Information and Communication Systems – A Swiss National Center of Competence in Research</td>
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<tr>
<td>Sep. 23</td>
<td>Prof. Peter Scheuermann</td>
<td>Northwestern University</td>
<td>FAST: A New Sampling-Based Algorithm for Discovering Association Rules</td>
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<td>Sep. 30</td>
<td>Prof. Alan Frieze</td>
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