DEPARTMENT OF

ComputerSciences

Message from the Head

SUSANNE E. HAMBRUSCH

I am delighted to report a year of exciting achievements for the Computer Science Department. In 2001-02, when Purdue announced a visionary plan to shape its destiny as a university with few peers in the sciences and engineering, the CS faculty worked on identifying strategic initiatives that complement and enhance the goals of the university. I want to share a summary, outlined below, of the faculty plan that resulted from these efforts, a plan that looks into the future of computing and strengthens the department's forty-year tradition of fostering groundbreaking research and providing an outstanding computer science education for its students.

As charted in the faculty strategic plan drafted this year, the department is focusing its efforts to build on strengths in its core areas: Computational Science and Engineering; Databases; Graphics, Visualization, and Geometric Modeling; Information Security; Networking, Operating Systems, and Distributed Systems; Programming Languages and Compilers; Software Engineering; and Theory of Computing and Algorithms.

Four research thrusts have been identified for future growth:

» Computational Biology and Nanotechnology
» Critical Infrastructure Protection
» Massive Data Handling
» Pervasive Computing

An exceptional faculty is a hallmark of Purdue Computer Science. We are pleased to welcome three outstanding new members of our faculty:

» Gopal Pandurangan, Assistant Professor; design and analysis of algorithms, with a focus on communication networks, Internet algorithms, and computational biology.
» Suresh Jagannathan, Associate Professor; semantics and implementation of high-level programming languages and distributed languages.
» Jeff Vitter, the Frederick L. Hovde Dean of the School of Science and Professor of Computer Science; algorithms, with a focus on external memory computations.

Our faculty and staff had a successful year. Recent faculty recognitions include:

» NSF Career Award: Walid Aref
» Ten Best Teachers in the School of Science recognitions: Buster Dunsmore and Jens Palsberg
» School of Science Outstanding Undergraduate Teaching Award: Ananth Grama
» University Faculty Scholar Award: Ananth Grama
» Fellow of Purdue Teaching Academy: Eugene Spafford
» Fellow of IEEE: Eugene Spafford
» Schlumberger Foundation Technical Merit Award: Sonia Fahmy

Our graphics faculty, under the leadership of Chris Hoffmann, plays a leading role in the University's new Envision Center and was instrumental in the highly recognized September 11 Pentagon Attack Simulation.

The 916 undergraduate majors enrolled in Fall 2002 are the brightest and most talented students the department has ever had, with an average SAT score of 1228. Our 203 graduate students represent the largest graduate program the department ever had. The department awarded 151 B.S., 36 M.S., and 8 Ph.D. degrees in 2001/02.

The department ranked 20th in the most recent U.S. News and World Report. It was in the 10th ranked cluster tied with Columbia, Duke, Harvard, and UC San Diego.

The department's development efforts were strong. The 26 participating companies in the Corporate Partners Program (CPP) supported scholarships and special programs with gifts totaling $1.3 million. Contributions from alumni and friends equaled $200,000. The campaign to raise gifts and pledges for our new building continues to move forward despite a struggling economy; groundbreaking will commence when the total of $20 million in funds needed for Phase I of the new facility are secured—and we make progress each month toward that goal.

In closing, let me say that it is an honor to follow Prof. Ahmed Sameh as the head of the Department of Computer Sciences. My colleagues and I are thankful for his service and leadership to the department.

Susanne E. Hambrusch

PS. Your comments and input are most welcome! Please write us at annual-report@cs.purdue.edu.

Samuel D. Conte
1917-2002

Samuel D. Conte, who founded the Department of Computer Sciences in 1962, passed away July 1, 2002. He was 85. Conte served as head of the department for 17 years and continued teaching until 1993.

« »

"Samuel Conte was at the leading edge of one of the most important scientific developments of the 20th century," said Purdue president Martin C. Jischke. "He was one of the first to recognize the role the computer could play in teaching and research, as well as in business. His vision and leadership have had a profound impact on Purdue and our world."

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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 6,100 courses in over 200 fields of study. Students come from 50 states and 130 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. Visit http://www.purdue.edu for more information.

Greater Lafayette

The home of Purdue, Greater Lafayette is a friendly, spirited community located on Interstate 65, 150 miles southwest of Chicago and 65 miles northeast 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 http://www.lafayette-in.com.

VISUALIZATION INSTRUCTIONAL LABORATORY

About the Department of Computer Sciences

The Department of Computer Sciences at Purdue was the first degree program in Computer Science in the nation. Computer Science offers challenging BS, MS, and Ph.D. programs for over 900 undergraduate and 200 graduate students.

The 37 faculty members (34 full-time equivalents) are involved with teaching and research interests that span most of Computer Science, and include analysis of algorithms and theory of computation; compilers and programming languages; databases; geometric modeling and scientific visualization; information security; networking and operating systems; scientific computing; and software engineering. For more information, see http://www.cs.purdue.edu/faculty.

Computer Science Department Facilities

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

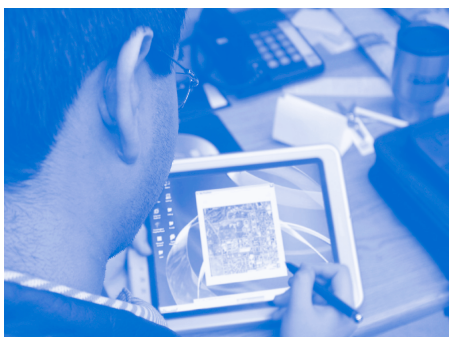
General computing facilities are available for both administrative activities (such as the preparation of research reports and technical publications) and research needs that are not supported by other dedicated equipment. The main systems each have 512 MB to 4 GB of main memory and a total of over 500 GB of disk storage. All faculty and many graduate students have a Sun, Intel, or Silicon Graphics 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. 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 both special-purpose output devices as well as general output equipment, including about 70 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 twenty-five 10 Mbps and 100 Mbps Ethernet hubs and switches included in the Computer Science Building connect the workstations to the departmental computing facilities. Experimental wireless networks are also used in the building. A fiber-optic ATM link connects departmental systems to other systems on campus, as well as to the Internet community via both "commodity" and Internet2/Abilene connections. ISDN and ADSL services are in use for remote access from a number of nearby sites.

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 SPARCservers and several Sun and Intel workstation laboratories. In addition, ITaP provides systems for use in courses taught by the CS 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.

Education

Graduate Instructor

Dennis William Brylow

Graduate Assistants

Deepak Agarwal
Kailash Kumar Agrawal
Daniel Alan Aiello
Antonio Ake
Mohamed Hassan Ali
Daniel Armanto
Asad Khan Awan
Gleb Evgeny Bahmutov
Scott Joseph Baxter
Krista Lynne Bennett
Florian Buchholz
Joao Wagner Lima Cangussu
Bogdan Carbunar
James Edward Cernak
Heung-Keung Chai
Srijan Chakraborty
Hoi Chang
Ron P. Chauby
Akbar Munir Chaudhary
Chun-Kong Cheng
Jie Chi
Amit Chourasia
Tomasz Czajka
David A. Dangerfield
Thomas Earl Daniels
Nitesh Dilip Dhanjani
Yonghua Ding
Yu Dong
Senthil Kumar Duraiswamy
James Patrick Early
Knic Martin Ebel
Mohamed Ahmed Yassin El Tabakh
Mohamed Galal Elfeky
Hicham Galal Elmongui
Ronaldo Alves Ferreira
John Chapman Flack
Mohamed Raouf Fouad
Keith Byron Frikken
Thanaa Mohamed Ghanem
Siddhartha Kartikaye Goel
Rajeev Gopalakrishna
Roger Patrick Gorman
Jason Eric Gower
Christian Grothoff
Hong Gu
Jiehua Guo
Robert Gwadera
Md Ahsan Habib
Moustafa Mohamed Hammad
Seung Chul Han
Xin He
Mohamed Mosaad Hefeeda
Eirik Asbjorn Herskedal
Tzvetan Todorov Horozov
Min Hou
Ihab Francis Ilyas
Ioannis Ioannidis
Shireen Munir Javali
Sundararaman Jeyaraman
Xuxian Jiang
Dmitri V. Kalashnikov
Murat Kantarcioglu
Mercan Karahan
Florian Kerschbaum
Alok Pramod Khambatkone
Humayun Mukhtar Khan
Md-Abdul Maleq Khan
HyoJeong Kim
Mehmet Koyuturk
Ajay Prakash Kulkarni
Benjamin Asher Kuperman
Minseok Kwon
Mudassir Latif
Usman Latif
Shan Lei
Min Li
Xiaodong Li
Hong Liang
James Zheng Liang
Hendry Lim
Chuan-Ming Liu
Huagen Liu
Jing Liu
Yaodong Liu
Ming Lu
Yi Lu
Di Ma
Andrey A. Madan
Marin Markov
Gergana Vassileva Markova
David Michael McClure
Christopher Felix McDonald
Scott David Miller
Mohamed Fathalla Mokbel
Mayur Hiru Naik
Surendar Reddy Nanchary
Krishna Venkata Nandivada
Ramkumar Natarajan
Arunkuma Navasivasakthivelsamy
Ather Imran Nawaz
Jinmin Ni
Peifeng Ni
Daniel Aaron Noland
Ann-Sofie Nystrom
Terry Daniel Ott
Vasudeva Nithyanan Pai
Krzysztof Palacz
Vinay Paradkar
Ga Hyun Park
Ioana Panseluta Patrascu
Om Prakash Pitta
Muralikrishna Ramanathan
Shrish Ranjan
Prathima Rama Rao
Huan Ren
Zhong Ren
Matthew Fuller Rose
Aparna Ram Sabunani
Mallika Ram Sabunani
Krithigassree Rang Sambamurthy
Addam Lee Schroll
Basit Shafiq
Mridul Sharma
Amit Jayant Shirsat

CERIAS GRADUATE STUDENTS »
BACK ROW: PAT GORMAN, ERIC BRYANT, FLORIAN BUCHHOLZ, ANDREW SMITH, ARUNKUMAR NAVASIVASAKTHIVELSAMY
MIDDLE ROW: BERNIE MCSHEA, JENNIFER REDMON, BEN LEE, JAMES JOSHI, DARREN KING
FRONT ROW: BEN KUPERMAN, MASHRUR NABI, SCOTT YOST, RAJEEV GOPALAKRISHNA, CRAIG GRUBE

Manish Singh
Radu Sion
Baskar Sridharan
Tiberiu Vasile Stef
Vignesh Sukumar
Christopher Adam Telfer
Steven Ee-Teong Teoh
Umut Topkara
Yi-Cheng Tu
Taisei Ueno
Jaideep Shrikant Vaidya
Thomas John VanDrunen
Venkatasatishkum Vangala
Pranathi Venkatayogi
Olga Vitek
Ryan S. Wamsley
Cheng Wang
Chin-Ying Wang
Weichao Wang
Adam Welc
John Bradford Woodfin
Yan Wu
Yuni Xia
Xiaopeng Xiong
Changhai Xu
Rong Xu
Zhangwei Xu
Hiroshi Yamauchi
Weiqiang Yang
Yu Yang
Youchan Yao
Xiaoduan Ye
Ossama Mohamed Younis
Puneet Zaroo
Chaogui Zhang
Fan Zhang
Mingwu Zhang
Tian Zhao
Yuhui Zhong
Liang Zhou
Haiya Zou

Fellows

Krista Lynne Bennett
Dennis William Brylow
David A. Dangerfield
Hicham Galal Elmongui
John Chapman Flack
Jason Mark Fox
Keith Byron Frikken
Roger Patrick Gorman
Craig Michael Grube
Darren Joseph King
Yungbin Benjamin Lee
Robert Preston Light
Bernard Kevin McShea
Tamara Lonette Morris
Anna Saputera
Andrew Brian Smith
Thomas John VanDrunen

Ph.D. Students

AUGUST 2002

Joao Wagner Lima Cangussu »
A Mathematical Foundation for Software Process Control
Advisor: A. P. Mathur

Chuan-Ming Liu »
Broadcasting and Blocking Large Data Sets with an Index Tree
Advisor: S. E. Hambrusch

Tian Zhao »
Type Matching and Type Inference for Object-Oriented Systems
Advisor: J. Palsberg

DECEMBER 2001

Susan Beth Evans Iacobacci »
Interactive Surface Modeling and Analysis
Advisor: C. Bajaj

AUGUST 2001

Wenliang Du »
A Study of Several Specific Secure Two-Party Computation Problems
Advisor: M. J. Atallah and E. H. Spafford

Min-Ho Kyung »
Computer-Aided Kinematic Synthesis of Mechanical Systems Using Configuration Space
Advisor: E. P. Sacks

Stefano Lonardi »
Global Detectors of Unusual Words: Design, Implementation, and Applications to Pattern Discovery in Biosequences
Advisor: A. Apostolico

Diego Martin Zamboni »
Using Internal Sensors for Computer Intrusion Detection
Advisor: E. H. Spafford

Courses

110	*Introduction to Computers*
152	*FORTRAN Programming for Engineers*
154	*FORTRAN Programming*
156	*C Programming for Engineers*
158	*C Programming*
178	*Introduction to Computer Science*
180	*Programming I*
181	*Programming II*
182	*Foundations of Computer Science*
190W	*Introduction to the Internet and the World Wide Web*
192	*Freshman Resources Seminar*
197	*Freshman Honors Seminar*
235	*Introduction to Organizational Computing*
240	*Programming Laboratory (C)*
250	*Computer Architecture*
251	*Data Structures*
314	*Numerical Methods*
348	*Information Systems*
352	*Compilers: Principles and Practice*
354	*Operating Systems*
381	*Introduction to the Analysis of Algorithms*
397	*Honors Seminar*
406	*Software Engineering I*
422	*Computer Networks*
426	*Computer Security*
435	*Interactive Computer Graphics*
448	*Introduction to Relational Database Systems*
490B	*Introduction to Bioinformatics*
491	*Senior Resources Seminar*
501	*Introduction to Computational Science*
502	*Compiling and Programming Systems*
503	*Operating Systems*
510	*Software Engineering*
514	*Numerical Analysis*
530	*Introduction to Scientific Visualization*
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*
565	*Programming Languages*
580	*Algorithm Design, Analysis, and Implementation*
590B	*Topics in Computational Molecular Biology*
590C	*Computational Nanotechnology*
590D	*Advanced Topics in Parallel and Distributed Computing*
590D	*Recent Trends in Database Systems*
590E	*Topical Lectures in Information Security*
590G	*Image-Based 3D Computer Graphics*
590M	*Security Issues in Data Mining*
590N	*Network Processor Systems*
590N	*Topics in QoS-Sensitive Networked Services*
590R	*Computer Graphics Frontiers*
590S	*Analysis of Algorithms on Sequences*
603	*Advanced Topics in Distributed Systems*
636	*Internetworking*
661	*Formal Compiling Methods*
690Z	*Handheld Devices and Embedded Systems*

TheNewCSBuilding

AN UPDATE

Purdue's plan for preeminence in science and engineering

Purdue University stands at the door of unparalleled promise. Building on its great tradition of excellence, Purdue has launched strategic initiatives that, when fully implemented, will create a truly exceptional, multi-disciplinary research and learning setting for the sciences and engineering, an environment that will be celebrated as preeminent among researchers, scientists, and scholars around the world.

In September 2002, Purdue announced a campaign to raise $1.3 billion to provide the resources to finance these strategic initiatives in learning, discovery, engagement, and facilities. Included in the University's campaign is the important effort to fund and construct Phases I and II of a $36 million building for Computer Science.

The critical challenge facing Computer Science today is space

In concert with Purdue's goal of preeminence, Computer Science has set out on a path to become a top ten CS program.

Now ranked at #20, Purdue Computer Science – the first degree program in Computer Science in the nation – is already a first class program. The objective is to build on its strengths to become even better. To accomplish this strategic goal, the essential first step is to increase faculty size – to attract, hire, and retain additional faculty who have achieved international distinction and provide them with computing facilities, space, and administrative staff that support a superlative research and learning environment.

However, making significant, measurable progress toward accomplishing the goal of hiring more faculty is problematical because, quite simply, Computer Science has run out of space. Thirty-four (34) CS faculty have research, instructional, and office space in five (5) separate buildings on the West Lafayette campus, teaching and doing research with over one thousand (1,000) students. This situation must change. Purdue understands that the time has come to build a facility that reflects its quest for preeminence in Computer Science.

Impact of a new Computer Science building

The impact of a new Computer Science building will be immediate and far-reaching. First, in its new home, Computer Science will be a magnet for the world's brightest minds in the field and achieve a competitive advantage in growing its faculty.

Second, outstanding students will follow great faculty and continue to be drawn to Purdue Computer Science. In a new building, students will gain by taking coursework in smaller, state-of-the-art classrooms. They will be taught more often by faculty, and less often by teaching assistants. And they will interact in team environments, completing projects and solving inter-disciplinary problems in larger, well-equipped research labs and breakout spaces.

Third, and of utmost importance, a new Computer Science facility will help Purdue attain the preeminent multi-disciplinary teaching and research milieu it is striving to achieve, a setting in which students – the scientists and engineers of the future – come together alongside exceptional professors to learn, discover, and ultimately find solutions that can lead to applications of immense benefit for the world. Emerging technology research with potential for important applications is already underway at Purdue, and will accelerate with a new Computer Science building.

In a year of continuing turmoil in world financial markets, alumni and friends of the department made building campaign commitments that totaled $2 million by year end. Phase I of the new CS facility at Purdue will cost $20 million – to be funded with $7 million in contributions from individuals, and $13 million from the state of Indiana. Groundbreaking for the project will be set when the remaining $5 million in private support is secured.

Donor Honor Roll

Development of Private Support Gifts from individual and corporate friends in 2001-02 provided the critical edge, enabling the department to meet and expand its learning and research goals. By June 30, 2002, contributions totaling $1,520,291 were received from these generous donors.

Individual Donors

Victor & Carol Abell
Subhash & Anjali Agrawal
Gregory Alfonso
Mary & William Allendoerfer
Richard Amick
Janet Andersen
Donald Andres
Carol & Sheldon Applegate
Eileen Armes
Robert Balazs & Louise McLeod
Mary Jo Bartolacci & Timothy Palmer
Jinous Bassari & S. Triantafyllopoulos
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Christopher & Cheryl Benes
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Gary Berg
Richard & Kimberly Bergendahl
Ronald & Rita Boisvert
Rick Bollenbacher
Randal & Sally Bond
Kathryn & Thomas Bond
Andre Bondi
James & Judy Bonnet
Raymond & Ruth Brancolini
Mark & Robyn Brands
Steven Bruell & Sandra Whelan
Audrey & Bruce Burton
Richard & Bonita Buten
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Kathleen & Milton Campbell
David Carlson
Thomas & June Carpenter
Brian Carrier
Dennis & Janice Carter
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Margaret & Thomas Cavender
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Ronald & Colleen Gardner
John & Pauline Garney
Anthony & Dawn Gast
Rosanna Glode
Amanda Goldner
Randal & Elizabeth Goodman
Eileen Gorrell & Bill Weaver
Jay & Deborah Granger
Bradley & Theresa Graves
M. Katherine & Walter Green
Jonathan Green & Andrea Shiroff
James & Bonnie Griffioen
Douglas & Kim Grismore
David & Charlene Gumkowski
Fredric & Anne Haines
Stephen & Linda Ham
Christopher & Anita Hansen
Eleanor Harrison
Steven Hart
Garth Hawkins
Robert Hemmig
Neil & Kristin Hentschel
Alan Hevner
Sean & Ellen Higgins
Brent & Rachel Hinkle
Larry & Deborah Hite
Linda & Thomas Hjertquist
Craig & Lynn Hodgkin
Thomas & Sherry Hoffman
Peter & Linda Hogue
Robert & Doris Holloway
Kent & Zih-Min Hoover
Jeffery Hubeny
David & Janela Hubka
Ryan Hudson
Yeou-Huei Hwang & Jing-Yun Shyr
Jill Ikemoto
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Gary Irick
Robert & Lori Jackson
David Jansen
Dorothy Janson
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Kirk Johanning
Michael Jones
Kimberly & Bruce Jones
Kevin & Laura Jozwiak
Paul Jurgens
Raymond Karmolinski
Joseph & Sharon Karpierz
E. Michael Kasamis
William Keating
David & Sandra Kern
Matthew & Jennifer Kimery
Kevin & Janyne Kizer
Kevin Kolis
John T. (Tim) & Kathleen Korb
Willaim Krause
Robert & Sarah Kuehl
Joseph & Barbara Kuharic
Aaron Kunze
Helen LaFlare
Nancy Laing
Robert & Amy Laird
Paul Landay
Ronald Large & Marny Livingston
Alan & Wendy Legerlotz
Denise & Richard LeNeave
Jonathan & Davida Levin
David & Cheryl Lindner
Darwin & Stephanie Ling
Marc & Deborah Lipnick
Barbara Lloyd & Carlos Pomalaza-Raez
Daniel Longacre
Karen & Ken Lucadema
Mark & Joanne Lynch
Stephen & Maryann Maher
Michael Mart
John & Maureen Masciola
Ken Mazawa
James & Lisa McNurlan
Robert & Sharon Mead Jr.
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Kenneth Mensik
Robert Mitchell
William Mitchell
Jeffrey Mow
Clara Muhammad
Mary-Ann Neel
Craig & Dale Neth
Deborah Neuts
Peter & Rose Ng
James Nichols
Laura & Daniel Niemeier

Continued on page 11

Corporate Partners

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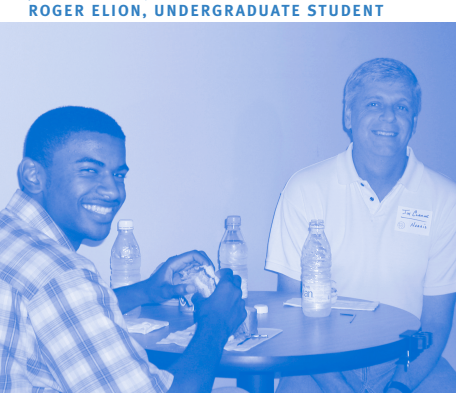
SUSANNE HAMBRUSCH, HEAD AND CARL MURRAY, BECKMAN COULTER

WEN JING GU, CS UNDERGRADUATE STUDENT AND LYNN TEWINKEL, GUIDANT

JIM CLAMONS, HARRIS CORPORATION AND ROGER ELION, UNDERGRADUATE STUDENT



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. They 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, insight in drafting the departmental strategic plan, ideas regarding retention and enrollment issues, collaborative efforts with faculty and student research, as well as alerting the department to industry areas of concern.

Premiere Corporate Partners

Eli Lilly and Company » *Mike Rudicle*
Guidant Corporation » *Jim Mapel*
IBM » *Ko-Yang Wang*
Intel Corporation » *Kevin Kahn*
Lockheed Martin » *Richard Schubert*
Microsoft Corporation » *John Spencer*
Motorola » *John Kinyon*

Partners

American Management Systems » *Paige Witte*
The Boeing Company » *Bob Byrne*
Centrics » *Don Shaffer*
Cisco Systems » *Dale Miller*
Harris Corporation » *Jim Clamons*
Hewlett Packard » *Janice Zdankus*
Lucent Technologies » *Jack Kozik*
Northrop Grumman » *Dave Capka*
Raytheon Systems Company » *Jerry Slater*
Schlumberger » *John Ullo*
TechPoint » *Donna Gastevich*
Tektronix, Inc. » *Steve Sutton*

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Crowe Chizek » *Mark Strawmyer*
EDS » *Rhonda Moon*
ExxonMobil » *Dan Post*
Goodyear Tire and Rubber Company » *Rick Maus*
Kimberly-Clark Corporation » *Rick Grosskopf*
Procter & Gamble » *Tom Hylton*

Donor Honor Roll

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William & Deborah Nigh
Jeffrey Noone
Jeffrey North
William & Libbie Nylin
William & Dorotha O'Brien
Pamela & Robert Ohno
Michael & Karen Ondrasek
Debra & Kevin Otto
Lisa Ozimek
Jennifer & Christopher Pacourek
Gregory & Deborah Perisho
Richard & Rebecca Piatt
Perry & Kathe Preston
Gary Pritts
Cheryl & Malcolm Railey
Ross & Indiana Rannells
Brian Redding
Jonathan Reed
Scott & Mary Rentschler
Ruben & Jerri Richardson Jr.
Charles & Dion Messer
John Rosandich & Alison Krufka
Jerry Rose
Michael Rossett
Rehe & Julie Ruesch
David Russell
David & Susan Russo
Michael & Brenda Ryan
Stephen & Laura Salisbury
Ahmed Sameh
C. Jill & Patrick Sample
Bimal Saraiya
Charles & Bonita Sauer
Ramon & Barbara Saunders
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Guest Lectures

Date	Name	Association	Talk Title
		FALL 2001	
Aug. 30	Denis Antonioli	Canoo Engineering	*Compact Wire-Formats for Java Programs*
Sep. 10	Urs Holzle	Google Inc.	Google – Linux Clustering for Fun and Profit
Sep. 10	Samir R. Das	Univ of Cincinnati	*On-Demand Multipath Distance Vector Routing for Mobile Ad hoc Networks*
Sep. 12	John Griffith	MITRE Corporation	*GeoNODE: The Geospatial News-On-Demand Environment*
Sep. 17	Francesco Zappa Nardelli	DI ENS	*Typing Mobility in the Seal Calculus*
Sep. 24	Matt Mason	Carnegie-Mellon University	*Automated Manufacturing and Robotic Juggling*
Sep. 28	Matthew Flatt	University of Utah	*Programming Language Support for Software Components*
Oct. 4	Kathleen Fisher	AT&T Research	*Hancock: A Language for Extracting Signatures from Data Streams*
Oct. 15	George Cybenko	Dartmouth College	*Matrix Analysis and Quantum Computing*
Oct. 18	Ken Calvert	University of Kentucky	*Concast – An Active Internet Service*
Nov. 12	Daniel E. Platt	IBM TJ Watson Research Lab	*Global Induced Interactions Between Secondary Structures in Proteins*
Nov. 16	Xiangyang Li	Illinois Institute of Technology	*Geometry and Wireless Ad Hoc Networks*
Nov. 19	Marcelo Weinberger	Hewlett-Packard Labs	*An Introduction to Universal Source Coding*
Nov. 26	Guy Gennioud	EPFL, Laussane	*Evolution of UML Standards*
Nov. 27	Aviel D. Rubin	AT&T Labs	*Publius: A Robust, Tamper-Evident, Censorship-Resistant Web Publishing System*
Nov. 29	Klara Nahrestedt	Univ. of IL - Urbana-Champaign	*QoS Routing for Next Generation High-Speed Network Challenges and Solutions*
		SPRING 2002	
Jan. 28	Larry Smarr	UCSD	*The 21st Century Internet*
Feb. 7	Maria Papadopouli	Columbia University	*Information Dissemination and Resource Sharing in Mobile, Ad Hoc Networks*
Feb. 11	Clem McDonald	IU School of Medicine	*A Large Scale Medical Record Database and Mechanisms for Maintaining Privacy while Permitting Cross Patient Research*
Feb. 14	R. Michael Kirby	Brown University	*Simulation and Visualization of Applied Computational Fluids Problems*
Feb. 25	Atanas (Nasko) Rountev	Rutgers University	*Dataflow Analysis of Software Fragments Beyond Whole-Program Analysis*
Feb. 25	Ed. Seidel	Albert Einstein Institut Germany	*Dynamic Grid Applications for Science and Engineering*
Feb. 26	Gary T. Leavens	Iowa State University	*A Java Modeling Language and also Specification Inheritance*
Mar. 7	Michael Huang	Univ. of IL Urbana-Champaign	*Managing Processor Adaptation for Energy Reduction*
Mar. 14	David M. Nicol	Dartmouth College	*Composite Synchronization in Parallel Discrete-Event Simulation*
Mar. 18	Zhendong Su	Univ. of CA - Berkeley	*Constraint Simplification for Scalable Program Analysis*
Mar. 18	Andrew Black	OHSU	*Extreme Programming: An Introduction with Pictures*
Mar. 21	Steve Zdancewic	Cornell University	*Programming Languages for Information Security*
Mar. 25	Stephanie Weirich	Cornell University	*Programming with Types*
Mar. 25	Sanjay Madria	Univ. of Missouri - Rolla	*Multi-version Transaction Model to Improve Data Availability in Mobile Computing*
Mar. 27	Martin Karsten	Darmstatdt Univ. - Germany	*Quality of Service in IP-Networks - From Proactive to Reactive Resource Allocation*
Mar. 29	Young Kim	POSTECH	*Distributed Edge-to-Edge Throughput Monitoring Methods to Manage Bandwidth Usage in Differentiated Service Networks*
Apr. 1	Rada Chrikova	Stanford University	*Automated Database Restructuring*
Apr. 4	Zhiyuan Chen	Cornell University	*Building Compressed Database Systems*
Apr. 8	Eylem Ekici	Georgia Institute of Technology	*Routing in Next Generation Terrestrial/Satellite IP Networks*
Apr. 8	David Holmes	DL Tech	*Threads, Concurrency and Synchronization*
Apr. 9	Gopal Pandurangan	Brown University	*Stochastic Analysis of Dynamic Computer Processes*
Apr. 11	Sumit Basu	MIT	*Machine Audition for Interactive Environments*
Apr. 15	Philip K. McKinley	Michigan State Univ.	*Design and Use of Adaptive Components in RAPIDware*
Apr. 22	Suresh Jagannathan	Storage Networks, Inc.	*User-Level Communication for Intelligent Storage*
Apr. 23	Armand M. Makowski	University of Maryland	*Queue Dynamics at RED Gateways Under a Large Number of Flows*
Apr. 29	Fabian E. Bustamante	Georgia Institute of Technology	*The Active Streams Approach to Adaptive Distributed Systems*
Apr. 29	Leszek Lilien	Signus Consulting	*Quasi-Partitioning in Distributed Database Systems*
Apr. 30	Michel Dagenais	University of Montreal	*Performance Evaluation on Linux*

Staff

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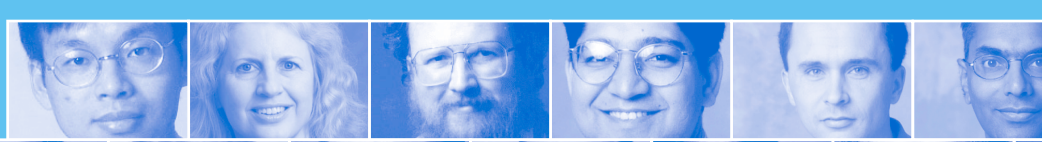

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01.02
ANNUAL REPORT

PURDUE
UNIVERSITY

Shreeram Abhyankar

- Marshall Distinguished Professor of Mathematics
- Professor of Computer Science and Industrial Engineering (1988)
- B.Sc., Bombay, 1951
- A.M., Harvard, 1952
- Ph.D., Harvard, 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 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.

David C. Anderson

- Professor of Mechanical Engineering and Computer Science (1975)
- 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 (Italy), 1973
- Dipl. Perf., Computer Science, University of Salerno (Italy), 1976

Professor Apostolico's research interests are in the areas of algorithmic analysis and design and parallel computation. His recent work deals with algorithms and data structures for combinatorial pattern matching problem 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, 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, and 1997 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, the International Colloquium on Automata, Languages, and Programming, the IEEE Data Compression Conference, the IFIP Conference on Parallel Algorithms for Irregularly Structured Problems, the Workshop on Algorithms and Data Structures, Research in Computational Biology (RECOMB), and as an invited speaker at various international conferences and advanced schools.

SELECTED PUBLICATIONS

A. Apostolico, M.E. Bock, S. Lonardi, and X. Xu, "Efficient Detection of Unusual Words", Journal of Computational Biology, Vol. 7 No. 1/2, pages 71-94, 2000.

A. Apostolico and S. Lonardi, "Off-line Compression by Greedy Textual Substitution", Proceedings of the IEEE, Vol. 88 No. 11, pages 1733-1744, 2000.

A. Apostolico and G. Bejerano, "Optimal Amnesic Probabilitstic Automata, or How to Learn and Classify Proteins in Linear Time and Space", Journal of Computational Biology, Vol. 7 No. 3/4, pages 381-393, 2000.

Walid Aref

- Associate Professor of Computer Science (1999)
- Ph.D., University of Maryland, College Park, 1993

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

SELECTED PUBLICATIONS

Walid G. Aref, Ibrahim Kamel, and Shahram Ghandeharizadeh, "Disk Scheduling in Video Editing Systems", IEEE Transactions on Knowledge and Data Engineering. To Appear. 2001.

Walid G. Aref and Hanan Samet, "Efficient Window Block Retrieval in Quadtree-based Spatial Databases", GeoInformatica, Vol. 1, No. 1, pp. 59--91, April 1997.

Walid G. Aref, Daniel Barbara, and Padmavathi Vallabhaneni, "The Handwritten-Trie: Indexing Electronic Ink", The 1995 ACM SIGMOD International Conference on Management of Data, San Jose, California, May 1995.

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, 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

M.J. Atallah and W. Wu, "Secure Multi-Party Computational Geometry", Lecture Notes in Computer Science, 2125, Springer Verlag, Proceedings Workshop on Algorithms and Data Structures, Providence, Rhode Island, pages 165-179, August 2001.

M.J. Atallah, Victor Raskin, Christoph Hempelmann, Mercan Karahan, Umut Topkara, Katerina Triezenberg, Radu Sion, "Natural Language Watermarking and Tamperproofing", Proc. 5th International Information Hiding Workshop, Noordwijkerhout, The Netherlands, October 2002.

H. Chang and M.J. Atallah, "Protecting Software Code by Guards", Proc. ACM Workshop on Security and Privacy in Digital Rights Management, Philadelphia, Pennsylvania, November 2001.

Chris Bailey-Kellogg

- Assistant Professor of Computer Science (2001)
- B.S. and M.S., Electrical Engineering and Computer Science, MIT, 1993
- Ph.D., Computer and Information Science, Ohio State, 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

C. Bailey-Kellogg and F. Zhao, "Influence-based Model Decomposition", Artificial Intelligence, 130(2):125-166, 2001.

C. Bailey-Kellogg, J.J. Kelley, III, C. Stein, and B.R. Donald, "Reducing Mass Degeneracy in SAR by MS (Structure-activity Relation by Mass Spectrometry) by Stable Isotopic Labeling", J. Computational Biology, 8(1):19-36, 2001.

C. Bailey-Kellogg, A. Widge, J.J. Kelley, III, M.J. Berardi, J.H. Bushweller, and B.R. Donald, "The NOESY Jigsaw: Automated Protein Secondary Structure and Main-chain Assignment From Sparse, Unassigned NMR Data", J. Computational Biology, 7(3-4):537-558, 2000.

Bharat Bhargava

- Professor of Computer Science (1984)
- Ph.D., Electrical Engineering, Purdue University, 1974

Professor Bhargava's research involves both theoretical and experimental studies in distributed systems. His research group has implemented a robust and adaptable distributed database system called RAID, an adaptable video conferencing system and is involved in networking research using ideas of active routers, diffserv, and mobileIP. Prof. Bhargava has conducted experiments in large scale distributed systems, communications, authentication, key management, fault-tolerance and Quality of Service. He is conducting experiments with large scale communication networks to support emerging applications such as digital library and multi-media databases. His current interests are in secure mobile systems, multimedia security and QoS as a security parameter.

Professor Bhargava was the chairman of the IEEE Symposium on Reliable and Distributed Systems held at Purdue in October 1998. Professor Bhargava is on the editorial board of three international journals. 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 Institute of Electrical and Electronics Engineers and Institute of Electronics and Telecommunication Engineers. He has been awarded the charter Gold Core Member distinction by IEEE Computer Society for his distinguished service. He received Outstanding Instructor Awards, from the Purdue chapter of the ACM in 1996 and 1998. He has received IEEE Technical Achievement award for a major impact of his decade long contributions to foundations of adaptability in communication and distributed systems in 1999. Prof. Bhargava's students have received best paper awards in International conferences and have started a Nasdaq listed company.

SELECTED PUBLICATIONS

Bharat Bhargava, "Concurrency Control in Database Systems", IEEE Transactions on Knowledge and Data Engineering (TKDE), Vol. 11, No. 1, pages 3-16, January 1999.

Bharat Bhargava and John Riedl, "A Model for Adaptable Systems for Transaction Processing", IEEE Transactions on Knowledge and Data Engineering (TKDE), Vol. 1, No. 4, pages 433-449, August 1989.

Bharat Bhargava and Melli Annamalai, "A Communication Framework for Digital Libraries", Multimedia Systems and Applications", Vol. 10, No.2/3, pages 205-236, April 2000.

Chris Clifton

- Associate Professor of Computer Science (2001)
- B.S. in Computer Science and Engineering, M.I.T., 1986
- M.A. in Computer Science, Princeton, 1988
- M.S. in Electrical Engineering and Computer Science, M.I.T., 1986
- Ph.D. in Computer Science, Princeton, 1991

Dr. Clifton works on challenges posed by novel uses of data mining technology, including data mining of text, data mining techniques applied to interoperation of heterogeneous information sources, and security and privacy issues raised by data mining. 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. He has a Ph.D. from Princeton University, and Bachelor's and Master's degrees from the Massachusetts Institute of Technology. Before joining MITRE in 1995, he was an Assistant Professor of Computer Science at Northwestern University.

SELECTED PUBLICATIONS

Christopher W. Clifton, "Using Sample Size to Limit Exposure to Data Mining", Journal of Computer Security 8(4), IOS Press, November 2000. Invited paper.

Christopher W. Clifton and Wen-Syan Li, "SEMINT: A Tool for Identifying Attribute Correspondences in Heterogeneous Databases Using Neural Networks", Data and Knowledge Engineering 33(1), Elsevier Science, Amsterdam, April 2000.

Jaideep Vaidya and Chris Clifton, "Privacy Preserving Association Rule Mining in Vertically Partitioned Data", The Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, July 23 - 26, 2002, Edmonton, Alberta, Canada.

Douglas Comer

- Professor of Computer Science (1976)
- 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 ground breaking textbooks on computer networks, the Internet, and computer operating systems. His books have been translated into eleven 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 fifteen of the top sixteen Computer Science Departments listed in the U.S. News and 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 fifteen 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.

Buster 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, Website 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 Ten 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 coauthor 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 Elmagarmid

- Professor of Computer Science (1988)
- B.S., Computer Science, University of Dayton, 1977
- M.S., Computer and Information Science, The Ohio State University, 1981
- Ph.D., 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 The 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

J. Fan, M.-S. Hacid, A.K. Elmagarmid, W.G. Aref, "Content-based Video Database Systems-Part I: Automatic Content Analysis Towards Compact Video Representation", IEEE Transactions on Multimedia, submitted, 2001.

E. Bertino, J. Fan, E. Ferrari, M.-S. Hacid, A.K. Elmagarmid, "A Hierarchical Access Control Model for Video Database", ACM Transactions on Information Systems, submitted by Professor Ferrari, 2001.

J. Fan and A.K. Elmagarmid, "A Semi-Automatic Algorithm for Video Object Extraction and Temporal Tracking", Signal Processing: Image Communication, 17, 2002.

Sonia Fahmy

- Assistant Professor of Computer Science (1999)
- Ph.D., 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, scalable sensor networks, and network security. 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. Her work is published in over 40 papers, including publications in IEEE/ACM Transactions on Networking, Computer Networks, IEEE INFOCOM, IEEE ICNP, and ACM NOSSDAV. 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 is a member of the ACM, IEEE, Phi Kappa Phi, Sigma Xi, and Upsilon Pi Epsilon. She received the Schlumberger foundation technical merit award in 2000 and 2001, and the OSU presidential fellowship for dissertation research in 1998. She has served on the technical program committees of IEEE INFOCOM, ICNP, ICC, ICDCS, and GLOBECOM; chaired the tutorials for IEEE Hot Interconnects; and co-chaired the first SPIE conference on scalability and traffic control in IP networks in 2001.

SELECTED PUBLICATIONS

S. Fahmy, R. Jain, R. Goyal, B. Vandalore, and S. Kalyanaraman, "Design and Evaluation of Feedback Consolidation for ABR Point-to-Multipoint Connections in ATM Networks", Journal of Computer Communications, 25 July 1999, 22(12):1085--1103 (also appeared in IEEE INFOCOM 1998).

S. Kalyanaraman, R. Jain, S. Fahmy, R. Goyal and B. Vandalore, "The ERICA Switch Algorithm for ABR Traffic Management in ATM Networks", IEEE/ACM Transactions on Networking, 8(1):87--98, February 2000.

O. Younis and S. Fahmy, "On Efficient On-line Grouping of Flows with Shared Bottlenecks at Loaded Servers," In Proceedings of the IEEE International Conference on Network Protocols (ICNP), November 2002.

Greg 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

Greg N. Frederickson, "Ambivalent data structures for dynamic 2-edge-connectivity and k smallest spanning trees", SIAM Journal on Computing, Vol. 26, pp. 484-538, 1997.

Greg N. Frederickson, "A data structure for dynamically maintaining rooted trees", Journal of Algorithms, Vol. 24, pp. 37-65, 1997.

Greg N. Frederickson and Roberto Solis-Oba, "Increasing the weight of minimum spanning trees", Journal of Algorithms, Vol. 33, pp. 244-266, 1999.

Walter Gautschi

- Professor Emeritus of Computer Science and Mathematics (1963)
- Ph.D., Basel (Switzerland), 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 has been the managing editor of Mathematics of Computation and, since 1991, 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

W. Gautschi, "Orthogonal Polynomials: Applications and Computations", in Acta Numerica 1996, A. Iserles, Editor, Cambridge University Press, Cambridge, 1996, pp. 45-119.

W. Gautschi, "The Incomplete Gamma Functions Since Tricomi", in Tricomi's Ideas and Contemporary Applied Mathematics, Atti dei Convegni Lincei, No. 147, Accademia Nazionale dei Lincei, Roma, 1998, pp. 203-237.

W. Gautschi, "The Use of Rational Functions in Numerical Quadrature," Journal of Computational and Applied Mathematics, 133, pages 111-126, August 2001.

Ananth Grama

- Associate Professor of Computer Science (1996)
- B.E., Computer Science and Technology, University of Roorkee, India, 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 land analysis.

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

SELECTED PUBLICATIONS

Vipin Kumar, Ananth Grama, George Karypis, and Anshul Gupta, "Introduction to Parallel Computing: Design and Analysis of Algorithms", Benjamin Cummings/Addison Wesley (ISBN 0-8053-3170-0), 600 pages, Redwood City, 1994.

Dow-Yung Yang, Ananth Grama, Vivek Sarin, and Naren Ramakrishnan, "Compression of Particle Data for Hierarchical Approximation Techniques", ACM Transactions on Mathematical Software, Volume 27, Number 3, 2001.

Marc Alzina, Wojciech Szpankowski, and Ananth Grama, "2D-pattern matching image and video compression: Theory, algorithms, and experiments", IEEE Transactions on Image Processing, December 2001.

Susanne 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 in Purdue University Book of Great Teachers and was selected in 1999 as one of the Ten Best Teachers of Undergraduates. Since July 2002, she serves as the Head of the Department of Computer Sciences.

SELECTED PUBLICATIONS

F. Dehne, T. Eavis, S. Hambrusch, and A. Rau-Chaplin, "Parallelizing the Data Cube", Distributed and Parallel Databases, Special Issue on Parallel and Distributed Data Mining, Vol. 11, Nr. 2, pp. 181-203, 2002.

S. Prabakhar, Y. Xia, D. Kalashnikov, W. Aref, and S. Hambrusch, "Query Indexing and Velocity Constrained Indexing: Scalable Techniques for Continuous Queries on Moving Objects", IEEE Transactions on Computers, Special Issue on DBMS and Computing, Vol. 51, pp. 1124-1140, 2002.

S. Hambrusch, C.-M. Liu, W. Aref, and S. Prabhakar, "Query Processing in Broadcasted Spatial Index Trees", 7th International Symposium on Spatial and Temporal Databases (SSTD 2001), 2001.

Chris Hoffmann

- » Professor of Computer Science (1976)
- » 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.

He is on the editorial boards of

- » Journal for Symbolic Computation
- » Journal for Applicable Algebra
- » International Journal of Computational Geometry and Applications
- » Computer-Aided Geometric Design
- » Computer Aided Design
- » ACM Transactions on Graphics
- » Computer Graphics, Vision and Image Processing
- » SIAM Monographs in Science and Engineering
- » Computer Graphics Forum

SELECTED PUBLICATIONS

C. Durand and C. M. Hoffmann, "A Systematic Framework for Solving Geometric Constraints Analytically" J. of Symbolic Computation, Vol. 30, 2000, 493-520.

C. M. Hoffmann and R. Joan-Arinyo, "Parametric Modeling" Handbook of Computer Aided Geometric Design G. Farin, ed. North Holland, 2001.

C. M. Hoffmann and K. J. Kim, "Towards Valid Parametric Models" Computer Aided Design, Vol. 33, 2001, 81-90.

Tony 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

M. Hirzel, A. Diwan, and A. Hosking, "On the Usefulness of Liveness for Garbage Collection and Leak Detection", Proceedings of the 15th European Conference on Object Oriented Programming, Budapest, Hungary, pages 181-206, June 2001.

D. Whitlock and A. Hosking, "A Framework for Persistence-Enabled Optimization of Java Object Stores", Proceedings of the Ninth International Workshop on Persistent Object Systems G.N.C. Kirby (editor), Lillehammer, Norway, pages 4-18, September 2000. Lecture Notes in Computer Science 2135, Springer-Verlag, 2001.

A. Hosking, N. Nystrom, D. Whitlock, Q. Cutts, A. Diwan, "Partial Redundancy Elimination for Access Expressions", Software - Practice and Experience 31, 6, pages 577-600, May 2001.

Elias Houstis

- Professor of Computer Science (1984)
- B.S., Mathematics, University of Athens, Greece, 1969
- Ph.D., Mathematics, Purdue University, 1974

E.N. Houstis served as acting and associate Head of the Department of Computer Sciences for several years. Houstis is in 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 on-line learning. He is one 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 the designing of 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 MS 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, Greek Research Foundation.

Suresh Jagannathan

- Associate Professor of Computer Science (2002)
- B.S., SUNY Stony Brook (1982)
- Ph.D, MIT (1989)

Prof. 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, flow analysis, abstract interpretation, etc. Building optimizing compilers using formal systems derived from types or control-flow analysis is a main goal of this research.

Besides work on compiler design and implementation, he also has an active interest in coordination and distributed languages. More specifically, his research studies the application of language abstractions and implementation techniques successfully developed for functional languages like SML to coordination and distributed languages.

More recently, he has been actively involved in applying formal methods and software engineering principles to the design, specification, and implementation of large-scale storage systems. This work includes research on advanced communication infrastructure and management of distributed storage architectures for database systems. His current work expands upon this experience to develop next-generation storage applications focussed on transparent archival and versioning services for SAN environments.

SELECTED PUBLICATIONS

Suresh Jagannathan, Y. Zhou, A. Bilas, C. Dubnicki, K. Li, and J. Philbin. "Experiences with VI Communication for Database Storage", International Symposium on Computer Architecture, June 2002.

Suresh Jagannathan. "Continuation-based Transformations for Coordination Languages", Theoretical Computer Science, July 2000.

Suresh Jagannathan, Henry Cejtin and Stephen Weeks. "Flow-Directed Closure Conversion for Typed Languages", European Symposium on Programming, March 2000.

Zhiyuan Li

- Associate Professor of Computer Science (1997)
- B.S., Mathematics, Xiamen University, China, 1982
- M.S., Computer Sciences, University of Illinois, Urbana, 1985
- Ph.D., Computer Sciences, University of Illinois, Urbana, 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. Li collaborates with a group at the University of Minnesota to build the Agassiz C compiler to perform similar taskson C programs.

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 Computers 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/ACM International Parallel Processing symposium (IPPS/SPDP), ACM International Conference on Supercomputing and International Conference on Parallel Processing.

SELECTED PUBLICATIONS

Junjie Gu and Zhiyuan Li, "Efficient Interprocedural Array Data-flow Analysis for Automatic Program Parallelization", IEEE Trans. on Software Engineering, Special Issue on Architecture-Independent Languages and Software Tools for Parallel Processing, 26(3), March 2000, pp. 244--261.

Yonghong Song and Zhiyuan Li, "New Tiling Techniques to Improve Cache Temporal Locality", Proceedings of ACM SIGPLAN Conference on Programming Language Design and Implementation, Atlanta, Georgia, May, 1999, pp. 215--228.

Y. Song, R. Xu, C. Wang, and Zhiyuan Li, "Data Locality Enhancement by Memory Reduction", Proceedings of ACM 15th International Conference on Supercomputing, Sorrento, Italy, pages 50-64, June, 2001.

Bradley Lucier

- Professor of Mathematics and Computer Science (1981)
- B.Sc. (Hon.), 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 ten 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 by the Office of Naval Research since 1990.

SELECTED PUBLICATIONS

Antonin Chambolle, Ronald A. DeVore, Namyong Lee, and Bradley J. Lucier, "Nonlinear Wavelet Image Processing: Variational Problems, Compression, and Noise Removal through Wavelet Shrinkage", IEEE Transactions on Image Processing, 7 (1998), 319-335. Special Issue on Partial Differential Equations and Geometry-Driven Diffusion in Image Processing and Analysis.

Antonin Chambolle and Bradley J. Lucier, "Interpreting Translation-Invariant Wavelet Shrinkage as a New Image Smoothing Scale Space", IEEE Transactions on Image Processing, 10 (2001), 993-1000.

Namyong Lee and Bradley J. Lucier, "Wavelet Methods for Inverting the Radon Transform with Noisy Data", IEEE Transactions on Image Processing, 10 (2001), 79-94.

Robert 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. Areas of his research include differential equations, linear algebra, software for solving elliptic partial differential equations, and computational biology. He and G. Birkhoff have written the monograph Numerical Solutions of Elliptic Problems, SIAM Publications, 1985.

Aditya Mathur

- Professor of Computer Science (1987)
- B.E., Electrical Engineering, BITS, Pilani, India, 1970
- M.S., Electrical Engineering, BITS, Pilani, India, 1972
- Ph.D., Computer Science, BITS, Pilani, India, 1977

Aditya Mathur conducts research in the areas of software testing, reliability, formal approaches for software process control, and the management of smart spaces. (a) 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. (b) His research group has developed Home Wabash, a tool for the the monitoring and control of Smart Spaces and for ensuring the safety of people within such spaces. (c) In collaboration with Raymond DeCarlo, Mathur investigates the use of the theory of automatic control for control of software development processes. (d) Also active now is the long suspended work on the Listen project to explore the use of sound in a variety of monitoring task.

SELECTED PUBLICATIONS

Joao Cangussu, Raymond DeCarlo, and Aditya P. Mathur, "A Formal Model of the Software Test Process", IEEE Transactions on Software Engineering, Vol. 28, No. 8, pp.782-796, August 2002.

Aditya P. Mathur, Baskar Sridharan and Steven G. Unger, "Digital Device Manuals for the Management of Connected Spaces", IEEE Communications Magazine, August 2002, Vol. 40, No. 8, 2002, pp.78-85.

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 Engineering, IEEE Press, Annapolis, Maryland, November 12-15, 2002.

Jens Palsberg

- Associate Department Head
- Professor of Computer Science (1996)
- Ph.D., Computer Science, University of Aarhus, 1992

Jens Palsberg received a Ph.D. in Computer Science from University of Aarhus, Denmark in 1992. In 1992-1996 he was a visiting scientist at various institutions, including MIT. In 1996 he joined the faculty at Purdue University where he is Associate Head and Professor of Computer Science. 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 his 1994 book with Michael Schwartzbach is entitled Object-Oriented Type Systems. He is a co-author of the revised version of Appel's textbook on Modern Compiler Implementation in Java. In 1998 he 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. Dr. Palsberg 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

Jens Palsberg and Christina Pavlopoulou, "From Polyvariant Flow Information to Intersection and Union Types," Journal of Functional Programming, 11, No. 3, pages 263-317, May 2001. Preliminary Version in Proceedings of POPL'98 25th Annual SIGPLAN-SIGACT Symposium on Principles of Programming Languages, San Diego, California, pages 197-208, January 1998.

Jens Palsberg and Tian Zhao, "Efficient and Flexible Matching of Recursive Types," Information and Computation, 171, pages 364-387, 2001. Preliminary version in Proceedings of LICS'00, Fifteenth Annual IEEE Symposium on Logic in Computer Science, Santa Barbara, California, pages 388-398, June 2000.

Dennis Brylow, Niels Damgaard, and Jens Palsberg, "Static Checking of Interrupt-driven Software," Proceedings of ICSE'01, 23rd International Conference on Software Engineering, Toronto, pages 47-56, May 2001.

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 broadly 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 and in probabilistic analysis of algorithms.

Professor Pandurangan has worked recently in the following application areas: Peer-to-Peer (P2P) Computing, Communication Networks, Internet Algorithmics, Web Measurement and Modeling, Computational Biology, and Computational Finance.

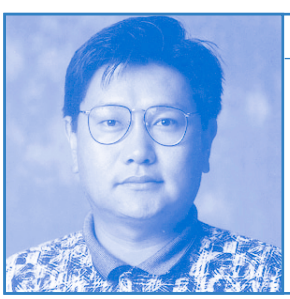
SELECTED PUBLICATIONS

G. Pandurangan, P. Raghavan , and E. Upfal. "Building Low-Diameter Peer-to-Peer Networks", Proceedings of the 42nd Annual IEEE Symposium on the Foundations of Computer Science (FOCS), 2001.

G. Pandurangan, P. Raghavan, and E. Upfal. "Using PageRank to Characterize Web Structure", to appear 8th Annual International Computing and Combinatorics Conference (COCOON), 2002.

G. Pandurangan and H. Ramesh. "The Restriction Mapping Problem Revisited", to appear Invited paper for a special issue on Computational Biology in Journal of Computer and System Sciences (JCSS).

Kihong Park



- Associate Professor of Computer Science (1996)
- B.A., School of 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 a 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 is organizing an SFI/NSF Workshop titled "The Internet as a Large-Scale Complex System" (co-chair: Dr. Walter Willinger), March 29-31, to be held at the Santa Fe Institute, and a SPIE Conference titled "Scalability and Traffic Control in IP Networks" (co-chair: Dr. Sonia Fahmy), August 20-24, at the Colorado Convention Center in Denver.

SELECTED PUBLICATIONS

K. Park and H. Lee, "On the Effectiveness of Route-based Packet Filtering for Distributed DoS Attack Prevention in Power-law Internets", in Proceeding of the ACM SIGCOMM '01, pages 15--26, 2001.

K. Park and T. Tuan, "Performance Evaluation of Multiple Time Scale TCP Under Self-Similar Traffic Conditions", ACM Transactions on Modeling and Computer Simulation, 24, pages 152-177, 2000.

K. Park and W. Willinger (eds.), "Self-Similar Network Traffic and Performance Evaluation", Wiley-Interscience, 2000.

Voicu Popescu

- Assistant Professor of Computer Science (2001)
- Ph.D., University of North Carolina, 2001

Voicu Popescu's research field is computer graphics, focusing on image-based modeling and rendering and on graphics architectures.

SELECTED PUBLICATIONS

Popescu, Voicu and Anselmo Lastra, "The Vacuum Buffer", Proceedings of 2001 ACM Symposium on Interactive 3D Graphics (Chapel Hill, NC), 2001.

Popescu, Voicu, John Eyles, Anselmo Lastra, Joshua Steinhurst, Nick England, and Lars Nyland, "The WarpEngine: An Architecture for the Post-Polygonal Age", Proceedings of SIGGRAPH 2000 (New Orleans, La), July 23-28, 2000, pp. 433-442.

Popescu, Voicu S., Anselmo A. Lastra, Daniel G. Aliaga, Manuel de Oliveira Neto, "Efficient Warping for Architectural Walkthroughs using Layered Depth Images", Proceedings of IEEE Visualization '98, pp. 211 - 215, Oct 18-23, 1998.

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 with Tata Unisys Ltd. from 1990 to 1994.

SELECTED PUBLICATIONS

Sunil Prabhakar, Y. Xia, D. Kalashnikov, W. Aref, and S. E. Hambrusch, "Query Indexing and Velocity Constrained Indexing: Scalable Techniques for Continuous Queries on Moving Objects", IEEE Transactions on Computers, Vol. 51, No. 10, October 2002, pp. 1124-1140.

Reynold Cheng, Sunil Prabhakar, and D. Kalashnikov, "Querying Imprecise Data in Moving Object Environments" IEEE International Conference on Data Engineering (ICDE) 2003.

M.J. Atallah and S. Prabhakar, "(Almost) Optimal Parallel Block Access for Range Queries", In Proceedings of the International Symposium on Principles of Database Systems (PODS), pages 205-215, Dallas, TX, May 2000.

Vernon Rego

- Professor of Computer Science (1985)
- M.Sc., Mathematics, BITS, Pilani, India
- M.S., Computer Science, Michigan State University
- Ph.D., Computer Science, Michigan State University, 1985

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 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. Professor Rice has published 21 books. Among recent ones are Solving Elliptic Problems with ELLPACK (Springer-Verlag, 1985), Mathematical Aspects of Scientific Software (Springer-Verlag, 1988), Expert Systems for Scientific Computing (North Holland, 1992), Enabling Technologies for Computational Science (Kluwer, 2000). He has also published about 300 scientific articles. The twenty-five or so articles of the past two years were in the areas of agent based computing, computational science, computer security, mathematical software, problem solving environments, recommender systems, simulating gas turbines, and web based computing.

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

Joskowicz, L. and E. Sacks, "Computer-Aided Mechanical Design Using Configuration Spaces", Computing in Science and Engineering, 1(6):14-21, 1999.

Sacks E., C. Pisula, and L. Joskowicz, "Visualizing Three-Dimensional Configuration Spaces for Mechanical Design", Computer Graphics and Applications, 19(5):50-53, 1999.

Sacks, E. and L. Joskowicz, "Parametric Kinematic Tolerance Analysis of General Planar Systems", Computer-Aided Design, 30(9):707-714, 1998.

Ahmed Sameh

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

Ahmed Sameh's current research interests include numerical linear algebra, and the design and performance analysis of parallel numerical algorithms needed in various science and engineering applications. He has served on the editorial boards of: IEEE Transactions on Computers, Computing, SIAM Journal on Scientific and Statistical Computing, Parallel Computing, Journal of Parallel and Distributed Computing, Computer Physics Communications, International Journal of High Speed Computing, Numerical Linear Algebra with Applications, IEEE Computing in Science and Engineering, and International Journal of Para llel Programming.

He was Head of Computer Science from 1997-2002, 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 1992-93. 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".

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V. Sarin and A. Sameh, "Hierarchical divergence-free bases and their application to particulate flows", ASME Journal of Applied Mechanics, Vol 70, pp. 1-6, January 2003.

A. Sameh, and V. Sarin, "Parallel Algorithms for Indefinite Linear Systems", Parallel Computing, Vol 28, pp. 285-299, 2002.

G. Golub, A. Sameh, and V. Sarin, "A Parallel Balance Scheme for Banded Linear Systems", Numerical Linear Algebra with applications, Vol 8, No. 5, pp. 297-316, 2001.

Eugene Spafford

- » Professor of Computer Science (1987)
- » Professor of Philosophy (courtesy, 2000)
- » Professor of Communication (courtesy, 2003)
- » Director, Purdue CERIAS
- » B.A., Mathematics and Computer Science, SUNY College 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. In May of 1998 Purdue University established the Center for Education and Research in Information Assurance and Security (CERIAS) with Spaf as its

Director. 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. CERIAS is the largest and most broadly-structured academic research center in the world in its field.

Spaf 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 ISSA's Hall of Fame, and awarded the 2001 William H. Murray Medal by the NCISSE. In October of 2000, Gene 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.

Among many professional activities, Dr. Spafford is a member of the Computing Research Association's Board of Directors and the US Air Force's Scientific Advisory Board. He is co-chair of both ACM's U.S. Public Policy Committee and its Advisory Committee on Security and Privacy. Dr. Spafford is the Academic Editor of the journal Computers & Security, and on the editorial and advisory boards of the ACM's Transactions on Information and System Security, International Journal on Information Security and Network 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 (1991, 1996), and the book Web Security, Privacy & Commerce (also with S. L. Garfinkel; 1997, 2001).

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John Steele

- Associate Professor of Computer Science (1963)
- Associate Vice President – Emerging Technologies (1963)

John Steele's research interests are in the areas of computer data communications and computer circuits and systems.

Yinlong Sun

- Assistant Professor of Computer Science (2000)
- B.S., Physics, Beijing University, China, 1985
- Ph.D., Physics, Simon Fraser University, Canada, 1996
- Ph.D., Computer Science, Simon Fraser University, Canada, 2000

Dr. Yinlong Sun is an assistant professor in the Department of Computer Sciences at Purdue University. His 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. Recently he has initiated the Photometric Graphics and Vision Lab, which involves spectral measurement of lights and objects for graphics and vision applications. Yinlong received his B.S. from Beijing University of China in 1985, and a Ph.D. in Condensed Matter Physics and a Ph.D. in Computer Science from Simon Fraser University of Canada in 1996 and 2000. He is a member of ACM, ACM SIGGRAPH, IEEE, IEEE Computer, and IS&T.

SELECTED PUBLICATIONS

Yinlong Sun, F. David Fracchia, Mark S. Drew, and Thomas W. Calvert, "A Spectrally Based Framework for Realistic Image Synthesis", The Visual Computer Vol. 17, No. 7, pages 429-444, October 2001.

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Wojciech Szpankowski

- Professor of Computer Science (1985)
- M.S., Electrical Engineering and Computer Science, Technical University of Gdansk, 1976
- 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 he was Assistant Professor at the McGill University, Montreal. During 1992/1993 he was Professeur Invité at INRIA, Rocquencourt, France. His 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 editors 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 book series Advances in the Theory of Computation and Computational Mathematics.

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C. Knessl and W. Szpankowski, "The Height of a Binary Search Tree: The Limiting Distribution Perspective", Theoretical Computer Science, 289, 649-703, 2002.

Jan Vitek

- Assistant Professor of Computer Science (1999)
- B.S., SES, University of Geneva, 1989
- M.S., Computer Science, University of Victoria, 1995
- Ph.D., SES, 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 earned a MSc in Computer Science from the University of Victoria, Canada, and a Ph.D. from the University of Geneva, 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. Research Areas: Programming Languages, Security, Compilers
Research Lab: Secure Software Systems Lab

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B. Bokowski and J. Vitek, "Confined Types", Proceedings of the 14th Annual ACM SIGPLAN Conference on Object-Oriented Programming Systems, Languages, and Applications (OOPSLA'99), Denver, Colorado, November 1999.

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Jeff Vitter

- Frederick L. Hovde Dean of the School of Science
- Professor of Computer Science (2002)
- B.S. (with highest honors), University of Notre Dame, 1977
- Ph.D., Stanford University, 1980
- M.B.A., Duke University, 2002

In his research, Professor Jeff Vitter investigates how to manage and process very large amounts of data. He has helped popularize the field of external memory algorithms, where the goal is to develop I/O-efficient algorithms that alleviate the bottleneck between fast internal memory and 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.

Honors & 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.

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Samuel Wagstaff

- 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 ± 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 http://www.ams.org/online_ bks/conm22) and Cryptanalysis of Number Theoretic Ciphers, CRC Press, 2002.

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Dongyan Xu

- Assistant Professor of Computer Science (2001)
- B.S. Computer Science, Zhongshan University, China, 1994
- Ph.D. Computer Science, University of Illinois at Urbana-Champaign, 2001

Professor Xu's research focuses on service provisioning in next generation distributed systems (such as overlay/peer-to-peer networks, utility/autonomic computing systems). 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.

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Dongyan Xu, H-K. Chai, C. Rosenberg, S. Kulkarni, "Analysis of a Hybrid Architecture for Cost-Effective Streaming Media Distribution", Proceedings of SPIE/ACM Conference on Multimedia Computing and Networking 2003 (MMCN2003), Santa Clara, California, January 2003.

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B. Li, Dongyan Xu, K. Nahrstedt, "An Integrated Runtime QoS-Aware Middleware Framework for Distributed Multimedia Applications", ACM Journal of Multimedia Systems, 8(5), Springer-Verlag, 2002.

David Yau

- Assistant Professor of Computer Science (1997)
- B.S., Computer Sciences, Chinese University of Hong Kong, Hong Kong, 1989
- M.S., Computer Sciences, University of Texas at Austin, 1992
- Ph.D., Computer Sciences, University of Texas at Austin, 1997

David Yau was born in Hong Kong. After getting his Bachelor's degree in computer science from the Chinese University, he spent one year with the Systems and Technology group of Citibank, NA, as assistant manager. He then entered graduate school at the University of Texas at Austin. During that time, he worked on a video server project at IBM, and completed his Ph.D. as a member of the Networking Research Lab.

David is interested in network and operating system architectures and algorithms for quality of service (QoS) provisioning. He is also interested in multimedia communication and software-programmable router technologies. He and his students prototype OS and router services on experimental network platforms, and measure their performance impact on benchmark applications. He was the recipient of an IBM graduate fellowship at Texas. In 1999 he received an NSF Career award for OS and network research on QoS.

David is a member of ACM and IEEE. He has served on the program committees of many IEEE and ACM conferences in networking, multimedia, and real-time systems.

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Siu F. Yeung, John C. S. Lui, and David K. Y. Yau, "A Case for a Multi-key Secure Video Proxy: Theory, Design, and Implementation", Proceedings ACM Multimedia, Juan Les Pins, France, December 2002.

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Walid Aref

Walid Aref » Next Generation Software Schedulers. Purdue Research Foundation. 6/11/2001-6/10/2003, $26,274.

Walid Aref » The Showalter Trust. The Showalter Trust. 7/1/2001-6/30/2002, $27,966.

Walid Aref and Ahmed K. Elmagarmid » Integrated Detection of Energetic & Hazardous Materials (IDEHM). NAVSEA/NSWC CRANE. 7/11/2001-7/11/2003, $90,000.

Walid Aref and Aref Ghafoor » CERIAS. CERIAS. 9/1/2001-8/14/2002, $32,731.

Susanne E. Hambrusch, Sunil K. Prabhakar, and Walid Aref » Query Processing in Pervasive Location Aware Computing Environments. National Science Foundation. 9/1/2001-8/31/2004, $220,000.

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, Ahmed K. Elmagarmid, and Aref Ghafoor » A Test-bed Facility for Research in Video Database Benchmarking. National Science Foundation. 8/15/2002-7/31/2003, $134,998.

Ahmed K. Elmagarmid, Bill McIver, Elias N. Houstis, Walid Aref, Sonia Fahmy, Sunil K. Prabhakar, Aref Ghafoor, Gordon Coppoc, and Marie Thursby » Indiana Telemedicine Incubator: A Multidisciplinary Consortium for the Development of Distributed Multimedia Database Technology for the Health Care Industry (21st Century Award). State of Indiana. 6/1/2000-6/1/2002, $1,698,880.

Walid Aref » Data Mining Tools for Technology Assessment and Management. Dept of the Navy. 2/26/2001-5/20/2002, $137,500.

RAID LABORATORY »
PROF. BHARAT BHARGAVA, YI LU, XIAODUAN YE, YUHUI ZHONG, XIAOXIN WU, WEICHAO WANG, DR. LESZEK LILIEN, MALEQ KHAN, AHSAN HABIB

Atallah, Mikhail J.

Eugene Spafford and Mikhail J. Atallah » Audit Trails: Content, Storage, and Processing. National Science Foundation. 8/1/1999-8/31/2002, $360,844.

Eugene Spafford and Mikhail J. Atallah » Audit Trails: Content, Storage, & Processing. National Science Foundation. 9/1/1999-8/31/2002, $5,000.

Mikhail J. Atallah and Sunil K. Prabhakar » Watermarking Non-media Semi-structured Content: XML & DBMS. CERIAS. 9/1/2001-8/12/2002, $40,118.

Mikhail J. Atallah and Victor Raskin » Natural Language Watermarking: Watermarking Text-Meaning Representation Trees. CERIAS. 9/1/2001-8/31/2002, $36,688.

Mikhail J. Atallah and Sunil K. Prabhakar » Privacy-Enhancing Audit and Intrusion Detection. CERIAS. 6/1/2000-12/31/2001, $36,702.

Mikhail J. Atallah, John R. Rice, John T. Korb, and Hoi Chang » Technology Innovation Trask Proposal: Software Tamperproofing. TRASK. 11/1/2000-1/1/2002, $100,000.

Bhargava, Bharat

Bharat Bhargava » Adaptable Communication Software for Differential QoS. IBM. 7/1/1999-8/15/2003, $35,000.

Bharat Bhargava » Experiments in Adaptable Distributed Systems. National Science Foundation. 8/15/1999-7/31/2003, $251,500.

Bharat Bhargava » Multimedia Traffic Control Using Active Networks. Purdue Research Foundation. 8/16/1999-2/19/2002, $26,411.

Bharat Bhargava » Secure Mobile Systems. National Science Foundation. 9/1/2000-9/30/2003, $279,172.

Bharat Bhargava » CISE Post Doc: Experiments in Security and Quality of Service in Mobile Systems. National Science Foundation. 8/1/2001-7/31/2003, $66,000.

Bharat Bhargava » Time-Based Coordination of Networked Embedded Nodes. Defense Advanced Research Projects Agency. 8/1/2001-5/31/2004, $129,239.

Bharat Bhargava » CERIAS Voluntary Support. Hewlett Packard Co. 4/15/2002-5/31/2003, $21,120.

Bharat Bhargava » ITR: Scalable Edge Router for Differentiated Services Networks. National Science Foundation. 8/1/2002-7/31/2005, $363,680.

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Bharat Bhargava » Formalizing Evidence and Trust for User Authorization. National Science Foundation. 8/15/2002-7/31/2004, $186,040.

Bharat Bhargava » CERIAS/Lilly. CERIAS. 6/1/2001-5/31/2002, $20,804.

Bharat Bhargava » CERIAS/Lilly Endowment. CERIAS. 8/1/2001-7/31/2002, $65,000.

Clifton, Christopher

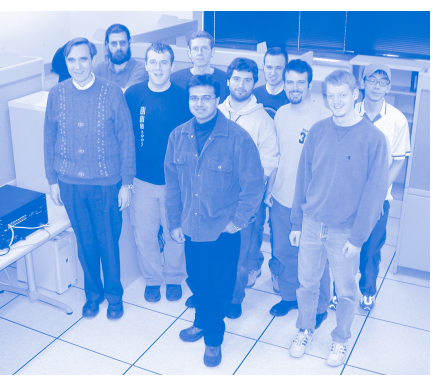
Christopher Clifton, Ananth Iyer, and Reha Uzsoy » Purdue Discovery Park-Management of Distributed E Enterprises a Prototype Integrated Tranaction Data Analysis and Visualization Environment for the Transportation, Distribution and Logistics Sector CERIAS. 8/19/2002-5/10/2003, $34,312.

Christopher Clifton » Secure Programming: Add-on Course Module and Short Course. CERIAS. 8/19/2002-6/30/2003, $44,457.

Comer, Douglas E.

Douglas E. Comer » Software Practice & Experience. John Wiley & Sons. 11/1/1987-12/31/2003, $587,655.

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



NETWORK PROCESSOR LAB » PROF. DOUGLAS COMER, JAMES CERNAK, CHRIS TAYLOR, FLORIAN BUCHHOLZ (REAR), ATHER NAWAZ (FRONT), MAX MARTYNOV, DAN ARDELEAN, ETHAN BLANTON, DAVID VOS, DANIEL ARMANTO

Dunsmore, Buster

Buster Dunsmore and Jean Jackson » Enhancing Integration and Ongoing Commitment First Year Seminar Pilot Studies - West Lafayette. Purdue University. 8/1/2001-12/31/2001, $10,607.

Elmagarmid, Ahmed K.

Ahmed K. Elmagarmid, Eugene Spafford, Kihong Park, John T. Korb, and Aref Ghafoor » MSI: A Research Infrastructure for Integrated Quality of Service Management of Multimedia Computing Environments. National Science Foundation. 9/15/1999-9/30/2004, $1,386,612.

Ahmed K. Elmagarmid » Digital Government: Database Middleware for Distributed Ontologies in State and Federal Family and Social Services. National Science Foundation. 6/1/2000-5/31/2003, $499,998.

Walid Aref and Ahmed K. Elmagarmid » Integrated Detection of Energetic & Hazardous Materials (IDEHM). NAVSEA/NSWC CRANE. 7/11/2001-7/11/2003, $90,000.

Walid Aref, Ahmed K. Elmagarmid, and Aref Ghafoor » A Test-bed Facility for Research in Video Database Benchmarking. National Science Foundation. 8/15/2002-7/31/2003, $134,998.

Lefteri Tsoukalas, Ahmed K. Elmagarmid, and Elias N. Houstis » Intelligent Management of the Electric Power Grid through an Innovative Anticipatory Multi-Agent, High Performance Computing Approach. Army Research Office. 1/1/1999-12/31/2001, $1,592,559.

Ahmed K. Elmagarmid, Bill McIver, Elias N. Houstis, Walid Aref, Sonia Fahmy, Sunil K. Prabhakar, Aref Ghafoor, Gordon Coppoc, and Marie Thursby » Indiana Telemedicine Incubator: A Multidisciplinary Consortium for the Development of Distributed Multimedia Database Technology for the Health Care Industry (21st Century Award). State of Indiana. 6/1/2000-6/1/2002, $1,698,880.

Fahmy, Sonia

Sonia Fahmy » Design & Evaluation of Coordinated Congestion Control Algorithms for Layered Multicast Traffic in the Internet. Purdue Research Foundation. 8/13/2001-8/12/2002, $13,134.

Ahmed K. Elmagarmid, Bill McIver, Elias N. Houstis, Walid Aref, Sonia Fahmy, Sunil K. Prabhakar, Aref Ghafoor, Gordon Coppoc, and Marie Thursby » Indiana Telemedicine Incubator: A Multidisciplinary Consortium for the Development of Distributed Multimedia Database Technology for the Health Care Industry (21st Century Award). State of Indiana. 6/1/2000-6/1/2002, $1,698,880.

Sonia Fahmy » Vulnerabilities and Safeguards in Networks with QoS Support. CERIAS. 6/30/2000-9/1/2001, $50,000.

Grama, Ananth Y.

Ananth Y. Grama » 1998 Undergraduate Biological Sciences Education Program. Hughes Medical Institute. 9/1/1998-8/31/2003, $16,732.

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

Ahmed Sameh, Ananth Y. Grama, and Vivek Sarin » Innovative Algorithms & Techniques for Large Scale Simulations. National Science Foundation. 9/1/1999-8/31/2003, $308,521.

Ananth Y. Grama » Dominant and Deviant Pattern Detection in Event Traces for Intrusion Detection Analyzing Event Sequences for Dominant and Deviants. CERIAS. 6/1/2000-12/31/2001, $50,000.

Ananth Y. Grama » Academic Allowance for Paul Ruth. The Krell Institute. 8/1/2000-12/31/2005, $3,000.

Susanne E. Hambrusch, Jens Palsberg, and Ananth Y. Grama » Fellowship Initiative in the Development of the Next-Generation Computing Infrastructure. U.S. Department of Education. 8/14/2000-8/14/2004, $486,750.

Zhiyuan Li and Ananth Y. Grama » ITR/SW+ACS: Dynamic Code Enhancement and Scheduling Techniques for Complex Simulations. National Science Foundation. 9/1/2000-8/31/2003, $279,994.

Bruce Alexander and Ananth Y. Grama » Calibrating the Two Antimicrobial Susceptibility Tests. National Institute of Health. 7/1/2001-6/30/2003, $161,197.

Christoph M. Hoffmann, Ahmed Sameh, Ananth Y. Grama, Voicu Popescu, J. Bottum, David Ebert, and J. Paul » MRI: Acquisition of Equipment for Purdue Envision Center for Data Perceptualization. National Science Foundation. 9/1/2002-8/31/2005, $862,011.

Mark Lundstrom, James Bottum, Joseph Pekny, Supriyo Datta, Ahmed Sameh, Ananth Y. Grama, and Jayathi Murthy » Network for Computational Nanotechnology. National Science Foundation. 9/15/2002-8/31/2003, $10,500,000.

Kihong Park » ISAC: Integrated Systems Support for Adaptive Communication & Computation Control in Clustered Environments. National Science Foundation. 8/1/1998-7/31/2002, $564,107.

PLACE PROJECT »
PROF. SUSANNE HAMBRUSCH,
PROF. WALID AREF,
JASON CHEN, ANKIT BHATIA,
AFTAB JALAL

Hambrusch, Susanne E.

Dwight Lewis and Susanne E. Hambrusch » Faculty for the Future-Engineering and Science - GE Fund. General Electric. 9/1/1997-8/31/2004, $18,000.

Susanne E. Hambrusch » Microsoft Voluntary Support. Microsoft Corporation. 7/9/2002, $20,000.

Susanne E. Hambrusch, Jens Palsberg, and Ananth Y. Grama » Fellowship Initiative in the Development of the Next-Generation Computing Infrastructure. U.S. Department of Education. 8/14/2000-8/14/2004, $486,750.

Susanne E. Hambrusch » Data Driven Communication and Synchronization in Non-Uniform Bandwidth Computing Cluster. National Science Foundation. 9/1/2000-8/31/2002, $123,383.

Susanne E. Hambrusch, Sunil K. Prabhakar, and Walid Aref » Query Processing in Pervasive Location Aware Computing Environments. National Science Foundation. 9/1/2001-8/31/2004, $220,000.

Hoffmann, Christoph M.

Christoph M. Hoffmann » Analysis of Segmented Spatial Distributions. Army Research Office. 4/15/1999-12/31/2002, $247,187.

Christoph M. Hoffmann » Capturing Multilayered Design Intent Using Efficient Constraint Decomposition. National Science Foundation. 1/14/2000-8/31/2003, $182,577.

Mileta Tomovic, Karthik Ramani, and Christoph M. Hoffmann » Short Run Tooling Advisor. Ad Tech Inst. 12/14/2001-6/15/2004, $30,000.

Christoph M. Hoffmann » Topological Accuracy for Boundary Representation Models. National Science Foundation. 5/1/2002-4/30/2005, $230,600.

Christoph M. Hoffmann » Volume-Filling Image Display Equipment. Army Research Office. 5/3/2002-5/2/2003, $150,000.

Karthik Ramani » Exploratory Research for Enabling 3D Part Searching in Large CAD Repositories for Distributed Product Management. CERIAS. 9/1/2002-2/28/2003, $29,662.

Christoph M. Hoffmann, Ahmed Sameh, Ananth Y. Grama, Voicu Popescu, J. Bottum, David Ebert, and J. Paul » MRI: Acquisition of Equipment for Purdue Envision Center for Data Perceptualization. National Science Foundation. 9/1/2002-8/31/2005, $862,011.

Hosking, Tony

Tony Hosking and Jan Vitek » Re-Assure: Resilient and Secure Virtual Machines for Network Computing. CERIAS. 6/1/1999-5/31/2002, $71,558.

Tony Hosking » Transactional Threads for Reliable Persistent Application Systems. National Science Foundation. 9/1/2000-8/31/2003, $215,000.

Tony Hosking » ITR/SW: Dynamic Cooperative Performance Optimization. National Science Foundation. 9/1/2000-8/31/2005, $423,922.

Jan Vitek, Jens Palsberg, and Tony Hosking » DCMF/NES: Dynamic Compositional Middleware Frameworks for Networked Embedded. Defense Advanced Research Projects Agency. 5/31/2001-5/29/2005, $3,274,680.

Houstis, Elias N.

John R. Rice and Elias N. Houstis » Collaborative Research: Performance-Driven Adaptive Software Design and Control. National Science Foundation. 9/15/2001-8/31/2004, $356,239.

Elias N. Houstis » Agent Based Scalable Enterprise System for Enterprise Co-Design. National Science Foundation. 10/1/2001-8/31/2004, $497,838.

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

John R. Rice and Elias N. Houstis » Institute for Gas Turbine Dynamics Simulation (Sandia National Labs). Department of Energy. 7/1/1998-9/30/2002, $1,500,000.

Lefteri Tsoukalas, Ahmed K. Elmagarmid, and Elias N. Houstis » Intelligent Management of the Electric Power Grid through an Innovative Anticipatory Multi-Agent, High Performance Computing Approach. Army Research Office. 1/1/1999-12/31/2001, $1,592,559.

John R. Rice and Elias N. Houstis » Model-based Management of Adaptive Programs on the Computational Grid. National Science Foundation. 6/1/2000-2/28/2002, $37,198.

Ahmed K. Elmagarmid, Bill McIver, Elias N. Houstis, Walid Aref, Sonia Fahmy, Sunil K. Prabhakar, Aref Ghafoor, Gordon Coppoc, and Marie Thursby » Indiana Telemedicine Incubator: A Multidisciplinary Consortium for the Development of Distributed Multimedia Database Technology for the Health Care Industry (21st Century Award). State of Indiana. 6/1/2000-6/1/2002, $1,698,880.

Li, Zhiyuan

Zhiyuan Li » Compiler Techniques for Improving Data Locality in Complex Program Constructs. National Science Foundation. 9/1/1999-8/31/2003, $175,000.

Zhiyuan Li and David Yau » Memory Management Software on Palm-Size Computers (21st Century Award). State of Indiana. 8/4/2000-8/4/2003, $393,230.

Zhiyuan Li and Ananth Y. Grama » ITR/SW+ACS: Dynamic Code Enhancement and Scheduling Techniques for Complex Simulations. National Science Foundation. 9/1/2000-8/31/2003, $279,994.

Zhiyuan Li » Compiler Schemes for Server-assisted Energy-efficient Mobile Computing on Handheld Devices. National Science Foundation. 7/1/2002-6/30/2005, $249,578.

Mathur, Aditya P.

Aditya P. Mathur » Rapidly Deployable Software Process Models: Developing Prototype Simulation Tools. Software Engineering Research Center. 7/1/2001-6/30/2002, $25,000.

Aditya P. Mathur » SERC: Industry/University Cooperative Research Center for Software Engineering. National Science Foundation. 9/1/1999-12/31/2002, $235,052.

SERC LABORATORY »
BASKAR SRIDHARAN,
ED GILMORE,
PROF. ADITYA MATHUR,
BYOUNGJU CHOI,
RAMKUMAR
NATARAJAN

Aditya P. Mathur » Industry/University Collaborative: Monitoring & Control of Next Generation Systems. National Science Foundation. 9/15/2002-8/31/2004, $25,000.

Aditya P. Mathur » Industry/University Cooperative Research Center for Software Engineering. National Science Foundation. 9/1/1999-12/31/2002, $100,052.

Palsberg, Jens

Jens Palsberg » Secure Assembly of Software Systems Components. CERIAS. 6/1/2000-8/31/2002, $106,773.

Susanne E. Hambrusch, Jens Palsberg, and Ananth Y. Grama » Fellowship Initiative in the Development of the Next-Generation Computing Infrastructure. U.S. Department of Education. 8/14/2000-8/14/2004, $486,750.

Jan Vitek, Jens Palsberg, and Tony Hosking » DCMF/NES: Dynamic Compositional Middleware Frameworks for Networked Embedded. Defense Advanced Research Projects Agency. 5/31/2001-5/29/2005, $3,274,680.

Jens Palsberg » Efficient Crypto Implementations for Low-Power Devices. CERIAS. 9/1/2001-12/31/2002, $37,500.

Jens Palsberg » ITR: Static Timing of Interrupt-Driven Software. National Science Foundation. 9/1/2001-8/31/2004, $432,900.

Park, Kihong

Kihong Park » Toward a QoS Provision Architecture in Noncooperative Networks: Theory and Implementation (Career Award). National Science Foundation. 5/1/1999-4/30/2004, $348,401.

Ahmed K. Elmagarmid, Eugene Spafford, Kihong Park, John T. Korb, and Aref Ghafoor » MSI: A Research Infrastructure for Integrated Quality of Service Management of Multimedia Computing Environments. National Science Foundation. 9/15/1999-9/30/2004, $1,386,612.

Kihong Park » ITR: Multiple Time Scale Traffic Control for Next Generation Internets. National Science Foundation. 9/1/2000-8/31/2003, $280,962.

Kihong Park » CERIAS Voluntary Support. CERIAS. 7/1/2001-8/14/2002, $45,175.

Kihong Park » Toward Scalable Solutions for Distributed Denial of Service Attack Prevention. Defense Advanced Research Projects Agency. 7/1/2001-6/30/2003, $442,284.

Kihong Park » ISAC: Integrated Systems Support for Adaptive Communication & Computation Control in Clustered Environments. National Science Foundation. 8/1/1998-7/31/2002, $564,107.

Kihong Park » Conference: The Internet as a Large-Scale Complex System. National Science Foundation. 3/15/2001-3/14/2002, $15,000.

NETWORK SYSTEMS LABORATORY » SITTING (LEFT-TO-RIGHT): DR. JAE-YOUNG KIM, HUMAYUN KHAN, DR. HUAN REN STANDING (LEFT-TO-RIGHT): ASAD AWAN, PROF. KIHONG PARK, BHAGYA BETHALA, HYOJEONG KIM

Popescu, Voicu

Christoph M. Hoffmann, Ahmed Sameh, Ananth Y. Grama, Voicu Popescu, J. Bottum, David Ebert, and J. Paul » MRI: Acquisition of Equipment for Purdue Envision Center for Data Perceptualization. National Science Foundation. 9/1/2002-8/31/2005, $862,011.

Prabhakar, Sunil K.

Sunil K. Prabhakar » Efficient I/O for Modern Database Applications (Career Award). National Science Foundation. 10/1/2000-7/14/2004, $240,000.

Sunil K. Prabhakar » Quality-Based Hierarchical Storage Management for Multimedia Documents. Purdue Research Foundation. 11/21/2000-12/30/2002, $13,070.

Mikhail J. Atallah and Sunil K. Prabhakar » Watermarking Non-media Semi-structured Content: XML & DBMS. CERIAS. 9/1/2001-8/12/2002, $40,118.

Susanne E. Hambrusch, Sunil K. Prabhakar, and Walid Aref » Query Processing in Pervasive Location Aware Computing Environments. National Science Foundation. 9/1/2001-8/31/2004, $220,000.

Sunil K. Prabhakar and Aref Ghafoor » A Transformation Framework for Developing an E-enterprise from a Legacy Enterprise. CERIAS. 9/1/2002-8/31/2003, $30,000.

Mikhail J. Atallah and Sunil K. Prabhakar » Privacy-Enhancing Audit and Intrusion Detection. CERIAS. 6/1/2000-12/31/2001, $36,702.

Ahmed K. Elmagarmid, Bill McIver, Elias N. Houstis, Walid Aref, Sonia Fahmy, Sunil K. Prabhakar, Aref Ghafoor, Gordon Coppoc, and Marie Thursby » Indiana Telemedicine Incubator: A Multidisciplinary Consortium for the Development of Distributed Multimedia Database Technology for the Health Care Industry (21st Century Award). State of Indiana. 6/1/2000-6/1/2002, $1,698,880.

Rego, Vernon

Vernon Rego » Multithreaded Scalable Distributed Computing for Collaborative Multimedia. Army Research Office. 4/1/1998-3/31/2003, $206,471.

Vernon Rego » User-Space Protocols for Distributed Applications. Purdue Research Foundation. 10/6/1999-8/16/2002, $26,273.

Rice, John R.

John R. Rice and Elias N. Houstis » Collaborative Research: Performance-Driven Adaptive Software Design and Control. National Science Foundation. 9/15/2001-8/31/2004, $356,239.

John R. Rice and Elias N. Houstis » Institute for Gas Turbine Dynamics Simulation (Sandia National Labs). Department of Energy. 7/1/1998-9/30/2002, $1,500,000.

John R. Rice and Elias N. Houstis » Model-based Management of Adaptive Programs on the Computational Grid. National Science Foundation. 6/1/2000-2/28/2002, $37,198.

Mikhail J. Atallah, John R. Rice, John T. Korb, and Hoi Chang » Technology Innovation Trask Proposal: Software Tamperproofing. TRASK. 11/1/2000-1/1/2002, $100,000.

Sacks, Elisha P.

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.

Sameh, Ahmed

Ahmed Sameh, Ananth Y. Grama, and Vivek Sarin » Innovative Algorithms & Techniques for Large Scale Simulations. National Science Foundation. 9/1/1999-8/31/2003, $308,521.

Ahmed Sameh » Efficient Algorithms for Large-Scale Dynamical Systems. National Science Foundation. 9/1/2000-8/31/2003, $156,443.

Christoph M. Hoffmann, Ahmed Sameh, Ananth Y. Grama, Voicu Popescu, J. Bottum, David Ebert, and J. Paul » MRI: Acquisition of Equipment for Purdue Envision Center for Data Perceptualization. National Science Foundation. 9/1/2002-8/31/2005, $862,011.

Mark Lundstrom, James Bottum, Joseph Pekny, Supriyo Datta, Ahmed Sameh, Ananth Y. Grama, and Jayathi Murthy » Network for Computational Nanotechnology. National Science Foundation. 9/15/2002-8/31/2003, $10,500,000.

Ahmed Sameh » 2002 PRF Summer Research Grant. Purdue Research Foundation. 5/13/2002-8/18/2002, $2,025.

Spafford, Eugene

Eugene Spafford and Carla Brodley » Proposal on Autonomous Security Agents and Vulnerabilities Database. National Security Agency. 1/7/1997-9/30/2001, $782,195.

Eugene Spafford » CERIAS Voluntary Support. CERIAS. 1/1/1999-9/1/2001, $347,121.

Eugene Spafford » Lilly Endowment. CERIAS. 1/6/1999-12/31/2002, $4,900,000.

Eugene Spafford » Audit Trails: Content, Storage, & Processing. National Science Foundation. 9/1/1999-8/31/2002, $365,844.

Ahmed K. Elmagarmid, Eugene Spafford, Kihong Park, John T. Korb, and Aref Ghafoor » MSI: A Research Infrastructure for Integrated Quality of Service Management of Multimedia Computing Environments. National Science Foundation. 9/15/1999-9/30/2004, $1,386,612.

Eugene Spafford » Forensic Evidence Capture and Analysis. MITRE Corp. 1/2/2001-12/31/2003, $30,308.

Melissa Dark and Eugene Spafford » A Proposal for Information Security Distance Education Modules. Indiana Higher Education. 3/15/2001-3/14/2002, $15,000.

Eugene Spafford and Pascal Meunier » CERIAS Incident Response Database Project. TRASK. 4/1/2001-3/31/2002, $80,868.

Eugene Spafford » A Duel-Track Masters Degree Program for Infosec Specialists. National Science Foundation. 6/1/2001-7/31/2005, $2,360,722.

Melissa Dark and Eugene Spafford » A Summer Workshop for Beginning Infosec Educators. National Science Foundation. 1/1/2002-12/31/2003, $198,207.

Szpankowski, Wojciech

Wojciech Szpankowski » Towards Analytic Information Theory. National Science Foundation. 7/1/1998-6/30/2003, $292,194.

Wojciech Szpankowski » Analytic Information Theory, Combinatorics, and Algorithmics: The Precise Redundancy & Related Problems. National Science Foundation. 8/1/2002-7/31/2005, $215,387.

Vitek, Jan

Jan Vitek » CERIAS Voluntary Support. CERIAS. 1/1/1999-12/31/2002, $62,500.

Tony Hosking and Jan Vitek » Re-Assure: Resilient and Secure Virtual Machines for Network Computing. CERIAS. 6/1/1999-5/31/2002, $71,558.

Jan Vitek » Resilient Mobile Agent Architure. Motorola. 9/1/2000-8/31/2003, $49,866.

Jan Vitek, Jens Palsberg, and Tony Hosking » DCMF/NES: Dynamic Compositional Middleware Frameworks for Networked Embedded. Defense Advanced Research Projects Agency. 5/31/2001-5/29/2005, $3,274,680.

Jan Vitek » A Proposal to Lilly Endowment for Support of CERIAS at Purdue University. CERIAS. 6/1/2001-5/31/2002, $50,000.

Jan Vitek » Foundations and Implementation of Mobile Object Systems. National Science Foundation. 6/1/2001-5/31/2006, $325,936.

Jan Vitek » Multi-Sponsored Account. Microsoft Corporation. 1/15/2002, $100,000.

Wagstaff, Samuel S.

Samuel S. Wagstaff » Encryption Algorithm. Western Digital Corp. 8/23/2000-10/31/2001, $32,546.

Samuel S. Wagstaff » Uses of Randomness in Computer Security. CERIAS. 7/1/2001-6/30/2002, $33,322.

Samuel S. Wagstaff » Improving the Number Field Sieve. CERIAS. 7/1/2001-6/30/2002, $48,128.

Yau, David

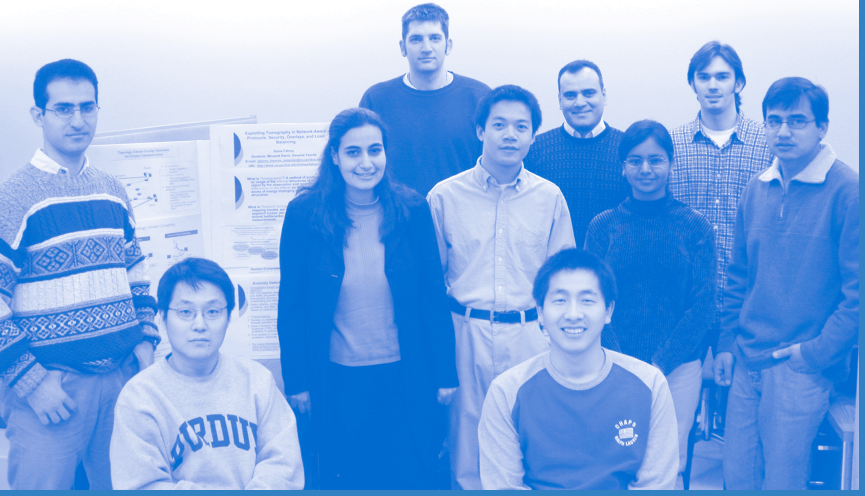
David Yau » QoS Architecture for General Purpose Network Computing (Career Award). National Science Foundation. 3/15/1999-2/29/2004, $255,332.

Zhiyuan Li and David Yau » Memory Management Software on Palm-Size Computers (21st Century Award). State of Indiana. 8/4/2000-8/4/2003, $393,230.

David Yau » Ensemble: Cooperative Resource Management for Cluster Web Servers. Purdue Research Foundation. 1/1/2001-12/31/2003, $26,210.

Kihong Park » ISAC: Integrated Systems Support for Adaptive Communication & Computation Control in Clustered Environments. National Science Foundation. 8/1/1998-7/31/2002, $564,107.

David Yau » CERIAS Voluntary Support. CERIAS. 6/30/2000-10/1/2001, $50,000.



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ANNUAL REPORT DESIGN » CATHY SWICK DESIGN

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