As we approach our 40th anniversary in 2007, the NC State Department of Computer Science (CSC) has much to celebrate. Significant growth in our graduate program, a substantial increase in research expenditures, the addition of several new and extremely talented faculty, and a move to our new state-of-the-art home on Centennial Campus all provide our department great momentum for future success. This issue overviews some of the successes, summarizes funded research projects, and provides profiles of new faculty and two of our senior faculty.

The Department of Computer Science now has 44 faculty involved in research and a number of research staff members. Since June 2004, we have welcomed three new faculty and two new staff members. After 12 years of dedicated service, Dr. Alan Tharp stepped down as department head in June 2004. Dr. Mladen Vouk is serving as interim department head. We are conducting a national search for a new department head and hope to finalize our decision by August 2006.

The graduate program has grown significantly and now includes over 130 Ph.D. and 240 M.S., M.S. in Computer Networking and M.CS students. We received 625 applications for admission to the graduate program in 2005, with 120 new students accepting our offer to join the department.

Engineering Building II (EB2), the new Centennial Campus home of both the NC State Department of Computer Science and the Department of Electrical and Computer Engineering, is nearing completion. Classes began in EB2 in August; faculty and research lab moves should be completed early in the Spring 2006 semester. This new state-of-the-art teaching and research

Research Highlights

EB2, the new Computer Science and Electrical and Computer Engineering Building, which opened in the Fall 2005 semester
Research Faculty

Annie I. Antón, Associate Professor  
PhD, Georgia Institute of Technology, 1997  
Software engineering, requirements engineering, information privacy and security

Dennis R. Bahler, Associate Professor  
PhD, University of Virginia, 1987  
Artificial intelligence, machine learning, hybrid neural-symbolic computing

Donald Bitzer, Distinguished University Research Prof., PhD, Univ. of Illinois, 1960  
High-speed networks, satellite/land communications, bioinformatics, computer-based education

Franc Brglez, Research Professor  
PhD, University of Colorado, 1970  
Distrib/collaborative workflows, databases, graph-based algorithms, signal processing

Rada Y. Chirkova, Assistant Professor  
PhD, Stanford University, 2002  
Graph-based algorithms, signal processing

Jon Doyle, SAS Prof. of Computer Science  
PhD, Mass. Institute of Technology, 1980  
Artificial intelligence, rationality, mathematical foundations, knowledge discovery

Rudra Dutta, Assistant Professor  
PhD, North Carolina State University, 2001  
Traffic grooming, fault tolerance, optical networks, ad-hoc wireless networking

Robert Fornaro, Professor  
PhD, Pennsylvania State University, 1969  
Concurrent programming in computer graphics, robotics, signal processing, operating systems

Vincent Freeh, Assistant Professor  
PhD, University of Arizona, 1996  
Operating systems, compilers, programming languages, distributed & parallel computing

Robert E. Funderlic, Professor  
PhD, University of Tennessee, 1970  
Scientific and parallel computing, numerical methods

Edward Gehringe, Associate Professor  
PhD, Purdue University, 1979  
Object-oriented software, parallel processing

Khaled Harfoush, Assistant Professor  
PhD, Boston University, 2002  
End-to-end network design, topologies, routing protocols, ad-hoc and peer-to-peer networks

Christopher G. Healey, Associate Prof., PhD, Univ. of British Columbia, Canada, 1996  
Visualization, computer graphics, perception

Steffen Heber, Assistant Professor  
PhD, Universität Heidelberg, Germany, 2001  
Computational biology, bioinformatics

Thomas L. Honeycutt, Associate Professor  
PhD, North Carolina State University, 1969  
MIS, modeling & simulation, computer literacy

Highlights (cont.)

Our faculty and students have received many research-related awards and recognitions. The department boasts 14 current faculty who have received NSF CAREER awards. Recent winners are Dr. Khaled Harfoush, Dr. Laurie Williams, Dr. Peng Ning, and Dr. Rada Chirkova. Dr. Xiaosong Ma received the prestigious DOE Early Career Primary Investigator Award. Dr. Perros, now Alumni Distinguished Graduate Professor, was chosen to serve on the National LambdaRail (NLR) Networking Research Council. Dr. George Rouskas received the Acore Foundation Engineering Research Award. Dr. Aniton has become a member of the NSF CISE (Computer & Information Science & Engineering) Advisory Committee, and Dr. Laurie Williams is co-director of the NC State e-commerce initiative. Our faculty were instrumental in getting NC State University re-designated a Center of Academic Excellence in Information Assurance Education by the National Security Agency (NSA). Our students have also been very successful. Dr. Laura Jackson received the 2004 Nancy G. Pollock PhD Dissertation Award for the College of Engineering. One of our undergraduate Senior Design teams (directed by Dr. Robert Fornaro and Ms. Margaret Heil) won first place in the 2005 IEEE CS International Design Competition. Their project combined GPS and wireless sensor technologies to track endangered animals in the wild. They were the first U.S. team to win this competition. Our graduate students have been awarded significant scholarships and research fellowships from corporate partners such as Cisco, IBM, Microsoft, and GlaxoSmithKline.

Mladen Vouk  
Professor and Interim Department Head
Selected Research Projects

The following is a representative list of active research projects. A complete list with abstracts is viewable at http://www.csc.ncsu.edu/research/

HI-FIVES: Using Web-Based Gaming to Improve Student Comprehension of Information Technology in Science; Leonard Annetta, Deborah Mangum, R. Michael Young, Thomas Miller. NSF ($1,197,270, 9/1/2005–8/31/2008)


Faculty (cont.)

S. Purushothaman Iyer, Professor
PhD, University of Utah, 1986
Formal methods–distributed and embedded systems, progr. languages, concurrency theory

Jaewoo Kang, Assistant Professor
PhD, University of Wisconsin, 2003
Data mining, query optimization, data integration

James C. Lester, Associate Professor
PhD, University of Texas, 1994
Artificial intelli., multimedia, knowledge-based learning environments, computational linguistics

Xiaosong Ma, Assistant Professor
PhD, University of Illinois, 2003
High performance computing, parallel IO, storage systems, scientific data management

Richard Mayr, Assistant Professor
PhD, TU-München, Germany, 1998
Formal verification, logic, automata theory, term rewriting, tableau systems

David F. McAllister, Professor
PhD, UNC Chapel Hill, 1972
Computer graphics, speech processing

Frank Mueller, Assistant Professor
PhD, Florida State University, 1994
Compilers, concurrent, distributed, real-time, & embedded systems, sensor network systems

Peng Ning, Assistant Professor
PhD, George Mason University, 2001
Network security, intrusion detection, cryptography, temporal databases, data mining

Harry Perros, Alumni Distinguished Graduate Prof., PhD, Trinity College, Ireland, 1975
High-speed communication. systems, queuing theory, simulation, numerical analysis

Douglas S. Reeves, Professor
PhD, Pennsylvania State University, 1987
Network security, protocols, and peer-to-peer computing

Injong Rhee, Associate Professor
PhD, UNC Chapel Hill, 1994
Computer networks, internet protocol design, congestion control, multimedia networking

Robert D. Rodman, Professor
PhD, Univ. of California, Los Angeles, 1973
Forensic speaker identification, automatic emotion detection, lip synchronization

George N. Rouskas, Professor
PhD, Georgia Institute of Technology, 1994
Network architectures and protocols, optical networks, performance evaluation

Carla D. Savage, Professor
PhD, University of Illinois, 1977
Algorithms, combinatorics, discrete mathematics

Munindar P. Singh, Professor
PhD, University of Texas, 1993
Multiagent systems, trust, service-oriented computing
Robert St. Amant, Associate Professor  
PhD, Univ of Massachusetts, Amherst, 1996  
HCI, artificial intelligence, intelligent user interfaces, statistical expert systems  
Matthias Stallmann, Associate Professor  
PhD, University of Colorado, 1982  
Experimental algorithms, combinatorial optimization, NP-hard problems, graph algorithms  
William J. Stewart, Professor, PhD, Queen’s University, Northern Ireland, 1974  
Performance analysis, queueing networks, linear algebra, operating systems, parallel architectures  
Alan L. Tharp, Professor  
PhD, Northwestern University, 1969  
File structures, man-machine interfaces, databases  
David Thuente, Professor  
PhD, University of Kansas, 1974  
Communication system design, simulation, performance modeling, media access control  
Mladen Vouk, Professor  
PhD, King’s College, England, U.K., 1976  
Software engineering, scientific computing, high-performance networks, computer-based education  
Benjamin Watson, Associate Professor  
PhD, Georgia Institute of Technology, 1997  
Computer graphics, design, interaction  
Laurie Williams, Assistant Professor  
PhD, University of Utah, 2000  
Collaborative/pair programming, software development, e-commerce, agile software, software testing  
Peter Wurman, Associate Professor  
PhD, University of Michigan, 1999  
Artificial intelligence, e-commerce, auctions  
Tao Xie, Assistant Professor  
PhD, University of Washington, 2005  
Software testing, verification, reuse  
Jun Xu, Assistant Professor  
PhD, University of Illinois, 2003  
Computer security and reliability  
R. Michael Young, Assistant Professor  
PhD, University of Pittsburgh, 1997  
Artificial intelligence, planning, natural language processing, interactive narrative  
Ting Yu, Assistant Professor  
PhD, University of Illinois, 2003  
Security, trust management, privacy protection

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Senior Faculty Profiles

Dr. William J. Stewart received his undergraduate degree in Applied and Pure Mathematics at The Queen’s University of Belfast, Northern Ireland in 1970. M.Sc. in 1971 and Ph.D. in 1974. Dr. Stewart spent five years as a Research Associate at the Université de Rennes in France before coming to NC State in 1978. For more than 30 years, he has been at the forefront of research into all aspects of generating, solving and analyzing Markov chains. In 2006, he will host an international conference to honor the 150th anniversary of Markov’s birth and the 100th anniversary of the publication of Markov’s seminal papers on chains. Dr. Stewart’s software package, MARCA: Markov Chain Analyzer, assists scientists and engineers in developing and solving large scale Markov models. His text, An Introduction to the Numerical Solution of Markov Chains, is the primary reference work for solving Markov chains numerically.

Dr. Alan L. Tharp received a B.S. in Science Engineering from Northwestern University. His work as a research chemist at Monsanto led him to appreciate the vast opportunities in computer science. He returned to Northwestern for his M.S. and Ph.D. in Computer Science. Prior to joining NCSU in 1969, he worked with Texas Instruments and Aerospace Corporation. During several summers while at NCSU, he worked with Data General (new EMC). Dr. Tharp served as interim, then department head from July 1992–June 2004. During that period, 29 tenure-track faculty were recruited (17 of them received the NSF CAREER development award); the department established an active Strategic Advisory Board, Senior Design Center, Corporate Education Program, and ePartners Program.

Dr. Tharp’s research interests include data and file structures for new technologies, and computer-user interfaces. He received the NCSU Alumni Association’s Distinguished Undergraduate Professorship Award in 1985. He has been associated with computer science accreditation for nearly 20 years. He is currently an ABET/CAC (Computing Accreditation) commissioner.

New Faculty Profiles

Dr. Richard Mayr - August 2004. Master’s and Ph.D. from Technische Universität München, Germany–1994 and 1998. Postdoc Fellowships at Université Paris 7 and Edinburgh University. Assistant Professor at Universität Freiburg, Germany. His research interests include formal verification, logic, automata theory, term rewriting, tableau systems, and exotic computing devices at borders of decidability.

Dr. Tao Xie - August 2005. B.S. from Fudan University in Shanghai, China in 1997; M.S. from Peking University in Beijing, China in 2000; and M.S. and Ph.D. from the University of Washington in 2002 and 2005. His research interests include software engineering with emphasis on software reliability and dependability.

Dr. Benjamin Watson - January 2006. B.S. from University of California–Irvine in 1987, Ph.D. from Georgia Institute of Technology in 1997. Assistant Professor at University of Alberta in Edmonton, Canada, and Northwestern University in Evanston, Illinois. His research examines the intersection between design and computer graphics and spans perception, interaction, visualization and computer games.