Computer Science Department
Annual Report
2003-2004

Summary

For the period July 1, 2003, through June 30, 2004, the resident faculty of the Computer Science Department included 19 full time faculty members (8 Professors, 5 Associate Professors, 5 Assistant Professors, 1 Temporary Assistant Professor), 1 Visiting Assistant Professor, and 1 part-time Instructor. Permanent professional persons associated with the department included 3 secretarial staff members, 3 technical support personnel, and one undergraduate advisor (only for half of the year).

As of Fall 2003, there were 117 graduate students enrolled in degree programs (48 in the doctoral program and 69 in the MS), and 313 declared undergraduate majors. Additionally, there were a total of 1608 seats offered in service courses, taken primarily by non-majors. During the past fiscal year, 2 students were awarded Ph.D. degrees and 23 graduated with the M.S. degree. Also, 52 bachelor's degrees were awarded and 5 students received the Certificate in Computing.

As a group, the faculty authored or co-authored 141 research articles and gave 32 presentations at professional meetings. Many of the faculty members have served on editorial boards of distinguished journals. Our faculty were PI, CO-PI, or contributors to 22 externally funded grants. The amount of the external funding totaled $4,517,944. Also, the faculty received 8 internal grants for the total amount of $160,592.

Dr. Kang Li was welcomed to our faculty in August 2003. Our recruiting efforts in 2003-2004 resulted in hiring Dr. Shelby Funk. Dr. Funk has completed her Ph.D. degree in Computer Science and will assume the position of Assistant Professor in August 2004. We will continue recruiting of two more faculty members in 2004-2005. Scott Watterson left the faculty in May 2004. Also, our two instructors left the University: Ellen Lether has retired in December, 2003, and Eraj Basnayake left the Department in August, 2003, to assume a faculty position at a college in Rochester, NY. Mary Helen Menken, our undergraduate advisor, left the department in December, 2003 to assume a position with the Athletics Department at UGA.

Major Accomplishments

External Research Funding

2003-2004 has been a very good year for the faculty of the Computer Science Department. A number of new sizeable grants were awarded to CS faculty. In total, eleven of our faculty members have held externally funded research grants as PIs or CO-PIs. For additional details, please see Appendix B, beginning on page 18.

Dr. Suchi Bhandarkar has continued his work on four externally sponsored grants: two from US Dept. of Agriculture, one from the University of Georgia and the Medical College of Georgia Joint Research Program.

Dr. Eileen Kraemer has started work on a new three year long NSF grant entitled *Program Visualization: Using Perceptual and Cognitive Concepts to Quantify Quality, Support Instruction, and Improve Interactions*.

Dr. David Lowenthal has received external funding from NSF for a new project: *HC-MPI: A System for Out-of-Core, Heterogeneous Data Distributions*. The project will last for three years. He has continued research on his NSF CAREER Award. Dr. Lowenthal also received an NSF REU Program grant.

Drs. David Lowenthal and R.W. Robinson have continued work as CO-PIs on a joint project on *ITR/ACS: Stochastic Summation of High-Order Feynman Graph Expansions* with the Physics Department (Dr. Bernd Schüttler, PI) which was funded by NSF.

Drs. David Lowenthal, Bhandarkar, Sheth, Li, as well as Scott Watterson received funding from the State of Georgia Yamacraw Research Program for their project *System-Level Techniques for Energy Aware Computing*.

Dr. Don Potter has continued his research on the project entitled *SAGA-3 Spray Advisor GA Parameter Setting Analysis*, supported by a grant from the USDA Forest Service.

Dr. Khaled Rasheed has continued his research (as a CO-PI) on a project entitled *Data Driven Design Optimization in Engineering Using Concurrent Integrated Experiment and Simulation*. The project has been funded by the National Science Foundation (the PI is Dr. Doyle Knight of Rutgers University).

Drs. Amit Sheth, Budak Arpinar, John Miller, and Krys Kochut have received a new grant from NSF for their project *SemDis: Discovering Complex Relationships in Semantic Web*. The project will last four years.

Drs. Amit Sheth, Budak Arpinar, and Krys Kochut have continued their work on the NSF project entitled *Semantic Association Identification and Knowledge Discovery for National Security Applications*.

Drs. Amit Sheth, Krys Kochut, and John Miller have started work on the NIH-sponsored project entitled *Bioinformatics of Glycan Expression*. This is a part of a large five year project ($6,700,000) originating from the Complex Carbohydrates Research Center (Dr. Michael Pierce, PI).

Drs. Amit Sheth and John Miller have received an *Eclipse Innovation Grant* from IBM.

Scholarly Publishing

The Computer Science faculty members have been very productive in publishing their research results. We have authored or co-authored 141 articles in 2003-2004, which is a significant increase from the previous year. They were published or submitted to high quality journals and conference proceedings. Our faculty gave 32 presentations at conferences, 11 of which were presented abroad. Also, we have given 3 keynote addresses and one invited talk. For the list of publications, please see Appendix C, beginning on page 21.

Conference Organization

Dr. Hamid Arabnia has organized the 2004 International MultiConference on Computer Science and Computer Engineering. The Conference will be held in June 2004, Las Vegas, Nevada. Dr. Arabnia has served as the General Chair of the MultiConference.

Drs. Amit Sheth, L. Usery, B. Arpinar, and X. Yao have organized a *Homeland Security Workshop* held in Amicalola Falls State Park, GA., in November 2003. They received a grant from USGIS for the organization of the workshop.

A. Strategic Planning

Computer Science Education

We have continued improving the undergraduate program in Computer Science. Our faculty have introduced one new undergraduate and 5 graduate courses to our curriculum.

Our graduate programs in Computer Science have grown in comparison to the 2002-2003 academic year. As of Fall 2003, there were 117 graduate students enrolled in graduate degree programs: 48 in the doctoral program and 69 in the MS program. We are especially happy that our Ph.D. program has grown considerably, increasing by almost 55% in comparison to its size in Fall, 2002.

Faculty Recruitment

Dr. Kang Li joined our faculty in the Fall, 2003. Dr. Li's research interests concentrate in Computer Networks and Operating Systems, including network measurement, modeling, pricing, and security. Dr. Li is also interested in defending against network abuses, such as Denial-of-Service attacks and SPAM. During the 2003-2004 recruiting period, the department has hired Shelby Funk. Her expertise is in real-time systems and distributed computing. Both areas complement well the research interests of our current faculty.

The department has two more positions to be filled in the 2004-2005 academic year. This will bring the number of Ph.D. faculty to 21, fewer than the 24 projected in our 1999-2004 Strategic Plan. However, we should point out that the plan was created at the time of a rapid economic expansion in the US, but the recent downturn and associated budgetary difficulties have trimmed considerably the amount of funding dedicated to hiring new faculty.

Space

The department has continued to suffer from an insufficient amount of space, especially in view of the recently hired faculty with research interests in experimental Computer Science. The anticipated hires of the two faculty members in Fall 2005 will require additional lab space. An unwelcome implication of our current space allocation is that our faculty are now located in three different buildings (Boyd, Hardman, and Barrow), which is not a good situation for fostering cohesiveness among the faculty body.

B. Short-Term Goals for FY 2005

Program Review

During the 2003-2004 academic year, the UGA conducted the first Program Review and Assessment of the Computer Science Department. The Program Review Committee has determined Computer Science to be "an essential department in a comprehensive university because of its upstream position in the knowledge flow," and that "Computer science research and teaching are important in themselves and in collaboration with other disciplines." The Review has included a number of recommendations for strengthening the department and our academic programs. The Computer Science faculty will begin the process of addressing the recommendations. This is an important process, which will involve our entire faculty throughout the upcoming year.

Faculty Recruitment

The department has two positions to be filled in FY05. Our plan is to hire two high-quality faculty members, preferably in research areas complementing those of our current faculty. The specific areas in which the recruiting should be conducted will be determined during the upcoming departmental retreat. Also, we intend to hire a permanent instructor in place of the two instructors who left UGA in the past year.

Space

Both the quantity and quality of the space available to the Department is insufficient. The first recommendation included in the report of the CS Review Team was that Computer Science be housed in a single building, with access to suitable teaching facilities and sufficient lab space.

C. Effectiveness Assessment

The Computer Science Department is in the process of modifying its undergraduate assessment procedures. A committee composed of Drs. Dan Everett, Liming Cai, and Suchendra Bhandarkar has created a new Computer Science Undergraduate Assessment model. The model has been approved and the new procedures will be created in the upcoming year. Also, we intend to collect measurements and analyze the results.

D. Student Retention and Graduation Rates

As of Fall 2003, there were 314 declared undergraduate CS majors, 27 fewer than in Fall 2002. It appears that the decreasing trend has slowed down (there were 100 fewer students in Fall, 2002, as compared to Fall, 2001). This decreasing trend, typical of many Computer Science departments across the country, has been attributed to the worsened economic conditions in the United States and fewer jobs awaiting CS graduates. John Sargent wrote in *Computer Research News* that "A variety of factors are likely to have contributed to these job losses in the IT occupations, including: the dot-com bust; the end of work on Y2K; the terrorist attacks of September 11, 2001 and their related effect on the U.S. economy; a downturn in corporate IT spending; the brief 2001 recession; productivity increases; and the offshore outsourcing (offshoring) of IT work."[1] Citing the US Department of Labor's Bureau

[1] John Sargent, "An Overview of Past and Projected Employment Changes in the Professional IT Occupations," Computing Research News, Vol. 16/No. 3, 2004, pp. 1, 21.

of Labor Statistics' (BLS), he adds that the demand for IT workers will resume its growth, but at a slower pace than during the 1990-2000 period. He states that the number of jobs "in the professional IT occupations […] is expected to grow from 3.3 million to 4.4 million, adding a total of 1.15 million new jobs. This represents a projected annual growth rate of 3.1 percent, more than twice that of the overall U.S. annual job growth of 1.4 percent. BLS projects a total of 1.6 million job openings […] for the professional IT occupations during the ten-year period."

Our graduate programs have continued to grow. As of Fall 2003, there were 117 students enrolled in graduate degree programs: 48 in the doctoral program and 69 in the MS program. Availability of funding for graduate students continues to be a very important factor in the overall health of the graduate program. In Fall 2003, 55 graduate students received financial support, as follows: Graduate Laboratory Assistants, 51%; Graduate Teaching Assistants (in charge of a course), 6%; Research Assistants supported by external funding, 36%; University Wide Assistantships, 7%. During the past fiscal year, 2 students were awarded Ph.D. degrees and 23 graduated with M.S.

In addition to graduate students and majors, the department taught several courses of a service nature, including CSCI 1100 (Introduction to Personal Computing), CSCI 1210 (Introduction to Computational Science), CSCI 1301 (Introduction to Computing and Programming). A total of 1,608 seats were offered in these courses.

E. Overall Status

The overall record of the faculty in instruction and research is very good. Similarly, our graduates are very well trained and are able to find quality employment. We have continued to provide quality education to a large number of students, both majors and non-majors. Moreover, this was possible without significant changes to teaching loads or class sizes and as a result, our research record has continued to improve both in scholarly publishing and in external research funding. We have added an excellent faculty member this year. At the same time, the loss of our two instructors presents a noticeable decrease in our capacity to teach lower-division courses. For a short period of time, we have been able to cover teaching of these courses with a few advanced graduate students. However, it is important that we find a permanent instructor to enhance our teaching capability at the introductory level.

We continue to believe that the professional environment for computer science at UGA is very good. The department looks forward to future opportunities to strengthen our research and instruction.

APPENDICES

Attached are detailed listings of professional activities, grants, publications, and presentations of the faculty during the past year.

A. PROFESSIONAL HONORS AND RECOGNITIONS

H. R. Arabnia

Editor-in-Chief, Journal of Supercomputing (Kluwer Publishing), Nov. 1997 - present.

Member, Editorial Advisory Board, The International Journal of Communication Systems (IJCS), published by John Wiley, 2000 – present.

Member, Editorial Board, Computing Letters, Cambridge International Science Publishing Ltd., 2001 – present.

Member, Board of Advisors, The International Journal of Information Technology and Systems (Editor-in-Chief, Prof. David Rine, George Mason University), 2002 – present.

Program Committee Member, 41st Annual ACM Southeast Conference (ACM-SE'03), Armstrong Atlantic State Univ., Georgia, 2003.

NSF: Third-Year Site Visit and Renewal Review of the NSF Engineering Research Center: Center for Subsurface Sensing and Imaging and Sensing (CenSSIS), at Northeastern University, Boston University, Rensselaer Polytechnic Institute.

Field Reviewer for the Naval Research Laboratory (NRL) - Postdoctoral Fellowship Application Review. The American Society for Engineering Education (ASEE), 2004.

Member of Review Panel: US Department of Defense, National Defense Science and Engineering Graduate (NDSEG) Fellowship Program; Alexandra, Virginia, Feb. 2004.

Member, Advisory Committee, IEEE Task Force on Cluster Computing (IEEE/TFCC), 2003 – present.

Associate Editor, International Journal of Computers and Applications published by ACTA Press, 2002 – present.

Member, Program Committee, 5th International Symposium on High-Performance Computing (ISHPC-V), Tokyo, Japan, October 2003.

General Chair, The 2003 International Multi Conference in Computer Science and Computer Engineering, Las Vegas, June 2003.

Journal of Parallel and Distributed Computing, JPDC, 1994 – present.

IEEE Transactions on Parallel and Distributed Systems, 1995 – present.

The Learning Disabilities Center (LDC) selected Dr. Arabnia as a faculty member who has positively impacted the education of students with learning disabilities, October 2003.

Listed in the AcademicKeys Who's Who in Sciences Higher Education (WWSHE).

I. Budak Arpinar

Member, IEEE Computer Society.

Member, ACM Sigmod.

Web Chair, IEEE International Conference on Electronic Commerce (CEC'03), June 2003, Newport Beach, CA.

Program Committee Member, 2nd International Semantic Web Conference, October 20-24, 2003, Sanibel-Captiva Island, FL.

Program Committee Member, IASTED International Conference on Information and Knowledge Sharing (IKS 2003), November 17-19, 2003, Scottsdale, AZ.

Co-organizer, Homeland Security Workshop, funded by UCGIS, November 2003.

Program Committee Member, 11th Intl. Conference on Artificial Intelligence: Methodology, Systems, and Applications (AIMSA 2004).

Program Committee Member, 2nd Workshop on Semantics in Peer-to-Peer and Grid Computing at the 13th Intl. WWW Conference, May 17-18, 2004, New York.

Program Committee Member, 2004 IEEE/WIC/ACM International Conference on Intelligent Agent Technology, September 20-24, 2004, Beijing, China.

Program Committee Member, 2004 IEEE/WIC/ACM International Conference on Web Intelligence, September 20-24, 2004, Beijing, China.

Program Committee Member, Net.ObjectDays 2004, 5th Annual International Conference on Object-Oriented and Internet-based Technologies, Concepts, and Applications for a Networked World, Erfurt, Germany, September 27-30, 2004.

Reviewer, IEEE Internet Computing.

Reviewer, IEEE Transactions on Systems, Man, and Cybernetics.

Reviewer, IEICE Transactions on Information and Systems.

Reviewer, 2nd Intl. Semantic Web Conference (ISWC2003) Semantic Integration Workshop.

Additional/External Reviewer of Major Database Conference and Journals including COOPIS, WWW, MIT Press Publications.

S. M. Bhandarkar

Associate Editor, International Journal of Applied Intelligence, November 1999 - present.

Associate Editor, The Computer Journal, May 1999 - present.

Program Committee Member, IEEE Computer Society Bioinformatics Conference (CSB 2004), Stanford University, Palo Alto, CA, August 2004.

Program Committee Member, European Conference on Parallel and Distributed Computing (EuroPar 2004), August 2004.

Program Committee Member, International Conference on Pattern Recognition (ICPR 2004), Cambridge, UK, August 2004.

Program Committee Member, International Conference on Parallel Processing, (ICPP 2004), Montreal, Quebec, August 2004.

Program Committee Member, IEEE Computer Society Bioinformatics Conference, Stanford University, CA, August 2003.

Program Committee Member, European Conference on Parallel and Distributed Computing (EuroPar 2003), August 2003.

Program Committee Member, Intl. Wkshp. Parallel and Distributed Computing in Image Processing, Video Processing and Multimedia, *(PDIVM 2003)*, Nice, France, April 2003.

Program Committee Member, Intl. Wkshp. High Performance Computational Biology (HiComb 2003), Nice, France, April 2003.

Member, Technical Committee on Multimedia Computing, IEEE Computer Society, 1998-present.

Member, Technical Committee on Pattern Analysis and Machine Intelligence, IEEE Computer Society, 1992-present.

Member, Association for Computing Machinery (ACM), 1990-present.

Member, International Society of Photo-optical and Instrumentation Engineers (SPIE), 1987-present.

Member, American Association for Artificial Intelligence (AAAI), 1985-present.

Member, Institute for Electrical and Electronic Engineering (IEEE), 1982-present.

Referee, International Journal of Computers and Their Applications, 1997-2003.

Referee, IEEE Transactions on Pattern Analysis and Machine Intelligence, 2001-2003.

Referee, Pattern Recognition Letters, 1994-2003.

Reviewer, Image and Vision Computing, 1991-2003.

Reviewer, IEEE Transactions on Systems, Man and Cybernetics, 2000, 2003.

Reviewer, USDA National Research Initiative Competitive Grants Program, 2000-2004.

Referee, National Science Foundation, 2000-2003.

U.S. Dept. of Agriculture, 1997-2003.

Reviewer, USDA SBIR Program 2003, 2004.

Referee, Journal of Real Time Images, 2003.

Referee, IEEE Trans. Multimedia, 2003.

Referee, Proceedings of IEEE, 2003.

Referee, IEEE Trans. Circuits and Systems for Video Technology, 2002, 2003.

Reviewer, Office of Naval Research, 2004.

L. Cai

Member of professional organizations: ACM, SIGACT, EATCS, (1992 -present).

Reviewer, Mathematical Reviews, 1998 -present.

Reviewer, SIAM Journal on Discrete Mathematics.

Reviewer, IEEE Transactions in Computer.

Reviewer, Journal of Algorithms.

Reviewer, Information and Computation.

Reviewer, Journal of Automata, Languages, and Combinatorics.

Reviewer, Information Processing Letters.

Reviewer, Symposium on Theoretical Aspects of Computer Science.

Reviewer, International Conference on Computing and Information.

Reviewer, International Conference on Computing and Combinatorics.

Reviewer, Mathematical Foundations of Computer Science.

Reviewer, International Symposium on Algorithms and Computation.

E. R. Canfield

Reviewer, Math Reviews.

Referee, Journal Combinatorial Theory, Series A and B.

Referee, American Mathematical Monthly.

Referee, National Science Foundation.

Member of the Association for Computing Machinery.

Editor, Electronic Journal of Combinatorics.

M. Hybinette

Member, Association for Computing Machinery.

Member, Institute of Electrical and Electronics Engineers.

Reviewer, Journal of Parallel and Distributed Computing.

Reviewer, International Journal of Formal Methods.

Reviewer, International Parallel and Distributed Processing Symposium (IPDPS).

Reviewer, Workshop on Parallel and Distributed Simulation (PADS).

Reviewer, Hawaiian International Conference on System Science (HICSS).

Reviewer, International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).

K. J. Kochut

Member, Association for Computing Machinery.

Member, SIGMOD.

Member, SIGCOMM.

Reviewer, IEEE Transactions on Knowledge and Data Engineering.

Reviewer, Information Systems.

E. T. Kraemer

Program Committee Member, Workshop on Bio-Inspired Solutions to Parallel Processing Problems (BIOSP3), 2000 - 2003.

Participant, Grant Proposal Review Panel, National Science Foundation, 2002, 2003.

Software Area Chair, Technical Papers Committee, SC03 Conference (Supercomputing).

Program Committee Member, ACM Symposium on Software Visualization, 2003.

Member, Program Committee for SoftViz, 2003.

Referee, Supercomputing, 1996, 2001, 2002, 2003.

Referee, National Science Foundation, Advanced Computational Research Program.

Referee, IEEE Transactions on Visualization and Computer Graphics.

Referee, IEEE Transactions on Software Engineering.

Referee, IEEE Transactions on Parallel and Distributed Systems.

Referee, Transactions on Software Engineering and Methodology.

Referee, Bioinformatics.

Referee, Journal of Parallel and Distributed Computing.

Referee, The Computer Journal.

Referee, Software-Practice and Experience Cybernetics and Systems.

Kang Li

Reviewer, Multimedia Computing and Networking.

Reviewer, ACM Multimedia.

Reviewer, IEEE Transactions of Parallel and Distributed Computing.

Reviewer, NOSSDAV and IEEE Security and Privacy.

D. K. Lowenthal

Grant Review Panel Member, National Science Foundation, October 2003.

Program Committee Member, Workshop on High-Level Parallel Programming Models and Supportive Environments, 2002, 2003.

Member, ACM, 1992-present.

Member SIGPLAN, 1992-present.

Member, SIGOPS, 1992-present.

Member, IEEE.

Referee, International Parallel and Distributed Processing Symposium (IPDPS).

Referee, Computer Languages.

Referee, Architectural Support for Programming Languages and Operating Systems (ASPLOS).

J. A. Miller

Associate Editor, ACM Transactions on Modeling and Computer Simulation (TOMACS), 1999- present.

Associate Editor, IEEE Transactions on Systems, Man and Cybernetics (TSMC), 1999-present.

Program Committee Member, Annual Simulation Conference (ANNSS), 1992-present.

Referee, ACM Transactions on Modeling and Simulation.

Referee, IEEE Transactions on Systems, Man and Cybernetics (TSMC).

W. D. Potter

Program Committee Member, International Conference on Industrial and Engineering Applications of Artificial Intelligence and Expert Systems, (IEA/AIE'2003) UK, June, 2003.

Program Committee Member and Robotics Competition Chairman, International Conference on Artificial Intelligence (IC-AI'2003), Las Vegas, Nevada, June, 2003.

Program Committee Member, Genetic and Evolutionary Computation Conference (GECCO-2003), Chicago, Illinois, July, 2003.

Associate Editor, IEEE Transactions on Systems, Man, and Cybernetics, 2001 - 2003.

Editorial Board Member, "Applied Intelligence", since 1993. (The International Journal of Artificial Intelligence, Neural Networks, and Complex Problem-Solving Technologies, Editor-in-Chief: Professor Moonis Ali, Kluwer Academic Publishers).

Regional Editor, International Journal of Hybrid Intelligent Systems, since 2003.

Associate Editor, Journal of Intelligent and Fuzzy Systems, since 2003.

Program Committee Member, International Conference on Artificial Intelligence (IC-AI’2004), Las Vegas, Nevada, June, 2004.

Program Committee Member, International Conference on Industrial and Engineering Applications of Artificial Intelligence and Expert Systems, (IEA/AIE’2003), UK, June, 2003.

Program Committee Member and Robotics Competition Chairman, International Conference on Artificial Intelligence (IC-AI’2003), Las Vegas, Nevada, June, 2003.

Program Committee Member, Genetic and Evolutionary Computation Conference (GECCO-2003), Chicago, Illinois, July, 2003.

Referee, IEEE Computer.

Referee, IEEE Trans. On Systems, Man, & Cybernetics.

Referee, International Journal for Applied Intelligence.

Referee, Journal of Intelligent and Fuzzy Systems: JIFS.

Referee, Pattern Recognition Letters.

K. M. Rasheed

Member, Institute of Electrical and Electronics Engineers (IEEE).

Member, IEEE Computer Society.

Member, IEEE Neural Network Society.

Member, International Society for Genetic and Evolutionary Computation (ISGEC).

Member, American Association for Artificial Intelligence (AAAI).

Journal guest editor, Soft Computing Journal: special issue on approximation and learning in evolutionary computation.

Workshop Co-organizer, Genetic and Evolutionary Computation Conference (GECCO'2002, 2003).

Program committee member, Genetic and Evolutionary Computation Conference (GECCO'99, 2000, 2002, 2003, 2004).

Program committee member, The 1st European Workshop on Evolutionary Algorithms in Stochastic and Dynamic Environments.

Session chair, Genetic and Evolutionary Computation Conference (GECCO'2002, 2003).

Referee, Journal of Machine Learning Research (JMLF).

Referee, Journal of Artificial Intelligence Research (JAIR).

Referee, Artificial Intelligence in Engineering Design and Manufacturing (AIEDAM).

Referee, International Association for Mathematics and Computers in Simulation (IMACS).

Referee, Machine Learning Journal (MLJ).

Referee, Applied Intelligence.

R. W. Robinson

Organizing Committee, SIAM/ACM workshop on Algorithms for Listing Counting and Enumeration, Baltimore, MD, January 2003.

Editorial Board, Journal of Combinatorial Mathematics and Combinatorial Computing (1987-present).

Career Center Award for Contributing to the Career Development of Students, September 2003.

A. P. Sheth

Member of the Editorial Board, Journal on Web Semantics: Science, Services and Agents on the World Wide Web, 2003 – present.

Senior Member (2003), IEEE and IEEE Computer Society, including Technical Committee on Database Engineering, 1981 – present.

Member of the Editorial Board, International Journal of Intelligent and Cooperative Information Systems.

Editor, IEEE Multimedia, November 1998 – present.

Member of the Editorial Board, Information Systems - an Intl. Journal, 1993 – present.

Member of the Editorial Advisory Board, International Journal of Engineering Intelligent Systems, 1993 - present.

Member of the Editorial Board, Journal on Distributed and Parallel Databases, 1992 - present.

Associate Editor, SIGMOD Record, 1988 – present.

Member, Association for Computing Machinery, SIGMOD and other SIGs.

Member, IEEE Computer Society, including Technical Committee on Database Engineering.

Member of the Board and Founding Member, International Foundation on Cooperative Information Systems, 1996 – present.

Editorial Board, International Journal of Cooperative Information Systems, 1996 – present.

Editorial Board, Information systems-An International Journal, 1998 – present.

Advisory Board, Coca-Cola Center for Marketing Studies, Terry College of Business, 2001 – present.

Co-Chair, UCGIS Homeland Security Workshop, Amicalola Falls and State Park, GA, Nov 5-7, 2003.

PC Member, 12th International Conference on Information and Knowledge Management (CIKM 2003), New Orleans, LA, November 2-8, 2003.

Senior PC Member, 2nd International Semantic Web Conference, Sanibel, Florida, October 20-24, 2003.

PC Member, IEEE Conference on E-Commerce (CDC03), Newport Beach, CA, June 24-27, 2003.

PC Member, AAAI 2004 Workshop on Semantic Web Personalization, San Jose, CA, USA, July 25-26, 2004.

PC Member, IEEE International Conference on Web Services (ICWS 2004), San Diego, CA, July 6-9, 2004.

PC Member, 14th International World Wide Web Conference (WWW2004): Web Services track, New York, May 17-22, 2004.

PC Member, 14th International World Wide Web Conference (WWW2004): Semantic Web track, New York, May 17-22, 2004.

PC Member, 2nd Workshop on Semantics in Peer-to-Peer and Grid Computing (at WWW2004), New York, May 17-18, 2004.

Co-organizer, Semantic Interoperability and Integration, Dagstuhl Seminar 04391, September 19-24, 2004, Dagstuhl, Germany.

Program Co-Chair, 2004 IEEE International Conference on Services Computing (SCC 2004), Shanghai, China, September 15-18, 2004.

Program Committee Member for the 4th International Conference on Web Information Systems Engineering (WISE'03), Roma, December 10-12, 2003.

Program Committee Member, 2nd International Conference on Ontologies, DataBases, and Applications of Semantics for Large Scale Information Systems (ODBASE'03), Sicily, November 3-7 2003.

Program Committee Member, The 2003 IEEE/WIC International Conference on Intelligent Agent Technology (IAT 2003), Beijing, China, October 13-17, 2003.

Program Committee Member, 7th International Workshop CIA-2003 on Cooperative Information Agents, Helsinki, Finland, August 27 - 29, 2003.

Program Committee Member, the Workshop on Semantic Web and Databases, Berlin, Germany, September 13-14, 2004.

Program Committee Member, 7th International Workshop on Cooperative Information Agents (CIA 2003), Helsinki, Finland, August 27 – 29, 2003.

Program Committee Member, 13th International World Wide Web Conference (WWW2003), Budapest, Hungary, May 20-24, 2003.

Referee, VLDB Journal.

Referee, National Science Foundation.

Referee, Research Council of Norway.

Referee, Information Systems.

Referee, Intelligent Information Systems.

Referee, Distributed and Parallel Databases.

Referee, Intelligent and Cooperative Information Systems.

Referee, Computer.

Referee, IEEE Transaction on Knowledge and Data Engineering.

Referee, Edited 3 Database Research Center Reports for *ACM SIGMOD Record* as Associate.

Referee, Edited 3 Media Reviews for IEEE Multimedia.

J. W. Smith

Member of IEEE

Reviewer for Computing Reviews, 1978 - 1986, 1990, 1994 - present.

T. R. Taha

Member, Association of Computing Machinery (ACM).

Member, Society for Industrial and Applied Mathematics (SIAM).

Member, SIAM SEAS.

Member, International Association for Mathematics and Computers in Simulation (IMACS).

Member, SIAM Activity Group on Supercomputing.

Member, SIAM Activity Group on Computational Science.

Member, IMACS technical committee on Dynamical Systems and Nonlinear Science, 1992 - present.

Member, Institute of Electrical and Electronics Engineers (IEEE), Inc.

Referee, Journal of Computational Physics.

Referee, Applied Numerical Mathematics (IMACS Journal).

Referee, Computers and Mathematics with applications.

Referee, Mathematics and Computers in Simulation.

Referee, Numerical Mathematics for Partial Differential Equations.

Referee, Institute of Physics Publishing Research Journal, UK, 1997 – present.

Referee, Simulation: The Journal of the Society for Computer Simulation, Hong Kong.

Referee, Journal of Science and Technology/Sultan Qaboos University of Oman.

Referee, Derasat/Journal of Sciences, University of Jordan, Jordan.

Referee, Journal of Physics A: Mathematical and General.

Referee, Journal of Physics B: Molecular and Optical Physics.

Referee, Numerical Algorithms, C. Brezinski, Editor-in-Chief, France.

Referee, The Korean Journal of Computational and Applied Mathematics.

Referee, Journal of Parallel and Distributed Computing.

Referee, IEEE Transactions on Systems, Man, and Cybernetics.

External reviewer, grant proposal submitted to the Sultan Qaboos University, Muscat, Oman.

External Reviewer, Board of Regents Support Fund (RCS proposals) for Fiscal Year 2002-03, Louisiana.

Guest Editor, Special Issue of the Journal Mathematics and Computers in Simulation on "Nonlinear Waves: Computation and Theory-II", Vol. 62, Issues 1-2, 2003.

Member, Editorial Board of The International Arab Journal of Information Technology (IAJIT).

S. Watterson

Member, Association for Computing Machinery.

Member, ACM SIGMICRO.

Member, IEEE.

Referee, Micro-33.

Referee, Software Practice & Experience.

B. GRANTS AWARDED OR CURRENT

EXTERNALLY FUNDED GRANTS

Bhandarkar, S.M. (with Dr. J. Arnold, Co-PI) US Dept. of Agriculture, "Novel Statistical Methods for Generation of Integrated Genomic Maps", Sept. 1, 2002 - Aug. 31, 2005, $280,644.

Bhandarkar, S.M. (with Dr. Jack Yu, MD, Medical College of Georgia, Co-PI University of Georgia and Medical College of Georgia Joint Research Program) "Computer-assisted External Reduction and Internal Fixation of Complex Crainofacial Fractures", Sept. 1, 2002 - June 30, 2003, $53,340.

Bhandarkar, S.M., D. Lowenthal and S. Watterson, State of Georgia Yamacraw Research Program, "An Integrated Scalable Client-Server System for Energy-aware Computing", $75,000, July 1, 2002 - June 30, 2003.

Bhandarkar, S.M., "Design and Prototype Development of a Computer Vision-based Lumber Production Planning System", US Department of Agriculture, $190,000, Dec. 15, 2000 - Dec. 30, 2004. (In addition, $30,000 matching funds from VP for Research.)

Canfield, E.R. (PI), J.W. Smith and H.R. Arabnia, University of Georgia Yamacraw Program (2003-2004), Georgia Governor's Office, $639,099, continued support for permanent/continued staff and faculty positions for the Department of Computer Science.

Kraemer, Eileen, NSF CAREER Award, "An Infrastructure in Support of Configurable, Consistent, Interactive Computational Steering", $201,617, May 1998 - April 2003.

Kraemer, Eileen and Elizabeth Davis, NSF "Program Visualization: Using Perceptual and Cognitive Concepts to Quantify Quality, Support Instruction, and Improve Interactions," $303,606, June 15, 2003 – June 14, 2007.

Lowenthal, David (PI), S. Bhandarkar, A. Sheth, K. Li, S. Watterson (Co-PIs), State of Georgia *Yamacraw* Research Program, "System-Level Techniques for Energy Aware Computing" (Focus area: Enabling Personal Networked and Home Computing Applications with Metadata), $27,150, July 1, 2003 – June 30, 2004.

Lowenthal, D.K., (PI) with S.M. Bhandarkar and E. Kramer (Co-PI), "Instrumentation Grant for Research in Parallel and Distributed Computing, Experimental and Integrative Activities", NSF, March 2000-February 2004, $114,000 (includes matching from the University of Georgia Research Foundation).

Lowenthal, David (PI), National Science Foundation REU Program, "A Power-Aware Scheduler for Streaming Multimedia Clients", $2,500.

Lowenthal, David (PI), National Science Foundation Advanced Computational Research Program (ACR), "HC-MPI: A System for Out-of-Core, Heterogeneous Data Distributions", $150,000, July 1, 2003 – June 2005 (additionally, $6000 on an REU supplement).

Lowenthal, David, National Science Foundation CAREER Award, "An Integrated Compiler/Run-Time System for Global Data Distribution", Computer and Communications Research, July 1, 1998 - June 30, 2003, $200,000.

Potter, W.D., “SAGA3: Spray Advisor GA Parameter Setting Analysis,” $37,000, USDA Forest Service, 8/2003 – 9/2004.

Knight, Doyle (PI), Khaled Rasheed (Co-PI) and 3 other Co-PIs, National Science Foundation (NSF), “Data Driven Design Optimization in Engineering Using Concurrent Integrated Experiment and Simulation,” $1,200,000, 2001-2004 (UGA's portion $137,295).

Schuttler, Bernd (PI), David Lowenthal, Bob Robinson, and Jem Corcoran, (Co-PIs), National Science Foundation Information Technology Research Program, “ITR/ACS: Stochastic Summation of High-Order Feynman Graph Expansions”, September 2000-August 2003, $487,000. (CS portion – approximately $236,195)

Sheth, A. and L. Usery (PIs), B. Arpinar & X. Yao (Co-Pi), “Homeland Security Workshop”, USGIS, Amicalola Falls State Park, GA., November 2003, $15,000

Pierce, Michael (PI), et al., Co-PI’s in CS: Amit P. Sheth, Krys J. Kochut and John A. Miller, “Bioinformatics of Glycan Expression,” National Institutes of Health (NIH), July 2003 - July 2008, $6,700,000 (Computer Science portion $709,401).

Sheth, Amit P., Budak I. Arpinar, John A. Miller and Krys J. Kochut, “SemDis: Discovering Complex Relationships in Semantic Web,” National Science Foundation, Information Technology Research (NSF-ITR), October 2003 - September 2007, $800,000.

Sheth, Amit P. (PI), John Miller (Co-PI), “Eclipse Innovation Grant”, IBM Eclipse Foundation, Jan 1, 2004 – Dec 1, 2004, $28,000.

Sheth, Amit, Budak Arpinar, Krys Kochut, National Science Foundation, "ITR: Semantic Association Identification and Knowledge Discovery for National Security Applications", (IDM program) CISE-ITR-0219649, $212,000, July 1, 2002-June 30, 2005.

Sheth, A., donations from various sources to support research activities in the LSDIS Lab at the University of Georgia, current funding, $85,097.

Taha, Thiab, NSF, Support for the Third IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory Conference", $15,000, August 1, 2002 - October 31, 2003.

INTERNALLY FUNDED GRANTS

Bhandarkar, S.M. (with Dr. E. William Tollner, Co-PI and Dr. Jack Yu, MD, Medical College of Georgia, Co-PI), "Exploiting Computer Vision and Computer-aided Design and Manufacturing Technologies in Computer-Assisted Reconstructive Surgery", University of Georgia Engineering Research Grant, $33,000, August 15, 2003 – August 14, 2004.

Kraemer, Eileen T., Leon Deligiannidis and John A. Miller, "Enhanced Learning through Virtual Reality," Office of Instructional Student Development (OISD), Learning Technology Grant, November 2003 – June 2004, $73,740.

Li, Kang, "Resisting SPAM with Network Puzzles", UGA Junior Faculty Research Grant, $9,572, December, 2003.

Potter, W.D., UGA Office of Instructional Support and Development: Learning Technologies Grant Program, "Artificial Intelligence In Action: An Introduction to Robotics – Phase 2," $34,550, 2002/2003.

Rasheed, Khaled, UGA Faculty Research Grant, "Modeling, Evaluation & Design of External Skeletal Fixation Structures", $5000, 2004.

Taha, Thiab, UGA, President Venture Fund, "Support for the Third IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, $2000, April 2003.

Taha, Thiab, Research Foundation of the University of Georgia, Foreign Travel grant approved for the amount of $1,730 to give a Keynote speech and chair a session at the 2003 Arab Conference on Information Technology (ACIT'03), December 20-23, 2003, Alexandria, Egypt.

Taha, Thiab, University of Georgia Provost's Office, International Travel grant for a partnership in Jordan, $1,000, 2004.

C. FACULTY PUBLICATIONS AND PRESENTATIONS

***PUBLISHED ARTICLES AND CHAPTERS IN BOOKS**:* (senior author listed first)

1. M. Arif Wani and H. R. Arabnia, "Parallel Edge-Region-Based Segmentation Algorithm Targeted at Reconfigurable Multi-Ring Network", *The Journal of Supercomputing*, Vol. 25, No. 1, pp. 43-62, 2003.
2. H. Valafar, H. R. Arabnia, and G. Williams, "Distributed Global Optimization and Its Development on the MultiRing Network", *International Journal of Neural, Parallel & Scientific Computations* (Dynamic Publishers), accepted in 2003, 24 pages.
3. H. R. Arabnia, Guest Co-Editor (with Prof. G. A. Gravvanis), *Journal of Mathematical Modelling and Algorithms* (JMMA - Kluwer Academic Publishers), Special issue *Computational Sciences and Applications*, Vol 2, No 3, pp 183-294, 2003.
4. H. R. Arabnia, Guest Editor (with Prof. G. A. Gravvanis), *International Journal of Future Generation Computer Systems; Special Issue on Parallel and Distributed Algorithm*, to appear.
5. H. R. Arabnia, Guest Co-Editor (with Prof. G. A. Gravvanis), *International Journal of Parallel Algorithms and Applications; Special Issue on Parallel and Distributed Algorithms*, to appear.
6. Himanshu Thapliyal, Vishal Verma, and H. R. Arabnia, "Universal and Novel NXN Bit Parallel Vedic Multiplier and Accumulator (V-MAC)", *IEEE Canadian Conference on Electrical and Computer Engineering (IEEE Canada)*. May 2-5, 2004, Niagara Falls, Ontario, Canada, submitted.
7. Matthias Wiemann and H. R. Arabnia, "Stereo Images and Genetic Algorithms: Making Computers See Depth"; *Proceedings of the International Conference on Imaging Science, Systems and Technology* (CISST'04: June 21-24, 2004, Las Vegas, Nevada), pp. 411-417 (2004).
8. Durga Yeluri, H. R. Arabnia, S. Budsberg, and G. Zhang, "Using Pattern Recognition Techniques in the Gait Analysis to Determine Osteoarthritis in Dogs", *Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences* (METMBS'04: June 21-24, 2004, Las Vegas, Nevada), accepted 2004.
9. D. Yeluri, H. R. Arabnia, S. C. Budsberg, and G. Zhang, "Using Pattern Recognition Techniques in Gait Analysis", *4th Annual Georgia Graduate Student Interdisciplinary Conference* (GGSIC 2004), Poster, Feb. 2004, Athens, Georgia.
10. Book (Co-Authored): M. I. Marin and H. R. Arabnia, "Problems in Algebra and Mathematical Analysis", Elliot & Fitzpatrick Inc., (360 pages), ISBN #: 0-945019-92-0, published in 2004.
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15. Hamid R. Arabnia and Xiangjian He, "Edge Detection Using MultiRing on Spiral Architecture", P*roceedings of the 2004 International Conference on Parallel and Distributed Processing Techniques and Applications(PDPTA'04)*, Las Vegas, Nevada, June 2004, pp. 413-419.
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17. Himanshu Thapliyal and Hamid R. Arabnia, "A Time-Area-Power Efficient Multiplier and Square Architecture Based On Ancient Indian Vedic Mathematics", *Proceedings of the 2004 International Conference on VLSI (VLSI'04)*, Las Vegas, Nevada, June 2004, pp. 434-439.
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Technologies and Applications (MLMTA'05), June 21-24, 2004, Las Vegas, USA, ISBN#: 1-932415-32-7, 2004; 650 pages.

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27. Hamid R. Arabnia, Editor, Associate Editors: P-T. Chung, H. Han, R. A. Liuzzi, Y. Mun, J. Oh, H. Pham, W. Tavanapong, The Proceedings of the 2004 International Conference on Information and Knowledge Engineering (IKE'04: June 21-24, 2004, Las Vegas, USA), ISBN#: 1-932415-27-0, 2004; 530 pages.
28. Hamid R. Arabnia, Laurence T. Yang, and Minyi Guo, Co-Editors, The Proceedings of the 2004 International Conference on Embedded Systems and Applications (ESA'04) and The Proceedings of the 2004 International Conference on VLSI (VLSI'04), June 21-24, 2004, Las Vegas, USA, ISBN#: 1-932415-41-6, 2004; 600 pages.
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Mathematics and Engineering Techniques in Medicine and Biological Sciences (METMBS'04: June 21-24, 2004, Las Vegas, USA). ISBN#: 1-932415-43-2, 2004; 500 pages.

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10. Liming Cai, "Stochastic modeling of RNA pseudoknots: a grammatical approach", co-authored with Russell Malmberg and Yunzhou Wu, at the *International Conference on Intelligent Systems for Molecular Biology*, Brisbane, Australia, June 29-July 3, 2003.

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