



# Computer Science Newsletter

*Newsletter of the Department of Computer Science, Louisiana State University (Baton Rouge)  
Spring, 2001*

## Chairman's Note

Through this newsletter we convey to our colleagues in academia and industry the highlights of our accomplishments during this past year. The science of computing is changing rapidly and in many ways it is a great time to be a part of the LSU computer Science Department. Much has happened during the past 6 months:

- The faculty in the department have been very active in obtaining federal funding in various areas of computer science. Funding sources are DARPA, MURI, NSF, Air-force Office of Scientific Research, Sandia National lab, Oakridge National lab, etc. This is indeed a great step for our department.
- We have initiated many new collaborations.
- A multidisciplinary grant effort involving biomedical science and engineering areas was initiated last year and this has forged many new research and educational efforts with other institutions across the country. More importantly, LSU has been a part of a successful MURI grant involving several good universities across the country.
- We have multiple technology fee proposals funded this year and the department is significantly expanding its instructional equipment.
- New educational innovations include a global course offered jointly with a university in Europe.

In short, our collaborative culture and the spirit of excellence make the department not only a great place to work but also a place for innovative ideas. It is the faculty and students who make LSU a great university. We invite you to read about accomplishments on the following pages.

S. S. Iyengar

## Distinguished Lecture Success!

On March 22nd, the LSU Computer Science Department hosted Professor John Hopcroft as part of the Chancellor's Distinguished Lecture Series. The title of his lecture was "The Past and Future of Theoretical Computer Science." The lecture was standing room only, with people coming from as far away as Mississippi.

### Inside This Issue

Chairman's Note .....	page 1
Lecture .....	page 1
Welcome .....	page 1
Congratulations .....	page 2
Computer Update .....	page 3
Publications .....	page 3
Activities .....	page 5
Grants .....	page 5
Seminars .....	page 5
Further Information .....	page 6

## Welcome!

Dr. Louise Perkins will join the department as an Associate Professor in Fall semester on the NSF funded JFAP program. She received her Ph.D. in



**Dr. Seiden, Dr. Hopcroft, Qian Yu Huang and Dr. Iyengar.**

Computer Science from University of California, Davis in 1989. Her fields of interest are distributed computing, networking, physical ocean modeling, mathematical methods of physics, and numerical techniques.

### **Congratulations!**

*Award!* Professor Peter Chen will be recognized as a software pioneer at the SD&M Conference June 28th and 29th in Bonn, Germany. His development of the Entity/Relationship model is cited as his major contribution.

*Big Grant!* Professor Peter Chen received an award of at least \$416,000 for research in cyberforensics. Cyberforensics is the the science of tracking criminals online. Under this grant, professor Chen will hire three postdoctoral researchers to aid him in his cyberforensics research.

*MURI Award!* LSU has been a part of a successful 2001 DOD Multidisciplinary University Research Initiative Program (MURI Program), a program designed to address large multidisciplinary topic areas for future DOD applications and Technology options. The title of the project is "Automated Self-Configuring Surveillance Networks." The average funding will be \$1 million per year over a three year period. The researchers involved are: S. Phoha (PSU), R. Brooks, S. S. Iyengar (LSU), K. Chakrabarty (Duke), S. Wicker (Cornell), Parameshwar (Univ. Wisconsin) and others.

*Teaching Award!* Mrs. Savitha Pinnepalli received the Undergraduate Teaching award (Tiger Athletic Foundation Award) at the Honors Convocation that was held on March 19, 2001.

*Teaching Award!* Professor I. Song, a former Ph.D. student in the department has been awarded the Linback Award for Excellence in Teaching at Drexel University

*Best Paper!* Nigel Gwee received the Best Student Paper award in the 39th Southeast Conference of the Association for Computing Machinery, held on March 16-17th at the University of Georgia, Athens. His paper was entitled "An NP-Complete Music Problem," and is based on his Ph.D. dissertation research (in progress). His faculty advisor is Professor Sukhamay Kundu.

*Recognition!* Instructor Barbara Guillott was featured in the University of Louisiana Lafayette alumni book, "La Louisiane," in the alumni section of the Spring issue.

*B.S. Degrees!* Commencement exercises were held at the Maravich Assembly Center on May 18th, 2001. The following Computer Science students received Bachelor of Science degrees: Brandon Clark Alessi, Joshua Sean Demoss, Alisha Lynn Eppinette, Thane Paul Erickson, Jason Gregory Hine, Mehtap Kandara, Lay-Fong Lim, Kyle Anthony Luthy, R. Keith Massie, Tristan Earl McInnis, Atsuko

Morikawa, John Hoang Nguyen, Curtis Lee Nugent, Huy Duc Phan, Seth Aaron Robertson, Carol Rampy Sims, Hitesh Sood, Wojciech Tadeusz Stryewski, Dennis Joseph Szot, Luong Vinh Tran, Phong Thanh Tran.

*Award!* Professor Donald Kraft was named as an honorary member of the Beta Phi Mu honor society.

*Honors!* At the Honors Convocation held on March 19, 2001, the department recognized the following 3 outstanding students: Bruce Lin (4.0 GPA) with many honors, Curtis Nugent (4.0 GPA) with many honors, Theodore Hierath (4.0 GPA) Dual major (Computer Science and Physics).

*Ph.D. Degrees!* Rahman Tashakkori and Michael Hoffman successfully defended their Ph.D. dissertations. Rahman Tashakkori's dissertation was entitled "Medical Image Compression Using Wavelet and Lifting Combined with New Scanning Techniques." Professor John Tyler was his advisor. Michael Hoffman's dissertation was entitled "A Methodology to Support the Maintenance of Object-oriented Software Systems Using Impact Analysis." Professor Doris Carver was his advisor.

*M.S. Degrees!* The following students have successfully defended their projects for their M.S. degrees: John Ebenezer Augustine, Donghai Bao, Yogesh Kandaswamy Dheenadayalu, Ramesh Chandra Gummadi, Kavitha Muthusamy Gurusamy, Kalyan Kumar Koppineedi, Chuan-Der Ma, Manoj P. Mohandas, Xiaojue Pan, Madhavi Samudrala, Dasika Sashidhar, David Sathiaraj, Nitin Verma, Shufang Yu.

## Computer Update

All instructors in the department had their computers upgraded to state-of-the-art PCs. The PCs are being configured and installed and will be ready by early July.

The departmental backbone network, currently running at 10 Mbps, will be upgraded in the early part of the new fiscal year, which starts on July 1, 2001. We are currently in the estimation phase,

but an order to upgrade will be placed very soon. The new network will have Gigabit switches and 100Mbps to the end-user. Our uplink will be 1 Gigabit to the campus backbone. In a related issue, all the IP numbers in our subnets have been changed recently, and we are now one independent subnet in Coates hall. This should help eliminate unnecessary traffic from other building subnets, and make systems management easier.

Finally, the microcomputer lab in 168 Coates will have its first upgrade since 1996! The money (\$36,000) from a Technology Fee proposal that was funded earlier this year will be used to upgrade all 20 machines, server and network switch.

New Departmental Web Site: We now have a newly redesigned web page at <http://www.csc.lsu.edu>. Please let the webmaster ([web@bit.csc.lsu.edu](mailto:web@bit.csc.lsu.edu)) know if you find errors, or encounter problems with the page. You may also send your comments about it to the same address.

(by Khalaf)

## Research Publications

R. Kannan and S. Ray, "A Fair and Efficient Multicast Switch based on Deflection Routing," to appear in *IEICE Transactions on Communications*.

R. Kannan and S. Ray, "Sorting Networks with Applications to Hierarchical Optical Interconnects," to appear in *Intl. Conf. on Parallel Processing (ICPP'01)*, Valencia, Spain, Oct. 2001.

R. Kannan and S. Ray, "An  $O(N \log N)$  Fair Multicast Packet Switch with Low Memory Requirements in *Intl. Conf. on Computers and Communication Networks (ICCCN 2000)*, Las Vegas, Oct. 2000.

R. Kannan and S. Ray, "A New Deflection Routed Multicast ATM Network," in *Intl. Symposium on Computers and Communication (ISCC 2000)*, Antibes, France, July 2000.

R. Kannan and S. Ray, "Local Area Networks based on Photonic Slot Switching," in *Advanced Computing and Communications Conference (ADCOM'00)*, Cochin, India, Dec. 2000.

- Zhi Chen, S. S. Iyengar, Sumeet Dua, “An Approach to solve Global optimization problems for continuous functions,” To appear in *Journal of Applied Systems*.
- J. M. Zachary and S. S. Iyengar, “Information Theory and Content Based Image Retrieval: A General Approach,” To appear in *Journal of American Society of Information Science (JASIS)*.
- Qishi Wu, S. S. Iyengar and M. Zhu “Web Image Retrieval using Self-Organizing Feature Map,” To appear in *Journal of American Society of Information Science (JASIS)*.
- Hairong Qi, S. S. Iyengar and K. Chakrabarty, “Distributed Multi-Resolution Data Integration Using Mobile Agents,” in *Proceedings of IEEE Aerospace Conference*, March 2001.
- K. Chakrabarty, S. S. Iyengar, Hairong Qi and E. C. Cho, “Coding Theory Framework for Target Locations in Distributed Sensor Networks,” in *Proceedings of International Symposium on Information Technology: Coding and Computing*, Las Vegas, Nevada, April 2001.
- K. Chakrabarty and S. S. Iyengar. “Sensor Placement in Distributed Sensor Networks Using a Coding Theory Framework,” To appear in *Proceedings of 2001 IEEE International Symposium on Information Theory* to be held in Washington, D.C., June 24-29, 2001.
- K. Chakrabarty, Vishwanath, and S. S. Iyengar, “Dynamic I/O Power Management for Hard Real-Time Systems,” To appear in *proceedings of International Symposium on Hardware/Software Co-Design (CODES)*, April 2001.
- S. N. Sanchez, E. Triantaphyllou, J. Chen, W. Liao, “An incremental learning algorithm for constructing Boolean functions from positive and negative examples,” accepted by *Journal of Computers and Operations Research*.
- Nigel Gwee, “An NP-Complete Music Problem,” *Proceedings of the 39th Annual ACM Southeast Conference* (March 2001). 184-190.
- Miguel A Serrano, Doris L. Carver, and Carlos Montes de Oca, “A Toolkit to Integrate Standalone Object-Oriented Systems and Distributed Object Systems,” *Proceedings of the 2001 International Conference on Parallel and Distributed Processing Techniques and Applications*.
- Srinivasan, P., Kraft, D., and Chen, J., “Rough and Fuzzy Sets for Data Mining of a Controlled Vocabulary for Textual Retrieval,” in Crestani, F. and Pasi, G. (eds.), *Soft Computing in Information Retrieval: Techniques and Applications*, Heidelberg, Germany, Physica-Verlag, 2000
- Chen, J., Mikulcic, A., and Kraft, D. H., “An Integrated Approach to Information Retrieval with Fuzzy Clustering and Fuzzy Inferencing,” in Pons, O., Vila, M. A., and Kacprzyk, J. (eds.), *Knowledge Management in Fuzzy Databases*, Heidelberg, Germany: Physica-Verlag, 2000
- Srinivasan, P., Kraft, Ruiz, M., Kraft D. H., and Chen, J., “Vocabulary Mining for Information Retrieval: Rough Sets and Fuzzy Sets,” *Information Processing and Management*, v. 37, 2001, pp. 15-38
- Kraft, D. H. and Chen, J., “Integrating and Extending Fuzzy Clustering and Inferencing to Improve Text Retrieval Performance,” invited paper, Larsen, H. L., Kacprzyk, J., Zadrozny, S., Andreasen, T., and Christiansen, H. (eds.), *Flexible Query Answering Systems: Recent Advances*, *Proceedings of the Fourth International Conference on Flexible Query Answering Systems, FQAS'2000*, Warsaw, Poland, October 2000, *Advances in Soft Computing*, Heidelberg, Germany: Physica-Verlag
- Epstein, L., Noga, J., Seiden, S., Sgall, J., and Woeginger, G. “Randomized online scheduling on two uniform machines,” *Journal of Scheduling* 4, 2 (Mar 2001), 71–92.
- Seiden, S. “Can a computer proof be elegant?” *SIGACT News* 32, 1 (Mar 2001), 111–114.
- Seiden, S. “On the online bin packing problem,” *Proceedings of the 28th International Colloquium on Automata, Languages and Programming* (Jul 2001). To appear.
- Csirik, J., Imreh, C., Noga, J., Seiden, S., and Woeginger, G. “Buying a constant competitive ra-

tio for paging,” *Proceedings of the 9th Annual European Symposium on Algorithms* (Aug 2001). To appear.

Seiden, S. “A general decomposition theorem for the  $k$ -server problem,” *Proceedings of the 9th Annual European Symposium on Algorithms* (Aug 2001). To appear.

## Professional Activities

Professor S. S. Iyengar was an invited speaker at the 2000 International Symposium on Multimedia Software Engineering, Taipei, Taiwan, Dec. 11-13, as well as at INTERCON 2000 at the 7th International Conference on Electronics, Electrical and Systems Engineering on Dominant Technologies of the New Millennium in Lima, Peru, August 15-18, 2000.

Professor S. S. Iyengar was program chairman of the Advanced Computing and Communication (ADCOM) Conference, 2001, Bhuvaneshwar, India.

Professor S. S. Iyengar is a technical advisor of Manipal International Institute of Information Technology, Bangalore.

Professor S. S. Iyengar is a member of the Distinguished SIAM Visiting Lecturer Program (2000-02).

Professor Jianhua Chen served as a panelist on an NSF proposal evaluation panel in March of 2001.

Professor Doris Carver is serving as a member of the Executive Committee of the IEEE.

Professor Doris Carver was an invited participant and the NSF/DARPA Workshop on Software Design and Productivity, held in Washington, DC.

Professor Doris Carver is serving as the Vice Chair for the IEEE Computer Society Fellows Committee.

## Grants and Contracts

Chen, P. P., “CIPIA Fellows in Cyberforensics,” \$416,844, AFOSR, May 1, 2001 - April 30 2002.

R. Kannan, S. S. Iyengar, “Next Generation Internet Routing Laboratory,” Chancellors Student technology Fee Fund, \$105,000, 2001-2002.

E. Khalaf, S. S. Iyengar, “Upgrading the Micro-computer Laboratory,” LSU Technology Fee Grant, \$36,000, 2001-2002.

J. Chen (Co-PI), “Online fabric sourcing database with data mining and intelligent search,” Louisiana Board of Regents, \$119,152. (June 2001 - June 2004).

R. Kannan, S. S. Iyengar and S. Sarangi, “Dynamic Topologies for Reliable Query Reporting in Sensor Networks,” DARPA-SenseIT Program, \$50,000 (June 1-October 1, 2001)

Seiden, S. “An investigation of algorithms for scheduling Cplant super-computers. Sandia National Laboratory,” \$27,611. (June-July 2001).

R. Kannan, \$5,000, LSU Summer Research Grant, Office of Vice Chancellor for Research, June 2001.

R. Kannan and S. S. Iyengar, “Scalable Multicast Protocol Aware Switch Architectures,” \$56,000, Louisiana Educational Quality Support Fund (LEQSF), September 2001–August 2003.

## Seminars

Dr. Alaa Sheta (King Fahd University of Petroleum and Minerals). “Evolutionary Algorithms: Introduction and Possible Applications,” Friday, January 26th.

Dr. Bill Buckles (Tulane University). “Evolutionary Computation and Image Processing,” Friday, February 2nd.

Dr. Jeff Vitter (Duke University) “External Memory Algorithms: Dealing with Massive data,” Friday, February 23rd.

Dr. Louise Perkins (University of Southern Mississippi). “Spectrally Accurate Explicit Finite Difference Approximations,” Friday, March 2nd.

Dr. Guoqing Chen (Tsinghua University). “Soft Computing and Knowledge Discovery: fuzzy logic in association rules mining,” Monday, March 19th.

Dr. John Hopcroft (Cornell University). “The Past and Future of Theoretical Computer Science,” Friday, March 23rd.

Dr. Chuck Weisbin (JPL and Cal Tech). “Surface Systems R&D in NASA’s Planetary Exploration Program,” Friday, April 20th.

## Further Information

The Computer Science Newsletter serves as a guide to activities in the department and other functions on and off campus. The Computer Science Newsletter is published by the Department of Computer Science, Louisiana State University (Baton Rouge).

Items to be included in the newsletter should be submitted to Steve Seiden in 283 Coates ([seiden@bit.csc.lsu.edu](mailto:seiden@bit.csc.lsu.edu)).

Previous issues of the newsletter can be found on the departmental home page at

<http://www.csc.lsu.edu/newsletter/>