

# COMPUTER SCIENCE NEWSLETTER

## *Louisiana State University, Baton Rouge*

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Charles E. Coates Hall



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Welcome to the Department of Computer Science at Louisiana State University (LSU), Baton Rouge. The purpose of this newsletter is to convey to our colleagues in academia and industry the highlights of our recent progresses in research and education programs, faculty hiring, and student and faculty achievements. The department has continued to make significant strides in research funding. The department is making a vigorous search process for faculty jointly with the Center of Computation and Technology (CCT) to enlarge our research impact areas that are important to the future success of high visibility across the country. Moreover, our new faculty will be able to teach important courses in networking, cyber security, computer graphics and scientific visualization. The sponsored research and increased faculty size will enhance the department's competitiveness and visibility in the critical research areas of scientific computing, visualization, sensor networks and cyber-security. Several distinguished faculty members and computer scientists from various institutions across the country visited our department. Thanks for taking the time to read this newsletter.

**S. S. Iyengar, Department Chair**



### **NEW FACULTY MEMBER**

Dr. Evangelos Triantaphyllou has recently joined the Department of Computer Science as a Professor. Dr. Triantaphyllou did his graduate studies at Penn State University from 1984 to 1990. While at Penn State, he earned a Dual M.S. degree in Environment and Operations Research (OR), an M.S. degree in Computer Science and a Dual Ph.D. degree in Industrial Engineering and Operations Research. Since the spring of 2005 he is a Professor in Computer Science at LSU after he has served for 11 years as an Assistant, Associate, and Full Professor in the Industrial Engineering Department at the same university. He has also served for one year as an Interim Associate Dean for the College of Engineering at LSU.

Dr. Triantaphyllou's research is focused on data mining and knowledge discovery, decision-making theory and applications, and the interface of operations research and computer science. Since the years he was a graduate student, he has developed new methods for data mining and knowledge discovery and



*Dr. E. Triantaphyllou*

also has explored some of the most fundamental and intriguing subjects in decision making. In 1999 he has received the prestigious IIE (Institute of Industrial Engineers), OR Division, Research Award for his research contributions in the above fields. Some of his graduate students have also received awards and distinctions including the Best Dissertation Award at LSU for Science, Engineering and Technology for the year 2003. In 2000 Dr. Triantaphyllou published a bestseller book on multi-criteria decision-making. Also, for 2005 he is scheduled to publish a monograph on data mining and knowledge discovery, besides co-editing a book on the same subject. He always enjoys sharing the results of his research with his students and is also getting them actively involved in his research activities. He has received teaching awards and distinctions. His research has been funded by federal and state agencies, and the private sector. He has extensively published in some of the top refereed journals and made numerous presentations in national and international conferences. Dr. Triantaphyllou has a strong inter-disciplinary background. He has always enjoyed organizing multi-disciplinary teams of researchers and practitioners with complementary expertise. These groups try to comprehensively attack some of the most urgent problems in the sciences and engineering. He is a strong believer of the premise that the next round of major scientific and engineering discoveries will come from the work of such inter-disciplinary groups. More details of his work can be found in his web site (<http://www.csc.lsu.edu/trianta/>).

There is search going on for one or more positions in Grid Computing. These positions are jointly between the Department of Computer Science (CS) and the Center for Computation and Technology (CCT).

**DID YOU KNOW?**

- ❖ Dr. D. Carver has been appointed as the member of Technical Achievement Award and Planning Committees of IEEE Computer Society.

- ❖ Dr. J. Chen is receiving the College of Basic Sciences Graduate Teaching Award on March 14, 2005.

- ❖ Dr. P. Chen is the recipient of LSU Distinguished Faculty Award and will receive the award on May 10, 2005.



*Dr. J. Chen*

- ❖ Dr. A. Durrezi has been appointed as the Area Editor for Ad-Hoc Networks Journal (Elsevier) since November 2004.

- ❖ Dr. A. Durrezi is severing as the co-chair of the “First International Workshop on Heterogeneous Wireless Sensor Networks” (HWISE 2005) and the program area chair for “Security in Ad hoc and Sensor Networks” (AINA 2005); and the program vice-chair of “The 2005 International Conference on Embedded Software and System,” (ICESS-05).



*Dr. P. Chen*

- ❖ Dr. S. S. Iyengar was one of the speakers in the distinguished lecture series at the University of Florida, Gainesville on February 18, 2005. He also gave a lecture at Information technology Laboratory, NIST, on March 4, 2005.

- ❖ Dr. Rajgopal Kannan is serving as the co-chair of the WirelessCom 2005 “Symposium on wireless sensor networks”.

- ❖ Dr. Anitra Wilson has received the Outstanding Faculty of the Year Award in Department of Electrical Engineering, Southern University (2004-2005).



*Dr. A. Wilson*

- ❖ The Computer Science was awarded 2nd place in the Bulletin Board category in the annual decoration contest organized by Holiday Decoration Committee in December, 2004. Several campus departments and offices competed in three categories: door decoration, office entrance and bulletin board in the contest.

**FUNDING**

- NSF ITR grant on “Virtual laboratory for Earth and planetary materials studies,” \$100,000; 10/01/2004-08/31/2008: B.B. Karki is the PI. The lead institution is the University of Minnesota and the total award amount is \$2.8 millions.

- NASA Cooperative Grant on “Scalable algorithms for high-end parallel and distributed computing,” \$80,000; 02/01/2005-01/31/2006; B. B. Karki is the PI.
- Louisiana NSF EPSCoR grant on “Scalable broadcast protocol for wireless sensor and actor networks,” \$12,000; 2005-2006: A. Durrezi is the PI.
- ExxonMobil grant to LSU in the amount of \$84,000 for 2004 academic year. This fund was distributed between different departments including computer science.

## CONGRATULATIONS!

### Ph.D. Degree Awardees

Sheena Rochelle Judson, “Pattern-Based Model Transformation: A Metamodel-based Approach to Model Evolution”, Major Professor: D. Carver, Fall 2004.

### M.S. Degree Awardees

Druva Vikas Chadalavada, Steven Todd Chance, Chirag Narahari Dekate, Vishnu D. Dutta, Rahul Jonna, Narasimhan Kannan, Sridhar Venkata Kondapalli, Archit Kulshrestha, Ranjani Narayanan, Soumya Pingili, Vikram Anil Rao, Naga Vinay Reddy Sathi, Sandeep Baswaraj Sindol, and Sangeeta Singh

### B.Sc. Degrees Awardees

Ussamah Ahmed (Honors), Cleta Ann Bujol, Lanyelle A. Burgos, Matthew David Camp (Honors), Kevin Scott Campbell, Diana Hsiu-Fong Chi, James Edward Duvic, Thomas Ray Fontenot, Farid Harhad(Honors), Damir Hasic, Bradley David Hernandez, Justin Lee Jensen, Syed Muasir Khalil, Anuradha Maha(Honors), Adam Wright Meyer(Honors), Christopher Russell Meyer, Nikolaos Michailidis (Honors), Monique Catherine Ory(Honors), Othmane Rahmouni(Honors), Justin Boyd Sonner, Javier Fernandez Sosa, Prakhar Srivastava, Duy Anh Huynh Truong, Stephanie Lynn Wages, and Sean Paul Young

## CURRICULUM NEWS

The following is the list of course additions/changes for the Spring 2005 Schedule:

CSc 4402: Database Systems Management, Dr. Kundu  
 CSc 4890: Theory of Computation, Dr. Triantaphyllou  
 CSc 4999: Programming Embedded Interfaces, Dr. Ullmer  
 CSc 4351: Compiler Construction, Dr. Baumgartner.

The Computer Science Ph.D. Written General Examination will be given this spring starting March 14, 2005. Prof. John Tyler is the coordinator. The schedule for the general exam is:

Area 1: Operating Systems and Computer Architectures, Monday March 14, 2005.

Area 2: Algorithms, Data Structures, and Theory of Computation, Wednesday March 16, 2005.

Area 3: Programming Languages and Compiler Design, Friday March 18, 2005.

Area 4: High Performance Computing, Monday March 28, 2005.

Area 5-10: All Remaining Areas, Wednesday March 30, 2005.

## EVENTS AND SEMINARS

The CS department jointly with CCT hosted several lectures including the IT Eminent lecture by Dr. William A. Wulf, President of National Academy of Engineering, September 7, 2004 and IT Eminent lecture by Dr. David Sincoskie, Vice President of Telcordia, Member of



*Dr. D. Sincoskie (second from the left) with Dr. P. Chen (on the left), Dr. S.S. Iyengar (third from the left) and Dr. E. Triantaphyllou (on the right)*

National Academy of Engineering, January 28, 2005, and special guest lecture by Dr. M. Parashar, The State University of New Jersey, February 24, 2005.

Several CS faculty members (Allen, Baumgartner, Kannan, Karki and Park) served the organizing committee for the Mardi Gras Conference "Frontiers of grid applications and technology" at LSU, February 3-5, 2005.

Dr. Durresi was invited as a panelist at "QoS for sensor networks" at the First International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks - QShine2004, Dallas, Texas, October 20, 2004. He also organized and chaired a special Session on "Wireless Sensor Networks" at BroadNets 2004, San Jose, California, October 25-29, 2004. Dr. Durresi also gave an invited talk entitled "Research on Heterogeneous Wireless Sensor Networks" Presented at Broadband & Wireless Networking Lab at Georgia Tech, Atlanta, Georgia, October 7, 2004.

Dr. D. Carver is serving the program committee for the Model Driven Engineering Languages and Systems Educators' Symposium (MoDELS 2005).

Dr. D. Kraft is serving the program committee for the 2005 IEEE/WIC/ACM International Joint Conference on Web Intelligence and Intelligent Agent Technology (WI-IAT 2005).

Dr. D. Kraft is attending the IPSI BgD multidisciplinary, interdisciplinary, and transdisciplinary conferences (IPSI-2005 USA and IPSI-2005 Italy).

Dr. Karki was invited to give a talk entitled "A visualization approach to understanding minerals properties" in the AGU Fall Meeting (December 13-18, 2004).

Farid Harhad won a second-place award in the poster competition for mathematics/computer science in the LAMP conference (October 29-31, 2004).

## RESEARCH PUBLICATIONS

Baumgartner, G., A. Auer, D.E. Bernholdt, A. Bibireata, V. Choppella, D. Cociorva, X. Gao, R.J. Harrison, S. Krishnamoorthy, S. Krishnan, C. Lam, Q. Lu, M. Nooijen, R.M. Pitzer, J. Ramanujam, P. Sadayappan, A. Sibiryakov, A., "Synthesis of High-Performance Parallel Programs for

a Class of Ab Initio Quantum Chemistry Models," *Proceedings of the IEEE*, Vol. 93, February 2005, pp. 276-292.

Chakravarti, A.J., G. Baumgartner, M. Lauria, "Application-Specific Scheduling for the Organic Grid." In *Proceedings of the 5th IEEE/ACM International Workshop on Grid Computing (Grid '04)*, Pittsburgh, Pennsylvania, November 8, 2004, pp. 146-155.

Denemark J., A. Kulshrestha and G. Allen, "Deploying Legacy Applications on Grids," In *Proceedings of 13<sup>th</sup> Annual Mardi Gras Conference: Frontiers of Grid Applications and Technologies*, Baton Rouge, Louisiana February 3-5, (2005), pp. 29.

Ding, W., S.S. Iyengar, R. Kannan, W. Rummmler, "Energy Equivalence Routing in Wireless Sensor Networks," *Journal of Microcomputers and Applications: Special issue on Wireless Sensor Networks*, October 2004.

Durresi, A. and R. Jain, "RTP, RTCP and RTSP for Real Time Applications," chapter in *The Industrial Information Technology Handbook*, edited by Richard Zurawski, Published by CRC Press, ISBN: 0849330777, February 2005

Durresi, A., V. Paruchuri, L. Barolli, R. Kannan, S.S Iyengar, "Anonymous Communication Protocol for Sensor Networks," to appear in *International Journal of Wireless and Mobile Computing (IJWMC)*, 2005.

Durresi, A., V. Paruchuri, R. Kannan, S.S. Iyengar, "A Lightweight Protocol for Data Integrity in Sensor Networks", in *Proceedings of International Conference on Intelligent Sensors, Sensor Networks and Information Processing ISSNIP*, Melbourne, Australia, December 14-17, 2004.

Hoss, A. and D. Carver, "Improving Design Quality by Integrating Multiple Design Views," in *Proceedings of 9<sup>th</sup> World Multiconference on Systemics, Cybernetics and Informatics*, 2005.

Kalidindi, R., V. Parachuri, S. Basavaraju, C. Mallanda, A. Kulshrestha, L. Ray, R. Kannan, A. Durresi, and S. Iyengar, "Sub-Grid Based Key Vector Assignment: A Key Pre-Distribution Scheme For Distributed Sensor Networks," in *Proceedings of International Conference on Wireless Networks ICWN 04*, pp.440-446.

Karki, B. B. and R. Chennamsetty, "A visualization system for mineral elasticity," *Visual Geosciences*, Springer – Verlag, November 2004, ISSN: 1610-2924.

Kannan, R. "The KR-Benes Network: A Control-Optimal Rearrangeable Permutation Network," accepted for publication in *IEEE Transactions on Computers*.

Khanduja, G. and B.B. Karki, "Visualization of 3D scientific datasets based on interactive clipping," *WSCG SHORT Paper*, 2005; ISBN 80-903100-9-5.

Koyama, A., L. Barolli, G. Capi, B. O. Aduhan, J. Arai, A. Durresi, "An Efficient Multi-purpose optimization method for QoS Routing Using Genetic Algorithm," *Journal of Interconnection Networks (JOIN)*, Vol. 5, No. 4 (2004), pp. 409-428.

Krishnamoorthy, S., G. Baumgartner, C. Lam, J. Nieplocha, P. Sadayappan, "Layout Transformation Support for the Disk Resident Arrays Framework," in *Proceedings of the Los Alamos Computer Science Initiative Symposium*, Santa Fe, New Mexico. October 12-14, 2004.

Krishnamoorthy, S., G. Baumgartner, C. Lam, J. Nieplocha, P. Sadayappan, "Efficient Layout Transformation Support for Disk-based Multidimensional Arrays." In *Proceedings of the 11th Annual International Conference on High-Performance Computing (HiPC '04)*, Bangalore, India, December 19-22, 2004.

Lei, Z., S. Lui, R. Dooley and G. Allen, "Enabling GRAM Applications Using GAT: A GAT Resource Broker Adaptor," In *Proceedings of 13<sup>th</sup> Annual Mardi Gras Conference: Frontiers of Grid Applications and Technologies*, Baton Rouge, Louisiana February 3-5, (2005), pp. 66.

Lu, Q., X. Gao, S. Krishnamoorthy, G. Baumgartner, J. Ramanujam, P. Sadayappan, "Empirical Performance-Model Driven Data Layout Optimization," in *Rudolf Eigenmann, Zhiyuan Li, Sam Midkiff (eds.): Languages and Compilers for Parallel Computing*, West Lafayette, Indiana, September 22-25, 2004.

Mallanda, C., A. Kulshrestha, Rajgopal Kannan, Arjan Durresi, S.S. Iyengar, "EBRP: Energy Band based Routing Protocol for Wireless Sensor Networks", in *Proceedings of International Conference on Intelligent Sensors, Sensor Networks and Information Processing ISSNIP*, Melbourne, Australia, December 14-17, 2004

Mallanda, C, S. Basavaraju, A. Kulshrestha, R. Kannan, A. Durresi and S. S. Iyengar "Secure Cluster Based Energy Aware Routing for Wireless Sensor Networks," in *Proceedings of International Conference on Wireless Nertworks ICWN 04*, pp. 461-466.

Paruchuri, V., S. Basavaraju, A. Durresi and R. Kannan "Random Asynchronous Wakeup Protocol for Sensor Networks" in *Proceedings of BroadNets 2004*, San Jose, CA, October 25-29, 2004, pp.710-717.

Zhang, S. L. Ray, R. Kannan, and H. Jiang, "Weighted Integrity Problem is Polynomial for Interval Graphs," *Ars Combinatoria*, October 2004.

### Further Information

The Computer Science Newsletter serves as a guide to activities in the department and other functions on and off campus. The 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 Bijaya B. Karki in 283 Coates ([karki@bit.csc.lsu.edu](mailto:karki@bit.csc.lsu.edu)). Previous issues of the Newsletter can be found on the departmental homepage at <http://www.csc.lsu.edu/newsletter>.