

## S. LENNART JOHANSSON

### Publications

April 2007

### Journal publications

“A Service-Oriented Approach to Enforce Grid Resource Allocations”, T. Sandholm, P. Gardfjall, E. Elmroth, O. Mulmo, and Lennart Johansson, *International Journal of Cooperative Information Systems*, vol. 15, No. 3, pp. , September, 2006.

“New Grid Scheduling and Rescheduling Methods in the GrADS Project”, F. Berman, H. Casanova, A. Chien, K. Cooper, H. Dail, A. Dasgupta, W. Deng, J. Dongarra, L. Johansson, K. Kennedy, C. Koelbel, B. Liu, X. Liu, A. Mandal, G. Marin, M. Mazina, J. Mellor-Crummey, C. Mendes, A. Olugbile, M. Patel, D. Reed, Z. Shi, O. Sievert, H. Xia, A. YarKhan, *International Journal of Parallel Programming*, vol. 33, no 2-3, pp. 209-229, 2005.

“CODELAB: A developers’ Tool for Code Generation and Optimization”, D. Mirkovic and L. Johansson, *Lecture Notes in Computer Science*, Vol 2660, pp. 729-738, 2003.

“The GrADS Project: Software Support for High-Level Grid Application Development”, (with F. Berman, A. Chien, K. Cooper, J. Dongarra, I. Foster, D. Gannon, K. Kennedy, C. Kesselman, J. Mellor-Crummey, D. Reed, L. Torczon and R. Wolski), *Journal on Supercomputer Applications and High-Performance Computing*, vol. 15, no. 4, pp 327 – 344, 2001.

“Telescoping Languages: A Strategy for Automatic Generation of Scientific Problem–Solving Systems from Annotated Libraries”, (with K. Kennedy, B. Broom, K. Cooper, J. Dongarra, R. Fowler, D. Gannon, J. Mellor-Crummey and L. Torczon), in *Journal of Parallel and Distributed Computing*, Vol. 61, No. 12, pp 1802 – 1826, 2001.

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“Large Scale Data Repository: Design of a Molecular Dynamics Trajectory Database”, with Michael Feig, Matin Abdullah, and Montgomery Pettitt, in *Future Generation Computer Systems*, Elsevier, North-Holland, Vol. 16, No. 1, pp. 101 – 110, 1999.

“Local Basic Linear Algebra Subroutines (LBLAS) for the CM–5/5E”, (with David Kramer and Yu Hu), in the *International Journal of Supercomputer Applications*, Vol. 10, No. 4, pp. 300 – 335, 1996.

“A Data Parallel Implementation of Hierarchical  $N$ -body Methods”, (with Yu Hu), in the *International Journal of Supercomputer Applications*, Vol. 10, No. 1, pp. 3 – 40, 1996.

“Implementing  $O(N)$   $N$ -body algorithms efficiently in data parallel languages”, (with Yu Hu), in the *Journal of Scientific Programming*, Vol. 5, No. 4, pp. 337 – 364, 1996.

“All-to-All Communication on the Connection Machine system CM–200”, (with Kapil K. Mathur), the *Journal of Scientific Programming*, Vol. 4, No. 4, pp. 251 – 273, 1995.

“On the Conversion between Binary Code and Binary Reflected Gray Code”, (with Ching-Tien Ho), in *IEEE Transactions on Computers*, Vol. 44, No. 1, pp. 47 – 53, January 1995.

“Index Transformation Algorithms in a Linear Algebra Framework”, (with Alan Edelman and Steve Heller), in *Transactions on Parallel and Distributed Systems*, Vol. 5, No. 12, pp. 1302 – 1309, 1994.

“Scalability of Finite Element Applications on Distributed–Memory Parallel Computers”, (with Zdenek Johan and Kapil K. Mathur and S. Lennart Johnsson and Thomas J.R. Hughes), in *Computer Methods in Applied Mechanics and Engineering*, Vol. 119, Nos. 1 –2, pp. 61 – 72, November 1994.

“Issues in High Performance Computer Networks”, in *IEEE Technical Committee on Computer Architecture Newsletter*, Summer – Fall 1994, pp. 14 – 19.

“Optimal Communication Channel Utilization for Matrix Transposition and Related Permutations on Boolean Cubes”, (with Ching–Tien Ho) in the *Journal of Discrete Applied Mathematics*, Vol. 53, pp. 251 – 274, September 1994.

“Multiplication of Matrices of Arbitrary Shape on a Data Parallel Computer”, (with Kapil K. Mathur), in *Journal of Parallel Computing*, Vol. 20, No. 7, pp. 919 - 951, July, 1994.

“An Efficient Communication Strategy for Finite Element Methods on the Connection Machine CM–5 System”, (with Zdenek Johan, Kapil K Mathur, and Thomas J.R. Hughes), in *Computer Methods in Applied Mechanics and Engineering*, vol. 113, pages 363 – 387, 1994.

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“Block Cyclic Dense Linear Algebra”, (with Woody Lichtenstein), *SIAM J. of Sci. Comp.*, Vol. 14, No. 6, pp. 1257 – 1286, 1993.

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“Generalized Shuffle Permutations on Boolean Cubes”, (with Ching–Tien Ho), *Journal of Parallel and Distributed Computing*, Vol. 16, No. 1, pp. 1 – 14, 1992.

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“Performance Modeling of Distributed Memory Architectures”, *Journal of Distributed and Parallel Computing*, Vol. 12, No. 4, pp. 300 – 312, 1991.

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“Histogram Computation on Distributed Memory Architectures” (with Dimitris C. Gerogiannis and Stelios C. Orphanoudakis), *Journal on Concurrency: Practice and Experience*, Vol. 1, No. 2, pp. 219 – 237, December 1989.

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### Refereed conference papers and book chapters

“Scheduling FFT Computation on SMP and Multi-core Systems”, Ayaz Ali, Lennart Johnsson, Dragan Mirkovic, 21<sup>st</sup> International Conference on Supercomputing, June 16 – 20, 2007, Seattle, WA.

“Developing Assays for the Detection of Influenza in Human Samples”, Chen Feng, Catherine Putonti, Michael Quance, Stephen Huff, Andrey Belokrylov, Lennart Johnsson, Krishna Jayaraman, Michael Hogan, and Yuriy Fofanov, The 2007 International Conference on Bioinformatics and Computational Biology (BIOCOMP'07), June 25-28, 2007, Las Vegas, NV.

“Empirical Auto-tuning Code Generator for FFT and Trigonometric Transforms”, Ayaz Ali, Lennart Johnsson and Dragan Mirkovic, 5<sup>th</sup> Workshop on Optimizations for DSP and Embedded Systems, 2007 International Symposium on Code Generation and Optimization, March 11 – 14, 2007, San Jose, CA.

“Two Challenges in Genomics That Can Benefit From Peta-Scale Platforms”, M. Zhang, C.Putonti, Y. Fofanov and L. Johnson, Europar, August 29 – September 1, 2006, Dresden, Germany. To appear, Springer Verlag, Lecture Notes in Computer Science.

“Towards An On-Demand Restricted Delegation Mechanism for Grids”, M. Ahsant, J. Basney, O. Mulmo, A.J. Lee, L. Johnsson, Grid 2006, the 7<sup>th</sup> IEEE/ACM International Conference on Grid Computing, September 28 – 29, 2006, Barcelona, Spain.

“Scheduling Strategies for Mapping Application Workflows onto the Grid”. A. Mandal, K. Kennedy, C. Koelbel, G. Marin, B. Liu, L. Johnsson, and J. Mellor-Crummey, in 14th IEEE Symposium on High Performance Distributed Computing (HPDC 2005). IEEE Computer Society Press.

An OGSA-Based Accounting System for Allocation Enforcement across HPC Centers, Thomas Sandholm, Peter Gardfjäll, Erik Elmroth, Lennart Johnsson, Olle Mulmo, Second International Conference on Service Oriented Computing, pp. 279 – 288, November 15 – 18, 2004, New York,

“New Grid Scheduling and Rescheduling Methods in the GrADS Project”, K. Cooper, A. Dasgupta, K. Kennedy, C. Koelbel, A. Mandal, G. Marin, M. Mazina, J. Mellor-Crummey, F. Berman, H. Casanova, A. Chien, H. Dail, X. Liu, A. Olugbile, O. Sievert, H. Xia, L. Johnsson, B. Liu, M. Patel, D. Reed, W. Deng, C. Mendes, Z. Shi, A. YarKhan, J. Dongarra, NSF Next Generation Software Workshop, International Parallel and Distributed Processing Symposium, April 26 – 30, 2004, Santa Fe.

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“SimDB: A Problem Solving Environment for Molecular Dynamics Simulation and Analysis”, (with Matin Abdullah, Michael Feig, and Montgomery Pettitt) First European Grid Forum Workshop, pp. 321 – 329, in “Proceedings of ISThms 2000: Research and Development for the Information Society”, ISBN 83-913639-0-2, April 2000. (\*\*)

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“High Performance Fortran for Highly Irregular Problems”, (with Yu Hu and Shang-Hua Teng) Sixth ACM SIGPLAN Symposium on Principles and Practices of Parallel Programming, pp. 13 – 24, Las Vegas, Nevada, June 18 - 21, 1997.

“A Data Parallel Fortran Benchmark Suite”, (with Yu Hu, and Dimitris Kehagias and Nadia Shalaby) Proceedings of the 11th International Parallel Processing Symposium, pp. 219 – 226, Geneva, Switzerland, April 1 - 5, 1997.

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<sup>1</sup> Chosen for the 1986 ICPP Outstanding Paper Award

<sup>2</sup> Nominated for Outstanding Paper Award

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## Conference Exhibits and Live Demonstrations

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## Poster presentations

“SIMDB: A Problem Solving Environment for Molecular Dynamics Simulations”, NPACI Annual Review, San Diego, CA, January 28 – 29, 1999.

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