

Bibliography

- [ABB+92] E. Anderson, Z. Bai, C. Bischof, J. Demmel, J. Dongarra, J. Cruz, A. Geebaum, S. Hammarling, A. McKenney, S. Ostrouchov, and D. Sorensen. LAPACK User's Guide. SIAM, Philadelphia, 1992.
- [ACL+98] A. Adl-Tabatabai, M. Cierniak, G-Y. Lueh, V. Parikh, and J. Stichnoth. Fast, Effective Code Generation in a Just-In-Time Java Compiler. In *Proceedings of ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, Montreal, Canada, June 1998.
- [ACR+96] B. Ang, D. Chiou, L. Rudolph, and Arvind. Message Passing Support on Star-T Voyager. *CSG-Memo-387*, MIT Laboratory for Computer Science, July 1996.
- [ADM98] O. Agesen, D. Detlefs, and E. Moss. Garbage Collection and Local Variable Type-Precision and Liveness in Java Virtual Machines. In *Proceedings of ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, Montreal, Canada, June 1998.
- [AG97] K. Arnold and J. Gosling. The Java Programming Language. Addison-Wesley, 1997.
- [BAL+90] B. Bershad, T. Anderson, E. Lazowska, and H. Levy. Lightweight Remote Procedure Call. In *ACM Transactions on Computer Systems (TOCS)*, 8(1):37-55, February 1990.
- [BAL+92] B. Bershad, T. Anderson, E. Lazowska, and H. Levy. User-Level Interprocess Communication for Shared Memory Multiprocessors. In *ACM Transactions on Computer Systems (TOCS)*, 9(2):175-198, May 1991.

- [BCF95] N. Boden, D. Cohen, R. Felderman, A. Kulawik, C. Seitz, J. Seizovic, and W-K. Su. Myrinet: A Gigabit-per-second Local Area Network. *IEEE Micro*, vol.15, no.1, February 1995, pp29-36.
- [BDV+98] F. Breg, S. Diwan, J. Villacis, J. Balasubramanian, E. Akman, and D. Gannon. Java RMI Performance and Object Model Interoperability: Experiments with Java/HPC++ Distributed Components. In *ACM 1998 Workshop for Java for High-Performance Network Computing*, February 1998.
- [BEN+94] A. Birrell, D. Evers, G. Nelson, S. Owicki, and T. Wobber. Distributed Garbage Collection for Network Objects. *DEC Systems Research Center Technical Report*, 1994.
- [BF96] A. Bilas and E. Felten. Fast RPC on the SHRIMP Virtual Memory Mapped Network Interface. *Tech. Rep. TR-512-96*, Princeton University, 1996.
- [BGC98] P. Buonadonna, A. Geweke, and D. Culler. An Implementation and Analysis of the Virtual Interface Architecture. In *Proceedings of ACM/IEEE Supercomputing*, Orlando, FL, November 1998.
- [BJM+96] G. Buzzard, D. Jacobson, M. Mackey, S. Marovich, and J. Wilkes. An Implementation of the Hamlyn Sender-Managed Interface Architecture. In *Proceedings of the 2nd USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, October 1996, pp245-260.
- [BKM+98] D. Bacon, R. Konuru, C. Murthy, and M. Serrano. Thin Locks: Featherweight Synchronization in Java. In *Proceedings of ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, Montreal, Canada, June 1998.
- [BKT92] H. Bal, M. F. Kaashoek, and A. Tanenbaum. Orca: A Language for Parallel Programming of Distributed Systems. In *IEEE Trans. on Software Engineering*, 18(3):190-205, March 1992.
- [BN84] A. Birrell and B. Nelson. Implementing Remote Procedure Calls. *ACM Transactions on Computer Systems*, 4(1):39-59, February 1984.
- [Boe93] H-J. Boehm. Space-efficient conservative garbage collection. In *ACM SIGPLAN Conference on Programming Language Design and Implementation*, Albuquerque, NM, June 1993, pp197-206.
- [Buo99] Philip Buonadonna. Personal communication, September 1999.

- [BW88] H-J. Boehm and M. Weiser. Garbage collection in an uncooperative environment. *Software: Practice and Experience*, 18(9):807-820, 1988.
- [BZ93] D. Barrett and B. Zorn. Using lifetime predictors to improve memory allocation performance. In *Proceedings of ACM SIGPLAN Conference on Programming Languages Design and Implementation (PLDI)*, Albuquerque, NM, June 1993, pp187-196.
- [CCH+96] C-C. Chang, G. Czajkowski, C. Hawblitz, and T. von Eicken. Low Latency Communication on the IBM RISC System/6000 SP. In *Proceedings of ACM/IEEE Supercomputing*, Pittsburgh, PA, November 1996.
- [CCvE96] C-C. Chang, G. Czajkowski, and T. von Eicken. Design and Implementation of Active Messages on the IBM SP-2. *Cornell CS Technical Report 96-1572*, February 1996.
- [CCvE99] C-C. Chang, G. Czajkowski, and T. von Eicken. MRPC: A High Performance RPC System for MPMD Parallel Computing. *Software: Practice and Experience* (29)1:43-66, 1999.
- [Cd99] Central Data. <http://www.cd.com>.
- [CDG+93] D. Culler, A. Dusseau, S. Goldstein, A. Krishnamurthy, S. Lu-meta, T. von Eicken, and K. Yelick. Parallel Programming in Split-C. In *Proceedings of ACM/IEEE Supercomputing*, Portland, OR, November 1993.
- [CFK+99] B. Carpenter, G. Fox, S-H. Ko, and S. Lim. Object Serialization for Marshaling Data in a Java Interface to MPI. In *ACM SIGPLAN Java Grande Conference*, San Francisco, CA, June 1999.
- [CKL+94] D. Culler, K. Keeton, L. Liu, A. Mainwaring, R. Martin, S. Rodrigues, and K. Wright, Generic Active Messages Specification, white paper, November 1994.
- [CMC98] B. Chun, A. Mainwaring, and D. Culler. Virtual Network Transport Protocols for Myrinet. *IEEE Micro*, Vol. 18, No. 1, January 1998.
- [CT90] Clark, D., and Tennenhouse, D. Architectural Considerations for a New Generation of Protocols. In *Proc. of the SIGCOMM*, 1990, pp.200-208.

- [CvE98] C-C. Chang and T. von Eicken. A Software Architecture for Zero-Copy RPC in Java. *Cornell CS Technical Report 98-1708*, September 1998.
- [CvE99a] C-C. Chang and T. von Eicken. Interfacing Java to the Virtual Interface Architecture. In *Proceedings of ACM SIGPLAN Java Grande Conference*, San Francisco, CA, June 1999, pp51-57.
- [CvE99b] C-C. Chang and T. von Eicken. Java: A Java Interface to the Virtual Interface Architecture. *Concurrency: Practice and Experience*, to appear.
- [DBC+98] Dubnicki, C., A. Bilas, Y. Chen, S. Damianakis, and K. Li. Shrimp Project Update: Myrinet Communication. *IEEE Micro*, Vol. 18, No. 1, January 1998.
- [EFF+97] E. Eide, K. Frei, B. Ford, J. Lepreau, and G. Lindstrom. Flick: A Flexible, Optimizing IDL Compiler. In *Proc. of ACM Conference on Programming Language Design and Implementation (PLDI)*, Las Vegas, NV, 1997.
- [Fer98] A. Ferrari. JPVM: Network Parallel Computing in Java. In *ACM 1998 Workshop for Java for High-Performance Network Computing*, February 1998.
- [Fft99] Fastest Fourier Transform in the West. <http://www.fftw.org>
- [FKR+99] R. Fitzgerald, T. Knoblock, E. Ruf, B. Steensgard, and D. Tarditi. Marmot: An Optimizing Compiler for Java. *Microsoft Research Technical Report 99-33*, June 1999.
- [FKT96] I. Foster, C. Kesselman, and S. Tuecke. The Nexus Approach for Integrating Multithreading and Communication. *Journal of Parallel and Distributed Computing (JPDC)*, 37, 1996.
- [GA98] D. Gay and A. Aiken. Memory Management with Explicit Regions. In *Proceedings of ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, Montreal, Canada, June 1998.
- [GFH+98] V. Getov, S. Flynn-Hummel, and S. Mintchev, High-Performance Parallel Programming in Java: Exploiting Native Libraries. In *ACM 1998 Workshop on Java for High-Performance Network Computing*, Palo Alto, CA, February 1998.

- [Gig98] Giganet, Inc. <http://www.giganet.com>
- [GS97] A. Gokhale and D. Schmidt. Measuring the Performance of Communication Middleware on High-Speed Networks. *Computer Communication Review 26(4)*, October 1996.
- [GvL89] G. Golub and C. van Loan. Matrix Computations. *The John Hopkins University Press*, 2nd Edition, 1989.
- [GW96] A. Grimshaw, and W. Wulf. Legion -- A View From 50,000 Feet. In *Proceedings of the Fifth IEEE International Symposium on High Performance Distributed Computing*, Los Alamitos, California, August 1996.
- [Han90] D. Hanson. Fast allocation and de-allocation of memory based on object lifetimes. *Software: Practice and Experience*, 20(1):5-12, January 1990.
- [HH94] Hoshcka, P., and Huitema, C. Automatic Generation of Optimized Code for Marshaling Routines. In *Proc. of Int'l Working Conference on Upper Layer Protocols, Architectures, and Applications*, Barcelona, Spain, 1994.
- [HM93a] M. Homewood and M. McLaren. Meiko CS-2 Interconnect Elan-Elite Design. In Proceedings of Hot Interconnects, August 1993.
- [HM93b] A. Hosking and J. E. Moss. Protection Traps and Alternatives for Memory Management of an Object-Oriented Language. In *Proceedings of ACM Symposium on Operating Systems Principles*, Asheville, NC, December 1993.
- [Hue96] L. Huelsbergen. A Portable C Interface for Standard ML of New Jersey. *AT&T Bell Laboratories Technical Memorandum*, January 1996.
- [Int99] Intel® Math Kernel Library Performance Specification
<http://developer.intel.com/vtune/perflibst/mkl/mklperf.htm>
- [Jav99] Javasoft. The Source for Java Technology.
<http://www.javasoft.com>
- [JCS+99] G. Judd, M. Clement, and Q. Snell. Design Issues for Efficient Implementation of MPI in Java. In *ACM SIGPLAN Java Grande Conference*, San Francisco, CA, June 1999.

- [Jd97] J/Direct: Microsoft Technologies for Java.
<http://www.microsoft.com/java>.
- [Jg98] The Java Grande Consortium. <http://www.javagrande.org>
- [Jg99] Interim Java Grande Forum Report JGF-TR-4.
<http://www.javagrande.org/reports.htm>
- [Jos99] Javasoft. Java Object Serialization Specification.
<http://www.javasoft.com>
- [Jni97] Javasoft. Java Native Interface Specification.
<http://www.javasoft.com>.
- [JZ91] D. Johnson and W. Zwaenepoel. The Peregrine high performance RPC system. *Tech. Rep. COMPTR91-152*, Dept. of Computer Science, Rice University, 1991.
- [Kae86] T. Kaehler, Virtual Memory on a Narrow Machine for an Object-Oriented Language. In *Proceedings of the Conference on OOSPLA*, Portland, OR, September 1986.
- [Kaf97] Transvirtual Technologies. The Kaffe OpenVM.
<http://www.transvirtual.com>
- [KC95] V. Karamcheti, and A. Chien. Concert – Efficient Runtime Support for Concurrent Object-Oriented Programming Languages on Stock Hardware. In *Proceedings of ACM/IEEE Supercomputing*, Portland, OR, Nov 1993.
- [KOH+94] J. Kuskin, D. Ofelt, M. Heinrich, J. Heinlein, R. Simoni, K. Gharchorloo, J. Chapin, D. Nakahira, J. Baxter, M. Horowitz, A. Gupta, M. Rosenblum, and J. Hennessy. The Stanford FLASH Multiprocessor. In *Proceedings of the 21st Annual International Symposium on Computer Architecture*, Chicago, Illinois, April 1994.
- [KSS+96] Krishnamurthy, K. Schauser, C. Scheiman, R. Wang, D. Culler, and K. Yelick. Evaluation of Architectural Support for Global Address-Based Communication in Large-Scale Parallel Machines. In *Proceedings of the 7th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS-VII)*, Cambridge, MA, October 1996.
- [KWB+98] V. Krishnaswamy, D. Walther, S. Bhola, E. Bommaiah, G. Riley, B. Topol, and M. Ahamad. Efficient Implementations of Java

- RMI. In *4th USENIX Conference on Object-Oriented Technologies and Systems (COOTS)*, Santa Fe, NM, 1998.
- [LY97] T. Lindholm and F. Yellin. The Java Virtual Machine Specification. *Addision-Wesley*, 2nd Edition, September 1996.
- [MC95] A. Mainwaring and D. Culler. Active Messages Application Programming Interface and Communication Subsystem Organization. Draft technical report, 1995.
- [Mic98] Microsoft. Notice Regarding Java Lawsuit Rulling
<http://msdn.microsoft.com/visualj/statement.asp>
- [Mic99] Microsoft Technologies for Java.
<http://www.microsoft.com/java>
- [MMG98] J. Moreira, S. Midkiff, and M. Gupta. From Flop to MegaFlops: Java for Technical Computing. *IBM Research Report RC 21166* (94954), April 1998.
- [MNV+99] J. Maassen, R. Nieuwpoort, R. Veldema, H. Bal, and A. Plaat. An Efficient Implementation of Java's Remote Method Invocation. In *ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)*, July 1999.
- [Mos92] J. E. Moss. Working with Persistent Objects: to Swizzle or not to Unswizzle. *IEEE Transactions on Software Engineering*, 18(8):657-673, August 1992.
- [NMB+99] R. Nieuwpoort, J. Maassen, H. Bal, T. Kielmann, R. Veldema. Wide-Area Parallel Computing in Java. In *ACM SIGPLAN Java Grande Conference*, San Francisco, CA, June 1999, pp8-14.
- [NPH99] C. Nester, M. Philippson, and B. Haumacher. A More Efficient RMI for Java. In *ACM SIGPLAN Java Grande Conference*, San Francisco, CA, June 1999, pp152-159.
- [OPM94] O'Malley, S. Proebsting, T., and Montz, A. USC: A Universal Stub Compiler. In *Proceedings. of the SIGCOMM*, London, UK, 1994, pp.295-306.
- [OW97] M. Odersky and P. Wadler. Pizza into Java: translating theory into practice. In *Proceedings of the 24th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages (POPL)*, 1997, pp.146-159.

- [PLC95] S. Pakin, M. Lauria, and A. Chien. High Performance Messaging on Workstations: Illinois Fast Messages (FM) for Myrinet. In *Proceedings of Supercomputing '95*, San Diego, California, 1995.
- [RLW94] S. Reinhardt, J. Larus, and D. Wood. Typhoon and Tempest: User-Level Shared Memory. In *Proceedings of the 21st Annual International Symposium on Computer Architecture*, Chicago, Illinois, April 1994.
- [Rmi99] Java Remote Method Invocation. <http://java.sun.com>.
- [Ros67] D. Ross. The AED free storage package. *Communications of the ACM*, 10(8):481-492, August 1967.
- [SB90] M. Schroeder and M. Burrows. Performance of Firefly RPC. In *ACM Transactions on Computer Systems (TOCS)*, 8(1):1-17, February 1990.
- [SG98] B. Steengard and D. Gay. Stack Allocating Objects in Java. Microsoft Research Technical Report, October 1998.
- [SHA95] D. Schmidt, T. Harrison, and E. Al-Shaer. Object-Oriented Components for High-Speed Network Programming. In *Proc. of the First USENIX Conference on Object-Oriented Technologies and Systems*, Monterrey, CA, June 1995.
- [SPM99] H. Shah, C. Pu, R. Madukkarumukumana. High Performance Sockets and RPC over Virtual Interface (VI) Architecture. In *Proceedings of Workshop on Communication and Architectural Support for Network-based Parallel Computing (CANPC)*, 1999.
- [SS95] K. Schauser and C. Scheiman. Experience with Active Messages on the Meiko CS-2. In *Proceedings of the 9th International Parallel Processing Symposium (IPPS)*, Santa Barbara, CA, April 1995.
- [Sto97] D. Stoutamire. Portable, Modular Expression of Locality. *PhD thesis*, University of California, Berkeley, 1997.
- [Tar99] D. Tarditi. Personal communication. August 1999.
- [Ten81] R. Tennent. Principles of Programming Languages. *Prentice Hall*, 1981.
- [TvRS+91] A. Tanenbaum, R. van Renesse, H. van Staveren, G. Sharp, S. Mullender, J. Jansen, and G. van Rossum. Experiences with the

- Amoeba distributed operating system. *Comm of the ACM*, 33(12):46-63, Dec 1990.
- [vEBB+95] T. von Eicken, A. Basu, V. Buch, and W. Vogels. *U-Net: A User-level Network Interface for Parallel and Distributed Computing*. In Proceedings of the 15th Annual Symposium on Operating System Principles, Copper Mountain Resort, Colorado, Dec. 1995, pp40-53.
- [vECS+92] T. von Eicken, D. Culler, S. Goldstein, and K. Schauser. Active Messages: A Mechanism for Integrated Communication and Computation. In *Proceedings of the 19th International Symposium in Computer Architecture (ISCA)*, Gold Coast, Australia, May 1992.
- [Via97] The Virtual Interface Architecture. <http://www.via.org>
- [Vo96] K-P. Vo. Vmalloc: A General and Efficient Memory Allocator. *Software: Practice and Experience*, 26(3):357-374, March 1996.
- [WBvE97] M. Welsh, A. Basu, and T. von Eicken. Incorporating Memory Management into User-Level Network Interfaces. In *Proceedings of Hot Interconnects V*, Stanford, CA, August 1997.
- [WC99] M. Welsh and D. Culler. Jaguar: Enabling Efficient Communication and I/O in Java. *Concurrency: Practice and Experience*, to appear.
- [Wel99] M. Welsh. Tigris: A Cluster-Based I/O System. Submitted for publication, June 1999.
- [Wil92] P. Wilson. Uniprocessor Garbage Collection. In *Proceedings of Int'l Workshop on Memory Management*, St. Malo, France, September 1992. LNCS 637, Springer-Verlag.
- [WJN+95] P. Wilson, M. Johnstone, M. Neely, and D. Boles. Dynamic Storage Allocation: A Survey and Critical Review. In *Proceedings of Int'l Workshop on Memory Management*, Kinross, Scotland, September 1995. LNCS 986, Springer-Verlag.
- [WK92] P. Wilson and S. Kakkad. Pointer Swizzling at Page Fault Time: Efficiently and Compatibly Supporting Huge Address Spaces on Standard Hardware. In *Proceedings of 1992 Int'l Workshop on Object Orientation in Operating Systems (WOOS)*, Paris, France, September 1992, pp.364-377.

- [YSP+98] K. Yelick, L. Semenzato, G. Pike, C. Miyamoto, B. Liblit, A. Krishnamurthy, P. Hilfinger, S. Graham, D. Gay, P. Colella, and A. Aiken. Titanium: a High-Performance Java Dialect. In *ACM 1998 Workshop for Java for High-Performance Network Computing*, February 1998.