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Education

B.S. in Mathematics and Computer Science, University of Wisconsin-Madison, Aug. 1981.

Ph.D. in Applied Mathematics, University of Maryland, College Park, Aug. 1987.

Professional Experience

September 2002 - : Professor, Department of Computer Sciences, The University of Texas at Austin.

September 1992 - : Member, Texas Institute for Computational and Applied Mathematics, The University of Texas at Austin.

September 1994 - August 2002: Associate Professor, Department of Computer Sciences, The University of Texas at Austin.

September 1987 - August 1994: Assistant Professor, Department of Computer Sciences, The University of Texas at Austin.

Aug. 1990 - May 1991: Research Professor, Computer Science Department, University of Tennessee, Knoxville.

Awards and Honors

President's Associates Teaching Excellence Award (2008)

Faculty Fellowship #5 in Computer Sciences, (1995–2002)

Dean's Curriculum Development Award, Spring 1998.

IBM Predoctoral Fellowship, 1986-1987

Thesis Title

Implementing the QR-algorithm on an array of processors.

Thesis Advisor

Professor G. W. (Pete) Stewart, Department of Computer Science, University of Maryland.

Current Research Interests

Parallel Computing; Scientific Computing; Linear Algebra; High-Performance Computing; Software Architectures of Scientific Libraries; Mechanical Derivation of Libraries; Formal Derivation; Special Purpose Hardware for Matrix Operations; High-performance tensor computation

Massive Open Online Courses

1. Margaret Myers and Robert van de Geijn. *Linear Algebra: Foundations to Frontiers - Notes to LAFF With.* offered in Spring 2014 on the edX platform. This course drew 28,000 registrants and received excellent reviews. To be offered again in Spring 2015.

Publications

Many of the listed recent publications can be found on-line at

`http://www.cs.utexas.edu/users/flame/`

Alternatively, you may wish to visit Google Scholar.

Books

1. Margaret Myers, Pierce van de Geijn, and Robert van de Geijn. *Linear Algebra: Foundations to Frontiers - Notes to LAFF With.* 2014 (Self-published at `http://www.ulaff.net`).
   Notes for the Massive Open Online Course (MOOC) titled *Linear Algebra: Foundations to Frontiers* offered in Spring 2014 on the edX platform.

2. Robert A. van de Geijn and Enrique S. Quintana-Ortí. *Science of Programming Matrix Computations.* www.lulu.com, 2008.

3. Robert A. van de Geijn. *Using PLAPACK: Parallel Linear Algebra Package.* The MIT Press, 1997.

4. Robert A. van de Geijn (editor). *Programming Dense Matrix Libraries: The FLAME Collection from ACM TOMS.* ACM Press, in preparation.

Journal Articles

1. Field G. Van Zee, Robert A. van de Geijn. "BLIS: A Framework for Rapid Instantiation of BLAS Functionality." ACM Transactions on Mathematical Software. To appear.

2. Field G. Van Zee, Tyler Smith, Bryan Marker, Tze Meng Low, Robert A. van de Geijn, Francisco D. Igual, Mikhail Smelyanskiy, Xianyi Zhang, Michael Kistler, Vernon Austel, John Gunnels, Lee Killough. "The BLIS Framework: Experiments in Portability." ACM Transactions on Mathematical Software. In review.

3. Martin D. Schatz, Jack Poulson, Robert A. van de Geijn. "Parallel Matrix Multiplication: A Systematic Journey." ACM Transactions on Mathematical Software. In review.

4. Martin D. Schatz, Tze Meng Low, Robert A. van de Geijn, Tamara G. Kolda. "Exploiting Symmetry in Tensors for High Performance." SIAM Journal on Scientific Computing. To appear.

5. Ardavan Pedram, Andreas Gerstlauer, and Robert van de Geijn. "Algorithm, Architecture, and Floating-Point Unit Codesign of a Matrix Factorization Accelerator." IEEE Transactions on Computers, Special Section on Computer Arithmetic, August 2014.

6. Field G. Van Zee, Robert van de Geijn, and Gregorio Quintana-Ortí. "Restructuring the QR Algorithm for Performance." ACM Transactions on Mathematical Software (TOMS) 40 (3), 18, 2014.

7. Bryan Marker, Don Batory, and Robert van de Geijn. "A Case Study in Mechanically Deriving Dense Linear Algebra Code." The International Journal of High Performance Computing Applications Volume 27 Issue 4, November 2013

8. Jack Poulson, Bryan Marker, Robert A. van de Geijn, Jeff R. Hammond, Nichols A. Romero. "Elemental: A New Framework for Distributed Memory Dense Matrix Computations." ACM Transactions on Mathematical Software (TOMS) 39 (2), 13, 2013

9. Francisco D. Igual, Gregorio Quintana-Orti, and Robert van de Geijn. "Scheduling Algorithms-by-blocks on Small Clusters." Concurrency and Computation: Practice and Experience 25 (3), 367-384, 2013.

10. Paolo Bientinesi, John Gunnels, Maggie Myers, Enrique Quintana-Orti, Tyler Rhodes, Robert van de Geijn, and Field Van Zee.' "Deriving Linear Algebra Libraries." Formal Aspects of Computing 25 (6), 933-945, 2013.

11. Ardavan Pedram, Robert van de Geijn, and Andreas Gerstlauer. "Codesign Tradeoffs for High-Performance, Low-Power Linear Algebra Architectures." IEEE Transactions on Computers, Special Issue on Energy Efficient Computing, Volume 61, Issue 12, Page(s) 1724 1736, December 2012.

12. Bryan Marker, Ernie Chan, Jack Poulson, Robert van de Geijn, Rob F. Van der Wijngaart, Timothy G. Mattson, and Theodore E. Kubaska. "Programming Many-Core Architectures - A Case Study: Dense Matrix Computations on the Intel SCC Processor." Concurrency and Computation: Practice and Experience Volume 24, Issue 12, pages 1317-1333, 25 August 2012

13. Gregorio Quintana-Ort, Francisco D. Igual, Mercedes Marqus, Enrique S. Quintana-Ort, Robert A. van de Geijn. "A Runtime System for Programming Out-of-Core Matrix Algorithms-by-Tiles on Multithreaded Architectures." ACM Transactions on Mathematical Software (TOMS) 38 (4), 25, 2012.

14. Field G. Van Zee, Robert A. van de Geijn, Gregorio Quintana-Ort, G. Joseph Elizondo. "Families of Algorithms for Reducing a Matrix to Condensed Form." ACM Transactions on Mathematical Software (TOMS), 2012

15. B Marker, A Terrel, J Poulson, D Batory, R van de Geijn "Mechanizing the expert dense linear algebra developer." ACM SIGPLAN Notices 47 (8), 289-290, 2012.

16. Francisco D. Igual, Ernie Chan, Enrique S Quintana-Orti, Gregorio Quintana-Orti, Robert A van de Geijn, Field G van Zee "The FLAME Approach: From Dense Linear Algebra Algorithms to High-Performance Multi-Accelerator Implementations." Journal of Parallel and Distributed Computing 72 (9) 1134–1143, 2010.

17. Field G. Van Zee, Robert A. van de Geijn, Gregorio Quintana-Ort, G. Joseph Elizondo. "Families of algorithms for reducing a matrix to condensed form." ACM Transactions on Mathematical Software (TOMS) 39 (1), 2, 2012

18. Robert A. van de Geijn, Field G. Van Zee. "High-performance up-and-downdating via Householder-like transformations." ACM Transactions on Mathematical Software (TOMS) 38 (1), 4, 2011.

19. Mercedes Marques, Gregorio Quintana-Orti, Enrique S. Quintana-Orti, Robert van de Geijn. "Using desktop computers to solve large-scale dense linear algebra problems." The Journal of Supercomputing, Vol. 58, Issue 2, 2011.

20. Paolo Bientinesi, Robert A. van de Geijn. "Goal-Oriented and Modular Stability Analysis." SIAM Journal on Matrix Analysis and Applications , Volume 32 Issue 1, February 2011

21. Paolo Bientinesi, Victor Eijkhout, Kyungjoo Kim, Jason Kurtz, and Robert van de Geijn. "Sparse Direct Factorizations through Unassembled Hyper-Matrices." Computer Methods in Applied Mechanics and Engineering, 199, 430–438, 2010.

22. Gregorio Quintana-Orti, Enrique S. Quintana-Orti, Robert A. van de Geijn, Field G. Van Zee, Ernie Chan. "Programming matrix algorithms-by-blocks for thread-level parallelism." ACM Transactions on Mathematical Software (TOMS) 36 (3), 14, 2009

23. M. Castillo, F.D. Igual, M. Marqus, R. Mayo, E.S. Quintana-Ort, Gregorio Quintana-Ort, Rafael Rubio, Robert van de Geijn. "Out-of-core solution of linear systems on graphics processors." International Journal of Parallel, Emergent and Distributed Systems 24 (6) 512–538, 2009.

24. Field G. Van Zee, Ernie Chan, Robert A. van de Geijn, Enrique S. Quintana-Orti, Gregorio Quintana-Orti. "The libflame Library for Dense Matrix Computations." IEEE Computing in Science and Engineering, Vol. 11, No 6, November/December 2009

25. Y. Zhang, R.A. van de Geijn, M.C. Taylor, T.K. Sarkar. "Parallel MoM using higher-order basis functions and PLAPACK in-core and out-of-core solvers for challenging EM simulations." Antennas and Propagation Magazine, IEEE 51 (5), 42-60, 2009

26. Kazushige Goto, Robert van de Geijn. "High-performance implementation of the level-3 BLAS." ACM Transactions on Mathematical Software (TOMS), 2008

27. Paolo Bientinesi, Brian Gunter, and Robert van de Geijn. Families of Algorithms Related to the Inversion of a Symmetric Positive Definite Matrix *ACM Transactions on Mathematical Software*, 35(1) Article 3, 22 pages, 2008.

28. Kazushige Goto, Robert A. van de Geijn. "Anatomy of high-performance matrix multiplication." ACM Transactions on Mathematical Software (TOMS), 2008

29. Field G. Van Zee, Paolo Bientinesi, Tze Meng Low, Robert A. van de Geijn. "Scalable parallelization of FLAME code via the workqueuing model." ACM Transactions on Mathematical Software (TOMS), 2008.

30. Enrique Quintana-Orti and Robert van de Geijn. Updating an LU Factorization with Pivoting. *ACM Transactions on Mathematical Software.* 35(2) Article 11, 16 pages, 2008.

31. Kazushige Goto and Robert A. van de Geijn. Anatomy of a High-Performance Matrix Multiplication. *ACM Transactions on Mathematical Software.* 34(2) Article 12, 25 pages, 2008.

32. Field G. Van Zee, Paolo Bientinesi, Tze Meng Low, and Robert A. van de Geijn. Scalable Parallelization of FLAME Code via the Workqueuing Model. *ACM Transactions on Mathematica Software*, 34(2) Article 10, 29 pages, 2008.

33. Ernie Chan, Marcel Heimlich, Avijit Purkayastha, and Robert van de Geijn. Collective Communication: Theory, Practice, and Experience. *Concurrency and Computation: Practice and Experience,* 19(13):1749–1783, July 5, 2007.

34. Gregorio Quintana-Ortí and Robert van de Geijn. Improving the Performance of Reduction to Hessenberg Form. *ACM Transactions on Mathematical Software,* 32(2):180-194, 2006.

35. Thierry Joffrain, Tze Meng Low, Enrique S. Quintana-Ortí, Robert van de Geijn, and Field Van Zee. On Accumulating Householder Transformations. *ACM Transactions on Mathematical Software,* 32(2):169-179, 2006.

36. Brian Gunter and Robert van de Geijn. Parallel Out-of-Core Computation and Updating of the QR Factorization. *ACM Transactions on Mathematical Software*, 32(1):60-78, March 2005.

37. Paolo Bientinesi, Inderjit S. Dhillon, and Robert A. van de Geijn. A Parallel Eigensolver for Dense Symmetric Matrices Based on Multiple Relatively Robust Representations. *SIAM Journal on Scientific Computing*, Vol. 27, No. 1, 2005.

38. Paolo Bientinesi, Enrique S. Quintana-Ortí, and Robert van de Geijn. Representing Linear Algebra Algorithms in Code: The FLAME APIs. *ACM Transactions on Mathematical Software*, 31(1):27-59, March 2005.

39. Paolo Bientinesi, John A. Gunnels, Margaret E. Myers, Enrique S. Quintana-Ortí, and Robert van de Geijn. The Science of Deriving Dense Linear Algebra Algorithms. *ACM Transactions on Mathematical Software,* 31(1):1-26, March 2005.

40. Enrique S. Quintana-Ortí and Robert van de Geijn. Formal Derivation of Algorithms: The Triangular Sylvester Equation. *ACM Transactions on Mathematical Software*, (29) 2, June 2003.

41. John A. Gunnels, Fred G. Gustavson, Greg M. Henry, and Robert A. van de Geijn. FLAME: Formal Linear Algebra Methods Environment. *ACM Transactions on Mathematical Software*, 27(4):422-455, December 2001.

42. Enrique S. Quintana-Ortí and Robert van de Geijn. Specialized parallel algorithms for solving Lyapunov and Stein equations. *Journal of Parallel and Distributed Computing*, **61,** pp. 1489–1504, 2001.

43. Enrique S. Quintana, Gregorio Quintana, Xiaobai Sun, and Robert van de Geijn. A note on parallel matrix inversion. *SIAM Journal on Scientific Computing*, 22(5):1762–1771, 2001.

44. Y. Fu, K. J. Klimkowski, G. J. Rodin, E. Berger, J. C. Browne, J. K. Singer, R. A. van de Geijn, and K. S. Vemaganti. A fast solution method for three-dimensional many-particle problems of linear elasticity. *International Journal on Numerical Methods in Engineering*, 42:1215–1229, 1998.

45. Robert van de Geijn and Jerrell Watts. SUMMA: Scalable universal matrix multiplication algorithm. *Concurrency: Practice and Experience*, 9(4):255–274, April 1997.

46. D. Giménez, V. Hernández, R. van de Geijn, and A. M. Vidal. A block Jacobi method on a mesh of processors. *Concurrency, Practice and Experience*, 9(5):391–411, May 1997.

47. Po Geng, J. Tinsley Oden, and Robert van de Geijn. A parallel multifrontal algorithm and its implementation. *Computational Methods in Applied Mechechanics and Engineering*, 149:289–301, 1997.

48. Almadena Chtchelkanova, John Gunnels, Greg Morrow, James Overfelt, and Robert A. van de Geijn. Parallel implementation of BLAS: General techniques for level 3 BLAS. *Concurrency: Practice and Experience*, 9(9):837–857, September 1997.

49. M. Barnett, D. Payne, R. van de Geijn, and J. Watts. Broadcasting on meshes with wormhole routing. *Journal of Parallel and Distributed Computing*, 35:111–112, 1996.

50. Greg M. Henry and Robert A. van de Geijn. Parallelizing the QR algorithm for the unsymmetric algebraic eigenvalue problem: Myths and reality. *SIAM Journal on Scientific Computing*, 17(4):870–883, 1996.

51. Brian Grayson and Robert van de Geijn. A high performance parallel Strassen implementation. *Parallel Processing Letters*, 6(1):3–12, 1996.

52. Po Geng, J. Tinsley Oden, and Robert van de Geijn. Massively parallel computation for acoustical scattering problems using boundary element methods. *Journal of Sound and Vibration*, 191(1):145–165, 1996.

53. Jerrell Watts and Robert van de Geijn. A pipelined broadcast for multidimensional meshes. *Parallel Processing Letters*, 5(2):281–292, 1995.

54. E. Barragy and R. van de Geijn. High performance computational kernels for selected segments of a p finite element code. *International Journal on Numerical Methods in Engineering*, 38:1327–1340, 1995.

55. E. Barragy, G.F. Carey, and R. van de Geijn. Performance and scalability for block preconditioned finite element (p) solution of viscous flow. *International Journal on Numerical Methods in Engineering*, 38:1535–1554, 1995.

56. M. Barnett, R. Littlefield, D. Payne, and R. van de Geijn. Global combine algorithms for 2-d meshes with wormhole routing. *Journal of Parallel and Distributed Computing*, 24:191–201, 1995.

57. R. A. van de Geijn. On global combine operations. *Journal of Parallel and Distributed Computing*, 22:324–328, 1994.

58. Jack Dongarra, Robert van de Geijn, and David Walker. Scalability issues affecting the design of a dense linear algebra library. *Journal of Parallel and Distributed Computing*, 22(3), Sept. 1994.

59. Tom Cwik, Robert van de Geijn, and Jean Patterson. The application of parallel computation to integral equation models of electromagnetic scattering. *Journal of the Optical Society of America A*, 11(4):1538–1545, April 1994.

60. E. Barragy, G.F. Carey, and R. van de Geijn. Performance and scalability of finite element analysis for parallel computation. *Journal of Parallel and Distributed Computing*, 21:202–212, 1994.

61. Robert A. van de Geijn. Deferred shifting schemes for parallel QR methods. *SIAM Journal on Matrix Analysis and Application*, 14(1):180–194, January 1993.

62. Jack Dongarra and Robert van de Geijn. Reduction to condensed form on distributed memory architectures. *Parallel Computing*, 18:973–982, 1992.

Major Software Efforts

1. BLAS-like Library Instantiation Software (BLIS). `//https://code.google.com/p/blis/`

2. libFLAME `https://github.com/flame/libflame/`

3. Parallel Linear Algebra Package (PLAPACK)

4. Interprocessor Collective Communications Library (intercom)

5. Complex Dense Linear Solver, Release 2.0.

Articles in Conference Proceedings

1. T.M. Smith, R. van de Geijn, M. Smelyanskiy, J.R. Hammond, F.G. Van Zee. "Anatomy of high-performance many-threaded matrix multiplication." 28th IEEE International Parallel and Distributed Processing Symposium (IPDPS) 71, 2014

2. B. Marker, D. Batory, R. van de Geijn. "Code generation and optimization of distributed-memory dense linear algebra kernels." Procedia Computer Science 18, 1282-1291, 2013.

3. B. Marker, R. van de Geijn, D. Batory. "Interfaces are key." Proceedings of the 1st International Workshop on Software Engineering for High Performance Computing in Computational Science and Engineering, pages 21-24, 2013.

4. B. Marker, R. van de Geijn, D. Batory. "DSLs, DLA, DxT, and MDE in CSE." 5th International Workshop on Software Engineering for Computational Science and Engineering (SE-CSE), pages 84–87, 2013.

5. B. Marker, J. Poulson, D. Batory, R. van de Geijn. "Designing linear algebra algorithms by transformation: Mechanizing the expert developer." High Performance Computing for Computational Science-VECPAR 2012, 362-378, 2013.

6. Ardavan Pedram, Andreas Gerstlauer, and Robert van de Geijn. "Floating Point Architecture Extensions for Optimized Matrix Factorization." The 21st IEEE International Symposium on Computer Arithmetic (ARITH21), 49-58, 2013.

7. F.D. Igual, G. Quintana-Ortí, R.A. van de Geijn, T.E. Simos, G. Maroulis. "Level-3 BLAS on a GPU: Picking the low hanging fruit." AIP Conference Proceedings-American Institute of Physics 1504 (1), 1109, 2012.

8. F.D. Igual, M. Ali, A. Friedmann, E. Stotzer, T. Wentz, R.A. van de Geijn "Unleashing the high-performance and low-power of multi-core DSPs for general-purpose HPC." Proceedings of the International Conference on High Performance Computing, Networking, Storage and Analysis. 2012.

9. Ardavan Pedram, Andreas Gerstlauer, and Robert van de Geijn. "On the Efficiency of Register File versus Broadcast Interconnect for Collective Communications in Data-Parallel Hardware Accelerators." The 24th International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD 2012), 2012.

10. M. Ali, E. Stotzer, F.D. Igual, R.A. van de Geijn. "Level-3 BLAS on the TI C6678 multi-core DSP." The 24th International Symposium on Computer Architecture and High Performance Computing (SBAC-PAD 2012), 2012.

11. Ardavan Pedram, Syed Gilani, Nam Sung Kim, Robert van de Geijn, Mike Schulte,and Andreas Gerstlauer. "A Linear Algebra Core Design For Efcient Level-3 BLAS." The 23rd IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP), 2012.

12. Ardavan Pedram, Andreas Gerstlauer, and Robert van de Geijn. "A High-performance, Low-power Linear Algebra Core." The 22nd IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP2011), 2011.

13. Ernie Chan, Jim Nagle, Robert van de Geijn, and Field G. Van Zee. "Transforming Linear Algebra Libraries: From Abstraction to Parallelism." *HIPS*, 2010.

14. Ernie Chan, Andrew Chapman, and Robert van de Geijn. "Managing the complexity of lookahead for LU factorization with pivoting." In *SPAA10: Proceedings of the Twenty-Second Annual ACM Symposium on Parallelism in Algorithms and Architectures*, Santorini, Greece, June 13-15, 2010.

15. Manuel Fogué, Francisco D. Igual, Enrique Quintana-Ortí, and Robert van de Geijn. "Retargeting PLAPACK to Clusters with Hardware Accelerators." International Conference on High Performance Computing and Simulation (HPCS), 2010.

16. Victor Eijkhout, Paolo Bientinesi, Robert van de Geijn. "Toward Mechanical Derivation of Krylov Solver Libraries." *Procedia Computer Science*, 1(1) 1799-1807, 2010. Proceedings of ICCS2010.

17. Mercedes Marqus, Gregorio Quintana-Ort, Enrique S. Quintana-Ort, and Robert van de Geijn. "Out-of-Core Computation of the QR Factorization on Multi-Core Processors." Euro-Par 2009.

18. Mercedes Marqus, Gregorio Quintana-Ort, Enrique S. Quintana-Ort, and Robert van de Geijn. "Solving "Large" Dense Matrix Problems on Multi-Core Processors and GPUs" 10th IEEE International Workshop on Parallel and Distributed Scientific and Engineering Computing - PDSEC'09. Roma (Italia). 2009.

19. Mercedes Marqus, Gregorio Quintana-Ort, Enrique S. Quintana-Ort, and Robert van de Geijn. "Using Graphics Processors to Accelerate the Solution of Out-of-Core Linear Systems"8th IEEE International Symposium on Parallel and Distributed Computing, Lisbon (Portugal), 2009.

20. Mara Jess Zafont, Alberto Martn, Francisco D. Igual, and Enrique S. Quintana-Ort. "Fast Development of Dense Linear Algebra Codes on Graphics Processors." 14th International Workshop on High-Level Parallel Programming Models and Supportive Environments, 2009. Rome, Italy.

21. Gregorio Quintana-Orti, Francisco D. Igual, Enrique S. Quintana-Orti, Robert van de Geijn. Solving Dense Linear Systems on Platforms with Multiple Hardware Accelerators. Proceedings of 2009 ACM SIGPLAN Symposium on Principles and Practices of Parallel Programming, Raleigh, North Carolina, February 2009.

22. Gregorio Quintana-Orti, Enrique S. Quintana-Orti, Ernie Chan, Robert van de Geijn, and Field G. Van Zee. Design of Scalable Dense Linear Algebra Libraries for Multithreaded Architectures: the LU Factorization. Proceedings of the Workshop on Multithreaded Architectures and Applications, Miami, Florida, April 2008.

23. Gregorio Quintana-Orti, Enrique S. Quintana-Orti, Alfredo Remon, and Robert A. van de Geijn. An Algorithm-by-Blocks for SuperMatrix Band Cholesky Factorization. Proceedings of the 8th International Meeting on High Performance Computing for Computational Science, Toulouse, France, June 2008.

24. Jeff Diamond, Behnam Robatmili, Stephen W. Keckler, Robert van de Geijn, Kazushige Goto, Doug Burger. High Performance Dense Linear Algebra on a Spatially Distributed Processor. Proceedings of 2008 ACM SIGPLAN Symposium on Principles and Practices of Parallel Programming, Salt Lake City, Utah, February 2008.

25. Ernie Chan, Field G. Van Zee, Paolo Bientinesi, Enrique S. Quintana-Ortí, Gregorio Quintana-Ortí, and Robert van de Geijn. SuperMatrix: A Multithreaded Runtime Scheduling System for Algorithms-by-Blocks. Proceedings of 2008 ACM SIGPLAN Symposium on Principles and Practices of Parallel Programming, p. 123-132, Salt Lake City, Utah, February 2008.

26. Gregorio Quintana-Ortí, Enrique S. Quintana-Ortí, Ernie Chan, Field G. Van Zee, and Robert A. van de Geijn. Scheduling of QR factorization algorithms on SMP and multi-core architectures. Proceedings of the 16th Euromicro International Conference on Parallel, Distributed and network-based Processing, Toulouse, France, February 2008.

27. Ernie Chan, Field G. Van Zee, Enrique S. Quintana-Ortí, Gregorio Quintana-Ortí, Robert van de Geijn. Satisfying your Dependencies with SuperMatrix. Proceedings of IEEE Cluster Computing 2007, pp. 91–99, Austin, Texas, September 2007.

28. Bryan Marker, Field Van Zee, Kazushige Goto, Gregorio Quintana-Orti, Robert van de Geijn. Toward Scalable Matrix Multiply on Multithreaded Architectures. Proceedings of European Conference on Parallel and Distributed Computing (EuroPar07), pp. 748-757, Rennes, France, August 2007.

29. Ernie Chan, Enrique Quintana-Orti, Gregorio Quintana-Orti, and Robert van de Geijn. SuperMatrix Out-of-Order Scheduling of Matrix Operations for SMP and Multi-Core Architectures. SPAA'07: Proceedings of the Nineteenth ACM Symposium on Parallelism in Algorithms and Architectures. pp. 116-125. 2007.

30. Paolo Bientinesi and Robert van de Geijn. Formal Correctness and Stability of Linear Algebra Algorithms. *Proceedings of IMACS05*, 2005.

31. Tze Meng Low, Robert van de Geijn, and Field Van Zee. Extracting SMP Parallelism for Dense Linear Algebra Algorithms from High-Level Specifications. *Proceedings of Principles and Practice of Parallel Processing 2005*, 2005.

32. John Gunnels, Fred Gustavson, Greg Henry, and Robert A. van de Geijn. A Family of High-Performance Matrix Multiplication Algorithms. *PARA 2004, LNCS 3732*, pp. 2256-265, 2005.

33. Paolo Bientinesi, John Gunnels, Fred Gustavson, Greg Henry, Margaret Myers, Enrique Quintana-Orti, and Robert A. van de Geijn. Rapid Development of High-Performance Linear Algebra Libraries. *PARA 2004, LNCS 3732*, pp. 376–384, 2005.

34. Paolo Bientinesi, Sergey Kolos, and Robert A. van de Geijn. Automatic Derivation of Linear Algebra Algorithms with Application to Control Theory. *PARA 2004, LNCS 3732*, pp. 385–394, 2005.

35. Thierry Joffrain, Enrique S. Quintana-Orti, and Robert A. van de Geijn. Rapid Development of High-Performance Out-of-Core Solvers. *PARA 2004, LNCS 3732*, pp. 413–422, 2005.

36. Ernie W. Chan, Marcel F. Heimlich, Avi Purkayastha, and Robert A. van de Geijn. On optimizing collective communication. *Proceedings of the 2004 IEEE International Conference on Cluster Computing*, pages 145–155, San Diego, CA, 2004.

37. Thuan D. Cao, John F. Hall, and Robert A. van de Geijn. Parallel Cholesky Factorization of a Block Tridiagonal Matrix. 4ths Workshop on High Performance Scientific and Engineering Computing with Applications (HPSECA-02), *in Proceedings of the International Conference on Parallel Processing 2002 (ICPP-02)*.

38. John A. Gunnels, Daniel S. Katz, Enrique S. Quintana-Ortí, and Robert A. van de Geijn. Fault–tolerant high–performance matrix multiplication: Theory and practice. In *Proceedings of the International Conference for Dependable Systems and Networks (DSN-2001)*, pp. 47–56, July 2-4, 2001.

39. Brian C. Gunter, Wesley C. Reiley, and Robert A. van de Geijn. Parallel Out-of-Core Cholesky and QR factorizations with POOCLAPACK. In *Proceedings of the 15th International Parallel and Distributed Processing Symposium*, San Francisco, CA, April 23–27 (on CD-ROM).

40. John A. Gunnels and Robert A. van de Geijn. Formal methods for high-performance linear algebra libraries. In Ronald F. Boisvert and Ping Tak Peter Tang, editors, *The Architecture of Scientific Software*, pages 193–210. Kluwer Academic Press, 2001. Proceedings of Working Conference on Sofware Architectures for Scientific Computing Applications (IFIP WG 2.5 WoCo 8).

41. John A. Gunnels, Greg M. Henry, and Robert A. van de Geijn. A family of high-performance matrix multiplication algorithms. In Vassil N. Alexandrov, Jack J. Dongarra, Benjoe A. Juliano, René S. Renner, and C.J. Kenneth Tan, editors, *Computational Science - ICCS 2001, Part I*, Lecture Notes in Computer Science 2073, pages 51–60. Springer-Verlag, 2001.

42. Enrique S. Quintana-Ortí and Robert van de Geijn. Fast parallel kernels for selected problems in control theory. In *Proceedings of the SIAM Conference on Parallel Processing for Scientific Computing 1999*, 1999. (CD-ROM).

43. Greg Morrow and Robert van de Geijn. A parallel linear algebra server for matlab-like environments. In *Proceedings of SC98*, 1998.

44. John Gunnels, Calvin Lin, Greg Morrow, and Robert van de Geijn. A flexible class of parallel matrix multiplication algorithms. In *Proceedings of First Merged International Parallel Processing Symposium and Symposium on Parallel and Distributed Processing (1998 IPPS/SPDP '98)*, pages 110–116, 1998.

45. Greg Baker, John Gunnels, Greg Morrow, Beatrice Riviere, and Robert van de Geijn. PLAPACK: High performance through high level abstraction. In *Proceedings of ICCP98*, 1998.

46. Philip Alpatov, Greg Baker, Carter Edwards, John Gunnels, Greg Morrow, James Overfelt, Robert van de Geijn, and Yuan-Jye J. Wu. PLAPACK: Parallel linear algebra package – design overview. In *Proceedings of SC97*, 1997.

47. Philip Alpatov, Greg Baker, Carter Edwards, John Gunnels, Greg Morrow, James Overfelt, Robert van de Geijn, and Yuan-Jye J. Wu. PLAPACK: Parallel linear algebra package. In *Proceedings of the SIAM Conference on Parallel Processing for Scientific Computing*, 1997.

48. Prasenjit Mitra, David Payne, Lance Shuler, Robert van de Geijn, and Jerrell Watts. Fast collective communication libraries, please. In *Proceedings of the Intel Supercomputing Users' Group Meeting 1995*, 1995.

49. Ken Klimkowski and Robert van de Geijn. Anatomy of an out-of-core dense linear solver. In *Proceedings of the International Conference on Parallel Processing 1995*, volume III - Algorithms and Applications, pages 29–33, 1995.

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Chapters

1. Victor Eijkhout and Robert van de Geijn. "The Spike Factorization as Domain Decomposition Method; Equivalent and Variant Approaches." In *High-Performance Scientific Computing* (Michael W. Berry, Kyle A. Gallivan, Efstratios Gallopoulos, Ananth Grama, Bernard Philippe, Yousef Saad, and Faisal Saied, eds.) pp. 157-169. Springer London. 2012.

2. Jesper Larsson Traeff and Robert A. vande Geijn. "All-to-All." Encyclopedia of Parallel Computing , Part 1, Pages 42-47. 2011.
3. Robert van de Geijn and Jesper Larsson Traeff. "Collective Communication." Encyclopedia of Parallel Computing , Part 3, Pages 318-327. 2011.
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7. Robert van de Geijn and Kazushige Goto. "BLAS (Basic Linear Algebra Subprograms)." Encyclopedia of Parallel Computing , Part 2, Pages 157-164. 2011.

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Dissertation and Thesis Supervision

Ph.D. Dissertations Supervised

1. Michael Barnett, Ph.D. in Computer Sciences, August 1992. "A Systolizing Compiler," co-supervised with Chris Lengauer.
2. Timothy Collins, Ph.D. in Computer Sciences, August 1995. "Efficient Matrix Computations Through Hierarchical Type Specifications," co-supervised with J.C. Browne.
3. H. Carter Edwards, Ph.D. in Computational and Applied Mathematics, May 1997. "A Parallel Infrastructure for Scalable Adaptive Finite Element Methods and its application to Least Squares C-infinity Collocation," co-supervised with Linda Hayes and Mary Wheeler.
4. John A. Gunnels, Ph.D. in Computer Sciences, Fall 2001. "A Systematic Approach to the Design and Analysis of Linear Algebra Algorithms."
5. James Overfelt, Ph.D. in Computational and Applied Mathematics, Spring 2002. "A Rapid Solution Methods for Stokesian Emulsions," co-supervised with Greg Rodin.
6. Paolo Bientinesi, Ph.D. in Computer Sciences, Spring 2006 "Automatic Derivation, Implementation, and Analysis of Linear Algebra Algorithms."
7. Ernie Chan, Ph.D. in Computer Sciences, Summer 2010 "Application of Dependence Analysis and Runtime Data Flow Graph Scheduling to Matrix Computations."
8. Ardavan Pedram, Ph.D. in Electrical and Computer Engineering, Summer 2013, "Algorithm/Architecture Codesign of Low Power and High Performance Linear Algebra Compute Fabrics," co-supervised with Andreas Gerstlauer.
9. Kyungjoo Kim, Ph.D. in Engineering Mechanics, Summer 2013, "Finite Element Modeling of Electromagnetic Radiation and Induced Heat Transfer in the Human Body," co-supervised with Leszek Demkowicz and Victor Eijkhout.
10. Tze Meng Low, Ph.D. in Computer Sciences, Fall 2013. "A Calculus of Loop Invariants for Dense Linear Algebra Optimization."

11. Bryan Marker, Ph.D. in Computer Sciences, May 2014, "Design by Transformation: From Domain Knowledge to Optimized Program Generation," co-supervised with Don Batory.
12. Martin Schatz, Ph.D. in Computer Science, expected Summer 2015, co-supervised with Tamara Kolda (Sandia National Lab).
13. Tyler Smith, Ph.D. in Computer Science.
14. Scott Rabidoux, Ph.D. in Computational Science, Engineering, Mathermatics, co-supervised with John Stanton and Victor Eijkhout.
15. (I also (co)supervise a number of students who are earlier in their academic careers.)

Masters Theses Supervised

1. James Juszczak, Masters in Computer Science, Masters thesis option, Fall 1989 "Parallel Matrix Computations." James is currently Supervisor of Application Development/Strategic Products with Exxon/Mobil.
2. Lance Shuler, Masters of Mathematics, Masters paper option, Fall 1992. "A Search for LAPACK Condition Number Counterexamples." Lance is currently a Senior Software Engineer with Intel.
3. Martin Hoff, Masters of Mathematics, Masters paper option, Spring 1993. "The Use of Jacobi Methods for Computing Eigenvalues of Real Symmetric Matrices."
4. Kenneth Klimkowski, Masters of Computational and Applied Mathematics, Thesis option, Spring 1997. "Application of an Approximate Hierarchical Method to a Parallel Matrix-Vector Product for a Non-Laplacian Operator."

Undergraduate Theses Supervised

1. Jerrell Watts, Honors Thesis in Computer Science, Spring 1994. "Efficient Collective Communication on Multidimensional Meshes with Worm-Hole Routing."
2. Scott Matthews, Honors Thesis in Computer Science, Spring 1994. "Implementation of Monte Carlo Methods in Biological Data Analysis."
3. Darin Greene, Honors Thesis in Computer Science, Spring 1995. "Robustness of Collective Communication Algorithms."
4. Thierry Joffrain, Honors Thesis in Computer Science, Spring 1998. "Parallel Implementation of Triangular Solve."
5. Wesley Reiley, Honors Thesis in Computer Science, Spring 2000. "Efficient Parallel Out-of-Core Implementation of the Cholesky Factorization."
6. Marcel Heimlich, Honors Thesis in Computer Science, Summer 2003.
7. Ernie Chan, Honors Thesis in Computer Science, Spring 2004.
8. Bryan Marker, Turing Scholars Thesis in Computer Science, Spring 2007.
9. James Levitt, Turing Scholars Thesis in Computer Science, Spring 2012.
10. Kevin Jia, Turing Scholars Thesis in Computer Science, Spring 2013.

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