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RICHARD (RICH) VUDUC

Note: I apologize for the absurd length of this CV. This format is required by the Georgia Tech processes for promotion and tenure, and I am overwhelmed with lethargy at the thought of maintaining multiple CVs. Thanks for your understanding!

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I Earned Degrees

Ph.D., Computer Science, University of California, Berkeley, 2004.

Dissertation: *Automatic performance tuning of sparse matrix kernels* [PDF]

Advisors: James W. Demmel (main) and Katherine A. Yelick (co-advisor)

B.S. with honors, Computer Science, Cornell University, 1997.

II Employment History

Associate Professor with tenure, School of Computational Science and Engineering, Georgia Institute of Technology, Aug. 2013–present.

Director of CSE Graduate Programs, *ibid.*, Aug. 2013–Dec. 2016.

Associate Chair for Academic Affairs, *ibid.*, Aug. 2013–Dec. 2016.

Assistant Professor, *ibid.*, Aug. 2007–Jul. 2013.

Postdoctoral Scholar, Lawrence Livermore National Laboratory, Nov. 2004–Jul. 2007.

Advisor: Daniel J. Quinlan

Postdoctoral Scholar, University of California, Berkeley, Jan. 2004–Oct. 2004.

Advisors: James W. Demmel and Katherine A. Yelick

III Honors and Awards

17. November 2018: Winner, Best student paper (lead author: [Jiajia Li](#)), ACM/IEEE Conf. Supercomputing (SC)
16. May 2015: Winner, Best paper (software track) at the IEEE Int'l. Parallel and Distributed Processing Symp. (IPDPS).
15. April 2013: Lockheed Martin Excellence in Teaching Award
14. April 2012: Winner, Best Paper at the SIAM Conference on Data Mining (SDM)
13. November 2010: Winner, Gordon Bell Prize at ACM/IEEE Conf. Supercomputing (SC)
12. April 2010: College of Computing's Outstanding Junior Faculty Research Award
11. April 2010: Winner, Best paper (software track) at the IEEE Int'l. Parallel and Distributed Processing Symp. (IPDPS).
10. January 2010: NSF CAREER Awardee.
9. November 2009: Finalist, Best paper at SC
8. November 2009: Winner, R&D 100 Award for ROSE (joint with Lawrence Livermore National Laboratory)
7. April 2009: Panelist, DARPA Computer Science Study Panel (CSSP). One of twelve panelists selected nationally among untenured US citizen professors.
6. July 2006: Winner, Best paper at Parallel and Distributed Testing and Debugging (PADTAD)
5. September 2004: Winner, Best paper at Int'l. Conf. Parallel Processing (ICPP)
4. June 2002: Winner, Best student presentation at Workshop on Performance Optimization of High-level Languages and Libraries, joint with the ACM Int'l. Conf. Supercomputing (ICS)
3. June 2002: Winner, Best student paper at Workshop on Performance Optimization of High-level Languages and Libraries, joint with ICS
2. November 2002: Finalist, Best student paper at SC
1. December 2000: Winner, Best presentation at Workshop on Feedback-directed Dynamic Optimization (FDDO), joint with the IEEE Int'l. Symp. Microarchitecture (MICRO)

IV Research, Scholarship, and Creative Activities

The people whose names appear in **boldface** were students at the time the work was carried out.

For citation counts per web-based indexes, see:

1. Google Scholar: <http://scholar.google.com/citations?user=CCGI7x4AAAAJ&hl=en>
2. Microsoft Academic Search: <https://academic.microsoft.com/#/detail/211035554>

IV-A Published Books, Book Chapters, and Edited Volumes

IV-A.1 Books

- [B1] H. Kim, R. Vuduc, **Sara Baghsorkhi**, **Jee Choi**, and W.-m. Hwu, *Performance analysis and tuning for general purpose graphics processing units (GPGPU)*, M. D. Hill, Ed., ser. Synthesis Lectures on Computer Architecture. San Rafael, CA, USA: Morgan & Claypool Publishers, Nov. 2012. doi: [10.2200/S00451ED1V01Y201209CAC020](https://doi.org/10.2200/S00451ED1V01Y201209CAC020).

IV-A.2 Refereed Book Chapters

(No data)

IV-A.3 Edited Volumes

- [EV1] **Jee Choi** and R. Vuduc, “A brief history and introduction to GPGPU,” in *Modern Accelerator Technologies for Geographic Information Science*, X. Shi, V. Kindratenko, and C. Yang, Eds., Boston, MA, USA: Springer, 2013, ch. 1, pp. 9–23. doi: [10.1007/978-1-4614-8745-6_2](https://doi.org/10.1007/978-1-4614-8745-6_2).
- [EV2] **Seunghwa Kang**, **Nitin Arora**, **Aashay Shringarpure**, R. W. Vuduc, and D. A. Bader, “Evaluating multicore processors and accelerators for dense numerical computations,” in *Multicore computing: Algorithms, architectures, and applications*, S. Rajasekaran, L. Fiondella, M. Ahmed, and R. A. Ammar, Eds., Chapman and Hall/CRC, 2013. [Online]. Available: <http://www.crcpress.com/product/isbn/9781439854341>.
- [EV3] R. W. Vuduc, “Autotuning (definition),” in *Encyclopedia of Parallel Computing*, D. Padua, Ed., Springer, 2011. [Online]. Available: <http://www.springer.com/computer/swe/book/978-0-387-09765-7>.
- [EV4] S. Williams, N. Bell, **Jee Choi**, M. Garland, L. Oliker, and R. Vuduc, “Sparse matrix vector multiplication on multicore and accelerator systems,” in *Scientific Computing with Multicore Processors and Accelerators*, J. Kurzak, D. A. Bader, and J. Dongarra, Eds., CRC Press, 2010.

IV-B Refereed Publications and Submitted Articles

IV-B.1 Published and Accepted Journal Articles

(Papers [J13]–[J19] are for work prior to my joining Georgia Tech.)

- [J1] P. Sao, X. S. Li, and R. Vuduc, “A communication-avoiding 3D algorithm for sparse LU factorization on heterogeneous systems,” *J. Parallel and Distributed Computing (JPDC)*, 2019, (accepted).
- [J2] **Ioakeim Perros**, E. E. Papalexakis, R. Vuduc, E. Searles, and J. Sun, “Temporal phenotyping of medically complex children via parafac2 tensor factorization,” *Journal of Biomedical Informatics*, 2019, (in press; available online). doi: [10.1016/j.jbi.2019.103125](https://doi.org/10.1016/j.jbi.2019.103125).

- [J3] **Yuchen Ma, Jiajia Li**, C. Yang, J. Sun, and R. Vuduc, “Optimizing sparse tensor times matrix on GPUs,” *J. Parallel and Distributed Computing (JPDC)*, 2018, (accepted).
- [J4] P. Balaprakash, J. Dongarra, T. Gamblin, M. Hall, J. K. Hollingsworth, B. Norris, and R. Vuduc, “Autotuning in high-performance computing applications,” *Proceedings of the IEEE*, vol. 106, no. 11, pp. 2068–2083, Nov. 2018. doi: [10.1109/JPROC.2018.2841200](https://doi.org/10.1109/JPROC.2018.2841200).
- [J5] **Mohammad M. Hossain**, C. Nath, T. M. Tucker, R. W. Vuduc, and T. R. Kurfess, “A graphics processor unit-accelerated freeform surface offsetting method for high-resolution subtractive three-dimensional printing (machining),” *J. Manufacturing Science and Engineering*, vol. 140, no. 4, p. 11, Apr. 2018. doi: [10.1115/1.4038599](https://doi.org/10.1115/1.4038599).
- [J6] Z. Du, R. Ge, V. W. Lee, R. Vuduc, D. A. Bader, and L. He, “Modeling the power variability of core speed scaling on homogeneous multicore processors,” *Scientific Programming*, vol. 2017, no. 8686971, p. 13, 2017. doi: [10.1155/2017/8686971](https://doi.org/10.1155/2017/8686971).
- [J7] **Yang You**, J. Demmel, **Kenneth Czechowski**, L. Song, and R. Vuduc, “Design and implementation of a communication-optimal classifier for distributed kernel support vector machines,” *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, vol. 28, no. 4, pp. 974–988, 2016, Extends conference version: doi:[10.1109/IPDPS.2015.117](https://doi.org/10.1109/IPDPS.2015.117). doi: [10.1109/TPDS.2016.2608823](https://doi.org/10.1109/TPDS.2016.2608823).
- [J8] **Sangmin Park**, R. Vuduc, and M. J. Harrold, “Unicorn: A unified approach for localizing non-deadlock concurrency bugs,” *Software: Testing, Verification, and Reliability*, vol. 25, no. 3, pp. 167–190, May 2015, Extends conference version: doi:[10.1109/ICST.2012.85](https://doi.org/10.1109/ICST.2012.85). doi: [10.1002/stvr.1523](https://doi.org/10.1002/stvr.1523).
- [J9] A. Rozga, T. Z. King, R. W. Vuduc, and D. L. Robins, “Undifferentiated facial electromyography responses to dynamic, audio-visual emotion displays in individuals with autism spectrum disorders,” *Developmental Science*, 2013. doi: [10.1111/desc.12062](https://doi.org/10.1111/desc.12062).
- [J10] **Ilya Lashuk, Aparna Chandramowlishwaran**, H. Langston, **Tuan-Ahn Nguyen**, R. Sampath, **Aashay Shringarpure**, R. Vuduc, L. Ying, D. Zorin, and G. Biros, “A massively parallel adaptive fast multipole method on heterogeneous architectures,” *Communications of the ACM (CACM)*, vol. 55, no. 5, pp. 101–109, May 2012, Extends conference version: doi:[10.1145/1654059.1654118](https://doi.org/10.1145/1654059.1654118). doi: [10.1145/2160718.2160740](https://doi.org/10.1145/2160718.2160740).
- [J11] **Jaekyu Lee**, H. Kim, and R. Vuduc, “When prefetching works, when it doesn’t, and why,” *ACM Trans. Architecture and Code Optimization (TACO)*, vol. 9, no. 1, Mar. 2012. doi: [10.1145/2133382.2133384](https://doi.org/10.1145/2133382.2133384).
- [J12] R. Vuduc and **Kenneth Czechowski**, “What GPU computing means for high-end systems,” *IEEE Micro*, vol. 31, no. 4, pp. 74–78, Jul. 2011. doi: [10.1109/MM.2011.78](https://doi.org/10.1109/MM.2011.78).

- [J13] S. Williams, R. Vuduc, L. Oliker, J. Shalf, K. Yelick, and J. Demmel, “Optimizing sparse matrix-vector multiply on emerging multicore platforms,” *Parallel Computing (ParCo)*, vol. 35, no. 3, pp. 178–194, Mar. 2009, Extends conference version: doi:10.1145/1362622.1362674. doi: 10.1016/j.parco.2008.12.006. **Most Downloaded Paper, Q1 2009:** <http://tinyurl.com/yllkfee>
- [J14] **Rajesh Nishtala**, R. Vuduc, J. W. Demmel, and K. A. Yelick, “When cache blocking sparse matrix vector multiply works and why,” *Applicable Algebra in Engineering, Communication, and Computing: Special Issue on Computational Linear Algebra and Sparse Matrix Computations*, J. Wasniewski, J. Dongarra, S. Toledo, and Z. Zlatev, Eds., Mar. 2007. doi: <http://dx.doi.org/10.1007/s00200-007-0038-9>.
- [J15] J. Demmel, J. Dongarra, V. Eijkhout, E. Fuentes, A. Petitet, R. Vuduc, R. C. Whaley, and K. Yelick, “Self-adapting linear algebra algorithms and software,” *Proc. IEEE*, vol. 93, no. 2, pp. 293–312, Feb. 2005. doi: <http://dx.doi.org/10.1109/JPROC.2004.840848>.
- [J16] **Eun-Jin Im**, K. Yelick, and **Richard Vuduc**, “Sparsity: Optimization framework for sparse matrix kernels,” *Int'l. J. High Performance Computing Applications (IJHPCA)*, vol. 18, no. 1, pp. 135–158, Feb. 2004. doi: <http://dx.doi.org/10.1177/1094342004041296>.
- [J17] **Richard Vuduc**, J. Demmel, and J. Bilmes, “Statistical models for empirical search-based performance tuning,” *Int'l. J. High Performance Computing Applications (IJHPCA)*, vol. 18, no. 1, pp. 65–94, 2004, Extends conference version: doi:10.1007/3-540-45545-0_21. doi: 10.1177/1094342004041293.
- [J18] B. Balko, I. W. Kay, J. D. Silk, **Richard Vuduc**, and J. W. Neuberger, “Superfluorescence in the presence of inhomogeneous broadening,” *Hyperfine Interactions: Special Issue on the Gamma-Ray Laser*, vol. 107, no. 1–4, pp. 369–379, Jun. 1997. doi: <http://dx.doi.org/10.1023/A:1012020225589>.
- [J19] B. Balko, I. W. Kay, **Richard Vuduc**, and J. W. Neuberger, “Recovery of superfluorescence in inhomogeneously broadened systems through rapid relaxation,” *Phys. Rev. B*, vol. 55, no. 18, pp. 12 079–12 085, May 1997. doi: <http://dx.doi.org/10.1103/PhysRevB.55.12079>.

IV-B.2 Conference Presentation with Proceedings (Refereed)

(Papers [C52]–[C61] are for work prior to my joining Georgia Tech.)

- [C1] J. Li, B. Uçar, Ü. Çatulyürek, J. Sun, K. Barker, and R. Vuduc, “Efficient and effective sparse tensor reordering,” in *Proceedings of the ACM International Conference on Supercomputing (ICS)*, (accepted), Phoenix, AZ, USA, Jun. 2019.
- [C2] P. Sao, R. Kannan, X. Li, and R. Vuduc, “A communication-avoiding 3D sparse triangular solver,” in *Proceedings of the ACM International Conference on Supercomputing (ICS)*, (accepted), Phoenix, AZ, USA, Jun. 2019.
- [C3] **Israt Nisa**, J. Li, A. Sukumaran-Rajam, R. Vuduc, and P. Sadayappan, “Load-balanced sparse MTTKRP on GPUs,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, (accepted), May 2019.

- [C4] **Jiajia Li**, J. Sun, and R. Vuduc, “HiCOO: Hierarchical storage of sparse tensors,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis* (“Supercomputing” or SC), (accepted), Nov. 2018. **Finalist, Best Student Paper**
- [C5] **Ioakeim Perros**, E. E. Papalexakis, H. Park, R. Vuduc, X. Yan, C. deFilippi, W. F. Stewart, and J. Sun, “SUSTain: Scalable unsupervised scoring for tensors and its application to phenotyping,” in *Proceedings of the SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, (accepted) Conference version of [arXiv:1803.05473](https://arxiv.org/abs/1803.05473), London, UK, Aug. 2018. [107/983=10.9%]
- [C6] **Yang You**, C.-J. Hsieh, R. Vuduc, and J. Demmel, “Accurate, fast, and scalable kernel ridge regression on parallel and distributed systems,” in *Proceedings of the ACM International Conference on Supercomputing (ICS)*, Beijing, China, Jun. 2018. [36/193=18.7%]
- [C7] **Sara Karamati**, J. Young, and R. Vuduc, “An energy-efficient single-source shortest path algorithm,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Vancouver, BC, Canada, May 2018. [113/461=24.5%]
- [C8] **Piyush Sao**, X. Li, and R. Vuduc, “A communication-avoiding 3D LU factorization algorithm for sparse matrices,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Vancouver, BC, Canada, May 2018. [113/461=24.5%]
- [C9] **Ioakeim Perros**, E. E. Papalexakis, F. Wang, R. Vuduc, E. Searles, M. Thompson, and J. Sun, “SPARTan: Scalable PARAFAC2 for large and sparse data,” in *Proceedings of the SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, Conference version of [arXiv:1703.04219v1](https://arxiv.org/abs/1703.04219v1), Halifax, Canada, Aug. 2017. [8.6%]
- [C10] **Jiajia Li**, J. Choi, **Ioakeim Perros**, J. Sun, and R. Vuduc, “Model-driven sparse CP decomposition for high-order tensors,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Orlando, FL, USA, May 2017. [23%]
- [C11] **Ioakeim Perros**, F. Wang, P. Zhang, P. Walker, R. Vuduc, J. Pathak, and J. Sun, “Polyadic regression and its application to chemogenomics,” in *Proceedings of the SIAM International Conference on Data Mining (SDM)*, Apr. 2017.
- [C12] **Mohammad M. Hossain**, C. Nath, T. M. Tucker, T. R. Kurfess, and R. W. Vuduc, “A graphical approach for freeform surface offsetting with GPU acceleration for subtractive 3D printing,” in *Proceedings of the 11th ASME Manufacturing Science and Engineering Conference (MSEC)*, Blacksburg, VA, USA, Jun. 2016.
- [C13] **Zhengkai Wu**, T. M. Tucker, C. Nath, T. R. Kurfess, and R. W. Vuduc, “Step ring based 3D path planning via GPU simulation for subtractive 3D printing,” in *Proceedings of the 11th ASME Manufacturing Science and Engineering Conference (MSEC)*, Blacksburg, VA, USA, Jun. 2016.

- [C14] **Mohammad Hossain**, T. Tucker, T. Kurfess, and R. Vuduc, "HDT: A hybrid structure for extreme-resolution 3D sparse data modeling," in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Chicago, IL, USA, May 2016. [Online]. Available: <http://ipdps.org>. [114/496=23%]
- [C15] **Jiajia Li**, **Casey Battaglino**, **Ioakeim Perros**, J. Sun, and R. Vuduc, "An input-adaptive and in-place dense tensor-times-matrix multiply," in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis ("Supercomputing" or SC)*, Austin, TX, USA, Nov. 2015. doi: 10.1145/2807591.2807671. [Online]. Available: <http://dl.acm.org/citation.cfm?id=2807671>. [79/358=22.1%]
- [C16] **Ioakeim Perros**, **Robert Chen**, R. Vuduc, and J. Sun, "Sparse hierarchical Tucker factorization and its application to healthcare," in *Proc. IEEE Int'l. Conf. Data Mining (ICDM)*, (short paper), Stony Brook, NY, USA, Nov. 2015.
- [C17] **Oded Green**, **Marat Dukhan**, and R. Vuduc, "Branch-avoiding graph algorithms," in *Proc. ACM Symp. Parallel Algorithms and Architectures (SPAA)*, Portland, OR, USA, Jun. 2015.
- [C18] **Yang You**, J. Demmel, **Kenneth Czechowski**, L. Song, and R. Vuduc, "CA-SVM: Communication-avoiding support vector machines on clusters," in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Hyderabad, India, May 2015. doi: 10.1109/IPDPS.2015.117. [108/496=21.8%]
Winner, Best Paper (algorithms track)
- [C19] **Piyush Sao**, **Xing Liu**, R. Vuduc, and X. Li, "A sparse direct solver for distributed memory Xeon Phi-accelerated systems," in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Hyderabad, India, May 2015. doi: 10.1109/IPDPS.2015.104. [108/496=21.8%]
- [C20] **Piyush Sao**, R. Vuduc, and X. Li, "A distributed CPU-GPU sparse direct solver," in *Proceedings of the 20th International European Conference on Parallel Processing (Euro-Par)*, Porto, Portugal, Aug. 2014. doi: 10.1007/978-3-319-09873-9_41.
- [C21] **Kenneth Czechowski**, V. W. Lee, E. Grochowski, R. Ronen, R. Singhal, R. Vuduc, and P. Dubey, "Improving the energy efficiency of big cores," in *Proc. ACM/IEEE Int'l. Symp. on Computer Architecture (ISCA)*, Minneapolis, MN, USA, Jun. 2014. doi: 10.1145/2678373.2665743.
- [C22] **Jee Choi**, **Marat Dukhan**, **Xing Liu**, and R. Vuduc, "Algorithmic time, energy, and power on candidate HPC compute building blocks," in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Phoenix, AZ, USA, May 2014. doi: 10.1109/IPDPS.2014.54.
- [C23] **Piyush Sao** and R. Vuduc, "Self-stabilizing iterative solvers," in *Proc. 4th Wkshp. Latest Advances in Scalable Algorithms for Large-scale Systems (Scala)*, Denver, CO, USA, Nov. 2013. doi: 10.1145/2530268.2530272. [Online]. Available: <http://www.csm.ornl.gov/srt/conferences/Scala/2013/>.
- [C24] **Marat Dukhan** and R. Vuduc, "Methods for high-throughput computation of elementary functions," in *Proc. 10th Int'l. Conf. Parallel Processing and Applied Mathematics (PPAM)*, Sep. 2013.

- [C25] **Sangmin Park**, M. J. Harrold, and R. Vuduc, “Griffin: Grouping suspicious memory-access patterns to improve understanding of concurrency bugs,” in *Proc. Int’l. Symp. Software Testing and Analysis (ISSTA)*, Lugano, Switzerland, Jul. 2013. [32/124=25.8%]
- [C26] **Jee Choi**, D. Bedard, R. Fowler, and R. Vuduc, “A roofline model of energy,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, This paper is a short peer-reviewed conference version of the following technical report: <https://smartech.gatech.edu/xmlui/handle/1853/45737>, Boston, MA, USA, May 2013. doi: 10.1109/IPDPS.2013.77. [106/494=21.5%]
- [C27] **Kenneth Czechowski** and R. Vuduc, “A theoretical framework for algorithm-architecture co-design,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Boston, MA, USA, May 2013. doi: 10.1109/IPDPS.2013.99. [106/494=21.5%]
- [C28] **William B. March, Kenneth Czechowski, Marat Dukhan, T. Benson, Dongryeol Lee**, A. J. Connolly, R. Vuduc, E. Chow, and A. G. Gray, “Optimizing the computation of n -point correlations on large-scale astronomical data,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis (“Supercomputing” or SC)*, Nov. 2012. [Online]. Available: <http://dl.acm.org/citation.cfm?id=2389097>. [100/472=21.2%]
- [C29] **Aparna Chandramowlishwaran, Jee Whan Choi**, K. Madduri, and R. Vuduc, “Towards a communication optimal fast multipole method and its implications for exascale,” in *Proc. ACM Symp. Parallel Algorithms and Architectures (SPAA)*, Brief announcement., Pittsburgh, PA, USA, Jun. 2012. doi: 10.1145/2312005.2312039.
- [C30] **Kenneth Czechowski, Chris McClanahan, Casey Battaglini, Kartik Iyer**, P.-K. Yeung, and R. Vuduc, “On the communication complexity of 3D FFTs and its implications for exascale,” in *Proceedings of the ACM International Conference on Supercomputing (ICS)*, San Servolo Island, Venice, Italy, Jun. 2012. doi: 10.1145/2304576.2304604. [36/161=22.4%]
- [C31] **Dongryeol Lee**, R. Vuduc, and A. G. Gray, “A distributed kernel summation framework for general-dimension machine learning,” in *Proc. SIAM Int’l. Conf. Data Mining (SDM)*, Anaheim, CA, USA, Apr. 2012. [53 (talks)/363=14.6%]
Winner, Best Paper
- [C32] **Sangmin Park**, R. Vuduc, and M. J. Harrold, “A unified approach for localizing non-deadlock concurrency bugs,” in *Proc. IEEE Int’l. Conf. Software Testing, Verification, and Validation (ICST)*, Montréal, Canada, Apr. 2012. doi: 10.1109/ICST.2012.85. [39/145=26.9%]
- [C33] **Cong Hou, George Vulov**, D. Quinlan, D. Jefferson, R. Fujimoto, and R. Vuduc, “A new method for program inversion,” in *Proc. Int’l. Conf. Compiler Construction (CC)*, Tallinn, Estonia, Mar. 2012. [Online]. Available: <http://www.cc.gatech.edu/~chou3/ProgramInversion.pdf>. [13/51=25.5%]

- [C34] **Jaewoong Sim, Aniruddha Dasgputa**, H. Kim, and R. Vuduc, “A performance analysis framework for identifying performance benefits in GPGPU applications,” in *Proceedings of the ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)*, New Orleans, LA, USA, Feb. 2012. doi: [10.1145/2145816.2145819](https://doi.org/10.1145/2145816.2145819). [26/175=14.9%]
- [C35] **Sooraj Bhat**, A. Agarwal, R. Vuduc, and A. Gray, “A type theory for probability density functions,” in *ACM SIGACT-SIGPLAN Symp. Principles of Programming Languages (POPL 2012)*, Philadelphia, PA, USA, Jan. 2012. doi: [10.1145/2103656.2103721](https://doi.org/10.1145/2103656.2103721). [44/205=21.5%]
- [C36] **George Vulov, Cong Hou**, R. Vuduc, D. Quinlan, R. Fujimoto, and D. Jefferson, “The Backstroke framework for source level reverse computation applied to parallel discrete event simulation,” in *Proc. Winter Simulation Conf. (WSC)*, S. Jain, R. R. Creasey, J. Himmelspach, K. White, and M. Fu, Eds., Phoenix, AZ, USA: IEEE, Dec. 2011. [Online]. Available: <http://www.informs-sim.org/wsc11papers/264.pdf>.
- [C37] **Kenneth Czechowski, Chris McClanahan, Casey Battaglino, Kartik Iyer**, P.-K. Yeung, and R. Vuduc, “Prospects for scalable 3D FFTs on heterogeneous exascale systems,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis (“Supercomputing” or SC)*, (poster; extended version available as Georgia Tech report GT-CSE-11-02, Nov. 2011).
- [C38] **Jaekyu Lee, Nagesh B. Lakshminarayana**, H. Kim, and R. Vuduc, “Many-thread aware prefetching mechanisms for GPGPU applications,” in *Proc. IEEE/ACM Int’l. Symp. Microarchitecture (MICRO)*, Atlanta, GA, USA, Dec. 2010. doi: [10.1109/MICRO.2010.44](https://doi.org/10.1109/MICRO.2010.44). [45/248=18.1%]
- [C39] **Aparna Chandramowlishwaran**, K. Madduri, and R. Vuduc, “Diagnosis, tuning, and redesign for multicore performance: A case study of the fast multipole method,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis (“Supercomputing” or SC)*, New Orleans, LA, USA, Nov. 2010. doi: [10.1109/sc.2010.19](https://doi.org/10.1109/sc.2010.19). [51/253=20.2%]
- [C40] **Abtin Rahimian**, I. Lashuk, **Aparna Chandramowlishwaran, Dhairya Malhotra, Logan Moon**, R. Sampath, **Aashay Shringarpure**, S. Veerapaneni, J. Vetter, R. Vuduc, D. Zorin, and G. Biros, “Petascale direct numerical simulation of blood flow on 200k cores and heterogeneous architectures,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis (“Supercomputing” or SC)*, New Orleans, LA, USA, Nov. 2010. doi: [10.1109/sc.2010.42](https://doi.org/10.1109/sc.2010.42). [51/253=20.2%] **Winner, Gordon Bell Prize**
- [C41] **Sangmin Park**, R. W. Vuduc, and M. J. Harrold, “Falcon: Fault localization for concurrent programs,” in *Proc. ACM/IEEE Int’l. Conf. Software Eng.*, Cape Town, South Africa, May 2010. doi: [10.1145/1806799.1806838](https://doi.org/10.1145/1806799.1806838). [52/380=13.7%]

- [C42] **Aparna Chandramowlishwaran**, K. Knobe, and R. Vuduc, “Performance evaluation of Concurrent Collections on high-performance multicore computing systems,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Atlanta, GA, USA, Apr. 2010. doi: [10.1109/IPDPS.2010.5470404](https://doi.org/10.1109/IPDPS.2010.5470404). [127/527=24.1%] **Winner, Best Paper (software track)**
- [C43] **Aparna Chandramowlishwaran**, S. Williams, L. Oliker, **Ilya Lashuk**, G. Biros, and R. Vuduc, “Optimizing and tuning the fast multipole method for state-of-the-art multicore architectures,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Atlanta, GA, USA, Apr. 2010. doi: [10.1109/IPDPS.2010.5470415](https://doi.org/10.1109/IPDPS.2010.5470415). [127/527=24.1%]
- [C44] **Jee Whan Choi**, **Amik Singh**, and R. W. Vuduc, “Model-driven autotuning of sparse matrix-vector multiply on GPUs,” in *Proceedings of the ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)*, Bangalore, India, Jan. 2010. doi: [10.1145/1693453.1693471](https://doi.org/10.1145/1693453.1693471). [29/173=16.8%]
- [C45] **Aparna Chandramowlishwaran**, K. Knobe, and R. Vuduc, “Applying the Concurrent Collections programming model to asynchronous parallel dense linear algebra,” in *Proceedings of the ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP)*, (poster), Bangalore, India, Jan. 2010. doi: [10.1145/1693453.1693506](https://doi.org/10.1145/1693453.1693506). [Papers+posters: 45/173=26.1%]
- [C46] **Ilya Lashuk**, **Aparna Chandramowlishwaran**, H. Langston, **Tuan-Anh Nguyen**, R. Sampath, **Aashay Shringarpure**, R. Vuduc, L. Ying, D. Zorin, and G. Biros, “A massively parallel adaptive fast multipole method on heterogeneous architectures,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis (“Supercomputing” or SC)*, Portland, OR, USA, Nov. 2009. doi: <http://doi.acm.org/10.1145/1654059.1654118>. [59/261=22.6%] **Finalist, Best Paper**
- [C47] **Nitin Arora**, **Aashay Shringarpure**, and R. Vuduc, “Direct n -body kernels for multicore platforms,” in *Proc. Int’l. Conf. Parallel Processing (ICPP)*, Vienna, Austria, Sep. 2009. doi: <http://dx.doi.org/10.1109/ICPP.2009.71>. [71/220=32.3%]
- [C48] **Nitin Arora**, R. P. Russell, and R. W. Vuduc, “Fast sensitivity computations for numerical optimizations,” in *Proc. AAS/AIAA Astrodynamics Specialist Conference*, ser. AAS 09-435, Pittsburgh, PA, USA, Aug. 2009. [Online]. Available: http://soliton.ae.gatech.edu/people/rrussell/FinalPublications/ConferencePapers/09AugAAS_09-392_p2pLowthrust.pdf.
- [C49] **Sundaresan Venkatasubramanian** and R. W. Vuduc, “Tuned and wildly asynchronous stencil kernels for hybrid CPU/GPU platforms,” in *Proceedings of the ACM International Conference on Supercomputing (ICS)*, New York, NY, USA, Jun. 2009. doi: <http://dx.doi.org/10.1145/1542275.1542312>. [47/191=25%]
- [C50] **Seunghwa Kang**, D. Bader, and R. Vuduc, “Understanding the design trade-offs among current multicore systems for numerical computations,” in *Proceedings of the IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Rome, Italy, May 2009. doi: <http://doi.ieeecomputersociety.org/10.1109/IPDPS.2009.5161055>. [101/440=23.0%]

- [C51] **Manisha Gajbe**, A. Canning, J. Shalf, L.-W. Wang, H. Wasserman, and R. Vuduc, “Auto-tuning distributed-memory 3-dimensional fast Fourier transforms on the Cray XT4,” in *Proc. Cray User’s Group (CUG) Meeting*, Atlanta, GA, USA, May 2009. [Online]. Available: http://www.cug.org/5-publications/proceedings_attendee_lists/CUG09CD/S09_Proceedings/pages/authors/11-15Wednesday/14C-Gajbe/GAJBE-paper.pdf.
- [C52] **Sam Williams**, L. Oliker, R. Vuduc, J. Shalf, K. Yelick, and J. Demmel, “Optimization of sparse matrix-vector multiplication on emerging multicore platforms,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis (“Supercomputing” or SC)*, 2007. doi: <http://dx.doi.org/10.1145/1362622.1362674>. [54/268=20.1%]
- [C53] D. Quinlan, R. Vuduc, T. Panas, **Jochen Härdtlein**, and **Andreas Sæbjørnsen**, “Support for whole-program analysis and the verification of the one-definition rule in C++,” in *Proc. Static Analysis Summit (SAS)*, vol. NIST Special Publication 500-262, 2006, pp. 27–35. [Online]. Available: http://samate.nist.gov/docs/NIST_Special_Publication_500-262.pdf.
- [C54] D. Quinlan, S. Ur, and R. Vuduc, “An extensible open-source compiler infrastructure for testing,” in *Proc. IBM Haifa Verification Conf. (VC)*, vol. LNCS 3875, Haifa, Israel: Springer Berlin / Heidelberg, Nov. 2005, pp. 116–133. doi: [10.1007/11678779_9](https://doi.org/10.1007/11678779_9).
- [C55] R. W. Vuduc and **Hyun-Jin Moon**, “Fast sparse matrix-vector multiplication by exploiting variable block structure,” in *Proc. High-Performance Computing and Communications Conf. (HPCC)*, vol. LNCS 3726, Sorrento, Italy: Springer, Sep. 2005, pp. 807–816. doi: [10.1007/11557654_91](https://doi.org/10.1007/11557654_91). [116/387=30%]
- [C56] R. Vuduc, J. W. Demmel, and K. A. Yelick, “OSKI: A library of automatically tuned sparse matrix kernels,” in *Proc. SciDAC, J. Physics: Conf. Ser.*, vol. 16, 2005, pp. 521–530. doi: <http://dx.doi.org/10.1088/1742-6596/16/1/071>.
- [C57] **Benjamin C. Lee**, R. Vuduc, J. Demmel, and K. Yelick, “Performance models for evaluation and automatic tuning of symmetric sparse matrix-vector multiply,” in *Proc. Int’l. Conf. Parallel Processing (ICPP)*, Montreal, Canada, Aug. 2004. doi: <http://dx.doi.org/10.1109/ICPP.2004.1327917>. [65/190=34.2%] **Winner, Best Paper**
- [C58] **Richard Vuduc**, J. W. Demmel, K. A. Yelick, **Shoaib Kamil**, **Rajesh Nishtala**, and **Benjamin Lee**, “Performance optimizations and bounds for sparse matrix-vector multiply,” in *Proceedings of the ACM/IEEE International Conference for High-Performance Computing, Networking, Storage, and Analysis (“Supercomputing” or SC)*, Baltimore, MD, USA, Nov. 2002. [Online]. Available: <http://portal.acm.org/citation.cfm?id=762822>. **Finalist, Best Student Paper**
- [C59] **Richard Vuduc**, J. W. Demmel, and J. A. Bilmes, “Statistical models for empirical search-based performance tuning,” in *Proc. Int’l. Conf. Computational Science (ICCS)*, Extends workshop version: <http://www.eecs.harvard.edu/~smith/fddo3/papers/107.ps>, vol. LNCS 2073, San Francisco, CA, USA: Springer Berlin / Heidelberg, May 2001, pp. 117–126. doi: [10.1007/3-540-45545-0_21](https://doi.org/10.1007/3-540-45545-0_21).

- [C60] **Danyel Fisher, Kris Hildrum, Jason Hong, Mark Newman, Megan Thomas,** and **Richard Vuduc**, “SWAMI: A framework for collaborative filtering algorithm development and evaluation,” in *Proc. ACM Conf. Research and Development in Information Retrieval (SIGIR)*, (poster), Athens, Greece, Jul. 2000, pp. 366–368. doi: <http://dx.doi.org/10.1145/345508.345658>.
- [C61] B. Balko, I. Kay, **Richard Vuduc**, and J. Neuberger, “An investigation of the possible enhancement of nuclear superfluorescence through crystalline and hyperfine interaction effects,” in *Proc. Lasers '95*, 1996, p. 308.

IV-B.3 Other Refereed Material, e.g., Workshops

(Papers [W20]–[W29] are for work prior to my joining Georgia Tech.)

- [W1] **Eric Hein**, J. S. Young, **Srinivas Eswar**, **Jiajia Li**, **Patrick Lavin**, R. Vuduc, and J. Riedy, “An initial characterization of the Emu Chick,” in *Proceedings of the IPDPS Workshops: 8th International Workshop on Accelerators and Hybrid Exascale Systems (AsHES)*, Vancouver, BC, Canada, 2018. [Online]. Available: <http://www.mcs.anl.gov/events/workshops/ashes/2018/>.
- [W2] **Jiajia Li**, **Yuchen Ma**, **Chenggang Yan**, and R. Vuduc, “Optimizing sparse tensor times matrix on multicore and manycore architectures,” in *Proceedings of the 6th Workshop on Irregular Applications: Architectures and Algorithms (IA³)*, co-located with SC16, Salt Lake City, UT, USA, Nov. 2016. [Online]. Available: <http://hpc.pnl.gov/IA3>.
- [W3] J. Young and R. Vuduc, “Finding balance in the post-Moore’s Law era (a position paper),” in *Proceedings of the 1st Post-Moore’s Era Supercomputing (PMES) Workshop*, co-located with SC16, Salt Lake City, UT, USA, Nov. 2016. [Online]. Available: <https://sites.google.com/site/2016pmes/program>.
- [W4] **Marat Dukhan**, R. Vuduc, and J. Riedy, “Wanted: Floating-point add round-off error instruction,” in *Proceedings of the 2nd International Workshop on Performance Modeling: Methods and Applications (PMAA)*, Frankfurt, Germany, Jun. 2016. [Online]. Available: <http://arxiv.org/abs/1603.00491>.
- [W5] **Piyush Kumar Sao**, O. Green, **Chirag Jain**, and R. Vuduc, “A self-correcting connected components algorithm,” in *Proceedings of the Fault-Tolerance for HPC at eXtreme Scale (FTXS) Workshop*, Kyoto, Japan, May 2016. [Online]. Available: <https://sites.google.com/site/ftxsworkshop/home/ftxs-2016>.
- [W6] **Jee W. Choi** and R. W. Vuduc, “Analyzing the energy-efficiency of the fast multipole method using a DVFS-aware energy model,” in *Proceedings of the Heterogeneous Computing Workshop (HCW), at IPDPS’16*, Chicago, IL, USA, May 2016. [Online]. Available: <http://hcw.eecs.wsu.edu/>.
- [W7] **Mohammad M. Hossain**, T. M. Tucker, T. R. Kurfess, and R. W. Vuduc, “A GPU-parallel construction of volumetric trees,” in *Proceedings of the 5th Workshop on Irregular Applications: Architectures and Algorithms (IA³)*, Austin, TX, USA, Nov. 2015. doi: 10.1145/2833179.2833191. [Online]. Available: <http://hpc.pnl.gov/IA3/IA3/IA3-2015/IA3/Program.html>.

- [W8] **Casey Battaglini, Robert Pienta**, and R. Vuduc, “GraSP: Distributed streaming graph partitioning,” in *Proc. 11th Workshop on High-Performance Graph Mining (HPGM)*, co-located with KDD’15, Sydney, Australia, Aug. 2015.
- [W9] **Marat Dukhan, Robert Guthrie, Robertson Taylor**, and R. Vuduc, “Furious.js: A model for offloading compute-intensive javascript applications,” in *Proceedings of the 1st Workshop on High-Performance Scripting Languages*, M. J. Garzaran, S. Midkiff, and D. Padua, Eds., San Francisco, CA, USA, Feb. 2015. [Online]. Available: <http://polaris.cs.uiuc.edu/hps1/>.
- [W10] **Jee Choi, Aparna Chandramowlishwaran**, K. Madduri, and R. Vuduc, “A CPU-GPU hybrid implementation and model-driven scheduling of the fast multipole method,” in *Proc. 7th Wkshp. on General-purpose Processing using GPUs (GPGPU-7)*, Salt Lake City, UT, USA: ACM, Mar. 2014. doi: <http://doi.acm.org/10.1145/2576779.2576787>. [Online]. Available: <http://www.ece.neu.edu/groups/nucar/GPGPU/GPGPU7/>.
- [W11] **Piyush Sao** and R. Vuduc, “Self-stabilizing iterative solvers,” in *Proc. 4th Wkshp. Latest Advances in Scalable Algorithms for Large-scale Systems (Scala)*, Denver, CO, USA, Nov. 2013. doi: [10.1145/2530268.2530272](https://doi.org/10.1145/2530268.2530272). [Online]. Available: <http://www.csm.ornl.gov/srt/conferences/Scala/2013/>.
- [W12] **Cong Hou**, D. Quinlan, D. Jefferson, R. Fujimoto, and R. Vuduc, “Synthesizing loops for program inversion,” in *Proc. 4th Wkshp. Reversible Computation*, Copenhagen, Denmark, Jul. 2012. doi: [10.1007/978-3-642-36315-3_6](https://doi.org/10.1007/978-3-642-36315-3_6). [Online]. Available: <http://www.reversible-computation.org/2012/cms>. [23/46=50%]
- [W13] R. Vuduc, **Kenneth Czechowski, Aparna Chandramowlishwaran**, and **Jee Whan Choi**, “Courses in high-performance computing for scientists and engineers,” in *Proc. NSF/TCPP Wkshp. Parallel and Distributed Computing Education (EduPar)*, co-located with IPDPS’12, Shanghai, China, May 2012.
- [W14] **Raghul Gunasekaran**, D. Dillow, G. Shipman, R. Vuduc, and E. Chow, “Characterizing application runtime behavior from system logs and metrics,” in *Proc. Int’l. Wkshp. Characterizing Applications for Heterogeneous Exascale Systems (CACHES)*, Tucson, AZ, USA, Jun. 2011.
- [W15] **Kenneth Czechowski, Casey Battaglini, Chris McClanahan, Aparna Chandramowlishwaran**, and R. Vuduc, “Balance principles for algorithm-architecture co-design,” in *Proc. USENIX Wkshp. Hot Topics in Parallelism (HotPar)*, Berkeley, CA, USA, May 2011. [Online]. Available: http://www.usenix.org/events/hotpar11/tech/final_files/Czechowski.pdf. [Talks: 16/45=35.5%]
- [W16] R. Vuduc, **Aparna Chandramowlishwaran, Jee Whan Choi, Murat Efe Guney**, and **Aashay Shringarpure**, “On the limits of GPU acceleration,” in *Proc. USENIX Wkshp. Hot Topics in Parallelism (HotPar)*, Berkeley, CA, USA, Jun. 2010. [Talks: 16/68=23.5%]

- [W17] **Sooraj Bhat**, A. Agarwal, A. Gray, and R. Vuduc, “Toward interactive statistical modeling,” *Procedia Computer Science*, vol. 1, no. 1, pp. 1829–1838, May 2010, Proc. Int’l. Conf. Computational Science (ICCS), Wkshp. Automated Program Generation for Computational Science (APGCS). doi: [10.1016/j.procs.2010.04.205](https://doi.org/10.1016/j.procs.2010.04.205). [10/21=47.6%]
- [W18] C. Liao, D. J. Quinlan, R. Vuduc, and T. Panas, “Effective source-to-source outlining to support whole program empirical optimization,” in *Proc. Int’l. Wkshp. Languages and Compilers for Parallel Computing (LCPC)*, vol. LNCS, Newark, DE, USA, Oct. 2009. doi: [10.1007/978-3-642-13374-9_21](https://doi.org/10.1007/978-3-642-13374-9_21).
- [W19] **Aparna Chandramowlishwaran**, **Abhinav Karhu**, **Ketan Umare**, and R. Vuduc, “Numerical algorithms with tunable parallelism,” in *Proc. Wkshp. Software Tools for Multicore Systems (STMCS)*, at *IEEE/ACM Int’l. Symp. Code Generation and Optimization (CGO)*, Boston, MA, USA, Apr. 2008. [Online]. Available: <http://people.csail.mit.edu/rabbah/conferences/08/cgo/stmcs/papers/vuduc-stmcs08.pdf>.
- [W20] T. Panas, D. Quinlan, and R. Vuduc, “Analyzing and visualizing whole program architectures,” in *Proc. Wkshp. Aerospace Software Engineering (AeroSE)*, at *ACM/IEEE Int’l. Conf. Software Eng. (ICSE)*, Also: Lawrence Livermore National Laboratory Technical Report UCRL-PROC-231453, Minneapolis, MN, USA, May 2007. [Online]. Available: <http://www.osti.gov/bridge/servlets/purl/909924-c8K5TR/909924.pdf>.
- [W21] —, “Tool support for inspecting the code quality of HPC applications,” in *Proc. Wkshp. Software Eng. for High-Performance Computing Applications (SE-HPC)*, at *ACM/IEEE Int’l. Conf. Software Eng. (ICSE)*, Minneapolis, MN, USA, May 2007. doi: <http://dx.doi.org/10.1109/SE-HPC.2007.8>.
- [W22] D. Quinlan, R. Vuduc, and **Ghassan Misherghi**, “Techniques for specifying bug patterns,” in *Proc. ACM Wkshp. Parallel and Distributed Systems: Testing and Debugging (PADTAD)*, at *Int’l. Symp. Software Testing and Analysis (ISSTA)*, Portland, ME, USA, Jul. 2007. doi: <http://doi.acm.org/10.1145/1273647.1273654>.
Winner, Best Paper
- [W23] Q. Yi, K. Seymour, H. You, R. Vuduc, and D. Quinlan, “POET: Parameterized Optimizations for Empirical Tuning,” in *Proc. Wkshp. Performance Optimization of High-level Languages and Libraries (POHLL)*, at *IEEE Int’l. Par. Distrib. Processing Symp. (IPDPS)*, Long Beach, CA, USA, Mar. 2007, pp. 1–8. doi: <http://dx.doi.org/10.1109/IPDPS.2007.370637>.
- [W24] D. Quinlan, M. Schordan, R. Vuduc, and Q. Yi, “Annotating user-defined abstractions for optimization,” in *Proc. Wkshp. Performance Optimization of High-level Languages and Libraries (POHLL)*, at *IEEE Int’l. Par. Distrib. Processing Symp. (IPDPS)*, Rhodes, Greece, Apr. 2006. doi: <http://dx.doi.org/10.1109/IPDPS.2006.1639722>.

- [W25] R. Vuduc, M. Schulz, D. Quinlan, and B. de Supinski, “Improving distributed memory applications testing by message perturbation,” in *Proc. ACM Wkshp. Parallel and Distributed Systems: Testing and Debugging (PADTAD)*, at *Int'l. Symp. Software Testing and Analysis (ISSTA)*, Portland, ME, USA, Jul. 2006. doi: <http://dx.doi.org/10.1145/1147403.1147409>. **Winner, Best Paper**
- [W26] **Richard Vuduc, Attila Gyulassy**, J. W. Demmel, and K. A. Yelick, “Memory hierarchy optimizations and bounds for sparse $A^T Ax$,” in *Proc. Wkshp. Parallel Linear Algebra (PLA)*, at *Int'l. Conf. Computational Sci. (ICCS)*, vol. LNCS 2659, Melbourne, Australia: Springer Berlin / Heidelberg, Jun. 2003, pp. 705–714. doi: [10.1007/3-540-44863-2_69](https://doi.org/10.1007/3-540-44863-2_69).
- [W27] **Richard Vuduc, Shoaib Kamil, Jen Hsu, Rajesh Nishtala**, J. W. Demmel, and K. A. Yelick, “Automatic performance tuning and analysis of sparse triangular solve,” in *Proc. Wkshp. Performance Optimization of High-level Languages and Libraries (POHLL)*, at *ACM Int'l. Conf. Supercomputing (ICS)*, New York, USA, Jun. 2002. [Online]. Available: <http://www.ece.lsu.edu/jxr/pohll-02/papers/vuduc.pdf>. **Winner, Best Presentation; Winner, Best Student Paper**
- [W28] **Richard Vuduc**, J. Demmel, and J. Bilmes, “Statistical modeling of feedback data in an automatic tuning system,” in *Proc. ACM Wkshp. Feedback-Directed Dynamic Optimization (FDDO)*, at *Int'l. Symp. Microarchitecture (MICRO)*, Monterey, CA, USA, Dec. 2000. [Online]. Available: <http://www.eecs.harvard.edu/~smith/fddo3/papers/107.ps>. **Winner, Best Presentation**
- [W29] **Richard Vuduc** and J. W. Demmel, “Code generators for automatic tuning of numerical kernels: Experiences with FFTW,” in *Proc. Semantics, Applications, and Implementation of Program Generation (SAIG)*, at *ACM SIGPLAN Int'l. Conf. Functional Programming (ICFP)*, Montréal, Canada, Sep. 2000. doi: [10.1007/3-540-45350-4_14](https://doi.org/10.1007/3-540-45350-4_14).

IV-B.4 Submitted Conference or Journal Articles

- [S1] **Patrick Lavin**, J. Young, J. Riedy, R. Vuduc, A. Vose, D. Ernst, S. Mehta, and J. Kohn, *Spatter: A tool for evaluating scatter/gather performance*, (submitted), Apr. 2019.
- [S2] P. Sao, R. Kannan, P. Gera, and R. Vuduc, *A supernodal all pairs-shortest path algorithm*, (submitted), Apr. 2019.
- [S3] **Xin Chen**, D. Konobrytskyi, T. M. Tucker, T. R. Kurfess, and R. Vuduc, *Faster collision detection at high resolution for CNC milling applications on GPUs*, (submitted), Jan. 2019.
- [S4] J. S. Young, E. Hein, **Srinivas Eswar**, J. Riedy, R. Vuduc, P. Lavin, J. Li, J. Riedy, R. Vuduc, and T. Conte, *A microbenchmark characterization of the Emu Chick*, (submitted), 2018.
- [S5] E. Hein, **Srinivas Eswar**, **Abdurrahman Yaşar**, J. Li, J. S. Young, T. Conte, Ü. Çatulyürek, R. Vuduc, J. Riedy, and B. Uçar, *Programming strategies for irregular algorithms on the Emu Chick*, (submitted), 2018.

- [S6] **Rahul Duggal, Siddharth Biswal**, M. B. Westover, K. Stojanovic, R. Vuduc, and J. Sun, *Compact convolutional neural networks for sleep staging on electroencephalogram data*, (submitted), Nov. 2018.
- [S7] **Patrick Lavin**, J. Riedy, R. Vuduc, and J. Young, *Spatter: A benchmark suite for evaluating sparse access patterns*, (submitted), Oct. 2018.

IV-C Other Publications and Creative Products

IV-C.1 Non-refereed Publications

- [O1] D. N. Parikh, M. E. Myers, R. Vuduc, and R. A. van de Geijn, *A simple methodology for computing families of algorithms*, arXiv, Aug. 2018. [Online]. Available: <https://arxiv.org/abs/1808.07832>.
- [O2] **Ioakeim Perros**, E. E. Papalexakis, F. Wang, R. Vuduc, E. Searles, M. Thompson, and J. Sun, *SPARTan: Scalable PARAFAC2 for large and sparse data*, Mar. 2017. doi: arXiv:1703.04219. [Online]. Available: <https://arxiv.org/abs/1703.04219v1>.
- [O3] **Ioakeim Perros, Robert Chen**, R. Vuduc, and J. Sun, “Sparse hierarchical Tucker factorization and its application to healthcare,” Tech. Rep. arXiv:1610.07722, Oct. 2016, Extended version of a conference short paper. [Online]. Available: <https://arxiv.org/abs/1610.07722>.
- [O4] **Marat Dukhan**, R. Vuduc, and J. Riedy, *Wanted: Floating-point add round-off error instruction*, arXiv:1603.00491, Mar. 2016. [Online]. Available: <http://arxiv.org/abs/1603.00491>.
- [O5] Y. Zhao, Q. Yi, K. Kennedy, D. Quinlan, and R. Vuduc, “Parameterizing loop fusion for automated empirical tuning,” Center for Applied Scientific Computing, Lawrence Livermore National Laboratory, California, USA, Tech. Rep. UCRL-TR-217808, Dec. 2005. doi: <http://dx.doi.org/10.2172/890608>.
- [O6] **E. Jason Riedy and Richard Vuduc**, *Microbenchmarking the Tera MTA*, <http://vuduc.org/pubs/riedy99-tera-report.pdf>, May 1998.

IV-C.2 Software

- [F1] M. Dukhan, *NNPACK: Neural Network Package*, Jan. 2017. [Online]. Available: <https://github.com/Maratyszczka/NNPACK>.
- [F2] C. McClanahan, *DiGPUFFT (“dig-puffed”): Distributed GPU FFTs*, Jul. 2011. [Online]. Available: <https://github.com/mcclanahoochie/digpufft>.
- [F3] R. Vuduc, *OSKI: Optimized Sparse Kernel Interface*, Jun. 2007. [Online]. Available: <https://bebop.cs.berkeley.edu/oski/about.html>.
- [F4] D. J. Quinlan, C. Liao, T. Panas, R. Matzke, M. Schordan, R. Vuduc, and Q. Yi, *ROSE Compiler Infrastructure*, Oct. 2005. [Online]. Available: http://rosecompiler.org/ROSE_UserManual/ROSE-UserManual.pdf.

IV-D Presentations

IV-D.1 Invited and Keynote Talks

- [T1] *(title ibd)*, Invited talk at **The 14th Scheduling for Large-Scale Systems Workshop**, Bordeaux, France, Jun. 2019. [Online]. Available: <https://scheduling2019.sciencesconf.org/>.
- [T2] *An algorithm, a data structure, and a machine that all (try to) move fewer bits*, **Invited keynote** at **VECPAR**, São Pedro, Brazil, Sep. 2018. [Online]. Available: <https://hpcgarage.org/vecpar18>.
- [T3] *A communication-avoiding sparse direct solver*, Talk at the **ICES Seminar**, University of Texas at Austin, Austin, TX, USA, Apr. 2018.
- [T4] *How much time, energy, power, and resilience does my algorithm need?* Talk at the **ECE Seminar**, University of Texas at Austin, Austin, TX, USA, Apr. 2018.
- [T5] *Designing an algorithm with a tuning knob that controls its power consumption*, Talk at the **SIAM Conference on Parallel Processing (PP)**, Tokyo, Japan, Mar. 2018. [Online]. Available: http://meetings.siam.org/sess/dsp_talk.cfm?p=89160.
- [T6] *A power-tunable algorithm to compute single-source shortest paths*, **Invited talk** at the University of Colorado, Colorado Springs (UCCS), Colorado Springs, CO, USA, Nov. 2017.
- [T7] *A power-tunable single-source shortest path algorithm*, **Invited keynote** for the 2nd International Workshop on Deepening Performance Models for Automatic Tuning (DPMAT), Nagoya, Japan, Aug. 2017. [Online]. Available: <http://www.abc-lib.org/Workshop/DPMAT2017.html>.
- [T8] *How much time, energy, and power does my algorithm need?* **Invited talk** for the Texas A&M University Computer Engineering and Systems Group (CESG) Seminar, College Station, TX, USA, Apr. 2017. [Online]. Available: <http://hpcgarage.org/aggies>.
- [T9] *How much time, energy, and power does my algorithm need?* **Invited talk** for University of Alabama, Birmingham, Dept. of Computer and Information Sciences Seminar, Birmingham, AL, USA, Sep. 2016. [Online]. Available: <http://hpcgarage.org/uab>.
- [T10] *How much time, energy, and power does my algorithm need?* **Invited keynote** at the International Symposium on Memory Systems (MEMSYS, memsys.io), Alexandria, VA, USA, Oct. 2016. [Online]. Available: <http://hpcgarage.org/memsys16>.
- [T11] *High-speed data analysis through specialization*, **Panelist**, HPC “Power Users,” Georgia Tech HPC External Advisory Group Meeting, May 2016. [Online]. Available: <http://hpcgarage.org/eag>.
- [T12] *How much time, energy, and power does my algorithm need?* **Invited talk** at the University of California, Irvine, Apr. 2016. [Online]. Available: <http://hpcgarage.org/uci>.

- [T13] *How much time, energy, and power does my algorithm need?* **Invited talk** at the University of Texas at Austin, Mar. 2016. [Online]. Available: <http://hpcgarage.org/longhorns>.
- [T14] *Performance understanding*, **Invited talk** at SPPEXA'16, Munich, Germany, Jan. 2016. [Online]. Available: <http://hpcgarage.org/sppexa16>.
- [T15] *Is there life after Moore?* **Invited keynote** at Post-Moore Computing Workshop in Japan, Tokyo, Japan, Dec. 2015. [Online]. Available: <http://hpcgarage.org/jppm15/>.
- [T16] *On algorithmic time, energy, and power*, **Invited keynote** at the 11th Workshop on High-Performance, Power-Aware Computing (HPPAC), at IPDPS'15, Salt Lake City, UT, USA, Mar. 2015. [Online]. Available: <http://hpcgarage.org/ipdps15>.
- [T17] *Computer science aspects of the fast multipole method*, **Featured Minisymposium Talk** at the SIAM Meeting on Computational Science and Engineering (CSE), Salt Lake City, UT, USA, Mar. 2015. [Online]. Available: <http://hpcgarage.org/cse15>.
- [T18] *A roofline model of energy*, Platform for Advanced Scientific Computing (PASC) meeting, Zürich, Switzerland, Jun. 2014. [Online]. Available: <http://hpcgarage.org/pasc14/>.
- [T19] *(position talk) execution under a power constraint is about optimal control*, **Invited panelist** at the High-Performance, Power-Aware Computing (HPPAC) Workshop at IPDPS'14, Phoenix, AZ, USA, May 2014. [Online]. Available: <http://hpcgarage.org/hppac14/>.
- [T20] *On the time, energy, and power to execute an algorithm*, **Invited keynote** at the SIAM Conference on Parallel Processing for Scientific Computing (SIAM PP), Portland, OR, USA, Feb. 2014. [Online]. Available: <http://www.siam.org/meetings/pp14/>.
- [T21] *Performance engineering practice*, Invited talk at the IEEE VIS Workshop on Visualization and Analysis of Performance of Large-scale Software, <http://hpcgarage.org/vapls13>, Atlanta, GA, USA, Oct. 2013. [Online]. Available: <http://www.sci.utah.edu/vapls2013>.
- [T22] *Generalized roofline analysis?* Dagstuhl Seminar 13401: Automatic application autotuning for HPC architectures, <http://hpcgarage.org/13401>; http://drops.dagstuhl.de/opus/volltexte/2014/4423/pdf/dagrep_v003_i009_p214_s13401.pdf, Dagstuhl, Germany, Sep. 2013. [Online]. Available: <http://www.dagstuhl.de/en/program/calendar/semhp/?semnr=13401>.
- [T23] *How much (execution) time, energy, and power will my algorithm cost?* **Invited keynote** at the Int'l. Conf. Parallel Processing and Applied Mathematics (PPAM), <http://hpcgarage.org/ppam13>, Warsaw, Poland, Sep. 2013. [Online]. Available: <http://ppam.pl/>.

- [T24] *Generalized roofline analysis*, Invited talk at ModSim: the US Department of Energy Workshop on Modeling and Simulation of Exascale Systems and Applications, <http://hpcgarage.org/modsim13>, Seattle, WA, USA, Sep. 2013. [Online]. Available: <http://hpc.pnl.gov/modsim/2013/>.
- [T25] *Can (your) algorithms inform architectures?* Invited talk at ExaMath: The US Department of Energy Applied Mathematics Research for Exascale Computing, <http://hpcgarage.org/examath13/>, Washington, DC, USA, Aug. 2013. [Online]. Available: <https://collab.mcs.anl.gov/display/examath>.
- [T26] *What do first principles of algorithms and architectures say about hybrid systems?* **Invited keynote** at the 3rd Int'l. Wkshp. Accelerators and Hybrid Exascale Systems (AsHES), <http://hpcgarage.org/ashes2013/>, Boston, MA, USA, May 2013. [Online]. Available: <http://www.mcs.anl.gov/events/workshops/ashes/2013>.
- [T27] *A theory for co-designing algorithms and architectures under power and chip-area constraints*, **Invited keynote** at the 10th Int'l. Mtg. on High-Performance Computing for Computational Science (VECPAR), Kobe, Japan. Jul. 2012. [Online]. Available: <http://nkl.cc.u-tokyo.ac.jp/VECPAR2012>.
- [T28] *A theory for co-designing algorithms and architectures under power and chip-area constraints*, Invited talk at the Young and Bright HPC Researchers session, International Supercomputing Conference (ISC), Hamburg, Germany, Jun. 2012. [Online]. Available: <http://www.isc-events.com/isc12/>.
- [T29] *Will exascale computing really require new algorithms and programming models?* **Invited panelist** at the IEEE Int'l. Parallel and Distributed Processing Symposium (IPDPS), Shanghai, China, May 2012. [Online]. Available: <http://ipdps.org>.
- [T30] *How might algorithms inform architectures at exascale?* **Invited keynote** at the Scalable Hierarchical Algorithms for eXtreme Computing (SHAX-C) Workshop, King Abdullah University of Science and Technology (KAUST), Saudi Arabia, Apr. 2012. [Online]. Available: <http://vuduc.org/talks/2012-SHAX-C/>.
- [T31] *A theory of co-design?* **Invited keynote** at the Partnership for Advanced Computing in Europe (PRACE) Future Technologies Workshop, Dansbury, UK, Apr. 2012. [Online]. Available: <http://vuduc.org/talks/2012-PRACE/>.
- [T32] *Principles of algorithm-architecture co-design*, Invited talk at the Institute for Computational and Experimental Research in Mathematics (ICERM), Brown University, Providence, RI, USA, Jan. 2012. [Online]. Available: <http://icerm.brown.edu/tw12-1-exascale>.
- [T33] *Balance principles for algorithm-architecture co-design*, ECE Seminar, Carnegie Mellon University, Oct. 2011.
- [T34] *Balance principles for algorithm-architecture co-design*, **Invited keynote** at Facing the Multicore Challenge II: A Conference for Young Scientists, Sep. 2011. [Online]. Available: <http://www.multicore-challenge.org/>.

- [T35] *State-of-the-art and future directions in autotuning*, **Invited keynote** at the 9th Int'l. Conf. Parallel Processing and Applied Mathematics (PPAM), Toruń, Poland, Sep. 2011. [Online]. Available: <http://ppam.pl>.
- [T36] *CnC for HPC*, Int'l. Conf. Industrial and Applied Mathematics (ICIAM), Minisymposium on Creating the Next Generation of High Performance Numerical Computing Capabilities, Vancouver, BC, Canada, http://meetings.siam.org/session/dsp_programsess.cfm?SESSIONCODE=12156, Jul. 2011.
- [T37] *Performance and correctness of software for large-scale heterogeneous systems*, **Invited keynote** at the Wkshp. Exploiting Concurrency Efficiently and Correctly (EC²), <http://www.cse.psu.edu/~swarat/ec2/>, Jul. 2011.
- [T38] *Performance principles and practice*, Invited talk at the Int'l. Supercomputing Conference (ISC), Hamburg, Germany, <http://www.supercomp.de/isc11>, Jun. 2011.
- [T39] *Parallel performance analysis principles and practice*, Invited talk at the Parallel Algorithms, Programming, Architectures (PAPA) Workshop, at the Design Automation Conference (DAC), <http://papaworkshop.com>, Jun. 2011.
- [T40] *Performance principles and practice*, Supercomputing Interest Community Seminar, IBM TJ Watson Laboratory, Yorktown Heights, NY, USA, May 2011.
- [T41] *Performance principles and practice*, **Invited talk** at the Salishan Conference on High-Speed Computing, sponsored by the US Dept. of Energy, Gleneden, OR, USA, <http://www.lanl.gov/orgs/hpc/salishan/>, Apr. 2011.
- [T42] *Performance engineering of a petascale blood flow simulator*, Invited seminar at the University of California, Berkeley, Apr. 2011.
- [T43] *Performance principles and practice*, Invited talk at the Wkshp. High-Performance Computing and Emerging Architectures, Institute for Mathematics and Its Applications at the University of Minnesota, organized by L.A. Barba, E. Darve, D. Keyes, <http://www.ima.umn.edu/2010-2011/W1.10-14.11/> – **Talk cancelled** due to weather, Jan. 2011.
- [T44] *Should I port my code to a GPU?* Scientific Computing and Numerics (SCAN) Seminar, organized by D. Bindel and A. Vladimirsky, Cornell University, <http://www.math.cornell.edu/~scan/index-f10.html>, Nov. 2010.
- [T45] *Opportunities and challenges in GPU co-processing*, National Science Foundation Workshop on Accelerators for Data-Intensive Applications, organized by V. Prasanna and D. Bader, Oct. 2010.
- [T46] *On the opportunities and limits of GPU co-processing*, Invited talk at the 2nd NSF Wkshp. Frontiers of Multicore Computing (FMC-II), organized by S. Zhou, Y. Yesha, and M. Halem, at the University of Maryland, Baltimore County, <http://www.mc2.umbc.edu/workshops/fmc2.php>, Sep. 2010.
- [T47] *Should I port my code to a GPU?* Invited talk at the Clusters, Clouds, and Grids for Scientific Computing (CCGSC), organized by J. Dongarra and B. Tourancheau, Flat Rock, NC, USA, <http://web.eecs.utk.edu/~dongarra/ccgsc2010/>, Sep. 2010.

- [T48] *On the limits of and opportunities for GPU acceleration*, Invited talk at the Scientific Discovery through Advanced Computing (SciDAC), US Department of Energy, Chattanooga, Tennessee, <http://computing.ornl.gov/workshops/scidac2010>, Jul. 2010.
- [T49] *Generalized n-body problems: From fast algorithms to fast code*, Dagstuhl Seminar 10191 on Program Composition and Optimization: Autotuning, Scheduling, Metaprogramming and Beyond, <http://www.dagstuhl.de/en/program/calendar/semhp/?semnr=10191>, May 2010.
- [T50] *Optimizing and tuning the fast multipole method for state-of-the-art multicore architectures*, SIAM Conf. Parallel Processing (SIAM PP), Seattle, WA, USA, <http://www.siam.org/meetings/pp10/>, Feb. 2010.
- [T51] *Parallel n-body solvers: Lessons learned in the multicore/ manycore era*, Yahoo! Labs, Bangalore, India, Jan. 2010.
- [T52] *Parallel n-body solvers: Lessons learned in the multicore/ manycore era*, NeurIPS Wkshp. Large-scale Machine Learning: Parallelism and Massive Datasets, <http://www.select.cs.cmu.edu/meetings/biglearn09/>, Vancouver, British Columbia, Canada, Dec. 2009.
- [T53] *Toward scalable particle methods for physics and data analysis*, Wkshp. Performance Analysis on Extreme-Scale Systems and Applications, at the Los Alamos Computer Science Symposium (LACSS), Santa Fe, NM, USA, <http://www.lanl.gov/conferences/lacss/2009/agenda/workshops.shtml>, Oct. 2009.
- [T54] *Toward a programming model for data analysis and mining*, Minisymposium on The Potential of Computational Algorithms in Datamining, at the SIAM Conf. Computational Sci. Eng. (SIAM CSE), Miami, FL, USA, http://meetings.siam.org/sess/dsp_programsess.cfm?SESSIONCODE=8103, Mar. 2009.
- [T55] *Recent progress in autotuning*, Intel Corporation, Hudson, MA, USA, Aug. 2008.
- [T56] *Expressing data structure transformations for an automatically tuned sparse matrix library*, Lua Workshop, George Washington University, Washington, DC, USA, <http://www.lua.org/wshop08.html#vuduc>, Jul. 2008.
- [T57] *Tuning sparse matrix-vector multiply for multicore*, Courant Institute, New York University, USA, Apr. 2008.
- [T58] *Tuning sparse matrix-vector multiply for multicore*, Oak Ridge National Laboratory, Oak Ridge, TN, USA, Apr. 2008.
- [T59] *Tuning sparse matrix-vector multiply for multicore*, Minisymposium on Algorithms and Optimizations Targeting Multi-Core Architectures, SIAM Conf. Parallel Processing (SIAM PP), Atlanta, GA, USA, http://meetings.siam.org/sess/dsp_programsess.cfm?SESSIONCODE=6762, Mar. 2008.
- [T60] *Automated data structure transformations for sparse matrix kernels*, Minisymposium on Tools for the Development of High-performance Scientific Applications, SIAM Conf. Parallel Processing (SIAM PP), Atlanta, GA, USA, http://meetings.siam.org/sess/dsp_programsess.cfm?SESSIONCODE=6765, Mar. 2008.

- [T61] *OSKI: A library of automatically tuned sparse matrix kernels*, **Invited keynote** at the Int'l. Wkshp. Automatic Performance Tuning (iWAPT), Tōkyō, Japan, <http://iwapt.org/2006/>, Oct. 2006.
- [T62] *OSKI: A library of automatically tuned sparse matrix kernels*, Kyōtō University, Japan, Oct. 2006.
- [T63] *Automatically tuned sparse matrix kernels*, High-Performance Computing Seminar, Pomona College, USA, Sep. 2006.
- [T64] *The Optimized Sparse Kernel Interface*, Bay Area Scientific Computing Day, Livermore, CA, USA, <https://computation.llnl.gov/casc/workshops/bascd/2006/>, Mar. 2006.
- [T65] *Tutorial: The ROSE source-to-source infrastructure*, IEEE Int'l. Conf. Parallel Architecture and Compilation Techniques (PACT), St. Louis, MO, USA, <http://www.informatik.uni-trier.de/~ley/db/conf/IEEEpact/IEEEpact2005.html>, Sep. 2005.
- [T66] *Automatically tuned sparse matrix kernels*, University of Rome, Tor Vegata, Italy, Jul. 2005.

IV-E Grants and Contracts

IV-E.1 As Principal Investigator

13. *Faster, smaller, and more energy-efficient inference using codebook-based quantization and FPGAs*
 PI: Richard Vuduc
 Co-PIs: Jeffrey Young (CS+CSE), Michael Isaev (CS)
 Facebook: [Caffe2 Research Award Competition](#)
 September 2017
 Awarded: \$40k
12. *A practical lower-bound on the execution time of certain stencil kernels*
 PI: Richard Vuduc
 Co-PI: Jeffrey Young (CS+CSE)
 ExxonMobil
 July 2017–June 2018
 Awarded: \$92k
11. *Post-GPU architectures and software for tensor computations*
 PI: Richard Vuduc
 Co-PI: Jeffrey Young (CS+CSE)
 Sandia National Laboratories, LDRD subcontract
 October 2016–October 2018
 Awarded: \$184k
10. *XPS: FULL: DSD: A Parallel Tensor Infrastructure (ParTI!) for Data Analysis*
 PI: Richard Vuduc
 Co-PI: Jimeng Sun
 National Science Foundation, [Exploiting Parallelism and Scalability \(XPS\)](#), Award

1533768

August 2015–July 2019

Awarded: \$750,000 over 4 years

9. *SHF: Small: How much execution time, energy, and power does an algorithm need?*

PI: Richard Vuduc (CoC/CSE)

National Science Foundation, [Award 1422935](#)

June 2014–May 2018

Funded: \$515,375

8. *A new theory of algorithm-architecture co-design*

PI: Richard Vuduc

Defense Advanced Research Projects Agency, [DARPA-BAA-11-34](#) (I2O Office-wide)

Computer Science Study Group, Phase 3 option

December 2012–December 2014

Funded: \$250,000

7. *Compiler-support for Reverse Computation*

PI: Richard Vuduc (CoC/CSE)

Lawrence Livermore National Laboratory

January 2011–May 2011

Funded: \$49,496.00

6. *Toward Exascale Pseudo-Spectral Codes for Turbulence Simulations on GPGPUs*

PI: Richard Vuduc (CoC/CSE)

Co-PI: P.K. Yeung (CoE/AE)

Georgia Institute of Technology, Institute for Data and HPC Type I Seed Grant Program

AY 2010–2011

Funded: \$25,000

5. *CAREER: Autotuning Foundations for Exascale Systems*

PI: Richard Vuduc

National Science Foundation, [Award 0953100](#)

June 2010–May 2014

Funded: \$460,000

4. *Foundations for a High-Speed, Low-Power Data Analytics Appliance*

PI: Richard Vuduc

Defense Advanced Research Projects Agency

Computer Science Study Group, Phase 2

June 2010–May 2012

Funded: \$389,111

3. *Autotuning Applications for Emerging Multicore Platforms*

PI: Richard Vuduc

Co-PI: Chi-Keung Luk (Intel Corporation)

2009–2010

Funded: \$50,000

2. *Algorithms and Software with Tunable Parallelism*

PI: Richard Vuduc

Defense Advanced Research Projects Agency

Computer Science Study Group (RA-08-52)

April 2009–April 2010

Funded: \$91,748

1. *THOR: A New Programming Model for Data Analysis and Mining*

PI: Richard Vuduc

Co-PI: Alexander G. Gray (CoC/CSE)

National Science Foundation, [Award 0833136](#)

September 2008–August 2010

Funded: \$686,647

IV-E.2 As Co-Principal Investigator

18. *MRI: Acquisition of an HPC System for Data-Driven Discovery in Computational Astrophysics, Biology, Chemistry, and Materials Science*
 PI: Srinivas Aluru
 Co-PIs: Richard Vuduc, Deirdre Shoemaker, David Sherrill, Surya Kalidindi
 National Science Foundation
 October 2018–September 2021
 Funded: \$3.7 million over 3 years
17. *DDARING: Dynamic Data-Aware Reconfiguration, Integration, and Generation*
 PI: Vivek Sarkar
 Co-PIs: David Bader, Tom Conte, Richard Vuduc (GT); Deming Chen, Wen-mei Hwu (UIUC); Scott Malkhe (Michigan)
 Defense Advanced Research Projects Agency (DARPA), Software-Defined Hardware
 June 2018–November 2020
 Funded: \$4.5 million over 2 years
16. *CDS&E: SuperSTARLU–Stacked, Accelerated Algorithms for Sparse Linear Systems*
 PI: Jeffrey Young (CS+CSE)
 Co-PIs: Jason Riedy (CSE), Richard Vuduc
 National Science Foundation, [Award 1710371](#)
 August 2017–July 2020
 Awarded: \$500,000
15. *PFI&BIC: Next Generation Real-Time Distributed Manufacturing Service Systems Using Digital Process Planning and GPU-Accelerated Parallel Computing*
 PI: Thomas Kurfess (ME)
 Co-PIs: Francis Durso (Psychology), Christopher Saldana (ME), Cassandra Telenko (ME), Richard Vuduc
 National Science Foundation, [Award 1631803](#)
 September 2016–August 2019
 Awarded: \$1 million
14. *EAGER-DynamicData: Power Aware Data Driven Distributed Simulation on Micro-Cluster Platforms*
 PI: Richard Fujimoto
 Co-PIs: Richard Vuduc, Michael Hunter (CEE)
 National Science Foundation, [EAGER-DynamicData, Award 1462503](#)

- September 2015–August 2017
 Awarded: \$240,000 over 2 years
13. *EAGER: Scaling Up Machine Learning with Virtual Memory*
 PI: Polo Chau
 Co-PIs: Richard Vuduc
 National Science Foundation, [Award 1551614](#)
 September 2015–August 2017
 Awarded: \$184,904 1 year
12. *Collaborative Research: EMBRACE: Evolvable Methods for Benchmarking Realism through Application and Community Engagement*
 PI: David A. Bader & Jack Dongarra (UTK)
 Co-PIs: E. J. Riedy, Richard Vuduc, Piotr Luszczek (UTK)
 National Science Foundation, [Benchmarks of Realistic Scientific Application Performance \(BRAP\) of Large-scale Computing Systems, Award 1535058](#)
 August 2015–July 2018
 Awarded: \$250,000 over 2 years
11. *Vancouver2: Vancouver2: Improving Programmability of Contemporary Heterogeneous Architectures*
 PI: Jeffrey Vetter (CoC/CSE + ORNL)
 Co-PIs: Wen-Mei Hwu (University of Illinois, Urbana-Champaign), Allen Maloney (University of Oregon), Richard Vuduc (CoC/CSE)
 Department of Energy, X-Stack
 June 2014–May 2017
 Funded: \$270,000 (to GT)
10. *SI2-SSI: Collaborative: The XScala Project: A community repository for model-driven design and tuning of data-intensive applications for extreme-scale accelerator-based systems*
 PI: David A. Bader (CoC/CSE)
 Co-PIs: Viktor Prasanna (University of Southern California), Edward J. Riedy (CoC/CSE), Richard Vuduc (CoC/CSE)
 National Science Foundation, [Award 1339745](#)
 October 2013–September 2018
 Funded: \$1,188,710
9. *XPS:CLCCA: Optimizing heterogeneous platforms for unstructured parallelism*
 PI: Sudha Yalamanchili (CoE/ECE)
 Co-PIs: Hyesoon Kim (CoC/CS), Richard VUduc (CoC/CSE)
 National Science Foundation, [Award 1337177](#)
 September 2013–August 2016
 Funded: \$735,055
8. *CPS: Synergy: Converting multi-axis machine tools into subtractive 3D printers by using intelligent discrete geometry data structures designed for parallel and distributed computing*
 PI: Thomas Kurfess (CoE/ME)
 Co-PI: Richard Vuduc (CoC/CSE)
 National Science Foundation, [Award 1329742](#)
 September 2013–August 2016
 Funded: \$969,557

7. *CCF: SHF: Small: Localization and Explanation of Faults in Concurrent Software*
 PI: Mary Jean Harrold (CoC/CS)
 Co-PI: Richard Vuduc (CoC/CSE)
 National Science Foundation, [Award 1116210](#)
 July 2011–June 2014
 Funded: \$490,496
6. *MLPACK: Scalable Machine Learning Software for Large-Scale Science*
 PI: Alexander Gray
 Co-PIs: Richard Vuduc, Haesun Park, Yu (Cathy) Jiao, John McDonald, Gordon Richards, Alexander Shapiro, Jeffrey Vetter
 Georgia Institute of Technology, Institute for Data and HPC Type II Seed Grant Program
 AY 2010–2011
 Funded: \$65,000
5. *Vancouver: Designing a Next-Generation Software Infrastructure for Heterogeneous Exascale Computing*
 PI: Jeffrey Vetter (CoC/CSE + ORNL)
 Co-PIs: Wen-Mei Hwu (University of Illinois, Urbana-Champaign), Allen Maloney (University of Oregon), Richard Vuduc (CoC/CSE)
 Department of Energy, X-Stack
 September 2010–August 2013
 Funded: \$339,130 (GT), \$3,000,000 (total)
4. *Collaborative Research: Establishing a Center for Hybrid Multicore Productivity Research*
 PI: David A. Bader (CoC/CSE), Thomas Conte (CoC/CS)
 Co-PIs: Nathan Clark (CoC/CS), Ada Gavrilovska (CoC/CS), Hyesoon Kim (CoC/CS), Richard Vuduc (CoC/CSE)
 National Science Foundation, [Award 0934114](#)
 August 2009–July 2010
 Funded: \$275,000
3. *From Algorithms to Hardware: Blueprints to Support Cooperative Hardware/Software Prefetching in Data-Intensive Applications*
 Co-PIs: Hyesoon Kim, Richard Vuduc
 Raytheon Faculty Fellowship
 August 2009–May 2010
 Funded: \$39,000
2. *Qameleon: Hardware/software Co-operative Automated Tuning for Heterogeneous Architectures*
 PI: Hyesoon Kim (CoC/CS)
 Co-PI: Richard Vuduc (CoC/CSE)
 National Science Foundation, joint with Semiconductor Research Corporation, [Award 0903447](#)
 August 2009–July 2012
 Funded: \$357,810
1. *Collaborative Research: Establishing an I/UCRC Center for Multicore Productivity Research (CMPR)*
 PI: Milt Halem (University of Maryland, Baltimore County)

Co-PIs: David A. Bader (CoC/CSE), Paul Woodward (University of Minnesota),
Paul Sheldon (University of California, San Diego)
Contributors: Richard Vuduc (CoC/CSE)
National Science Foundation, [Award 0831110](#)
August 2008
Funded: \$10,000

IV-E.3 As Senior Personnel or Contributor

1. Evaluating Memory-centric Architectures for High Performance Data Analysis
PI: E.J. Riedy
Co-PIs: David A. Bader, Thomas M. Conte (CoC/CS)
Senior Personnel: Jeffrey Young (CoC/CS), Richard Vuduc
IARPA
August 2017–August 2018
Awarded: \$662,525

V Education

In recognition of my teaching service, I have received a [Thank-a-Teacher](#) acknowledgment from at least one student in almost every semester since Spring 2009.

V-A Courses Taught

When	Course	Size
Spring '19	CSE 6730/CX 4230: Modeling & Simulation	(TBD)
Spring '19	CSE 6220-OMS: Intro to HPC	(TBD)
Fall '18	CSE 6040-OMS: Comp for Data Analysis	≈ 700
Fall '18	CSE 6040: Comp for Data Analysis	72
Fall '18	CSE 6001: Intro to CSE	23
Spring '18	CSE 6040-OMS: Comp for Data Analysis	348
Spring '18	CSE 6220-OMS: Intro to HPC	120
Fall '17	CSE 6220-OMS: Intro to HPC	64
Fall '17	CSE 6040-OMS: Comp for Data Analysis	141
Fall '17	CSE 6040: Comp for Data Analysis	60
Fall '17	CSE 6001: Intro to CSE	8
Spring '16	CSE 6220-OMS: Intro to HPC	36
Spring '16	CX 4230: Modeling & simulation	29
Fall '15	CSE 6220-OMS: Intro to HPC	41
Fall '15	CSE 6040: Comp for Data Analysis	37
Fall '15	CSE 6001: Intro to CSE	18
Spring '15	CX 4230: Modeling & simulation	32
Fall '14	CSE 6001: Intro to CSE	20
Fall '14	CSE 6230: HPC Tools and Applications	41
Fall '13	CSE 6001: Intro to CSE	9
Fall '13	CSE 6230: HPC Tools and Applications	36
Spring '13	CSE 6220: Intro to HPC	60
Fall '12	CSE 6230: HPC Tools and Applications	55
Spring '12	CS 4225: Intro to HPC	12
Fall '11	CSE 6230: HPC Tools & Apps	49
Spring '11	CS 4335 / CSE/ECE 6730: Modeling and Simulation	36
Fall '10	CSE 8803 HPC: Hot Topics in Parallel Computing	12
Spring '10	CS 4225: Introduction to HPC	
Fall '09	CSE 6230: HPC Tools and Applications	13
Spring '09	CS 4643 / MATH 4641: Numerical Analysis II	(cancelled)
Fall '08	CSE / CS 6230: HPC Tools and Applications	35
Spring '08	CSE 8803 PNA: Parallel Numerical Algorithms	21

V-B Individual Student Guidance

V-B.1 Ph.D. Students

7. Casey Battaglino (CoC/CSE) — Fall 2010–present
6. Xin Chen (CoC/CS) — Fall 2016–present
5. Marat Dukhan (CoC/CSE) — Fall 2012–present
4. Srinivas Eswar (CoC/CS) — Fall 2016–present¹
3. Michael Isaev (CoC/CS) — Spring 2017–present
2. Sara Karamati (CoC/CSE) — Fall 2014–present
1. Patrick Lavin (CoC/CSE) — Fall 2016–present

Graduated or no longer supervising

11. Daniel Browne (CoC/CSE) — Spring 2012–Spring 2016
10. Aparna Chandramowlishwaran (CoC/CSE) — Fall 2008–Fall 2013
— *Placement*: Assistant Professor at UC Irvine
9. Jee Choi (CoE/ECE) — Fall 2008–Spring 2015
— *Placement*: Postdoc at IBM T.J. Watson Research Lab; Assistant Professor at University of Oregon
8. Kenneth Czechowski (CoC/CSE) — Fall 2011–Spring 2019 — *Placement*: Main Street Hub
7. Raghul Gunasekaran (CoC/CSE) — Fall 2010–Fall 2012
6. Mohammad Hossain (CoC/CS) — Spring 2014–Fall 2016
— *Placement*: Facebook
5. Cong Hou (CoC/CS) — Summer 2009–Spring 2013
— *Placement*: Google
4. Jiajia Li (CoC/CSE) — Spring 2015–Summer 2018
— *Placement*: Pacific Northwest National Laboratory
3. Sangmin Park (CoC/CS; M.J. Harrold) — Fall 2008–Summer 2014
— *Placement*: Two Sigma
2. Piyush Kumar Sao (CoC/CSE) — Fall 2011–Spring 2018
— *Placement*: Oak Ridge National Laboratories
1. Zhengkai Wu (CoC/ECE) — Spring 2014–Summer 2017

Co-advised

1. George Vulov (CoC/CSE; R. Fujimoto) — Fall 2009–Fall 2011

V-B.2 M.S. Students

(None at present)

Graduated and/or no longer supervising

10. Vaibhav Bedia (CoC/CS) — Spring 2014–Fall 2014
— *Placed*: Apple

¹Originally met and began working with Srinivas in Spring 2015, when he was an M.S. student at Georgia Tech.

9. Stefan Henneking (CoC/CS) — Spring 2015–Spring 2016
 — *Thesis*: [Implementation and analysis of a parallel vertex-centered finite element segmental refinement multigrid solver](#)
 — *Committee*: Richard Vuduc (advisor, CoC/CSE), Edmond Chow (CoC/CSE), Mark Adams (Lawrence Berkeley National Laboratory)
 — *Now at*: UT Austin (ICES PhD program)
8. Robert Lee (CoC/CSE) — Spring 2014–Spring 2016
 — *Placement*: Tower Research Capital (NYC)
7. Wafa Louhichi (CoC/CSE; primary advisor: Tom Kurfess in CoE/ME) — Spring 2018–Spring 2019
6. Chris McClanahan (CoC/CS) — Fall 2010–Spring 2011
 — *Placed*: [AccelerEyes](#)
5. David S. Noble, Jr. (CoC/CSE) — Fall 2010–Spring 2013
 — *Placed*: [CD-Adapco](#)
4. Shruti Padamati (CoC/CS) — Spring 2014
3. Niveditha Raveendran (CoC/CS) — Spring 2014
 — *Placed*: [Oracle](#)
2. Archana Venkatesh (CoC/CS) — Spring 2014–Fall 2014
 — *Placed*: [Apple](#)
1. Sundaresan Venkatasubramanian (CoC/CS) — Spring 2008
 — *Thesis*: Tuned and wildly asynchronous stencil kernels for hybrid CPU/GPU platforms.
 — *Committee*: Richard Vuduc (advisor, CoC/CSE), Hyesoon Kim (CoC/CS), Jeffrey Vetter (CoC/CSE & ORNL)
 — *Placed*: [Amazon.com](#)

V-B.3 Undergraduate Students

Students are from Georgia Tech unless otherwise noted.

17. Judith Brennan — Summer 2018–present
16. Shaowei Zhu — Fall 2017–Spring 2018 — *Placed*: Amazon
15. DeVon Ingram — Spring 2016
14. Chaitanya Aluru (UC Berkeley) — Summer 2014
13. Lawrence Moore — Summer 2014
12. Austin Tucker (Morehouse College) — Summer 2013
11. Hyangjin Lee — Summer 2013
10. Lesly Sandoval (Georgia State University) — Summer 2011
9. Gurbinder Gill Singh (IIT-Roorkee) — Summer 2011
8. Ashish Narasimham — Fall 2009–Fall 2011
7. Japnik Singh (IIT-Bombay) — Summer 2010
6. Piyush Kumar Sao (IIT-Madras) — Summer 2010
5. Nimit Nigania (IIT-Madras) — Summer 2009
4. Amik Singh (IIT-Roorkee) — Summer 2009
3. Jada Jeffries (Hampton University) — Summer 2009 — *Placed*: AT&T
2. Gaurav Chadha (IIT-Guwahati) — Summer 2008
 — *Placed*: Ph.D. program at U. Michigan, EECS Dept.

1. Lauren Gracia (U. Houston–Downtown) — Summer 2008
— *Placed*: Chevron

V-B.4 Service on Thesis or Dissertation Committees

Ph.D. thesis examining committees (internal to Georgia Tech)

141. Patrick Flick – Advisor: Srinivas Aluru — CoC/CSE, Thesis Proposal, Spring 2018
140. Kasimir Gabert – Advisor: David Bader — CoC/CSE, Qualifying Exam, Spring 2018
139. SaBra Neal – Advisor: Richard Fujimoto — CoC/CSE, Thesis Defense, Spring 2018
138. Tony Pan – Advisor: Srinivas Aluru — CoC/CSE, Thesis Defense, Spring 2018
137. Vipin Sachdeva – Advisor: David Bader — CoC/CSE, Thesis Defense, Spring 2018
136. Qi Ge – Advisor: John Wise — CoS/Physics, Thesis Defense, Spring 2018
135. Anirban Chatterjee – Advisor: Yichang (James) Tsai — CoE/CSE-CEE, Qualifying Exam, Spring 2018
134. Patrick Lavin – Co-advisors: Richard Vuduc and Jeff Young — CoC/CSE, Qualifying Exam, Spring 2018
133. Srinivas Eswar – Co-advisors: Richard Vuduc and Haesun Park — CoC/CSE, Qualifying Exam, Spring 2018
132. Mark Jackson – Advisor: Richard Fujimoto — CoC/CSE, Qualifying Exam, Spring 2018
131. Jiajia Li – Advisor: Richard Vuduc — CoC/CSE, Thesis Proposal, Spring 2018
130. Jordi Wolfson-Pou – Advisor: Edmond Chow — CoC/CS, Qualifying Exam, Fall 2017
129. Siddharth Biswal – Advisor: Jimeng Sun — CoC/CS, Qualifying Exam, Fall 2017
128. Sungtae An – Advisor: Jimeng Sun — CoC/CS, Qualifying Exam, Fall 2017
127. Lluís Munguia – Advisor: David Bader — CoC/CSE, Thesis Defense, Fall 2017
126. Chao Chen – Advisor: Greg Eisenhauer — CoC/CS, Qualifying Exam, Fall 2017
125. Yuanzheng Zhu – Advisor: Cyrus Aidun — CoE/ME, Thesis Proposal, Fall 2017
124. SaBra Neal – Advisor: Richard Fujimoto — CoC/CSE, Thesis Proposal, Fall 2017
123. Nagakishore Jammula – Advisor: Srinivas Aluru — CoC/CSE, Thesis Proposal, Fall 2017
122. Girish Mururu – Advisor: Santosh Pande — CoC/CS, Qualifying Exam, Fall 2017
121. Muyuan Li – Advisor: Ken Brown — CoC/CSE/Chem, Qualifying Exam, Fall 2017
120. Xin Xing – Advisor: Edmond Chow — CoS/CSE/Math, Qualifying Exam, Spring 2017
119. Chao Shi – Advisor: John Wise — CoS/Physics, Thesis Defense, Spring 2017
118. Tony Pan – Advisor: Srinivas Aluru — CoC/CSE, Thesis Proposal, Spring 2017
117. Lifeng Nai – Advisor: Hyesoon Kim — CoC/CS, Thesis Defense, Fall 2016
116. Joo Hwan Lee – Advisor: Hyesoon Kim — CoC/CS, Thesis Defense, Fall 2016
115. Anshuman Goswami – Advisor: Karsten Schwan and Matthew Wolf (GT/ORNL) — CoC/CS, Thesis Defense, Fall 2016
114. Eric Anger – Advisor: Sudha Yalamanchili — CoE/ECE, Thesis Defense, Fall 2016
113. Jin Wang – Advisor: Sudha Yalamanchili — CoE/ECE, Thesis Defense, Fall 2016
112. Marat Dukhan – Advisor: Richard Vuduc — CoC/CS, Thesis Proposal, Fall 2016

111. Caleb Robinson – Advisor: Bistra Dilkina – CoC/CSE, Qualifying Exam, Fall 2016
110. Jordi Wolfson-Pou – Advisor: Edmond Chow – CoC/CSE, Qualifying Exam, Fall 2016
109. Rahul Nihalani – Advisor: Srinivas Aluru – CoC/CSE, Thesis Proposal, Fall 2016
108. Ankit Srivastava – Advisor: Srinivas Aluru – CoC/CSE, Qualifying Exam, Fall 2016
107. Mohammad Hossain – Advisor: Richard Vuduc – CoC/CS, Thesis Defense, Fall 2016
106. Piyush Sao – Advisor: Richard Vuduc – CoC/CSE, Thesis Proposal, Fall 2016
105. Philip Pecher – Advisor: Richard Fujimoto – CoE/CSE-ISyE, Thesis Proposal, Fall 2016
104. Syed Minhaj Hassan – Advisor: Sudha Yalamanchili – CoE/ECE, Thesis Defense, Fall 2016
103. Chris Forster – Advisor: Marc Smith – CoE/ME, Thesis Defense, Summer 2016
102. Matthew Kinsey – Advisor: Pablo Laguna – CoS/Physics, Thesis Defense, Summer 2016
101. Dipanjan Sengupta – Advisor: Karsten Schwan / Matthew Wolf – CoC/CS, Thesis Defense, Summer 2016
100. James Fairbanks – Advisor: David Bader – CoC/CSE, Thesis Defense, Spring 2016
99. Tushar Kumar – Advisor: Sudha Yalamanchili – CoE/ECE, Thesis Defense, Spring 2016
98. Ramakrishnan (Ramki) Kannan – Advisor: Haesun Park – CoC/CS, Thesis Defense, Spring 2016
97. Haicheng Wu – Advisor: Sudha Yalamanchili – CoE/ECE, Thesis Defense, Spring 2016
96. Jai Dayal – Advisor: Karsten Schwan / Matthew Wolf – CoC/CS, Thesis Proposal, Spring 2016
95. Joo Hwan Lee – Advisor: Hyesoon Kim – CoC/CS, Thesis Proposal, Spring 2016
94. Anshuman Goswami – Advisor: Karsten Schwan / Matthew Wolf – CoC/CS, Thesis Proposal, Spring 2016
93. Jin Wang – Advisor: Sudha Yalamanchili – CoC/ECE, Thesis Proposal, Spring 2016
92. Eric Anger – Advisor: Sudha Yalamanchili – CoC/ECE, Thesis Proposal, Spring 2016
91. Parsa Banihashemi – Advisor: Kenneth Will – CoE/CEE, Thesis Defense, Fall 2015
90. Naila Farooqui – Advisor: Karsten Schwan – CoC/CS, Thesis Defense, Fall 2015
89. Brian Railing – Advisor: Tom Conte – CoC/CS, Thesis Defense, Fall 2015
88. Ryan Curtin – Advisor: Mark Clements – CoE/ECE, Thesis Defense, Summer 2015
87. Aaron Howell – Advisor: Cyrus Aidun – CoE/ME, Thesis Defense, Spring 2015
86. Indranil Roy – Advisor: Srinivas Aluru – CoC/CSE, Thesis Defense, Spring 2015
85. Jee Whan Choi – Advisor: Richard Vuduc – CoE/ECE, Thesis Defense, Spring 2015
84. Xing Liu – Advisor: Edmond Chow – CoC/CSE, Thesis Defense, Fall 2014

83. Naila Farooqui – Advisor: Karsten Schwan — CoC/CS, Thesis Proposal, Fall 2014
82. Parsa Banihashemi – Advisor: Kenneth Will — CoE/CEE, Thesis Proposal, Fall 2014
81. Nagesh B. Lakshminarayana – Advisor: Hyesoon Kim — CoE/ECE, Thesis Defense, Fall 2014
80. Sangmin Park – Advisor: Mary Jean Harrold & Richard Vuduc — CoC/CS, Thesis Defense, Summer 2014
79. Kaushik Ravichandran – Advisor: Santosh Pande — CoC/CS, Thesis Defense, Summer 2014
78. Indranil Roy – Advisor: Srinivas Aluru — CoC/CSE, Thesis Proposal, Spring 2014
77. Kartik Iyer – Advisor: P.-K. Yeung — CoC/AE, Thesis Defense, Spring 2014
76. Seongcheol Baek – Advisor: Jongman Kim — CoE/ECE, Thesis Defense, Spring 2014 —
75. Vipin Sachdeva – Advisor: David Bader — CoC/CSE, Thesis Proposal, Spring 2014
74. Zhaoming Yin – Advisor: David Bader — CoC/CSE, Thesis Defense, Spring 2014
73. Xing Liu – Advisor: Edmond Chow — CoC/CSE, Thesis Proposal, Spring 2014
72. Oded Green – Advisor: David Bader — CoC/CSE, Thesis Defense, Spring 2014
71. Fang Zheng – Advisor: Karsten Schwan — CoC/CS, Thesis Defense, Spring 2014
70. Yu Tomita – Advisor: Ken Brown — CoS/CSE-CHEM, Thesis Defense, Spring 2014
69. Ryan Curtin – Advisor: Alex Gray — CoE/ECE, Thesis Proposal, Spring 2014
68. Aaron Howell, College of Engineering, School of Mechanical Engineering — Thesis Proposal, Fall 2013 — Advisor: Cyrus Aidun (CoC/ME)
67. Philip Pecher, College of Engineering, School of Industrial and Systems Engineering — Qualifying Exam (CSE-ISyE), Fall 2013 — Advisor: Richard Fujimoto
66. Aftab Patel, College of Computing, School of Computational Science and Engineering — Qualifying Exam, Fall 2013 — Advisor: Edmond Chow
65. Lluís Munguia, College of Computing, School of Computational Science and Engineering — Qualifying Exam, Fall 2013 — Advisor: David A. Bader
64. Jane Kang, College of Engineering, School of Mechanical Engineering — Thesis Proposal, Fall 2013 — Advisor: Cyrus Aidun
63. Junghee Lee, College of Engineering, School of Electrical and Computer Engineering — Thesis Proposal, Fall 2013 — Advisor: Jongman Kim
62. James Fairbanks, College of Computing, School of Computational Science and Engineering — Qualifying Exam, Fall 2013 — Advisor: David A. Bader
61. Nagesh Lakshminarayana, College of Computing, School of Computer Science — Thesis Proposal, Fall 2013 — Advisor: Hyesoon Kim (CoC/CS)
60. Hana Strakova, University of Vienna — Thesis Defense, Fall 2013 — Advisor: Wilfried Gansterer
59. Fang Zheng, College of Computing, School of Computer Science — Thesis Defense, Summer 2013 — Advisor: Karsten Schwan (CoC/CSE)
58. William March, CoC, CSE — Thesis Defense, Spring 2013 — Advisor: Alexander Gray (CoC/CSE)
57. Ryan Riegel, College of Computing, School of Computational Science and Engineering — Thesis Defense, Spring 2013 — Advisor: Alexander Gray (CoC/CSE)

56. Chris Forster, College of Engineering, School of Mechanical Engineering — Thesis Proposal, Spring 2013 — Advisor: Marc Smith (CoE/ME)
55. Kaushik Ravichandran, College of Computing, School of Computer Science — Thesis Proposal, Spring 2013 — Advisor: Santosh Pande (CoC/CSE)
54. Zhaoming Yin, College of Computing, School of Computational Science and Engineering — Thesis Proposal, Spring 2013 — Advisor: David Bader (CoC/CSE)
53. Da Kuang, College of Computing, School of Computational Science and Engineering — Thesis Proposal, Spring 2013 — Advisor: Haesun Park (CoC/CSE)
52. Aparna Chandramowliswaran, College of Engineering, School of Electrical and Computer Engineering — Thesis Defense, Spring 2013 — Advisor: Richard Vuduc (CoC/CSE)
51. Cong Hou, College of Engineering, School of Electrical and Computer Engineering — Thesis Defense, Spring 2013 — Advisor: Richard Vuduc (CoC/CSE)
50. Oded Green, College of Computing, School of Computational Science and Engineering — Thesis Proposal, Spring 2013 — Advisor: David Bader (CoC/CSE)
49. David Ediger, College of Engineering, School of Electrical and Computer Engineering — Thesis Defense, Spring 2013 — Advisor: David Bader (CoC/CSE)
48. Sooraj Bhat, College of Computing, School of Computer Science — Thesis Defense, Spring 2013 — Advisor: Alexander G. Gray (CoC/CSE)
47. Nan Du, College of Computing, School of Computational Science and Engineering (CSE) — Qualifying Exam, Spring 2013 — Advisor: Le Song (CoC/CSE)
46. Marat Dukhan, College of Computing, School of Computational Science and Engineering (CSE) — Qualifying Exam, Spring 2013 — Advisor: Richard Vuduc (CoC/CSE)
45. Anita Zakrzewska, CoC, CSE — Qualifying Exam, Spring 2012 — Advisor: David A. Bader (CoC/CSE)
44. Kartik Iyer, College of Engineering (CoE), Aerospace Engineering (AE) — Thesis Proposal, Fall 2012 — Advisor: P.-K. Yeung (CoE/AE)
43. Ying Li, College of Computing, Computational Science and Engineering (CSE) — Thesis Defense, Fall 2012 — Advisor: Richard Fujimoto (CoC/CSE)
42. Sunpyo Hong, CoE, Electrical and Computer Engineering (ECE) — Thesis Defense, Fall 2012 — Advisor: Hyesoon Kim (CoC/CS)
41. Dongryeol Lee, CoC/CSE — Thesis Defense, Spring 2012 — Advisor: Alexander Gray (CoC/CSE)
40. Abtin Rahimian, CoC, CSE — Thesis Defense, Spring 2012 — Advisor: George Biros (CoC/CSE; UT Austin)
39. Oded Green, CoC, CSE — Qualifying Exam, Spring 2012 — Advisor: David A. Bader (CoC/CSE)
38. Oguz Kaya, CoC, CSE — Qualifying Exam, Spring 2012 — Advisor: Edmond Chow (CoC/CSE)
37. Kenneth Czechowski, CoC, CSE — Qualifying Exam, Spring 2012 — Advisor: Richard Vuduc (CoC/CSE)
36. Raghul Gunasekaran, CoC, CSE — Qualifying Exam, Spring 2012 — Advisor: Richard Vuduc (CoC/CSE)
35. Liangda Li, CoC, CSE — Qualifying Exam, Spring 2012 — Advisor: Haesun Park (CoC/CSE)
34. Nitin Arora, College of Engineering (CoE), Aerospace Engineering (AE) — Thesis

- Defense, Fall 2011 — Advisor: Ryan Russell (CoE/AE)
33. Bo Xiao, CoC, CSE — Qualifying Exam, Fall 2011 — Advisor: George Biros (CoC/CSE + CoC/Biomedical Engineering (BME))
 32. Sangho Lee, CoC, Computer Science (CS) — Qualifying Exam, Fall 2011 — Advisor: Santosh Pande (CoC/CS)
 31. Kaushik Ravichandran, CoC, CS — Qualifying Exam, Fall 2011 — Advisor: Santosh Pande (CoC/CS)
 30. Jingfang Liu, College of Science, Mathematics — Qualifying Exam, Fall 2011 — Advisor: Haomin Zhou (CoS/Math)
 29. Cong Hou, CoC, CS — Qualifying Exam, Summer 2011 — Advisor: Richard Vuduc (CoC/CSE)
 28. Asif Salahuddin, CoE, Mechanical Engineering (ME) — Thesis Proposal, Summer 2009 — Thesis Defense, Summer 2011 — Advisor: Cyrus Aidun (CoC/ME)
 27. Jaswanth Sreeram, CoC, CS — Thesis Proposal, Spring 2011 — Advisor: Santosh Pande (CoC/CS)
 26. Abtin Rahimian, CoC, CSE — Thesis Proposal, Spring 2011 — Advisor: George Biros (CoC/CSE + CoE/BME)
 25. Pushkar Pande, CoC, CSE — Qualifying Exam, Spring 2011 — Advisor: David Bader (CoC/CSE)
 24. Xing Liu, CoC, CSE — Qualifying Exam, Spring 2011 — Advisor: David Bader (CoC/CSE)
 23. George Vulov, CoC, CSE — Qualifying Exam, Spring 2011 — Advisor: Richard Fujimoto (CoC/CSE), Richard Vuduc (co-advisor, CoC/CSE)
 22. Sangmin Park, CoC, CS — Qualifying Exam, Fall 2010 — Advisor: Mary Jean Harold (CoC/CS), Richard Vuduc (co-advisor, CoC/CSE)
 21. Jiang Bian, CoC, CSE — Thesis Proposal, Spring 2010 — Advisor: Hongyuan Zha (CoC/CSE)
 20. Dongryeol Lee, CoC, CSE — Thesis Proposal, Spring 2010 — Advisor: Alexander Gray (CoC/CSE)
 19. Sooraj Bhat, CoC, CS — Thesis Proposal, Spring 2010 — Advisor: Alexander Gray (CoC/CSE)
 18. William March, CoC, CSE — Qualifying Exam, Spring 2010 — Advisor: Alexander Gray (CoC/CSE)
 17. Murat Efe Guney, CoE, Civil Engineering (CE) — Thesis Proposal, Summer 2009 — Thesis Defense, Spring 2010 — Advisor: Kenneth Wills (CoE/CE)
 16. Aparna Chandramowliswaran, CoC, CSE — Qualifying Exam, Fall 2009 — Advisor: Richard Vuduc (CoC/CSE)
 15. Mingxuan Sun, CoC, CS — Qualifying Exam, Fall 2009 — Advisor: Guy Lebanon
 14. Parikshit Ram, CoC, CS — Qualifying Exam, Fall 2009 — Advisor: Alexander Gray
 13. Virat Agarwal, CoC, CSE — Thesis Proposal, Summer 2009 — Advisor: David Bader
 12. Rahul Sampath, CoC, CSE — Spring 2009 — Ph.D. Thesis: A parallel geometric multigrid method for finite elements on octrees applied to elastic image registration — Advisor: George Biros (CoC/CSE + CoE/BME)
 11. Steven P. Crain, CoC, CSE — Qualifying Exam, Spring 2009 — Advisor: Hongyuan Zha (CoC/CSE)

10. Haw-Jing “Michael” Lo, CoE, ECE — Spring 2009 — Ph.D. Thesis: Design of a reusable distributed arithmetic filter and its application to the affine projection algorithm — Advisor: David Anderson (CoE/ECE)
9. Jaegul Choo, CoC, CSE — Qualifying Exam, Spring 2009 — Advisor: Haesun Park (CoC/CSE)
8. Rahul Sampath, CoC, CSE — Thesis Proposal, Spring 2009 — Advisor: George Biros (CoC/CSE + CoE/BME)
7. Manisha Gajbe, CoC, CS — Qualifying Exam, Spring 2009 — Advisor: David Bader (CoC/CSE)
6. Hasan Abbasi, CoC, CS — Thesis Proposal, Spring 2009 — Advisor: Karsten Schwan (CoC/CS)
5. Dongreol Lee, CoC, CS — Qualifying Exam, Fall 2008 — Advisor: Alexander Gray (CoC/CSE)
4. Ryan Riegel, CoC, CS — Qualifying Exam, Spring 2008 — Advisor: Alexander Gray (CoC/CSE)
3. Alfred Park, CoC, CS — Ph.D. Thesis: Master/worker parallel discrete event simulation Advisor: Richard Fujimoto (CoC/CSE)
2. Kamesh Madduri, CoC, CS — Ph.D. Thesis: A high-performance framework for analyzing massive complex networks Advisor: David Bader (CoC/CSE)
1. Michael P. Holmes, CoC, CS — Ph.D. Thesis: Multi-tree Monte Carlo methods for fast, scalable machine learning Advisors: Charles Isbell (primary; CoC/IC), Alexander Gray (CoC/CSE)

M.S. thesis examining committees (internal to Georgia Tech)

5. Thuy Vy Nguyen – Advisor: Richard Fujimoto — CoC/CSE, MS Thesis Proposal, Summer 2017
4. Daniel R. Browne, CoE, AE — Summer 2011 — Thesis: Enabling collaborative behaviors among CubeSats — Advisor: Ryan Russell (CoE/AE)
3. Sundaresan Venkatasubramanian, CoC, CS — Spring 2009 — Thesis: Tuned and wildly asynchronous algorithms for hybrid CPU/GPU platforms — Advisor: Richard Vuduc
2. Rick Quax, CoC, CS — Fall 2008 — Thesis: Modeling and simulating the propagation of infectious diseases using complex networks — Advisor: David Bader
1. Amrita Mathuriya, CoC, CS — Fall 2008 — Thesis: GTfold: A scalable multicore code for RNA secondary prediction — Advisor: David Bader

Ph.D. thesis or habilitation examining committees (external to Georgia Tech)

6. Oguz Kaya – Advisors: Yves Robert and Bora Ucar — ENS-Lyon, Thesis Defense, Fall 2017
5. Richard Veras – Advisor: Franz Franchetti — Carnegie Mellon University / ECE, Thesis Defense, Summer 2017
4. Amir Gholami – Advisor: George Biros — University of Texas at Austin / ICES, Thesis Defense, Summer 2017
3. Victoria Caparros Cabezas – Advisor: Markus Püschel — ETH Zürich, Thesis Defense, Fall 2016

2. Richard Veras – Advisor: Franz Franchetti — Carnegie Mellon University / ECE, Thesis Proposal, Spring 2016
1. Dimitar Lukarski — Mathematics, Karlsruhe Institute of Technology (KIT) — Spring 2012 — Thesis: Parallel sparse linear algebra for multi-core and many-core platforms — Advisor: Jan-Philipp Weiß (KIT)

V-B.5 Mentorship of postdoctoral fellows or visiting scholars

(No data)

V-C Educational Innovations and Other Contributions

2. Development of CSE 6040-OMS, the Online MS in Analytics version of Computing for Data Analysis
1. Development of CSE 6220-OMS, the Online MS in CS version of Intro to HPC

VI Service

VI-A Professional Contributions

Professional recognition

1. Invited participant, US National Academy of Engineering Frontiers of Engineering (US NAE-FOE) Symposium, September 2015

Professional societies (memberships, leadership, elected positions)

8. 2018–2020, Chair (elected), Society for Industrial and Applied Mathematics, Activity Group on Supercomputing (SIAM/SC)
7. 2016–2018, Vice Chair (elected), Society for Industrial and Applied Mathematics, Activity Group on Supercomputing (SIAM/SC)
6. 2015–present, Executive Committee, Newsletter Editor, Association of Computing Machinery (ACM) Special Interest Group on High-Performance Computing (ACM SIGHPC)
5. 2010–2012, Secretary (elected), Society for Industrial and Applied Mathematics, Activity Group on Supercomputing (SIAM/SC)
4. Member, ACM
3. Member, SIAM
2. Member, Institute of Electrical and Electronics Engineers (IEEE)
1. Member, USENIX Association

Editorial boards for scientific journals

3. Associate Editor, IEEE Transactions on Parallel and Distributed Systems (TPDS), 2015–2017
2. Associate Editor, International Journal of High-Performance Computing Applications (IJHPCA), 2012–present

1. Guest Co-editor, International Journal of High-Performance Computing Applications (IJHPCA), special issue on Autotuning, doi:10.1177/1094342013495303, 2013

Conference committee activities

56. Program Committee, Chapel Implementers and Users Workshop (CHI UW), 2019
55. Program Committee, ACM/IEEE Conf. Supercomputing (SC), Applications track, 2019
54. Publicity Co-chair (Americas), ACM SIGPLAN Principles and Practice of Parallel Programming (PPoPP), 2019
53. Technical Committee, IEEE High-Performance Extreme Computing (HPEC) Conference, 2018
52. Research Posters Committee, Int'l. Supercomputing Conference (ISC), 2018
51. Program Committee, Platform for Advanced Scientific Computing (PASC) Conference, 2018
50. Program Committee, SIAM Workshop on Combinatorial Scientific Computing, 2018
49. Panels Vice-Chair, ACM/IEEE Conf. Supercomputing (SC), 2018
48. Program Committee, Post-Moore's Era Supercomputing (PMES) Workshop, 2017
47. Program Committee, ACM/IEEE Conf. Supercomputing (SC), Programming systems track, 2017
46. Program Committee, IEEE Int'l. Parallel and Distributed Processing Symp. (IPDPS), Applications track, 2017
45. Ph.D. Forum Committee, Int'l. Supercomputing Conference (ISC), 2017
44. Research Posters Committee, Int'l. Supercomputing Conference (ISC), 2017
43. Program Co-Chair, IEEE CLUSTER, 2017
42. Program Committee, Post-Moore's Era Supercomputing (PMES) Workshop, 2016
41. Technical Papers Vice-Chair,² ACM/IEEE Conf. Supercomputing (SC), 2016
40. Co-chair, SIAM Conf. Parallel Processing (SIAM PP), 2016
39. Program Committee, International Conference on Parallel Processing (ICPP), 2016
38. Tutorials Co-chair,³ ACM/IEEE Conf. Supercomputing (SC), 2015
37. General co-chair, IEEE Int'l. Symposium on Workload Characterization (IISWC), 2015
36. Program Committee, ACM Symposium on High-Performance Parallel and Distributed Computing (HPDC), 2015
35. Program Committee Track Chair, IEEE Cluster, "Applications, Algorithms, and Performance" track, 2015
34. Program Committee, IEEE/ACM Symp. on Cluster, Cloud, and Grid Computing (CCGrid), Programming Models and Runtime Systems area, 2015
33. Program Committee, NSF eXtreme Science and Engineering Discovery Environment Conference (XSEDE), Technology track, 2014

²Together with Lois McInnes Curfman (Argonne National Laboratory), we implemented double-blind review for SC'16.

³Together with CJ Newburn (then at Intel), we implemented online distribution of tutorial notes for SC'15.

32. Program Committee, [IEEE/ACM Symp. on Cluster, Cloud, and Grid Computing \(CCGrid\)](#), Doctoral symposium, 2014
31. Program Committee, [ACM/IEEE Conf. Supercomputing \(SC\)](#), Programming systems track, 2014
30. Program Committee, [ACM/IEEE Conf. Supercomputing \(SC\)](#), Workshops track, 2014
29. Program Committee, [ACM/IEEE Conf. Supercomputing \(SC\)](#), Doctoral Showcase, 2014
28. Program Committee, [Int'l. Mtg. High-Performance Computing for Computational Sci. \(VECPAR\)](#), 2014
27. Workshop and Tutorials Committee Co-Chair, [ACM Int'l. Conf. Supercomputing \(ICS\)](#), 2013
26. Program Committee Track Co-Chair, [ACM/IEEE Conf. Supercomputing \(SC\)](#), 2013
25. Program Committee Co-Chair, [ACM SIGPLAN Symp. Principles and Practice of Parallel Programming \(PPoPP\)](#), 2013
24. Program Committee, [Int'l. Green Computing Conference \(IGCC\)](#), 2013
23. Program Committee, [ACM/IEEE Conf. Supercomputing \(SC\)](#), Performance track, 2012
22. Program Committee, [Int'l. Wkshp. Modern Accelerator Technologies for GIScience \(MAT4GIScience\)](#), 2012
21. Program Committee, [Int'l. Conf. Parallel Processing \(ICPP\)](#), Performance track, 2012
20. Program Committee, [IEEE Int'l. Parallel and Distributed Processing Symp. \(IPDPS\)](#), Algorithms track, 2012
19. PhD Forum Committee, [IPDPS](#), 2012
18. Program Committee, [SIAM Conf. Parallel Processing \(SIAM PP\)](#), 2012
17. Program Committee, [Int'l. Conf. High-Performance Computing \(HiPC\)](#), Software track, 2011
16. Program Committee, [Workshop on GPU Computing, at Int'l. Conf. Parallel Processing and Applied Mathematics \(PPAM\)](#), 2011
15. Program Committee, [ACM Student Research Competition and Poster Session at the ACM Int'l. Conf. Supercomputing \(ICS\)](#), 2011
14. Program Committee, [SC](#), Performance track, 2011
13. Program Committee, [IPDPS](#), Software track, 2011
12. PhD Forum Committee, [IPDPS](#), 2011
11. Program Committee, [IEEE/ACM Int'l. Symp. Code Generation and Optimization \(CGO\)](#), 2011
10. Program Committee, [HiPC](#), 2010
9. Program Committee, [SC](#), Applications track, 2010
8. Program Committee, [Conf. Partitioned Global Address Space \(PGAS\) Programming Models](#), 2010
7. Program Committee, [Int'l. Mtg. High-Performance Computing for Computational Sci. \(VECPAR\)](#), 2010
6. Program Committee, [ACM Int'l. Conf. Computing Frontiers \(CF\)](#), 2010
5. Program Committee, [PPoPP](#), 2010

4. Program Committee, SC, Applications track, 2009
3. Program Committee, Int'l. Conf. High-Performance Computing (HiPC), 2008
2. Program Committee, IEEE Int'l. Conf. Computational Sci. Eng. (CSE), 2008
1. Poster Committee, SC, 2005

Workshop committee service

25. Program Co-Chair, [The 13th Workshop on High-Performance, Power-Aware Computing \(HPPAC\)](#), 2017
24. Co-organizer, [The 1st Workshop on Evolvable Methods for Benchmarking Realism and Community Engagement \(EMBRACE\)](#), 2017
23. Program Committee, [Int'l. Wkshp. Automatic Performance Tuning \(iWAPT\)](#), 2013–2019
22. Co-organizer, [Workshop on Power and Energy Aspects of Computing \(PEAC\)](#), 2013, 2015
21. Program Chair, [Int'l. Wkshp. Automatic Performance Tuning \(iWAPT\)](#), 2012
20. Program Chair, [Concurrent Collections \(CnC\) Workshop](#), 2011
19. Program Committee, [High-Performance Scientific Software at Euro-Par](#), 2011
18. Program Committee, [USENIX Wkshp. Hot Topics in Parallelism \(HotPar\)](#), 2011
17. Vice Program Chair, [iWAPT](#), 2011
16. Program Committee, [International Workshop on Multicore Software Engineering at ACM/IEEE Int'l. Conf. Software Eng.](#), 2011
15. Program Committee, [Workshop on Application/Architecture Co-design for Extreme-scale Computing at IEEE Cluster](#), 2010
14. Organizing Committee, [Concurrent Collections Workshop at LCPC](#), 2010
13. Program Committee, [iWAPT](#), 2010
12. Program Committee, [IEEE Int'l. Symp. Workload Characterization \(IISWC\)](#), 2010
11. Local Organizing Chair, [IISWC](#), 2010
10. Steering Committee, [Wkshp. Statistical Machine Learning applied to ARchitecture and compilaTion \(SMART\)](#), 2010
9. Program Committee, [HotPar](#), 2010
8. Program Committee, [iWAPT](#), 2009
7. Program Committee, [SMART](#), 2008
6. Program Committee, [iWAPT](#), 2008
5. Program Committee, [IEEE Int'l. Wkshp. Parallel and Distributed Scientific and Eng. Computing \(PDSEC\)](#), 2008
4. Program Committee, [iWAPT](#), 2007
3. Program Committee, [Wkshp. Performance Optimization of High-level Languages and Libraries \(POHLL\)](#), 2007
2. Program Committee, [SMART](#), 2007
1. Program Committee, [POHLL](#), 2006

Workshop and external course organization

10. Co-organizer, [Minisymposium on Energy-aware High-Performance Computing](#), SIAM Parallel Processing (PP), Feb. 2012

9. Co-organizer, [Wkshp. Libraries and Autotuning for Extreme Scale Systems](#), for the US Dept. of Energy Center for Scalable Application Development Software (DOE CScADS), Aug. 2011
8. Co-organizer, Tutorial on Performance analysis and tuning for GPGPUs, at the [IEEE Int'l. Symp. High Performance Computer Architecture \(HPCA\)](#), Feb. 2011
7. Co-organizer, Tutorial on Performance analysis and tuning for GPGPUs, at the [ACM/IEEE Int'l. Symp. Microarchitecture \(MICRO\)](#), Dec. 2010
6. Co-organizer, [Wkshp. Libraries and Autotuning for Petascale Applications](#), for US DOE CScADS, Aug. 2010
5. Co-organizer, Tutorial on Performance Analysis and Optimization for GPUs, at NSF TeraGrid Conf., Aug. 2010
4. Co-organizer, [Wkshp. Libraries and Autotuning for Petascale Applications](#), for US DOE CScADS, Jul. 2009
3. Co-organizer, [Wkshp. Automatic Tuning for Petascale Systems](#), for US DOE CScADS, Aug. 2008
2. Co-organizer, Minisymposium on Adaptive Tools and Frameworks for High-Performance Numerical Computations, SIAM PP, Mar. 2006
1. Co-organizer, Tutorial on "ROSE C/C++ Source-to-source Translator," Int'l. Conf. Parallel Architectures and Compilation Techniques (PACT), Sep. 2005

Professional panel service (not otherwise listed in this CV)

10. Panel on [Supporting Students While We Teach](#), a Georgia Tech Center for Teaching and Learning (CTL) Workshop, Jan 2019
9. Panel on Career Networking for the [SC16 Early Career Program](#), 2016
8. Panel on Career Networking for the [SC15 Early Career Program](#), 2015
7. Panel on [High-Performance Power-Aware Computing \(HPPAC\)](#) at IPDPS, Phoenix, AZ, USA, May 2014
6. Birds-of-a-Feather Session on [Community MOOCs for Computing Technologies and Applications](#), at SC, Denver, CO, USA, November 2013
5. Panel on Algorithms at IPDPS, Shanghai, China, May 2012
4. Panel on Communication and Synchronization Primitives, US Dept. of Energy (DOE), Advanced Scientific Computing Research (ASCR), [Workshop on Exascale Programming Challenges](#), July 2011.
3. Panel on AMD Fusion-like Processors in HPC, AMD Fusion Developers' Summit, June 2011.
2. Panel on MPI+Manycore Issues and Plans, Sandia National Laboratories Computer Science Research Institute (CSRI) Workshop on Next-generation Scalable Application: When MPI-only is Not Enough, May 2008.
1. Panel on New HPC-Challenge Benchmark Candidates, Georgia Tech, November 2008.

Student awards and fellowships reviewing

2. Reviewer for the ACM SIGHPC / Intel Fellowships in Computational and Data Science, 2017–2018

1. Reviewer for the ACM SIGHPC / Intel Fellowships in Computational and Data Science, 2016–2017

Research project reviewing

19. National Science Foundation, 2019
18. Natural Sciences and Engineering Research Council (NSERC), Canada, 2018
17. Department of Energy, Exascale Computing Project, 2018
16. The Partnership for Advanced Computing in Europe (PRACE), 2017
15. The Netherlands Organisation for Scientific Research (NWO), [Technology Foundation STW](#), 2016
14. Inria ([French National Institute for Computer Science and Applied Mathematics](#)), 2016
13. Department of Energy, 2016
12. National Science Foundation, 2016
11. Department of Energy, 2015, 2016
10. National Science Foundation, 2015
9. Department of Energy, 2014
8. National Science Foundation, 2014
7. National Science Foundation, 2013
6. Department of Energy, 2012
5. National Science Foundation, 2012
4. National Science Foundation, 2011
3. Department of Energy, 2010
2. Department of Energy, 2009
1. National Science Foundation, 2008

Peer reviewing of technical books

3. MIT Press, 2015.
2. CRC Press, 2008, 2010–2014, 2016–2017.
1. John Wiley & Sons, 2013.

Peer reviewing for scientific journals

13. ACM Transactions on Parallel Computing (TOPC), 2013, 2014.
12. International Journal on High Performance Computing Applications (IJHPCA), 2002, 2004, 2009, 2011, 2013, 2014.
11. SIAM J. Scientific Computing (SISC), 2008, 2009, 2011, 2012, 2014, 2015, 2016.
10. IEEE Trans. Par. Distrib. Sys. (TPDS), 2009, 2010, 2011, 2012.
9. ACM Trans. Architecture and Code Optimization (ACM TACO), 2009, 2012.
8. J. Parallel Computing (ParCo), 2008, 2009.
7. ACM Trans. Mathematical Software (ACM-TOMS), 2008.
6. J. Parallel and Distributed Computing (JPDC), 2008, 2010.
5. Software: Practice and Experience, 2008.
4. Concurrency and Computation: Practice and Experience (CC:PE), 2007.
3. Parallel Processing Letters, 2004.
2. Proc. IEEE, 2004.

1. J. Functional Programming (JFP), 2001.

Ad hoc peer reviewing for technical conferences and workshops

18. Innovative Parallel Computing Conference (**InPar**), 2012
17. ACM SIGPLAN Symp. Principles and Practice of Parallel Programming (PPoPP), 2011, 2012
16. IEEE/ACM Int'l. Symp. Microarchitecture (MICRO), 2011
15. IEEE Int'l. Par. Distrib. Processing Symp. (IPDPS), 2010.
14. Workshop on General-Purpose Computation on Graphics Processing Units (GPGPU), 2009, 2010.
13. Winter Simulation Conference (WSC), 2009.
12. Int'l. Symp. Computer Architecture (ISCA), 2008.
11. Computing Frontiers (CF), 2008.
10. Int'l Conf. High-Performance Computing and Communications (HPCC), 2007.
9. ACM/IEEE Conf. Supercomputing (SC), 2007.
8. ACM Int'l. Conf. Supercomputing (ICS), 2007.
7. Network and Parallel Computing (NPC), 2006.
6. Euro-Par, 2006.
5. Combinatorial Scientific Computing, 2005.
4. ACM Symposium on Parallel Algorithms and Architectures (SPAA), 2003, 2004.
3. ACM Conf. Programming Language Design and Implementation (PLDI), 2003.
2. Int'l. Conf. Computational Science (ICCS), 2001.
1. ACM Conf. Principles of Programming Languages (POPL), 2000.

VI-B Public and Community Service

7. Judge, Georgia Science and Engineering Fair, 2013
6. Judge, Georgia Science and Engineering Fair, 2011
5. Judge, Georgia Science and Engineering Fair, 2010
4. Judge, Georgia Science and Engineering Fair, 2009
3. Speaker, Advice on Preparing a Research Statement, CoC Job Hunting Seminar, 2009
2. Reader, Georgia Junior Humanities and Science Fair, 2008
1. Speaker, Advice on Preparing a Research Statement, CoC Job Hunting Seminar, 2008

VI-C Institute Contributions

36. CSE, School Chair Advisory Committee, 2018–2019 AY.
35. CSE, Chair Review Committee, 2018 AY.
34. CSE, Qualifying Exam Committee, CoC, 2008–2018 AY.
33. CoC CS Graduate Curriculum Committee, 2015–2018 AY.
32. CoC Undergraduate Curriculum Committee, 2015–2018 AY.
31. College of Computing Dean Review Committee, 2015.
30. Data Science and Engineering Faculty Council, 2014–2015 AY.

29. CoC Dean's Advisory Committee, 2014–2015 AY.
28. CoC Undergraduate Curriculum Committee, 2014–2015 AY.
27. CETL TA Awards Selection Committee, 2014.
26. Associate Chair for Academic Affairs, CSE, 2013–2015 AY.
25. Director of Graduate Programs, CSE, 2013–2016 AY.
24. Brooks Byers Professorships Committee, 2013–2014 AY.
23. CSE Awards Committee Chair, CoC, 2012–2013 AY.
22. CoC Awards Committee Member, 2012–2013 AY.
21. CoC MOOMS Committee Member, 2012–2013 AY.
20. CSE Chair Search Committee Member, 2012–2013 AY.
19. CSE Seminar Co-organizer, CoC, 2012–2013 AY.
18. CSE School Advisory Committee (SAC), CoC, 2011–2012 AY. Committee, (SAC), CoC, 2011–2012 Academic Year (AY).
17. CSE, Space Planning Committee, CoC, 2011–2012 AY.
16. CSE, Graduate Admissions and Recruiting Committee, CoC, 2010–2011 Academic Year (AY).
15. Undergraduate Curriculum Advisory Committee on Parallel Computing, College of Computing (CoC), 2009–2010 AY.
14. CSE Chair Advisory Committee, CoC, 2009–2010 AY.
13. Computer Science (CS) PhD Recruiting Weekend Committee, CoC, 2008–2009 AY.
12. CSE Review of the Chair Committee, CoC, 2008–2009 AY.
11. CSE Faculty Recruiting Committee (FRC), CoC, 2008–2009 AY.
10. Faculty Computer Committee (FCC), CoC, 2008–2009 AY.
9. CSE PhD Admissions Committee, CoC, 2008–2009 AY.
8. CS PhD Admissions Committee, CoC, 2008–2009 AY.
7. CSE Chair Advisory Committee, CoC, 2008–2009 AY.
6. CSE FRC, CoC, 2008–2009 AY.
5. CSE PhD Admissions Committee, 2007–2008 AY.
4. CS PhD Admissions Committee, 2007–2008 AY.
3. Teaching Assistanceship Requirement Grandfathering Committee, CoC. 2007–2008 AY.
2. FCC, CoC, 2007–2008 AY.
1. Awards Committee, CoC, 2007–2008 AY.