Richard W. Vuduc

Curriculum Vitæ

My research program designs scalable parallel algorithms and software for computational science, data analysis, and data mining. This work has been broadly applied to blood flow simulation, advanced manufacturing, and mining of astronomical data, among others.

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Education

1997–2004	**Ph.D.**, Computer Science *University of California, Berkeley*
1993–1997	**B.S.**, with honors, Computer Science *Cornell University*

Experience

Georgia Institute of Technology
School of Computational Science and Engineering (CSE)

Associate Chair & Dir. of Grad. Programs	2013–Present
Associate Professor	2013–Present
Assistant Professor	2007–2013

Lawrence Livermore National Laboratory (LLNL)

Postdoctoral Scholar	2004–2007

Institute for Defense Analyses (IDA)

Research Intern	(summers) 1994–1996

Awards and Honors (selected)

2015	**Winner, Best Paper** *IEEE Int'l. Par. & Dist. Proc. Symp. (IPDPS)*
2013	**Lockheed Martin Excellence in Teaching Award**
2012	**Winner, Best Paper** *SIAM Conf. Data Mining (SDM)*
2010	**Winner, Gordon Bell Prize** *ACM/IEEE Conf. Supercomputing (SC)*
2010	**Outstanding Junior Faculty Research Award** *College of Computing, Georgia Institute of Technology*
2010	**Winner, Best Paper** *IEEE Int'l. Par. & Distr. Proc. Symp. (IPDPS)*
2010	**CAREER Award** *National Science Foundation*
2009	**Finalist, Best Paper** *ACM/IEEE Conf. Supercomputing (SC)*
2009	**Winner, R&D 100 Award** *R&D Magazine*
2009	**Invited Member** *DARPA Computer Science Study Group (CSSG)*
2009	**"Hottest" (most downloaded) Article** [link] *Parallel Computing (ParCo)*

Professional Service

Vice Chair	Technical Papers *ACM/IEEE Conf. Supercomp. (SC)*, 2016
Vice Chair (elected)	*SIAM Activity Group on Supercomputing (SIAM/SC)*, 2016–2018
Co-chair	Program Committee *ACM Principles & Practice of Parallel Programming (PPoPP)*, 2013
Associate Editor	*Int'l. J. High-Performance Computing and Applications (IJHPCA)*, 2012–2013

Invited Keynotes & Talks

Keynote	*SIAM Parallel Processing (PP)*, 2014
Keynote	*Int'l. Mtg. HPC for Computational Science (VECPAR)*, 2012
Talk	Young & Bright HPC Researchers Session *Int'l. Supercomp. Conf. (ISC)*, 2012
Keynote	Scalable Hierarchical Algorithms for eXtreme-Scale Computing (SHAX-C) *King Abdullah Univ. Sci. Tech. (KAUST)*, 2012
Keynote	Partnership for Advanced Computing in Europe (*PRACE*), 2012

Publications (selected) [Google Scholar Page]

- Y. You, J. Demmel, K. Czechowski, L. Song, R. Vuduc. "CA-SVM: Communication-avoiding support vector machines on clusters." *IPDPS* 2015. **Best Paper**
- K. Czechowski, V. W. Lee, E. Grochowski, R. Ronen, R. Singhal, P. Dubey, R. Vuduc. "Improving the energy-efficiency of big cores." *ISCA* 2014.
- J. Choi, D. Bedard, R. Fowler, R. Vuduc. "A roofline model of energy." *IPDPS* 2013. [PDF]
- K. Czechowski, R. Vuduc. "A theoretical framework for algorithm-architecture co-design." *IPDPS* 2013. [PDF]
- D. Lee, R. Vuduc, and A. G. Gray. "A distributed kernel summation framework for general-dimension machine learning." *SDM* 2012. [PDF] **Best paper**
- I. Lashuk *et al.* "A massively parallel adaptive fast multipole method on heterogeneous architectures." *Comm. ACM*, 2012. [www] **Research highlight**
- A. Rahimian et al. "Petascale direct numerical simulation of blood flow on 200k cores and heterogeneous architectures." *SC* 2010. [www] **Gordon Bell Prize**