

Aaron Vose

avose@aaronvose.net — (865) 851-6988 — Oakdale, MN

HPC Software Engineer

Talented software engineer possessing comprehensive expertise in developing and optimizing software to achieve maximum scalability and performance in High Performance Computing (HPC) environments.

Work Experience



Cray Inc. — Software Engineer,
for Performance Tools Sr. Manager Heidi Poxon.
July 2015 – present.
Developing a next-generation HPC runtime environment.



Cray Inc. — Software Engineer,
for Performance Team Director Mike Aamodt.
July 2013 – July 2015.
Assists domain scientists with code optimization for world-class HPC resources.



University of Tennessee — Graduate Teaching Assistant,
for Dr. Bradley T. Vander Zanden and Dr. Micah Beck.
August 2012 – July 2013.
Assisted teaching “Databases & Scripting Languages” and “Operating Systems”.



Joint Institute for Computational Science — Research Associate,
for Dr. Igor B. Jouline.
August 2010 – January 2012.
Wrote HPC code scaling molecular docking software Dock6 to thousands of cores.



National Institute for Computational Science — Intern,
for Dr. Bhanu Rekepalli.
May 2010 – August 2010.
Wrote HPC code to scale NCBI’s blastall software to 98,000 cores.



University of Tennessee — Research Assistant,
for Distinguished Professor Dr. Sergey Gavrillets.
2002 – July 2012.
Completed numerous research projects, many of which resulted in publication.

Academic History



M.S., Computer Science, Summer 2013.
B.S., Computer Science, Spring 2010.
University of Tennessee, Knoxville.



CCDA - Cisco Certified Design Associate, 2001.
CCNA - Cisco Certified Network Associate, 2000.

Highlighted Skills

Strong command of the C programming language.

Languages: C, C++, Fortran, PHP, Java, Bash, Perl, Python, Assembly (SSE/AVX/ARM).

Tools: CCE, GCC, GDB, L^AT_EX, PAPI, CrayPAT, Oprofile, PBS, SLURM, Neural Networks.

APIs: MPI, OpenACC, OpenMP, OpenGL, pthreads, POSIX, CUDA, WebGL.

Journal Publications

- Otten, M., Gong, J., Mametjanov, A., Vose, A., Levesque, J., Fischer, P. and Min, M. (2016) “An MPI/OpenACC implementation of a high-order electromagnetics solver with GPUDirect communication”. *International Journal of High Performance Computing Applications*.
- Kjaergaard, T., Baudin, P., Bykov, D., Eriksen, J.J., Ethenhuber, P., Kristensen, K., Larkin, J., Liakh, D., Pawlowski, F., Vose, A., and Wang, Y.M. (2016) “Massively parallel and linear-scaling algorithm for second-order Moller-Plesset perturbation theory applied to the study of supramolecular wires”. *Computer Physics Communications*.
- M. Norman, J. Larkin, A. Vose, and K. Evans (2015) “A case study of CUDA FORTRAN and OpenACC for an atmospheric climate kernel”. *Journal of Computational Science*. Vol 9: 1-6.
- Birand, A., A. Vose, and S. Gavrillets (2012) “Patterns of species ranges, speciation, and extinction”. *American Naturalist*. Vol 179.
- Gavrillets, S. and A. Vose (2009) “Dynamic patterns of adaptive radiation: evolution of mating preferences”. In Butlin, RK, J Bridle, and D Schluter (eds) *Speciation and Patterns of Diversity*, Cambridge University Press, pp. 102-126.
- Gavrillets, S. and A. Vose (2007) “Case studies and mathematical models of ecological speciation. 2. Palms on an oceanic island”. *Molecular Ecology* 16: 2910-2921
- Gavrillets, S., A. Vose, M. Barluenga, W. Salzburger, and A. Meyer (2007) “Case studies and mathematical models of ecological speciation. 1. Cichlids in a crater lake”. *Molecular Ecology* 16: 2893-2909
- Gavrillets, S. and A. Vose (2006) “The dynamics of Machiavellian intelligence”. *Proceedings of the National Academy of Sciences USA* 103: 16823-16828
- Gavrillets, S. and A. Vose (2005) “Dynamic patterns of adaptive radiation”. *Proceedings of the National Academy of Sciences USA* 102: 18040-18045

Conference Publications

- A. Vose, B. Mitchell, J. Levesque (2014) “Tri-Hybrid Computational Fluid Dynamics on DoE’s Cray XK7, Titan”. 2014 *Cray User Group* (CUG).
- B. Rekepalli, A. Vose, and P. Giblock (2012) “HSPp-BLAST: Highly Scalable Parallel PSI-BLAST for Very Large-scale Sequence Searches”. *Bioinformatics and Computational Biology* (BICoB-2012), ISCA 4th Int’l. Conference 2012, Las Vegas, Nevada.
- L. D. Crosby, R. G. Brook, B. Rekepalli, M. Sekachev, A. Vose, and K. Wong (2011) “A Pragmatic Approach to Improving the Large-scale Parallel I/O Performance of Scientific Applications”. 2011 *Cray User Group* (CUG).
- E. A. Duenez-Guzman, A. D. Vose, M. D. Vose, and S. Gavrillets (2009) “Simulating Population Genetics on the XT5”. 2009 *Cray User Group* (CUG).

Presentations

- Vose, A. “Porting Computational Physics Applications to the Titan Supercomputer with OpenACC and OpenMP”, *GPU Technology Conference* (GTC), San Jose, California, 2015.
- Rekepalli, B.; Vose, A. “Petascale Genomic Sequence Search.” *Proceedings of The 11th IEEE/ACM International Symposium on Cluster, Cloud, and Grid Computing*, Newport Beach, California, May 2011.
- Vose, A. “Modeling Speciation in Anolis Lizards”, *South Eastern Population Ecology and Evolutionary Genetics Conference* (SEPEEG), Cades Cove, Tennessee, 2007.