Laura C. Carrington
Performance Modeling Laboratory
San Diego Supercomputer Center at University of California, San Diego
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Education:
Ph.D., 2000, Chemical Engineering, University of California, San Diego
M.S., 1995, Chemical Engineering, University of California, San Diego
B.S., 1992, Computer Engineering, Rensselaer Polytechnic Institute

Synergistic Activities:
Supervisor for the Performance Modeling and Characterization lab, which is focused on the advancement of performance modeling and prediction to guide scientific code development, improve architectural design, and assist in informed system procurements.

Co-PI on High Performance Computing Research Program Proposal, (DOE GOCO OPERAT/4000069422) Allan Snavely PI, FY08-FY10, ($489K).

Co-PI on the Cyberinfrastructure Evaluation Center, (NSF-OCI-0516162) Allan Snavely PI, Dan Reed is equal collaborative PI, FY05-FY08, ($600K UCSD budget).

Co-PI on the High Performance Computing Benchmarks Initiative, a Department of Defense funded effort (via interagency funds transfer to NSF) to develop relevant performance models for applications of interest to DOD support of their annual ~$50 million procurement cycle. Allan Snavely, PI, FY02-FY10, ($1,605K).

Professional Appointments:
PMaC Supervisor, San Diego Supercomputer Center, 2006-present
Programming Staff, San Diego Supercomputer Center, 1997- present
NPACI Consulting Coordinator, San Diego Supercomputer Center, 1999-2000
Associate In Engineering, UCSD Applied Mechanics and Engineering Sciences, 1998

Relevant Publications:
[1] D. Komatitsch, **L. Carrington**, M. Laurenzano, M. Tikir, D. Michea, N. Le Goff, A. Snavely, and J. Tromp, High-frequency simulation of seismic wave propagation in the whole Earth on 150,000 processor cores of a petaflop machine, Waves, Pau, France, 2009.
[2] N. Wright, **L. Carrington**, M. Tikir, M. Laurenzano, and A. Snavely, Understanding and Achieving Good Performance on Teragrid Resources: From Simple Performance Monitoring to Sophisticated Performance Models, TeraGrid, Arlington, VA, 2009.

[3] C. Olschanowsky, M. Tikir, **L. Carrington**, and A. Snavely, PSnAP: Accurate Synthetic Address Streams Through Memory Profiles. The 22nd International Workshop on Languages and Compilers for Parallel Computing (2009).
[4] M. Tikir, M. Laurenzano, **L. Carrington**, and A. Snavely, PSINS: An Open Source Event Tracer and Execution Simulator for MPI Applications, Euro-Par, Delft, The Netherlands, 2009.
[5] **L. Carrington**, A. Snavely, D. Komatitsch, M. Laurenzano, M. Tikir, D. Michéa, N. Le Goff, and J. Tromp, High-Frequency Simulations of Global Seismic Wave Propagation Using SPECFEM3D_GLOBE on 62K Processors, Supercomputing 2008, Austin, TX, 2008.
[6] J. Dongarra, R. Graybill, W. Harrod, R. Lucas, E. Lusk, P. Luszczek, J. McMahon, A. Snavely, J. Vetter, K. Yelick, S. Alam, R. Campbell, **L. Carrington**, T.Y. Chen, O. Khalili, J. Meredith, and M. Tikir, DARPA's HPCS Program - History, Models, Tools, Languages. Advances in Computers 72 (2008) 1-100.
[7] T.Y. Chen, O. Khalili, R. Campbell, **L. Carrington**, M. Tikir, and A. Snavely, Performance Prediction and Ranking of Supercomputers. Advances in Computers 72 (2008) 135-172.
[8] M. Tikir, **L. Carrington**, A. Snavely, and E. Strohmaier, Genetic Algorithm Approach to Modeling the Performance of Memory-bound Codes. The Proceeding of the ACM/IEEE Conference on High Performance Networking and Computing (2007).
[9] M. Tikir, M. Laurenzano, **L. Carrington**, and A. Snavely, The PMaC Binary Instrumentation Library for PowerPC. Workshop on Binary Instrumentation and Applications, San Jose (2006).
[10] **L. Carrington**, A. Snavely, and N. Wolter, A performance prediction framework for scientific applications. Future Generation Computer Systems 22 (2006) 336-346.
[11] P. Worley, J. Candy, **L. Carrington**, K. Huck, T. Kaiser, G. Mahinthakumar, A. Maloney, S. Moore, D. Reed, P. Roth, H. Shan, S. Shende, A. Snavely, S. Sreepathi, F. Wolf, and Y. Zhang, Performance Analysis of GYRO: A Tool Evaluation. Journal of Physics: Conference Series 16 (2005) 551-555.
[12] **L. Carrington**, M. Laurenzano, A.Snavely, R. Campbell, and L. Davis, How well can simple metrics represent the performance of HPC applications? Proceedings of the ACM/IEEE SC2005 Conference on High Performance Networking and Computing (2005).
[13] **L. Carrington**, X. Gao, N. Wolter, A. Snavely, and R. Campbell, Performance Sensitivity Studies for Strategic Applications. Department of Defense Users Group Conference 2005 (2005).
[14] **L. Carrington**, X. Gao, A. Snavely, and R. Campbell, Profile of AVUS Based on Sampled Memory Tracing of Basic Blocks. Department of Defense Users Group Conference 2005 (2005).
[15] **L. Carrington**, N. Wolter, A. Snavely, and C. Lee, Applying an Automated Framework to Produce Accurate Blind Performance Predictions of Full-Scale HPC Applications. UGC (2004).
[16] A. Snavely, X. Gao, C. Lee, **L. Carrington**, N. Wolter, J. Labarta, J. Gimenez, and P. Jones, Performance Modeling of HPC Applications. ParCo Dresden October (2003).

[17] **L. Carrington**, A. Snavely, X. Gao, and N. Wolter, A Performance Prediction Framework for Scientific Applications, ICCS Workshop on Performance Modeling and Analysis (PMA03) Melbourne, 2003.
[18] A. Snavely, **L. Carrington**, N. Wolter, J. Labarta, R. Badia, and A. Purkayastha, A Framework for Application Performance Modeling and Prediction. ACM/IEEE Conference on High Performance Networking and Computing (2002).
[19] **L. Carrington**, N. Wolter, and A. Snavely, A Framework for Application Performance Prediction to Enable Scalability Understanding. Scaling to New Heights Workshop, Pittsburgh (2002).
[20] A. Snavely, **L. Carrington**, and N. Wolter, Modeling Application Performance by Convolving Machine Signatures with Application Profiles, IEEE Workshop on Workload Characterization, Austin, 2001.

Other Publications:

[21] **L. Nett-Carrington**, and R. Herz, Spaciotemporal patterns within a porous catalyst: dynamic carbon monoxide oxidataion in a single-pellet reactor. Chemical Engineering Science 57 (2002) 1459-1474.
[22] **L. Carrington**, Modeling of Dynamic Carbon Monoxide Oxidation over a Porous Platinum Catalyst. Ph.D. Dissertation (2000).
[23] A.C. **L. Nett (Carrington)**, R. Herz, Measurement of Gas Composition at the Center of a Porous Pellet during Adsorption and Catalytic Reaction under Dynamic Conditions. Journal of Catalysis 172 (1997) 346-354.

Professional Activities:

- Technical Program Committee member of the 2006 International Conference on High Performance Computing and Communications
- NSF Review panel, Foundations of Computing Processes and Artifacts (Washington DC, March, 2008).
- DoD's Distributed Centers High Performance Computing Modernization Program Technical Evaluation Panel (Washington DC, April, 2000).
- DoD's Distributed Centers High Performance Computing Modernization Program Technical Evaluation Panel (Washington DC, April, 2001).
- DoD's Distributed Centers High Performance Computing Modernization Program Technical Evaluation Panel (Washington DC, April, 2002).
- DoD's Distributed Centers High Performance Computing Modernization Program Technical Evaluation Panel (San Diego April 2003).

Collaborators:

Steve Poole (ORNL), Larry Davis (HPCMO), Roy Campbell (HPCMO), Henry Newman (Instrumental), Bronis de Supinski (LLNL), Dmitri Komatitsch (University of Pau), Jeroen Tromp (Princeton), Bill Ward (NASA)

Graduate Advisor:

Richard Herz (UCSD)