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October 7, 2014

EDUCATION

Ph.D., Computer Science, University of California, Berkeley, May 1987.
M.S., Computer Science, University of California, Berkeley, June 1982.
B.S., Electrical Engineering, Duke University, May 1978.
Graduated *magna cum laude*, with *Distinction.*

ACADEMIC POSITIONS

Visiting Professor, Department of Numerical Analysis and Computing Science, Royal Institute of Technology, Stockholm, Sweden, April 2012 to September 2012.

Professor, Department of Computer Science and Engineering, University of California, San Diego, 2002 to present. Associate Professor, 1996 to 2002, Assistant Professor, 1990 to 1996.

Senior Fellow, San Diego Supercomputer Center, 1991 to present.

Visiting Researcher, PDC Center for High Performance Computing, Royal Institute of Technology, Stockholm, Sweden, March to September 2010.

Visiting Scientist, Computer Science and Artificial Intelligence Laboratory, Massachusetts Institute of Technology, September to December 2007.

Visiting Professor, Department of Numerical Analysis and Computing Science, Royal Institute of Technology, Stockholm, Sweden, September 2004 to June 2005.

EPSRC Visiting Research Fellow, Department of Computing, Imperial College, London, United Kingdom, September to November 2001.

Visiting Professor, University of Karlskrona/Ronneby, Ronneby, Sweden, April to August 1998.

Visiting Assistant Professor, Computer Sciences Department, University of Wisconsin—Madison, Madison, Wisconsin, August to December 1994.

Computer Scientist, Mathematics Group, Lawrence Berkeley Laboratory, April 1987 to August 1988, July 1989 to May 1990.

SELECTED HONORS

Best papers award, selected for journal submission, Conference on Visualization and Data Analysis, IS&T/SPIE Electronic Imaging, San Francisco, California, January 2012.
Invited speaker, 21st International Workshop on Logic and Synthesis, (Co-located with the Design Automation Conference,) La Jolla, California, June 2011.
Invited Speaker, FEnICS'10, Stockholm, Sweden, June 2010.
IBM Faculty Award, 2007.
Senior member of the IEEE since 2006.
Outstanding Instructor, UCSD, 1999 to 2000.
Member of Tau Beta Pi and Eta Kappa Nu engineering honor societies, 1978.

PEER-REVIEWED JOURNAL PUBLICATIONS

H. P. Baden, S. I. Roth, L. A. Goldsmith, S. B. Baden, L. D. Lee. "Keratohyalin Protein in Disorders of Keratinization." *Journal of Investigative Dermatology,* **62**(4):411–414, 1974.

S. B. Baden and E. G. Puckett. "A Fast Vortex Code for Computing 2D Viscous Flow." *Journal of Computational Physics*, **91**(2):278–297, 1990.

S. B. Baden. "Programming Abstractions for Dynamically Partitioning and Coordinating Localized Scientific Calculations Running on Multiprocessors." *SIAM Journal on Scientific and Statistical Computing,* **12**, pp. 145–157, 1991.

S. B. Baden and S. R. Kohn. "Portable Parallel Programming of Numerical Problems Under the LPAR System." *Journal of Parallel and Distributed Computing,* **27**(1):38–55, 1995.

S. R. Kohn and S. B. Baden. "Irregular Coarse-Grain Data Parallelism Under LPARX." *Journal of Scientific Programming,* **5**(3):185–201, 1996.

J. R. Pilkington and S. B. Baden. "Dynamic Partitioning of Non-Uniform Structured Workloads with Spacefilling Curves." *IEEE Transactions on Parallel and Distributed Computing,* **7**(3):288–300, 1996.

S. B. Baden. "Software Infrastructure for Non-Uniform Scientific Computations on Parallel Processors." *Applied Computing Review,* ACM, **4**(1):7–10, 1996.

W. G. Griswold, R. Wolski, S. B. Baden, S. J. Fink and S. R. Kohn. "Programming Language Requirements for the Next Millennium." *ACM Computing Surveys, Special issue: position statements on strategic directions in computing research* **28**(4es):1–8, December 1996.

S. J. Fink, C. Huston and S. B. Baden. "Parallel Cluster Identification for Multidimensional Lattices." *IEEE Transactions on Parallel and Distributed Systems,* **8**(11):1089–1097, 1997.

S. J. Fink, S. R. Kohn, and S. B. Baden. "Efficient Run-time Support for Irregular Block-Structured Applications." *Journal of Parallel and Distributed Computing,* **50**(1-2):61–82, 1998.

J. Saltz, A. Sussman, S. Graham, J. Demmel, S. Baden, and J. Dongarra. "Programming Tools and

Environments." *Communications of the ACM,* **41**(11):64–73, 1998.

J. H. Merlin, S. B. Baden, S. J. Fink and B. M. Chapman. "Multiple Data Parallelism with HPF and KeLP." *Future Generation Computer Systems*, **15**(3):393–405, 1999.

S. B. Baden and S. J. Fink. "A Programming Methodology for Dual-tier Multicomputers. *IEEE Transactions on Software Engineering,* **26**(3):212-26, 2000.

S. R. Kohn and S. B. Baden. "Parallel Software Abstractions for Structured Adaptive Mesh Methods." *Journal of Parallel and Distributed Computing,* **61**(6):713-736, 2001.

P. H. J. Kelly, O. Beckmann, A. Field, and S. Baden. "Themis: Component Dependence Metadata in Adaptive Parallel Applications." *Parallel Processing Letters,* **11**(4):455-470 (2001).

T. H. Kaiser and S. B. Baden. "Higher-level Parallelism with OpenMP and MPI." *Journal of Scientific Programming,* **9**(2-3):73–81, 2002.

P. McCorquodale, P. Colella, G. T. Balls and S. B. Baden. "A Local Corrections Algorithm for Solving Poisson's Equation in Three Dimensions." *Communications in Applied Mathematics and Computational Science,* **2**(1):57-81, 2007.

R. A. Kerr, T. M. Bartol, B. Kaminsky, M. Dittrich, J.-C. J. Chang, S. B. Baden, T. J. Sejnowski and J. R. Stiles. "Fast Monte Carlo Simulation Methods for Biological Reaction-Diffusion Systems in Solution and on Surfaces." *SIAM Journal on Scientific Computing*, **30**(6):3126-3149, 2008.

E. J. Bylaska, K. Tsemekhman, S. B. Baden, J. H. Weare and H. Jónsson. "Parallel Implementation of gamma-point Pseudopotential Plane-Wave DFT with Exact Exchange." *Journal of Computational Chemistry* **32**(1):54-69, 2011.

D. Unat, J. Zhou, Y. Cui, X. Cai and S. B. Baden. "Accelerating a 3D Finite Difference Earthquake Simulation with a C-to-CUDA Translator." *Computing in Science Engineering*, **14**(3):48-59, May/June 2012.

M. Arora, S. Nath, M. Subhra, S. Baden, D. Tullsen. "Redefining the Role of the CPU in the Era of CPU-GPU Integration." *IEEE Micro,* **32**(6):4-16, Nov-Dec 2012 (Journal Cover)

T. Nguyen, D. Hefenbrock, J. Oberg, R. Kastner and S. Baden. "A software-based dynamic-warp scheduling approach for load-balancing the Viola-Jones face detection algorithm on GPUs ." *J. Parallel Distributed Computing*, **73**(5):667-685, 2013.

M. Meswani, L. Carrington, D. Unat, A. Snavely, S. Baden and S. Poole. "Modeling and Predicting Performance of High Performance Computing Applications on Hardware Accelerators," *International J. High Performance Computing Applications,* **27**(2):89-108 (May 2013).

H. S. Kim, D. Unat, S. B. Baden and J. Schulze. "A new approach to interactive viewpoint selection for volume data sets," *Information Visualization,* Issue 3-4, pp. 240-256, July-Oct 2013. *Electronic Access at DO 10.1177/1473871612467631).*

PEER-REVIEWED CONFERENCE PUBLICATIONS

S. B. Baden and D. R. Patel. "Berkeley FP — Experiences with a Functional Programming Language." *Conference Record of COMPCON '83*, San Francisco, California, pp. 274–277, March 1983.

S. B. Baden. "Programming Abstractions for Run-Time Partitioning of Scientific Continuum Calculations Running on Multiprocessors." *Proceedings of the Third SIAM Conference on Parallel Processing for Scientific Computing*, Los Angeles, California, pp. 223–230, 1987.

S. B. Baden and E. G. Puckett. "A Fast Vortex Code for Computing 2D Flow in a Box." *Proceedings of the First National Fluid Dynamics Congress*, Cincinnati, Ohio, pp. 185–192, July 25–28, 1988, AIAA.

S. B. Baden. "Very Large Vortex Calculations in Two Dimensions." Proceedings of the UCLA Workshop on Vortex Methods, Los Angeles, California, May 20–22, pp. 96–120, 1987, Springer-Verlag.

S. B. Baden and S. R. Kohn. "A Comparison of Load Balancing Strategies for Particle Methods Running on MIMD Multiprocessors." *Proceedings of the Fifth SIAM Conference on Parallel Processing for Scientific Computing*, Houston, Texas, pp. 442–450, March 25–27, 1991, SIAM.

S. B. Baden and S. R. Kohn. "Lattice Parallelism: A Parallel Programming Model for Manipulating Non-Uniform Structured Scientific Data Structures." *Conference Proceedings for the Second Workshop on Languages, Compilers, and Run-Time Environments for Distributed Memory Multiprocessors,* Boulder, Colorado, pp. 24–27, September, 1992, ACM.

S. R. Kohn and S. B. Baden. "An Implementation of the LPAR Parallel Programming Model for Scientific Computations." *Proceedings of the Sixth SIAM Conference on Parallel Processing for Scientific Computing*, Norfolk, Virginia, pp. 759–766, March 22–24, 1993.

S. J. Fink, S. B. Baden, and K. Jansen. "Cluster Identification on a Distributed Memory Multiprocessor." *Proceedings of the 1994 Scalable High Performance Computing Conference*, Knoxville, Tennessee, pp. 239–246, May 23–25, 1994, IEEE.

S. R. Kohn and S. B. Baden. "A Robust Parallel Programming Model for Dynamic Non-Uniform Scientific Computations." *Proceedings of the 1994 Scalable High Performance Computing Conference*, Knoxville, Tennessee, pp. 509–517, May 23–25, 1994, IEEE.

E. J. Bylaska, S. R. Kohn, S. B. Baden A. Edelman, R. Kawai, M. E. G. Ong, and J. H. Weare. "Scalable Parallel Numerical Methods and Software Tools for Material Design." *Proceedings of the Seventh SIAM Conference on Parallel Processing for Scientific Computing,* San Francisco, California, pp. 219–224, February 15–17, 1995, SIAM.

S. R. Kohn and S. B. Baden. "The Parallelization of an Adaptive Multigrid Eigenvalue Solver with LPARX." *Proceedings of the Seventh SIAM Conference on Parallel Processing for Scientific Computing,* San Francisco, California, February 15–17, 1995, pp. 552–557, SIAM.

S. J. Fink and S. B. Baden. "Run-time Data Distribution for Block-Structured Applications on Dis-

tributed Memory Computers." *Proceedings of the Seventh SIAM Conference on Parallel Processing for Scientific Computing,* San Francisco, California, pp. 762–767, February 15–17, 1995. SIAM.

S. M. Figueira and S. B. Baden. "Performance Analysis of Parallel Strategies for Localized N-body Solvers." *Proceedings of the Seventh SIAM Conference on Parallel Processing for Scientific Computing,* San Francisco, California, pp. 349–354, February 15–17, 1995, SIAM.

S. R. Kohn and S. B. Baden. "A Parallel Software Infrastructure for Structured Adaptive Mesh Methods." *Proceedings of the IEEE/ACM SC95 Conference, Supercomputing 1995,* San Diego, California, 30pp., December 4–7 1995. *Published in electronic form only.*

W. E. Hart, S. B. Baden, R. K. Belew, and S. R. Kohn. "Analysis of the Numerical Effects of Parallelism on a Parallel Genetic Algorithm." *Proceedings of the 10th International Parallel Processing Symposium,* Honolulu, Hawaii, pp. 606–612, April 1996, IEEE.

S. J. Fink, S. R. Kohn, and S. B. Baden. "Flexible Communication Mechanisms for Dynamic Structured Applications." Third International Workshop on Parallel Algorithms for Irregularly Structured Problems, Santa Barbara, California, pp. 203-215, August 1996, Springer-Verlag.

S. Kohn, J. Weare, M. E. G. Ong, and S. B. Baden. "Parallel Adaptive Mesh Refinement for Electronic Structure Calculations." *Proceedings of the 8th SIAM Conference on Parallel Processing for Scientific Computing,* Minneapolis, Minnesota, 8 pp., March 1997.

S. B. Baden, R. Schreiber, K. S. Gatlin, and S. J. Fink. "A Preliminary Evaluation of HPF." *Proceedings of the 8th SIAM Conference on Parallel Processing for Scientific Computing,* Minneapolis, Minnesota, 7 pp., March 1997.

S. R. Kohn, J. Weare, M. E. Ong and S.B. Baden. "Software Abstractions and Computational Issues in Parallel Structured Adaptive Mesh Methods for Electronic Structure Calculations." *Proceedings of the Workshop on Structured Adaptive Mesh Refinement Grid Methods, Institute for Mathematics and its Applications,* University of Minnesota, Minneapolis, Minnesota, pp. 75-95, March 1997, Springer-Verlag.

S. J. Fink and S. B. Baden. "Runtime Support for Multi-Tier Programming of Block-Structured Applications on SMP Clusters." *Proceedings of the International Scientific Computing in Object-Oriented Parallel Environments Conference (ISCOPE '97),* Marina del Ray, California, pp. 1-8, December 1997, Springer-Verlag.

J. H. Merlin, S. B. Baden, S. J. Fink and B. M. Chapman. "Multiple Data Parallelism With HPF and KeLP." *Proceedings of the International Conference and Exhibition on High-Performance Computing and Networking (HPCN Europe 1998),* pp. 828–839, 1998, Springer-Verlag.

J. Howe, S. B. Baden, T. Grimmett, and K. Nomura. "Modernization of Legacy Application Software." *Proceedings of the 4th International Workshop on Applied Parallel Computing, Large Scale Scientific and Industrial Problems (PARA'98),* pp. 255–262, 1998, Springer-Verlag.

S. B. Baden and S. J. Fink. "Communication Overlap in Multi-Tier Parallel Algorithms." *Proceedings of the 1998 ACM/IEEE conference on Supercomputing, Supercomputing '98*, Washington, DC, USA, 20pp., IEEE.

S. B. Baden and S. J. Fink. "The Data Mover: A Machine-Independent Abstraction for Managing

Customized Data Motion." *Proceedings of the Twelfth International Workshop on Languages and Compilers for Parallel Computing (LCPC '99),* La Jolla, California, pp. 333-349, August 1999.

S. B. Baden, P. Colella, D. Shalit, B. Van Straalen. "Abstract KeLP." *Proceedings of the 10th SIAM Conference on Parallel Processing for Scientific Computing,* Portsmouth, Virginia, 4 pp., March 2001. *Published in electronic form only.*

S. B. Baden and D. Shalit. "Performance tradeoffs in multi-tier formulation of a finite difference method." *Proceedings of the 2001 International Conference on Computational Sciences (ICCS '01)*, pp. 785–794, San Francisco, California, May 2001, Springer-Verlag.

P. Diamessis, W. Kerney, S. B. Baden, and K. Nomura. "Automated Tracking of 3-D Overturn Patches in Direct Numerical Simulation of Stratified Homogeneous Turbulence." *Proceedings of the 6th International Conference on Applied Parallel Computing (PARA '02),* Espoo, Finland, pp. 557-566, 2002, Springer-Verlag.

G. T. Balls, S. B. Baden, and P. Colella. "SCALLOP: a highly: Scalable Parallel Poisson Solver in Three Dimensions." *Proceedings of the 2003 ACM/IEEE conference on Supercomputing (SC '03),* Phoenix, Arizona, November 2003, 12pp., ACM. *Published in electronic form only.*.

G. T. Balls, S. B. Baden, T. Kispersky, T. M. Bartol and T. J. Sejnowski. "A large scale Monte Carlo simulator for cellular microphysiology." Proceedings of the 18th International Parallel and Distributed Processing Symposium (IPDPS'04), Santa Fe, New Mexico, pp. 42-51, April 2004, IEEE.

S. M. More, T. Pevzner, A. Deutsch, S. Baden, P. Kube, "Building an XQuery Interpreter in a Compiler Construction Course," *Proceedings of the 36th SIGCSE Technical Symposium on Computer Science Education (SIGCSE '05),* St. Louis, Missouri, pp. 2-6, February 23 - 27, 2005, ACM.

P. McCorquodale, P. Colella, G. T. Balls, and S. B. Baden. "A Scalable Parallel Poisson Solver in Three Dimensions with Infinite-Domain Boundary Conditions." *Proceedings of the 2005 International Conference on Parallel Processing Workshops (ICPPW '05),* Oslo, Norway, pp. 163-172, June 14-17, 2005, IEEE.

T. Shafaat, S. Baden, "A Method of Adaptive Coarsening for Compressing Scientific Datasets." *8th International Conference on Applied Parallel Computing (PARA'06)*, Umeå, Sweden, 4 pp., June 2006, Springer-Verlag.

P. Cicotti and S. B. Baden. "Short paper: Asynchronous programming with Tarragon." *Proceedings of the 15th IEEE International Symposium on High Performance Distributed Computing,* Paris, France, pp. 375-376, June 19-23 2006, IEEE.

S. Baden, T. Sejnowski, T. Bartol and J. Stiles. "Toward Petascale Simulation of Cellular Microphysiology." *Proceedings of the 7th IEEE International Conference on Bioinformatics and Bioengineering, BIBE 2007,* Boston, MA, pp. 628–634, October 14-17, 2007, IEEE.

Y. Zhu, M. Taylor, S. Baden and C.K. Cheng. "Advancing Supercomputer Performance Through Interconnect Topology Synthesis." *Proceedings of the 2008 IEEE/ACM International Conference on Computer-Aided Design (ICCAD '08),* pp. 555-558, 2008.

D. Unat, T. Hromadka III and S. B. Baden. "An Adaptive Sub-Sampling Method for in-memory

Compression of Scientific Data." *Proceedings of the 2009 Data Compression Conference (DCC '09),* Snowbird, UT, pp. 262-71, March 2009, IEEE.

J. Sorensen and S. B. Baden. "Hiding Communication Latency with non-SPMD, Graph-Based Execution." *Proceedings of the International Conference on Computational Science 2009 (ICCS '09),* Baton Rouge, Louisiana, pp. 155-164, May 25-27, 2009, Springer-Verlag.

D. Hefenbrock, J Oberg, N. T. N. Thanh, R. Kastner and S. B. Baden. "Accelerating Viola-Jones Face Detection to FPGA-Level using GPUs." *Proceedings of the 18th Annual International IEEE Symposium on Field-Programmable Custom Computing Machines,* Charlotte, North Carolina, pp. 11-18, May 2-4, 2010, IEEE.

F. V. Lionetti, A. D. McCulloch and S. B. Baden. "Source-to-source optimization of CUDA C for GPU Accelerated Cardiac Cell Modeling." *Proceedings of the 16th International Euro-par Conference on Parallel Processing (Europar '10),* Ischia, Italy, pp. 38-49, Aug 31-Sept 4, 2010, Springer-Verlag.

D. Unat, X. Cai and S. B. Baden. "Mint: Realizing CUDA performance in 3D Stencil Methods with Annotated C." *Proceedings of the 25th International Conference on Supercomputing (ICS '11),* Tucson, Arizona, pp. 214-224, May 31-June 4, 2011. ACM.

P. Cicotti and S. B. Baden. "Latency Hiding and Performance Tuning with Graph-Based Execution." *Proceedings of the Seventh IEEE eScience Conference, Data-Flow Execution Models for Extreme Scale Computing (DFM 2011),* Galveston Island, Texas, October 2011, IEEE, pp. 28-37.

A. King, E. Arobone, S. B. Baden and S. Sarkar. "The Saaz Framework for Turbulent Flow Queries." *Seventh International Conference on E-Science (e-Science),* Stockholm, Sweden, pp. 325-331, Dec. 2011, IEEE.

D. Unat, H. S. Kim, J. P. Schulze and S. B. Baden. "Auto-optimization of a Feature Selection Algorithm." *4th workshop of Emerging Applications and Many-core Architecture,* June 2011, 6 pp.

H. S. Kim, D. Unat, S. B. Baden and J. Schulze. "Interactive Data-Centric Viewpoint Selection." *Conference on Visualization and Data Analysis, IS&T/SPIE Electronic Imaging*, San Francisco, California, January 23-25, 2012, 12. pp. *Best papers award.*

M. Meswani, L. Carrington, D. Unat, A. Snavely, S. Baden and S. Poole, "Modeling and Predicting Performance of High Performance Computing Applications on Hardware Accelerators," *Proceedings of the Second International Workshop on Accelerators and Hybrid Exascale Systems, co-located with the 26th International Parallel and Distributed Processing Symposium (IPDPS'12)*, Shanghai, China, May 2012.

A. King and S. B. Baden. "Reducing Library Overheads through Source-to-Source Translation," *Proceedings of the International Conference on Computational Science 2012 (ICCS '12),* Lincoln, NE, June 4-6 2012, Vol 9, pp.1930-1939.

T. Nguyen, P. Cicotti, E. Bylaska, D. Quinlan and S. B. Baden. "Bamboo: Translating MPI Applications to a Latency-tolerant, Data-driven Form," *Proceedings of the 2012 ACM/IEEE conference on Supercomputing (SC12),* Salt Lake City, UT, Nov. 10-16, 2012, 11 pp.

T. Nguyen and S. Baden, "Bamboo - Preliminary scaling results on multiple hybrid nodes of Knights

Corner and Sandy Bridge processors," *Proc. WOLFHPC: Workshop on Domain-Specific Languages and High-Level Frameworks for HPC, SC13, The International Conference for High Performance Computing, Networking, Storage and Analysis, Denver CO, November 2013.*

Mohammed Sourouri, Tor Gillberg, Scott Baden and Xing Cai, "Effective Multi-GPU Communication Using Multiple CUDA Streams and Threads," *Proc. 20th International Conference on Parallel and Distributed Systems (ICPADS 2014)*, Hsinchu, Taiwan, Dec. 2014 (Accepted for Publication).

EDITED VOLUME AND CHAPTERS

S. B. Baden. "Low Overhead Storage Reclamation in the Smalltalk-80 Virtual Machine," chapter from *Smalltalk-80: Bits of History, Words of Advice*, edited by E G. Krasner, Addison Wesley, pp. 331–342, 1983.

S. B. Baden, N. Chrisochoides, M. Norman, and D. Gannon (Eds.). *Structured Adaptive Mesh Refinement (SAMR) Grid Methods. IMA Volumes in Mathematics and its Applications,* Volume 117, 172pp., 2000, Springer-Verlag (Edited volume).

P. H. J. Kelly, S. Gorlatch, S. B. Baden, and V. Getov. "Topic 10: Programming Languages, Models, and Methods." *Proceedings of the 6th International Euro-Par Conference on Parallel Processing (Euro-Par '00),* A. Bode, T. Ludwig, W. Karl, and R. Wismüller (Eds.), Munich, Germany, pp. 617-770, August-September, 2000, *Lecture Notes in Computer Science,* Vol. 1900, Springer-Verlag (Edited chapter).

S. B. Baden, P. H. J. Kelly, S. Gorlatch, and C. Lin. "Topic 10: Parallel Programming: Models, Methods and Programming Languages." *Proceedings of the 7th International Euro-Par Conference on Parallel Processing (Euro-Par '01),* R. Sakellariou, J. Keane, J. R. Gurd, L. Freeman (Eds.), Manchester, UK, pp. 491-565, August 28-31, 2001, *Lecture Notes in Computer Science Vol. 2150*, Springer-Verlag (Edited chapter).

J. D. Teresco, J. E. Flaherty, S. B. Baden, J. Faik, S. Lacour, M. Parashar, V. E. Taylor and C. A. Varela. "Approaches to Architecture-Aware Parallel Scientific Computation." Chapter in Michael A. Heroux, Padma Raghavan, Horst D. Simon (Eds.), *Parallel Processing for Scientific Computing,* pp. 33-58, December 2006, SIAM (Edited chapter).

GRANTS AND AWARDS

"CDS&E:A large-scale data discovery framework for understanding intermittent, performance-critical phenomena in simulations of offshore wind turbines," National Science Foundation, with S. Sarkar and Y. Bazilevs, $500,005 (9/1/2013–8/31/2016)

"Domain Specific Language Support for Exascale," Department of Energy, $309,903 (9/1/12–8/31/15)

"User-friendly programming of GPU-enhanced clusters via automated code translation and optimization," Research Council of Norway, with X. Cai, S. Clark (Simula Research Lab), Y. Cui (San Diego Supercomputer Center), J. Seland (Sintef Applied Mathematics), NOK 9,364,000 (07/01/2012–06/30/2016)

"VLSI Circuit Simulation Using Parallel Processing," National Science Foundation, with C.K Cheng, UCSD, $450,000 (07/01/10–06/30/13)

"Automatic Transformation of MPI Programs to Asynchronous, Graph Driven Form," Department of Energy, with John Weare, UCSD, $600,000 (10/15/09–10/14/12)

"CDI-Type I: A computational database for cyber-assisted discovery of oceanic mixing processes in multi-resolution, feature-driven simulations," National Science Foundation, PI, co-PI: Sutanu Sarkar, UCSD, $602,017 (9/15/08–8/31/11)

"MRI: Acquisition of Parallel Computing and Visualization Facility to Enable Integrated Research and Training in Modern Computational Science, Mathematics, and Engineering," National Science Foundation, with Michael Holst, Randy Bank, and Jeffrey Remmel, John Weare, UCSD, $351,449 (9/01/08–8/31/11)

"Multiscale Design of Advanced Materials based on Hybrid Ab Initio and Quasicontinuum Methods," Department of Energy, with John Weare, UCSD, Mitchell Luskin and Richard James, University of Minnesota, $797,032 (10/1/05–09/30/08)

"Data driven execution of communication tolerant algorithms," Lawrence Livermore National Laboratory, sole PI, $183,680 (10/1/05–9/30/08)

"Data driven execution of communication tolerant algorithms," Institute for Scientific Research, Lawrence Livermore National Laboratory, sole PI, $37,825 (10/1/03–9/30/04)

"ITR: Asynchronous execution for scalable simulation of cell physiology,"National Science Foundation, PI, co-PIs: Terrence Sejnowski, Salk Institute, Joel Stiles, Carnegie Mellon University and Pittsburgh Supercomputing Center, $550,000 (9/1/03–8/31/04)

"The KeLP Project," National Partnership for Advanced Computational Infrastructure, National Science Foundation, sole PI, $210,000 (10/1/02–9/30/03)

"The KeLP Project," National Partnership for Advanced Computational Infrastructure, National Science Foundation, sole PI, $210,000 (10/1/01–9/30/02)

'The KeLP Project," 'National Partnership for Advanced Computational Infrastructure, National Science Foundation, sole PI, $226,000 (10/1/00–9/30/01)

"The KeLP Project," National Partnership for Advanced Computational Infrastructure, National Science Foundation, sole PI, $212,000 (10/1/99–9/30/00)

"Software Infrastructure for Multi-tier Implementation of Structured Adaptive Mesh Hierarchies," Institute for Scientific Research, Lawrence Livermore National Laboratory, sole PI, $25,000 (10/1/99–9/30/00)

"Novel Probes and Optical Methods–Image Real-Time Brain Function In Vivo," Packard Foundation, $960,000, with Mark Ellisman, Shaya Feinman, David Kleinfeld, Sheldon Schultz, UCSD, (9/15/99–9/14/04).

"Hierarchical Lattice Parallelism," National Science Foundation, PI, co-PI: Keiko Nomura, UCSD, $301,627 (9/1/99–8/31/02).

"Tradeoffs in Hierarchical Algorithm Design on Multi-Tier Architectures,"California Micro Elec-

tronics, sole PI, $55,688, Sun Microsystems, $15,000 + $750,000 equipment donation (8/1/99–9/30/00).

"The KeLP Project," National Partnership for Advanced Computational Infrastructure, National Science Foundation, sole PI, $153,724 (10/1/98–9/30/99)

"Software Infrastructure for Multi-tier Implementation of Structured Adaptive Mesh Hierarchies," Institute for Scientific Research, Lawrence Livermore National Laboratory, sole PI, $32,047 (10/1/98–9/30/99)

"Tradeoffs in Hierarchical Algorithm Design on Multi-Tier Architectures," California Micro Electronics, sole PI, $37,357, Sun Microsystems, $10,000 + $560,000 equipment donation (8/1/98–9/30/99).

"Software Infrastructure for Multi-tier Implementation of Structured Adaptive Mesh Hierarchies," Institute for Scientific Research, Lawrence Livermore National Laboratory, sole PI, $24,085 (12/1/97–9/30/98)

"The KeLP Project," National Partnership for Advanced Computational Infrastructure, National Science Foundation, sole PI, $85,000, (10/1/97–9/30/98).

"Workshop: Workshop on Structured Adaptive Mesh Refinement Grid Methods at the University of Minnesota in Minneapolis, Minnesota, March 1997.", National Science Foundation, with M. Norman, University of Illinois at Urbana-Champaign, N. Chrisochoides, University of Notre Dame, D. Gannon, Indiana University, $10,000, (3/97–7/97), Department of Energy, $7,125.

"Computational Infrastructure for Intelligent Material Design," National Science Foundation, with John Weare, UCSD, $298,406, plus matching equipment funds of $960 from the UCSD School of Engineering (4/1/96–3/31/99).

Graduate School Research Grant, Wisconsin Alumni Research Foundation, $5,962 (8/94–12/94).

1994 Joint UCSD–SDSC workshop on Computational Aspects of Materials Science," San Diego Supercomputer Center, with John Weare and Elizabeth M. G. Ong, $2,500, July 1994.

"Compiler Support for Coarse Grained Data Parallelism," Office of Naval Research, sole PI, $114,632, (7/94–6/97).

1992 Joint UCSD–SDSC workshop on Computational Aspects of Materials Science," San Diego Supercomputer Center, with John Weare, UCSD, $2,500, University of California Division of Engineering, $2,500 (7/94)

"Parallel Programming Methodologies for Non-Uniform Structured Problems in Materials Science," Office of Naval Research, sole PI, $427,688, plus matching equipment funds of $7,440 from the UCSD Division of Engineering (12/92–11/95).

"Data Parallel Programming Model for Non-Uniform Numerical Algorithms," University of California Academic Senate Research Grant, sole PI, $5,163 (1/92–6/92).

"Lattice Parallelism: A Programming Model for Dynamically Manipulating Distributed Data Structures in Localized Non-Uniform Scientific Calculations," National Science Foundation, sole PI, $69,392, plus matching equipment funds of $9,453 from the UCSD Division of Engineering (7/1/91–

6/30/93).

"Software Portability on MIMD Multiprocessors," University of California Academic Senate Research Grant, sole PI, $4,936 (1/91–6/91).

Research startup award, Powell Foundation, $40691 (7/90–6/91).

RECENT UNIVERSITY SERVICE

Faculty Director, Programs Abroad, UCSD, 2014 to present.

UCSD Academic Senate Committee on International Education, 2000 to 2004, Vice-Chair 2003 to 2004, 2014 to present (*ex-officio*).

Academic Integrity Review Board, 2014 to present.

CSE Masters Affairs Committee, 2011 to present.

CSE Masters Admissions Committee, 2012 to 2014.

Chair, University Center for International Education Review Committee 2011-12, Denmark and Sweden, University of California.

University of California Education Abroad Program Faculty Advisory Committee (2012 present)

UCSD's Extended Studies and Public Service Committee, 2013-present.

CSE Undergraduate Committee, 2011 to 2012.

Advisory Committee and founding member of the UCSD Graduate Program in Computational Science, Mathematics and Engineering (CSME), 2005 to present.

Committee on Research Appointments and Promotion, San Diego Supercomputer Center (2009-present)

Practicum Advisory Committee for Sixth College, 2005 to present, Chair, 2008-2011.

CSE Computing Committee, 2005 to 2011.

Chair, Review Committee for the Provost of Sixth College, 2006.

CSE Department Doctoral Admissions Committee, 2000 to 2004, Vice-Chair, 2002 to 2004.

SELECTED PROFESSIONAL SERVICE

Advisory board, Europar conference, 2001 to present.

Technical Program Committee, 29th IEEE International Parallel & Distributed Processing Symposium (IEEE IPDPS 2015).

External Review Committee, Principles and Practices of Parallel Programming (PPoPP14).

Research Council, UC Discovery Grant Program 2000 to present.

Committee Member, 2013 Los Alamos National Laboratory Computational Physics and Applied Mathematics Capability Review.

Technical Program Committee, IEEE 19th International Conference on High Performance Computing (HiPC 2012), Pune, India, December 2012.

External Review Committee, 17th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming, New Orleans, LA, USA, February 2012.

Organizing Committee, 2nd International Workshop on GPUs and Scientific Applications (GPUScA 2011) Galveston Island, TX, USA, October 2011, in conjunction with PACT 2011.

Lecturer at High Performance Summer School, PDC Center for High Performance Computing, Royal Institute of Technology, Stockholm, Sweden (August 2004, 2005, 2007, 2009)

Judge, 2009 Greater San Diego Science and Engineering Fair.

Program Committee, IEEE 13th International Conference on High Performance Computing (HiPC 2006), Bangalore, India, December 2006.

Technical Program Committee, SC 2003, ACM/IEEE Supercomputing Conference, November 2003, Phoenix, Arizona.

Program Committee, 16th International Conference on Supercomputing, June 2002, New York, NY.

Associate Editor, *IEEE Transactions on Parallel and Distributed Computing,* 1997 to 2001.

Member of the High Performance Fortran Forum (1994-5).

Grant reviewer for the National Science Foundation, Department of Energy, U.S.-Israel Bi-national Science Foundation.

Referee for: *The Journal of Computational Physics, SIAM Journal of Scientific and Statistical Computing, Journal of Parallel and Distributed Computing, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Computers, Concurrency: Practice and Experience, International Journal of Supercomputing Applications, Parallel Processing Letters, SCXY Conference* (formerly Supercomputing), *Symposium on Parallel and Distributed Processing, International Parallel Processing Symposium, International Conference on High Performance Computing, Europar.*

COURSES DESIGNED OR REORGANIZED

CSE 91, Perspectives in Computer Science (with Bill Griswold and Beth Simon)

CSE 131A, Compiler Construction (with Paul Kube).

CSE 160, Introduction to Parallel Computation.

CSE 164, Solving Problems with Parallel Computers.

CSE 260, Parallel Computation.

CSE 262, System Support for Applications of Parallel Computation.

CSE 292, The CSE Seminar (with Gary Cottrell).

CSE 294, The Large Scale Systems Seminar (with Allan Snavely).

THESES SUPERVISED

Didem Unat (Ph.D., 2012), Alden King (Ph.D., 2012), Catherine Olschanowsky (Ph.D., co-advisor, 2011), Pietro Cicotti (Ph.D., April 2011), Fred Lionetti (M.S., June 2010), Joey Hammer (M.S., December 2007), Omid Khalili (M.S., 2007, co-advisor), Faisal Mir (M.S., Royal Institute of Tech-

nology, Stockholm, Sweden, 2006, co-advisor), Tallat Shaafat (M.S., Royal Institute of Technology, Stockholm, Sweden, 2006, co-advised), Urvashi Rao Venkata (M.S., 2004) Stephen Lau (M.S, 2003), F. David Sacerdoti (M.S., June 2002), William Kerney (M.S., June 2001), Sean Peisert (M.S., June 2000), Stephen Fink (Ph.D., June 1998), Zia Ansari (M.S., June 1997), Scott Kohn (Ph.D., June 1995),