

- DATE This document was prepared on January 30, 2012.
- CONTACT INFORMATION Department of Computer Science
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Rohnert Park, CA 94928 USA Web: <http://rivoire.cs.sonoma.edu>
- CURRENT POSITION 2008– **Assistant Professor of Computer Science**, Sonoma State University
- EDUCATION **Ph.D. in Electrical Engineering**
Stanford University, June 2008
- Dissertation: *Models and Metrics for Energy-Efficient Computer Systems*
Advisor: Professor Christos Kozyrakis
Summary: Improving the energy efficiency of enterprise computing requires new ways of designing systems and new policies for adaptively managing individual systems or data centers. To enable these improvements, this dissertation describes *JouleSort*, the first complete full-system benchmark for energy efficiency; and *Mantis*, an approach to high-level power modeling appropriate for online use.
- M.S. in Electrical Engineering**
Stanford University, January 2003
- B.S. in Electrical Engineering** with Highest Honors
University of Texas at Austin, May 2001
- INDUSTRY EXPERIENCE
- Consulting Researcher at **Microsoft Research**-Silicon Valley (Mountain View, CA)
Mentor: Dr. John D. Davis
Conducted research on energy-efficient computer design for data center environments. [2008–2011]
 - Intern at **Hewlett-Packard Labs** (Palo Alto, CA)
Mentor: Dr. Parthasarathy Ranganathan
Conducted Ph.D. dissertation research on computer energy-efficiency metrics and power consumption models. [2005–2006]
 - Intern at **Cray** (Chippewa Falls, WI)
Mentor: Dr. Steve Scott
Developed a theoretical model and lightweight simulator for a clustered vector supercomputer microarchitecture. [2003]
 - Intern at **Compaq** (Houston, TX)
Mentor: David Joy
Benchmarked, debugged, and tested firmware for Integrated Lights-Out (iLO) server management product. [2001]
- PATENTS
- Pending: Davis, J.D., Goldszmidt, M., and Rivoire, S.M., “Estimating and Managing Power Consumption of Computing Devices Using Power Models” (Nov. 2011)

PUBLICATIONS

- Davis, J.D., Rivoire, S., Goldszmidt, M., and Ardestani, E.K. Including variability in large-scale cluster power models. In *Computer Architecture Letters*, preprint (Nov. 2011). [Invited paper; revision of EXERT 2011]
- Davis, J.D., Rivoire, S., Goldszmidt, M., and Ardestani, E.K. No hardware required: Building and validating composable highly accurate OS-based power models. Microsoft Research Technical Report MSR-TR-2011-89 (July 2011).
- Davis, J.D., Rivoire, S., Goldszmidt, M., and Ardestani, E. Accounting for variability in large-scale cluster power models. In *Proceedings of the 2nd Exascale Evaluation and Research Techniques Workshop*, held at the International Conference on Architectural Support for Programming Languages and Operating Systems (Newport Beach, CA, Mar. 2011).
- Rivoire, S. 2010. Learning to teach. *IEEE Potentials*. 29, 4 (Jul./Aug. 2010), pp. 17–20. doi:10.1109/MPOT.2010.937461
- Keys, L., Rivoire, S., and Davis, J.D. 2010. The search for energy-efficient building blocks for the data center. In *Proceedings of the 2nd Workshop on Energy-Efficient Design*, held at the International Symposium on Computer Architecture (St. Malo, France, June 2010).
- Davis, J.D. and Rivoire, S. 2010. Building energy-efficient systems for sequential I/O workloads. Microsoft Research Technical Report MSR-TR-2010-30 (Mar. 2010).
- Rivoire, S. 2010. A breadth-first course in multicore and manycore programming. In *Proceedings of the 41st ACM SIGCSE Technical Symposium on Computer Science Education* (Milwaukee, WI, Mar. 2010), pp. 214–218. Acceptance rate: 34%. doi:10.1145/1734263.1734339
- Ranganathan, P., Rivoire, S., Moore, J. 2009. Models and metrics for energy-efficient computing. In *Advances in Computers, vol. 75: Computer Performance Issues*, M.V. Zelkowitz, Ed. Elsevier, Apr. 2009, pp. 159–233. doi:10.1016/S0065-2458(08)00803-6
- Rivoire, S., Ranganathan, P., Kozyrakis, C. 2008. A comparison of high-level full-system power models. In *Proceedings of the 1st Workshop on Power-Aware Computing and Systems (HotPower)*, held at the USENIX Symposium on Operating Systems Design and Implementation (San Diego, CA, Dec. 2008). Acceptance rate: 30%.
- Rivoire, S., Shah, M.A., Ranganathan, P., Kozyrakis, C., Meza, J. 2007. Models and metrics to enable energy-efficiency optimizations. *IEEE Computer*. 40, 12 (Dec. 2007), pp. 39–48. doi:10.1109/MC.2007.436
- Rivoire, S., Shah, M.A., Ranganathan, P., Kozyrakis, C. 2007. JouleSort: a balanced energy-efficiency benchmark. In *Proceedings of the ACM SIGMOD International Conference on Management of Data* (Beijing, China, June 2007), pp. 365–376. Acceptance rate: 15%. doi:10.1145/1247480.1247522
- Rivoire, S., Schultz, R., Okuda, T., Kozyrakis, C. 2006. Vector lane threading. In *Proceedings of the International Conference on Parallel Processing* (Columbus, OH, Aug. 2006), pp. 55–64. Acceptance rate: 32%. doi:10.1109/ICPP.2006.74
- Economou, D., Rivoire, S., Kozyrakis, C., Ranganathan, P. 2006. Full-system power analysis and modeling for server environments. In *Proceedings of the 2nd Workshop on Modeling, Benchmarking, and Simulation (MoBS)*, held at the International Symposium on Computer Architecture (Boston, MA, June 2006), pp. 70–77. Acceptance rate: 47%.

TALKS, POSTERS,
PANELS

Invited Talks

- “Generic full-system power modeling,” VMWare (Palo Alto, CA) [Jan. 2011]
- “Energy-efficient computing,” Sonoma State University Environmental Studies Program Energy Forum (Rohnert Park, CA) [Apr. 2010]
- “A breadth-first course in multicore and manycore programming,” Stanford University Pervasive Parallelism Lab (Palo Alto, CA) [Apr. 2010]
- “Models and metrics for energy-efficient computer systems”
 - Accenture Technology Labs (San Jose, CA) [Oct. 2008]
 - Microsoft Research-Silicon Valley (Mountain View, CA) [Jun. 2008]
- “Real-time power modeling with Mantis and energy-efficiency benchmarking with JouleSort”
 - Microsoft Research-Redmond (Redmond, WA) [Dec. 2007]
 - Google (Mountain View, CA) [Apr. 2007]
 - UC-Berkeley RAD Lab retreat (Santa Cruz, CA) [Jan. 2007]

Posters

- Schmidt, S. (undergraduate advisee), “Modeling the power consumption of computer systems with graphics processing units (GPUs).” ACM Student Research Competition (Raleigh, NC) [Mar. 2012]
- Rivoire, S., “Universal Design for Learning in CS1.” ACM SIGCSE Technical Symposium on Computer Science Education (Dallas, TX) [Mar. 2011]
- “Modeling computer systems’ power consumption”
 - Sonoma State University Faculty Exposition of Scholarship and Sponsored Research (Rohnert Park, CA) [Mar. 2009]
 - Computing Research Association Committee on the Status of Women in Computing Research (CRA-W) and the Coalition to Diversify Computing (CDC) Programming Languages, Operating Systems, and Architecture Workshop (Washington, DC) [Mar. 2009]

Panels

- Malpica, D. M., Mookerjee, M., Paolucci, M., Parker, J., Rivoire, S. Mentor Faculty Panel, Sonoma State New Faculty Orientation [Aug. 2011]
- Ayala, E., Bozman-Moss, D., Ely, K., Kroll, C., Rivoire, S., Severson, S., Wilson, B. “Universal Design for Learning faculty workshop,” Sonoma State University Disability Awareness Week (Rohnert Park, CA) [May 2010]
- Ayala, E., Christie, B., Rivoire, S., Severson, S., Wilson, B. “Universal Design and accessibility (EnACT),” California State University “Meet the Experts” webinar series [Apr. 2010]
- Mitchell, A., Jain, J., Rivoire, S., Carmody, W., Albrecht, J., Grit, L. “Learning by doing: using internships to discover where you belong”, Grace Hopper Celebration of Women in Computing (Orlando, FL) [Oct. 2007]

Video

- Intel Teach Parallel series: “Introducing Undergraduates to Parallelism” <http://software.intel.com/en-us/blogs/2011/03/31/dr-susan-rivoire-introducing-undergraduates-to-parallelism/>
- MERLOT ELIXR Case Study: “Teaching Computer Science.” <http://elixr.merlot.org/case-stories/understanding--meeting-students-needs/universal-design-for-learning-udl/teaching-computer-science2>

REVIEWING AND EDITING

Program Committee Membership

- Workshop on High-Performance, Power-Aware Computing (HPPAC) [2012]
- International Conference on Supercomputing (ICS) [2011]
- International Symposium on Performance Analysis of Systems and Software (ISPASS) [2011]
- ACM SIGCOMM International Conference on Energy-Efficient Computing and Networking (e-Energy) [2010]
- Workshop on Power-Aware Computing and Systems (HotPower), held at the Symposium on Operating Systems Principles [2009]
- Workshop on Modeling, Benchmarking, and Simulation (MoBS), held at the International Symposium on Computer Architecture [2009]

Editorial Board Membership

IEEE Potentials, the student magazine of the Institute of Electrical and Electronics Engineers (IEEE).

- Associate Editor [2009–present and 2004–2006]
- Editor-in-Chief [2007–2008]
- Student Editor [2002–2004]

Reviewing

- ACM Technical Symposium on Computer Science Education (SIGCSE)[2010–2012]
- *IEEE Transactions on Computers* [2010–2012]
- *IEEE Micro* [2011]
- International Conference on High-Performance and Embedded Architecture and Compilation (HiPEAC) [2011]
- ACM Annual Conference on Innovation and Technology in Computer Science Education (ITiCSE) [2010–2011]
- *IEEE Transactions on VLSI* [2009]
- *IEEE Transactions on Services Computing* [2008]
- International Symposium on Computer Architecture (ISCA) [2008]
- International Conference on Parallel Architecture and Compilation Techniques (PACT) [2006–2007]
- International Symposium on Microarchitecture (MICRO) [2006]

FUNDING

External Funding

- “S3: Stepping up STEM at Sonoma State University,” senior personnel, \$791,636, National Science Foundation Division of Undergraduate Education [2011-2016]
- “Modeling the Power Consumption of Computer Systems with Graphics Processing Units (GPUs),” PI, \$16,800 in student stipend and travel funding, Computing Research Association Collaborative Research Experience for Undergraduates award [2010-2011]

Competitive Internal Funding

- “Contextualizing the Literature of Introductory Programming Education,” \$1000 in student assistant funding from the Instructionally Related Activities Student Assistant program [2010]
- Advisor to Benjamin Morrison’s Undergraduate Research Grant, “Modeling the Power Consumption of Graphics Processors,” \$650 in equipment funding [2010]

Travel Grants

- Sonoma State School of Science and Technology Travel / Professional Development Grants
 - IEEE International Symposium on Performance Analysis of Systems and Software (Austin, TX) [Apr. 2011]
 - ACM SIGCSE Technical Conference on Computer Science Education (Dallas, TX) [Mar. 2011]
 - International Symposium on Computer Architecture workshops (Austin, TX) [Jun. 2009]
 - Workshop on Power-Aware Computing and Systems (San Diego, CA) [Dec. 2008]
- Travel to the Programming Languages, Operating Systems, and Architecture Mentoring Workshop (Washington, D.C.) funded by the Computing Research Association Committee on the Status of Women in Computing Research (CRA-W) and the Coalition to Diversify Computing (CDC) [Mar. 2009]

TEACHING EXPERIENCE

Sonoma State University

- *Instructor*, CS 115: Programming I [Spring 2012, Fall 2011, Spring 2011, Spring 2010, Fall 2009, Spring 2008, Fall 2008] Lower-division undergraduate lecture and lab course
- *Supervisor*, CS 115W: Programming I Workshop [Spring 2012, Fall 2011, Spring 2011, Spring 2010, Fall 2009, Spring 2008, Fall 2008] Student-led workshop for CS 115
- *Instructor*, CS 210: Introduction to Unix [Fall 2010] Lower-division undergraduate lab course
- *Instructor*, ES 210: Digital Circuit & Logic Design [Spring 2012] Lower-division undergraduate lecture and lab course
- *Instructor*, CS 215: Programming II [Spring 2011, Fall 2010] Lower-division undergraduate lecture and lab course

- *Instructor*, CS 252: Computer Organization [Spring 2010, Fall 2009]
Lower-division undergraduate lecture and lab course
- *Instructor*, CS 351: Computer Architecture [Fall 2011, Fall 2010, Fall 2008]
Upper-division undergraduate lecture course
- *Instructor*, CS 355: Database Management Systems Design [Spring 2009]
Upper-division undergraduate lecture course
- *Instructor and Course Creator*, CS 385: Multicore and Manycore Programming [Spring 2009]
Upper-division undergraduate lecture and lab elective

Stanford University

- *Co-Instructor*, EE 282: Computer Systems Architecture [Spring 2007]
Graduate lecture course offered in-person and through the distance learning program at Stanford Center for Professional Development
- *Grader*, EE 275: Logic Design [Winter 2004]
- *Grader*, EE 182: Computer Architecture [Fall 2002]

University of Texas at Austin

- *Grader*, EE 345L: Microprocessor Design Lab [Fall 2000]
- *Tutor* for Women in Engineering Program [Fall 1999–Spring 2001]
Tutored students in lower-division electrical engineering, physics, and math classes

STUDENTS
SUPERVISED

Research Assistants

“Modeling the Power Consumption of Computer Systems with Graphics Processing Units (GPUs)”

- Stephanie Schmidt [Fall 2010–Fall 2011]
- Forrest Lipske (high school student) [Summer 2011]
- Vincent Morrow [Fall 2010–Summer 2011]
- Benjamin Morrison (senior capstone project) [Spring 2010]
- Taylor Lee (high school student) [Summer 2009]

“Contextualizing the Literature of Introductory Programming Education”

- Ashley Campbell [Spring-Summer 2010]

“A Mini-Course Management System for Computer Science”

- Jason Gregori (senior capstone project) [Spring 2010]

Course Assistants

CS 115 lab assistants and graders

- Rachelle Thysell [Spring 2012]
- Kristi Yost [Spring 2012]
- David Tran [Spring 2012]
- Matthew Hardwick [Fall 2011, Spring 2012]
- Andrew Huss [Fall 2011]
- Stephanie Schmidt [Fall 2011]
- Eric Milliren [Spring 2010]
- Ashley Campbell [Fall 2009]

CS 115W workshop instructors

- Brian McWilliams [Fall 2011, Spring 2012]
- Matthew Hardwick [Spring 2012]
- Andrew Huss [Fall 2011]
- Katie Caballero [Spring 2011]
- Anthony Cavallaro [Spring 2010, Spring 2011]
- William Batt-Freitas [Fall 2009]
- Ryan O'Donnell [Spring 2009]
- Jenna Silva [Spring 2009]
- Joe Muller [Fall 2008]

TEACHING
ACTIVITIES

- Member of Faculty Learning Community for multi-campus EnACT~PTD project (Ensuring Access through Collaboration and Technology Partnerships, Technology & Dissemination). The community consists of 5 faculty members working on implementing Universal Design for Learning and accessibility technology in their classrooms. [Spring 2009–Spring 2011]
- Member of Sonoma State University's Moodle Pilot Project to reinvent the Introduction to Unix course using the Moodle course management system (one of 14 faculty selected) [Fall 2010]
- Teaching and mentoring workshops and courses
 - "More About Moodle" online course, @One Project [Aug. 2010]
 - "Introduction to Teaching and Learning with Moodle" online course, @One Project [June 2010]
 - Multicultural Competency Workshop, Sonoma State University School of Science and Technology [Feb. 2010]
 - Moodle Overview and Faculty Demonstration Panel, Sonoma State University [Feb. 2010]
 - Course Accessibility Makeover Program, Sonoma State University [June 2009]
 - Universal Design for Learning for Enhanced Student Engagement and Expression, Sonoma State University Center for Teaching and Professional Development [Mar. 2009]
 - Process Oriented Guided Inquiry Learning in the Classroom (POGIL), an NSF and Department of Education-FIPSE Sponsored Workshop, Sonoma State University [Sep. 2008]
 - Teaching Problem Solving, Stanford University Center for Teaching and Learning [Feb. 2008]
 - The Art of Asking Questions, Stanford University Center for Teaching and Learning [Oct. 2008]
 - Managing Groups and Teams, Stanford Graduate Summer Institute [Sep. 2008]

PROFESSIONAL
SERVICE

- Student travel grant chair for the International Symposium on Performance Analysis of Systems and Software (ISPASS) [2010, 2012]
- Member of IEEE Publication Conduct Committee, a subcommittee of the Publication Services and Products Board [2007–2010]
- Tester for IEEEExtreme worldwide student programming contest [2009]
- Voting member of IEEE Publication Services and Products Board [2007–2008]
- Member of Conference No-show Policy ad-hoc subcommittee of IEEE Publication Services and Products Board [2008]

- Voting member of IEEE Student Activities Committee [2007–2008, 2002–2004]
- Newsletter editor for worldwide IEEE Women in Engineering organization [2006–2008]
- Newsletter editor for worldwide IEEE Graduates of the Last Decade (GOLD) organization [2006]

UNIVERSITY
SERVICE

Sonoma State University

- Program Coordinator, School of Science and Technology Student High School Internship Program (SHIP) [2012]
- Member of Graduation Initiative Group [2012]
- Member of University Scholarship Committee [2010-2012]
- Member of School of Science and Technology Professional Development Committee [2010-2012]
- Name reader at Commencement [2011]
- Volunteer at MESA Day [Apr. 2011]
- Volunteer for CS department at Seawolf Day [Apr. 2010]
- Judge for School of Education’s Jack London Award [Apr. 2010]
- Volunteer for CS department at Latino Family Summit [Mar. 2010]
- Interviewer for University Study Abroad program [Feb. 2010]
- Member of School of Science and Technology stimulus package committee [Summer 2009]
- Member of Academic Senate Fairness Board [Spring 2009]
- Member of selection committee for School of Science and Technology STEM internship program [Spring 2009]
- Member of faculty team in CS department student/faculty/alumni trivia contest [May 2009]
- Proctor and problem designer for Computer Science department student programming contest [Apr. 2009]
- Reviewer for School of Science and Technology Undergraduate Research Grant applications [Nov. 2008]

Stanford University

- Computer Systems Laboratory Student Ambassador [2004–2007]
- “Big Sister” to three first-year graduate students through Stanford Women in Electrical Engineering [2004–2007]
- Mentor to eight first-year graduate students through Stanford Electrical Engineering admissions office [2006–2007]
- Member of Judicial Panel pool [2005–2006]
- Webmaster for Associated Students of Stanford University Speakers Bureau [2003–2006]

COMMUNITY
SERVICE

- Member of Facilities committee for Expanding Your Horizons conference for middle school girls (Sonoma County, CA) [2012]
- Faculty advisor for Novato High School MOUSE Squad, an organization that teaches IT support skills (Novato, CA) [2010-2011]
- Computer Science workshop leader for Adelante program, in which 7th-12th grade students visit Sonoma State University (Rohnert Park, CA) [Jul. 2011]
- Co-leader of “Developing Computer Animations with Alice” workshop at Expanding Your Horizons conference for middle school girls (Sonoma County, CA) [2010-2011]
- Volunteer at Dare 2B Digital workshop for middle and high school girls (Los Altos Hills, CA) [Feb. 2010]
- Volunteer at San Francisco Support for Families of Children with Disabilities Parent-Professional Workshop and Halloween party (San Francisco, CA) [Sept.–Oct. 2010]
- Faculty mentor for a local high school student through Sonoma State University’s STEM research internship program (Rohnert Park, CA) [Summer 2009]
- Member of advisory panel for Santa Rosa Junior College Computer Science Department (Santa Rosa, CA) [Oct. 2008]

AWARDS

- MOUSE Squad of Northern California Volunteer of the Year [2011]
- Stanford Graduate Fellowship [2001–2005]
- National Science Foundation Graduate Fellowship [2001–2004]
- National Defense Science and Engineering Graduate Fellowship (declined) [2001]
- UT-Austin Electrical and Computer Engineering Department “Outstanding Scholar-Leader” (awarded to 1 graduating student) [2001]
- UT-Austin Society of Women Engineers “Outstanding Student” (awarded to 1 graduating student) [2001]
- *Jeopardy!* College Tournament semi-finalist [2001]
- National Merit Scholarship [1999–2001]
- UT-Austin College of Engineering Cockrell Scholarship [1998–2001]