Diana Franklin
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## Education

**University of California, Davis** ..... Davis, CA
Ph.D. in Computer Science ..... 2002
**University of Illinois, Urbana-Champaign** ..... Urbana, IL
M.C.S. in Computer Science ..... 1999
**University of California, Davis** ..... Davis, CA
B.S. in Computer Science and Engineering ..... 1997

## Honors

IEEE Computer Engineering Best Advisor (2006-2007)
Bert and Candace Forbes Professor (2002-present)
IEEE Computer Engineering Professor of the Year (2002-2003)
IEEE Outstanding Professor (2003)
Tau Beta Pi Fellow (1997)
National Physical Science Consortium Fellow (1997-2002)
Compaq Outstanding Intern Award (2000)

## Academic Experience

California Polytechnic State University, Associate Professor, Fall 2007.
California Polytechnic State University, Assistant Professor, 2002-2007.
Associate Instructor, ECS 154B: Computer Architecture. Fall quarter, 2000.
Teaching Assistant, ECS 250A: Graduate Computer Architecture, 1998.
Teaching Assistant, ECS 158: Parallel Programming, 1998.

## Professional Experience

Seven Pinnacles, consultant, 2006-present
High-performance code parallelization for future multi-core platforms.

Compaq VSSAD group, Research Intern, Summer 2000.
Developed cache coherence protocols for a chip multiprocessor model with dynamically scheduled processors to support Alpha microprocessor development.

Lawrence Livermore National Laboratory, Summer Intern, Summers 97 and 98.
Integrated a hardware performance monitor API on the IBM AIX into a visual debugger (TotalView). Provides monitoring control and displays real-time results within the debugger.

**Funding**

- NSF-CAREER: Horsehoes and Hand Grenades: Exploiting Error Tolerance in Applications, 6/07-6/12. $300K
- Fundraising for the 2007 SWE Diversity Summer Camp, soley responsible for $16K (CISCO-$6K, Raytheon, $5K, Google, $5K)
- NSF-REU Supplemental funding associated with NSF-MRI grant, 1/07-1/08. $7.5K
- NSF-MRI: Acquisition of Computing Resources for Management of Reliability through Data Classification and Voltage Overscaling, 8/06-7/09. $45K
- Departmental Bloom Grant, 1/06-3/06. $40K
- NSF-REU Supplemental funding associated with NSF-ITR grant, 8/05-7/06. $12K
- C3RP:Large-Scale Distributed Wireless Networks, 7/05-9/06, $45K.
- C3RP:Large-Scale Distributed Wireless Networks, 5/04-6/05, $35K.
- NSF-ITR:Synchroscalar, Exploiting Synchronized Clock Domains for Energy Efficient Multi-rate Embedded Systems, Co-PI(subcontractor), 8/03-7/06. - Rated Highly Competitive and the top proposal in its panel. $50K

**Diversity / Outreach / Retention Activities**

- NSF Broadening Participation in Computing (BPC) Proposal Coordinator, in conjunction with UCSB CS, 2007
- Girl Scouts Engineering Day, 4/07, 4/06
- Panel speaker, "Along the Career Path," CRA-W/CDC Computer Architecture Workshop, 7/19/06
- Building an Engineer Day, 10/05, 11/04, 5/04
- Expanding Your Horizons at Cuesta College, 3/19/05
- Microsoft Messenger Project with female engineers creating Virtual Pet, 12/03-6/04
- SWE TeamTech Advisor 2003, won 1st place at national SWE competition
- Panel speaker, "Grad School and Beyond" for NPSC (National Physical Science Consortium) fellows, 11/03
- CSC/CPE Gender equity committee, 2002-2004

**Educational Service**

- CAC-ABET Program Evaluator, accreditation visits: 10/06, 10/04, 10/03
- ABET Coordinator for CS Department, 2007-2008
- ABET Coordinator for CS side of CPE, 2005-2008
- College-Level Retention, Promotion and Tenure Task Force, 11/06-6/07
- College-Level Faculty Workload Committee, 3/06-6/06
- CSC Curriculum Committee, 2005-2007
- CPE Curriculum Committee, 2003-2007
- Assisted UCD with ABET efforts, 2007
- Assisted UCSB with ABET efforts, 2005-2006
- CSC Orientation "LEGO Language" activity, 10/20/05
- CPE Orientation "How to Succeed at Cal Poly" panel, 9/30/05

**Professional Service**

- Program Committee, Workshop on Programming Models for Ubiquitous Parallelism, 6/07
- Program Committee, Computing Frontiers, 1/07
- Program Committee, ICESS07, 1/07
- NSF Review Panel, 1/07, 10/05, 5/04
- PACT (Parallel Architectures and Compilation Techniques) Registration Chair, 9/03
- Doctoral thesis committee, Ravishankar Rao, 2006
- Reviewed Textbook, "Memory Systems: Cache, DRAM, Disk" by Bruce Jacob, Spencer Ng and David Wang
- Reviewed Textbook, "High Performance Embedded Systems: Architectures, Algorithms, and Applications" by Wayne Wolf
- Reveiwed IEEE Transactions on Computing (2002, 2004, 2005)
- Reviewed SPAA - Symposium Parallel Algorithms and Architectures (2005)
- Reviewed ISCA - International Symposium for Computer Architecture (2002,2004)
- Reviewed ASPLOS - Architectural Support for Programming Languages and Operating Systems (2004)
- Reviewed IEEE Journal on Parallel Computing (2004)
- Reviewed HPCA - High Performance Computer Architecture (2002, 2003, 2005)
- Reviewed MICRO - International Symposium for Microarchitecture (2001, 2003)

**Teaching Experience**

- CSC/CPE 101 - Introduction to Programming
- CSC/CPE 103 - Data Structures and Algorithm Analysis
- CSC X225 - Introduction to Computer Organization
- CSC/CPE 315 - Computer Architecture II
- CPE 316 - Embedded Processing
- CSC/CPE 520 - Graduate Computer Architecture

| Term<br>Course | F02<br>315x2 | W03<br>520 | S03<br>315x3 | F03<br>315 | F03<br>520 | W04<br>315 | S04<br>315x2 | F04<br>101x2 | W05<br>315 | W05<br>316 | S05<br>315x2 | F05<br>225x2 | W06<br>316 | S06<br>315x2 | F06<br>315 | F06<br>520 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preparation | 3.60 | 3.94 | 3.80 | 3.79 | 3.67 | 3.57 | 3.77 | 3.23 | 3.79 | 3.41 | 3.66 | 3.43 | 3.50 | 3.59 | 3.84 | 4.00 |
| Conveyance | 3.13 | 3.94 | 3.45 | 3.59 | 4.00 | 2.96 | 3.14 | 2.91 | 3.32 | 3.44 | 3.08 | 3.00 | 3.29 | 3.36 | 3.44 | 4.00 |
| Office Hours | 3.36 | 4.00 | 3.65 | 3.52 | 4.00 | 2.89 | 3.21 | 3.37 | 3.33 | 3.50 | 3.05 | 3.31 | 3.31 | 3.37 | 3.33 | 4.00 |
| Overall | 3.16 | 4.00 | 3.57 | 3.56 | 4.00 | 3.09 | 3.35 | 3.13 | 3.46 | 3.48 | 3.27 | 3.18 | 3.50 | 3.42 | 3.46 | 4.00 |
| My Avg | 3.31 | 3.97 | 3.61 | 3.62 | 3.92 | 3.14 | 3.38 | 3.14 | 3.48 | 3.45 | 3.30 | 3.22 | 3.40 | 3.44 | 3.53 | 4.00 |
| Dept Avg | 3.25 | 3.23 | 3.31 | 3.43 | 3.43 | 3.22 | 3.29 | 3.35 | 3.35 | 3.37 | 3.32 | 3.35 | 3.29 | 3.27 | | |

Table 1: Student Evaluation scores, reported out of 4. Elective Mean for each category. Calpoly has the top-ranked undergraduate-oriented, public computer science department in the nation. Our primary mission is teaching and faculty members invest substantial time in their courses. As such, an average score at Calpoly is generally regarded as indication of a high standard of teaching. My scores are generally above the department average. Additionally, lower-division courses typically receive scores a full point below upper-division course.

**Major Revisions and Innovations in Existing Courses**

- CSC/CPE 225 - Computer Organization Developed a new assembly language / architecture course exclusively for computer science students.
- CSC/CPE 316 - Embedded Processing Continued Prof. John Seng's work in revamping the course. Developed a set of lecture slides.
- CSC 100 - Introduction to Computer Science Developed LEGO activity to teach beginning students about machine instructions.
- CSC/CPE 482P - Parallel Programming Currently developing a parallel programming course scheduled for fall 2008

**Undergraduate Projects Supervised**

- 25 senior projects completed
- 10 senior projects currently under supervision
- 3 students competed at the statewide CSU undergraduate research competition. Their projects were: an underwater SCUBA-diving buddy detector, performance analysis and benchmarks of parallel network processors, and WSN.
- My undergraduates have gone on to graduate school at UCSC, UCSB, and Northeastern, as well as taken industry positions directly related to their project experience.

**Publications** (Names in boldface were Cal Poly undergraduate researchers)

1 Diana Franklin. "Recognizing and Developing Potential in Female Students." *CRA Pipelines*, March 2007.

2 Ravishankar Rao, Justin Wenck, Diana Franklin, Rajeevan Amirtharajah, and Venkatesh Akella. "Segmented Bitline Cache: Exploiting Non-Uniform Memory Access Patterns," *International Conference on High Performance Computing*, December 2006.

3 Darshan Thaker, Diana Franklin, John Oliver, Susmit Biswas, **Derek Lockhart**, Tzvetan Metodi, and Frederic T. Chong. "Characterization of Error-Tolerant Applications when Protecting Control Data", *2006 IEEE International Symposium on Workload Characterization*, October 2006.

4 Diana Franklin, Problem sets for Chapter 1 of Hennessy and Patterson's *Computer Architecture: A Quantitative Approach,* 4th edition, the best selling graduate computer architecture book.

5 Diana Franklin, "Active Pages: Memory-Centric Computation." chapter to appear in *Reconfigurable Computing: The Theory and Practice of FPGA-Based Computation.*

6 J. Oliver, R. Rao, D. Franklin, V. Akella, and F. Chong, "Synchroscalar: Evaluation of an Embedded, Multi-core Architecture for Media Applications," *Journal of Embedded Computing.* Volume 2, Number 2, 2006.

7 John Oliver, Ravishankar Rao, **Jennifer Mankin**, **Michael Brown**, Diana Franklin, Venkatesh Akella, and Frederic T. Chong. "Tile Size Selection for Low-Power Tile-Based Architectures." *ACM International Conference on Computing Frontiers*, May 2006.

8 Ravishankar Rao, Justin Wenck, Diana Franklin, Rajeevan Amirtharajah, and Venkatesh Akella. " Exploiting Non-Uniform Memory Access Patterns Through Bitline Segmentation." One of 5 papers in WMPI workshop to be published in *SIGMICRO* newsletter.

9 Ravishankar Rao, Justin Wenck, Diana Franklin, Rajeevan Amirtharajah, and Venkatesh Akella. " Exploiting Non-Uniform Memory Access Patterns Through Bitline Segmentation." *Workshop on Memory Performance Issues*, in conjunction with HPCA (High Performance Computer Architecture), February 2006.

10 D. Thaker, D. Franklin, V. Akella, and F. Chong. "Reliability Requirements of Control, Address, and Data Operations in Error-Tolerant Applications," *Workshop on Architectural Reliability*, in conjunction with MICRO-2005, December 2005.

11 Diana Franklin and John Seng, "Experiences with the Blackfin Architecture for Embedded Systems Education." In the *Twelfth Workshop on Computer Architecture Education*, WCAE05, June 2005.

12 **A. LeBeau, J. Fields, R. Lavering**, D. Franklin and J. Seng, "Improving Non-Stationary Data Retrieval in Wireless Sensor Networks," *IEEE PerCom Workshop on Sensor Networks and Systems for Pervasive Computing*, June 2005.

13 J. Oliver, R. Rao, P. Sultana, J. Crandall, E. Czernikowski, **L. Jones**, D. Franklin, V. Akella, and F. Chong, "Synchroscalar: A Multiple Clock Domain, Power-Aware, Tile-Based Embedded Processor," *International Symposium on Computer Architecture*, ISCA-04, Munich, Germany, June 2004.

14 D. Franklin and F. Chong, "Design and Verification of Scalable, Solid-State Quantum Computers," Chapter 8 of *Nano, Quantum and Molecular Computing: Implications to High Level Design and Validation*, Kluwer Academic Publishers, 2004.

15 R. Rao, J. Oliver, P. Sultana, J. Crandall, E. Czernikowski, **L. Jones**, D. Copsey, D. Keen (Franklin), V. Akella, and F. Chong, "Synchroscalar: Initial Lessons in Power-Aware Design of a Tile-Based Embedded Architecture," *Power-Aware Computer Systems Workshop*, in conjunction with MICRO-2003, December 2003.

16 Diana Keen (Franklin), Mark Oskin, Justin Hensley, and Frederic T. Chong. Cache Coherence in Intelligent Memory Systems. *IEEE Transactions on Computers*, Vol. 52, Num. 7, July 2003 pgs 960-966.

17 M. Oskin, D. Keen (Franklin), J. Hensley, L. Lita and F. Chong. "Operating Systems Techniques for Parallel Computation in Intelligent Memory," *Parallel Processing Letters*, Col. 12, No 3. (2000)99-109.

18 Mark Oskin, Justin Hensley, Diana Keen (Franklin), Frederic T. Chong, Matthew Farrens, and Aneet Chopra. Exploiting ILP in Page-Based Intelligent Memory. In the *International Symposium on Microarchitecture*. November 1999.

19 Yi Kang, Michael Huang, Seung-Moon Yoon, Zhengho Ge, Diana Keen (Franklin), Vinh Lam, Prattap Pattnaik and Josep Torrellas. FlexRAM: An Advanced Intelligent Memory System. In *International Conference on Computer Design(ICCD)*. October 1999.

20 Mark Oskin, Diana Keen (Franklin), Justin Hensley, Lucian-Vlad Lita, and Frederic T. Chong. Reducing Cost and Tolerating Defects in Page-Based Intelligent Memory.In *International Conference on Computer Design (ICCD2000)*. Austin Texas, 2000

21 Mark Oskin, Lucian-Vlad Lita, Frederic T. Chong, Justin Hensley and Diana Keen (Franklin). Algorithmic Complexity with Page-Based Intelligent Memory. In *Parallel Processing Letters*. Vol. 10 No 1. (2000)99-109 World Scientific Publishing Company.