# Chandra Krintz

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University of California, Santa Barbara
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**Vita:**

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| Birth date: | May 23, 1970 |
| Birthplace: | Monticello, Indiana |
| Gender: | Female |
| Citizenship: | United States |

**Research Interests:**

My research interests include programming support and adaptive optimization for cloud computing applications and systems, and techniques for efficient interoperation and integration of web services. Most recently, my focus has been on using these technologies to faciliate sustainability science and engineering for the domains of agriculture (SmartFarm) and Diabetes management (Vigilance). My other interests include projects that mentor, support, and encourage young people from underrepresented groups (especially women!) to consider and pursue computer science.

**Education:**

**University of California** **San Diego, CA**
Doctor of Philosophy degree in Computer Science, May 2001
Dissertation Title: Reducing Load Delay to Improve Performance of Internet-Computing Programs
Available as UCSD Technical Report CS2001-0672
Adviser: Brad Calder

**University of California** **San Diego, CA**
Master of Science degree in Computer Science, June 1998

**California State University** **Northridge, CA**
Bachelor of Science degree in Computer Science, December 1995
Honors: School of Engineering Outstanding Undergraduate Award

**Professional Experience:**

**University of California,** **Santa Barbara, CA**
Professor. (July 2011 - Present)
Associate Professor. (July 2007 - June 2011)
Assistant Professor. (July 2001 - June 2007)

**AppScale Systems, Inc.,** **Santa Barbara, CA**
Co-founder. (October 2012 - Present)
Chief Scientist (November 2013 - Present)
Chief Technology Officer (October 2012 - November 2013)

**Peer-Reviewed Conference & Workshop Publications:**

1. H. Jayathilaka, R. Wolski, and C. Krintz, Service-Level Agreement Durability for Web Service Response Time, IEEE Conference on Cloud Computing Technology and Science (CloudCom'15). November, 2015
2. C. Krintz, R. Wolski, J. E. Pinsker, S. Dimopoulos, J. Brevik, and E. Dassau, On the Use of Consumer-grade Activity Monitoring Devices to Improve Predictions of Glycemic Variability, EAI International Conference on Smart Wearable Devices and IoT for Health and Wellbeing Applications. October, 2015.
3. H. Jayathilaka, R. Wolski, and C. Krintz, Response Time Service Level Agreements for Cloud-hosted Web Applications, ACM Symposium on Cloud Computing (SoCC'15). August, 2015
4. A. Pucher, R. Wolski, and C. Krintz, Providing Lifetime Service-Level-Agreements for Cloud Spot Instances, International Conference on Grid and Cloud Computing and Applications (GCA'15). July, 2015
5. S. Dimopoulos, C. Krintz, and R. Wolski, SuperContra: Cross-Language, Cross-Runtime Contracts As a Service, IC2E Workshop on the Future of PaaS, March 2015

6. H. Jayathilaka, C. Krintz, and R. Wolski, EAGER: Deployment-time API Governance for Modern PaaS Clouds, IC2E Workshop on the Future of PaaS, March 2015
7. A. Pucher, C. Krintz, and R. Wolski, Using Trustworthy Simulation to Engineer Cloud Schedulers, IEEE International Conference on Cloud Engineering (IC2E), March, 2015. – **Best Paper Award**
8. G. Douglas, B. Drawert, C. Krintz, and R. Wolski, CloudTracker: Using Execution Provenance to Optimize the Cost of Cloud Use, International Conference on Economics of Grid, Clouds, Systems, and Services, September 2014
9. C. Horuk, G. Douglas, A. Gupta, C. Krintz, B. Bales, G. Bellesia, B. Drawert, R. Wolski, L. Petzold, and A. Hellander, Automatic and Portable Cloud Deployment for Scientific Simulations, IEEE/ACM International Conference on High Performance Computing and Simulation, July 2014
10. H. Jayathilaka, C. Krintz, and R. Wolski Towards Automatically Estimating Porting Effort Between Web Service APIs, IEEE International Conference on Services Computing, June 2014
11. C. Krintz, H. Jayathilaka, S. Dimopoulos, A. Pucher, R. Wolski, and T. Bultan, Cloud Platform Support for API Governance, IC2E Workshop on the Future of PaaS, March 2014
12. C. Krintz, The AppScale Cloud Platform: Enabling Porable, Scalable Web Application Deployment, IEEE Internet Computing, March/April, 2013
13. N. Chohan, A. Gupta, C. Bunch, S. Sundaram, and C. Krintz, North by Northwest: Infrastructure Agnostic and Datastore Agnostic Live Migration of Private Cloud Platforms, USENIX HotCloud, June, 2012
14. N. Chohan, A. Gupta, C. Bunch, K. Prakasam, and C. Krintz, Hybrid Cloud Support for Large Scale Analytics and Web Processing, USENIX WebApps, June, 2012
15. C. Bunch, N. Chohan, and C. Krintz, Supporting Placement and Data Consistency Strategies Using Hybrid Clouds, IEEE Aerospace Conference, March, 2012
16. C. Bunch and C. Krintz, Enabling Automated HPC / Database Deployment via the AppScale Hybrid Cloud Platform, Workshop on High-Performance Computing Meets Databases, Nov, 2011
17. N. Chohan, C. Bunch, C. Krintz, and Y. Nomura, Database-Agnostic Transaction Support for Cloud Infrastructures, IEEE Cloud11: International Conference on Cloud Computing, July, 2011
18. C. Bunch, N. Chohan, C. Krintz, and Khawaja Shams, Neptune: A Domain Specic Language for Deploying HPC Software on Cloud Platforms, ACM ScienceCloud Workshop, June, 2011 – **Best Paper Award**
19. C. Bunch, J. Kupferman, and C. Krintz, Active Cloud DB: A RESTful Software-as-a-Service for Language Agnostic Access to Distributed Datastores, International Conference on Cloud Computing (CloudComp), Oct, 2010
20. M. Wegiel and C. Krintz, Cross-Language, Type-Safe, and Transparent Object Sharing For Co-Located Managed Runtimes, The ACM/SIGPLAN Conference on Object Oriented Programming Systems, Languages, and Applications (OOPSLA), Oct, 2010
21. C. Bunch, N. Chohan, C. Krintz, J. Chohan, J. Kupferman, P. Lakhina, Y. Li, and Y. Nomura (Fujitsu), An Evaluation of Distributed Datastores Using the AppScale Cloud Platform, IEEE International Conference on Cloud Computing, Jul, 2010
22. N. Chohan, C. Castillo, M. Spreitzer, M. Steinder, A. Tantawi, and C. Krintz, See Spot Run: Using Spot Instances for MapReduce Workflows, USENIX HotCloud, Jun, 2010
23. N. Chohan, C. Bunch, S. Pang, C. Krintz, N. Mostafa, S. Soman, and R. Wolski AppScale: Scalable and Open AppEngine Application Development and Deployment, International Conference on Cloud Computing (CloudComp), Oct, 2009
24. N. Mostafa and C. Krintz, Tracking Performance Across Software Revisions, ACM International Conference on Principles and Practice of Programming in Java (PPPJ), Aug, 2009
25. M. Wegiel and C. Krintz, Dynamic Prediction of Collection Yield for Managed Runtimes, ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Mar, 2009
26. S. Soman and C. Krintz and L. Daynes, $MTM^2$: Scalable Memory Management for Multi-Tasking Managed Runtime Environments, European Conference on Object-Oriented Programming (ECOOP), Jul, 2008

27. M. Wegiel and C. Krintz, XMem: Type-Safe, Transparent, Shared Memory for Cross-Runtime Communication and Coordination, ACM Conference on Programming Language Design and Implementation (PLDI), Jun, 2008
28. R. Wolski, S. Gurun, C. Krintz, and D. Nurmi, Using Bandwidth Data to Make Computation Offloading Decisions, High-Performance Grid Computing Workshop (HPGC) – **invited and peer reviewed**, as part of the International Conference on Parallel and Distributed Processing, Apr, 2008
29. M. Wegiel and C. Krintz, The Mapping Collector: Virtual Memory Support for Generational, Parallel, and Concurrent Compaction, ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Mar, 2008
30. L. Zhang, C. Krintz, and P. Nagpurkar, Supporting Exception Handling for Futures in Java, ACM International Conference on the Principles and Practice on Programming in Java (PPPJ), Sep, 2007
31. L. Zhang, C. Krintz, and P. Nagpurkar, Language and Virtual Machine Support for Efficient Fine-Grained Futures in Java, ACM International Conference on Parallel Architectures and Compilation Techniques (PACT), Sep, 2007
32. P. Nagpurkar, H. Cain, M. Serrano, J. Choi, and C. Krintz, Call-chain Software Instruction Prefetching in J2EE Server Applications, ACM International Conference on Parallel Architectures and Compilation Techniques (PACT), Sep, 2007
33. C. Grzegorczyk, S. Soman, R. Wolski, and C. Krintz, Isla Vista Heap Sizing: Using Feedback to Avoid Paging, ACM International Symposium on Code Generation and Optimization (CGO), Mar, 2007
34. H. Mousa, C. Krintz, L. Youseff, and R. Wolski, VIProf: Vertically Integrated Full-System Performance Profiler, Workshop on Next-Generation Software, Mar, 2007
35. L. Youseff, R. Wolski, B. Gorda, and C. Krintz, Paravirtualization for HPC Systems, XHPC: Workshop on XEN in High-Performance Cluster and Grid Computing, Dec, 2006 – **(Co-)Best Paper Award**
36. L. Zhang, C. Krintz, and S. Soman, Efficient Support of Fine-grained Futures in Java, International Conference on Parallel and Distributed Computing and Systems (PDCS), Nov, 2006
37. L. Youseff, R. Wolski, B. Gorda, and C. Krintz, Evaluating the Performance Impact of Xen on MPI and Process Execution For HPC Systems, International Workshop on Virtualization Technologies in Distributed Computing (VTDC), Nov, 2006
38. S. Gurun and C. Krintz, A Run-Time, Feedback-Based Energy Estimation Model For Embedded Devices, International Conference on Hardware-Software Codesign and System Synthesis (CODES+ISSS), Oct, 2006
39. Y. Wen, S. Gurun, N. Chohan, R. Wolski, and C. Krintz, SimGate: Full-System, Cycle-Close Simulation of the Stargate Sensor Network Intermediate Node, International Conference on Embedded Computer Systems: Architectures, MOdeling, and Simulation (IC-SAMOS), Jul, 2006
40. S. Soman, L. Daynes, C. Krintz, Task-Aware Garbage Collection in a Multi-Tasking Virtual Machine, ACM International Symposium for Memory Management (ISMM), Jun, 2006
41. S. Soman and C. Krintz, Efficient and General On-Stack Replacement for Aggressive Program Specialization, International Conference on Programming Languages and Compilers (PLC), Jun, 2006
42. P. Nagpurkar, C. Krintz, M. Hind, P. Sweeney, and V.T. Rajan, Online Phase Detection Algorithms, ACM International Symposium on Code Generation and Optimization (CGO), Mar, 2006
43. C. Krintz and S. Gurun, Remote Performance Monitoring, Dagstuhl Seminar Proceedings – Schloss Dagstuhl Workshop on Automatic Performance Analysis, Apr, 2005
44. S. Gurun and C. Krintz, AutoDVS: An Automatic, General-Purpose, Dynamic Clock Scheduling System for Hand-Held Devices, ACM SIGBED International Conference on Embedded Systems Software (EMSOFT), Sep, 2005
45. H. Mousa and C. Krintz, HPS: Hybrid Profiling Support, ACM SIGARCH ACM International Conference on Parallel Architectures and Compilation Techniques (PACT), Sep, 2005
46. C. Krintz and R. Wolski, Using Phase Behavior in Scientific Application to Guide Linux Operating System Customization, Workshop on Next Generation Software at IPDPS, Apr, 2005
47. P. Nagpurkar, C. Krintz, and T. Sherwood, Phase-Aware Remote Profiling, ACM International Symposium on Code Generation and Optimization (CGO), Mar, 2005

48. S. Soman, C. Krintz, and D. Bacon, Dynamic Selection of Application-specific Garbage Collectors, ACM International Symposium for Memory Management (ISMM), Oct, 2004
49. C. Krintz, Y. Wen, and R. Wolski, Application-level Prediction of Battery Dissipation, ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED), Aug, 2004
50. L. Zhang and C. Krintz, Adaptive Code Unloading for Resource-Constrained JVMs, ACM SIGPLAN Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), Jun, 2004
51. P. Nagpurkar and C. Krintz, Visualization and Analysis of Phased Behavior in Java Programs, ACM International Conference on the Principles and Practice of Programming in Java (PPPJ), Jun, 2004
52. L. Zhang and C. Krintz, Profile-driven Code Unloading for Resource-Constrained JVMs, ACM International Conference on the Principles and Practice of Programming in Java (PPPJ), Jun, 2004
53. S. Gurun, C. Krintz, and R. Wolski, NWSLite: A Light-Weight Prediction Utility for Mobile Devices, ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), Jun, 2004
54. Y. Wen, R. Wolski, and C. Krintz, History-based, Online, Battery Lifetime Prediction for Embedded and Mobile Devices, Workshop on Power-Aware Computer Systems (PACS), Dec, 2003
55. S. Soman, C. Krintz, and G. Vigna, Detecting Malicious Java Code Using Virtual Machine Auditing, 12th USENIX Security Symposium, Aug, 2003
56. S. Sucu and C. Krintz, ACE: A Resource-Aware Adaptive Compression Environment, International Conference on Information Technology: Coding and Computing (ITCC), Apr, 2003
57. C. Krintz, Coupling On-Line and Off-Line Profile Information to Improve Program Performance, in the: ACM International Symposium on Code Generation and Optimization (CGO), Mar, 2003
58. C. Krintz, Improving Mobile Program Performance Through the Use of a Hybrid Intermediate Representation, Workshop on Intermediate Representation Engineering (IRE), Jun, 2002
59. C. Krintz, Using Adaptive Optimization Techniques To Teach Mobile Java Computing, ACM International Conference on Principles and Practice of Programming in Java (PPPJ), Jun, 2002
60. C. Krintz and B. Calder, Dynamic Selection of Compression Formats to Reduce Transfer Delay, High-Performance Distributed Computing (HPDC), Aug, 2001
61. C. Krintz and B. Calder, Using Annotation to Reduce Dynamic Optimization Time, ACM Conference on Programming Language Design and Implementation (PLDI), Jun, 2001
62. C. Krintz and R. Wolski, NwsAlarm: A Tool for Accurately Detecting Resource Performance Degradation, IEEE/ACM Symposium on Cluster Computing and the Grid (CCGRID), May 2001
63. C. Krintz and R. Wolski, JavaNws: The Network Weather Service for the Desktop, JavaGrande, Oct, 2000
64. C. Krintz, B. Calder, and U. Hölzle, Reducing Transfer Delay Using Java Class File Splitting and Prefetching, ACM Conference on Object-Oriented Programming Systems, Languages, and Applications (OOPSLA), Oct, 1999
65. R. Wolski, J. Brevik, C. Krintz, G. Obertelli, N. Spring, and A. Su, Running EveryWare on the Computational Grid, IEEE Supercomputing (SC), Oct, 1999
66. C. Krintz, B. Calder, H. B. Lee, and B. Zorn, Overlapping Execution with Transfer Using Non-Strict Execution for Mobile Programs, ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Oct, 1998
67. B. Calder, C. Krintz, S. John, and T. Austin, Cache-Conscious Data Placement, ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Oct, 1998
68. C. Krintz and S. Fitzgerald, AGAVE: A Visualization Tool for Parallel Programming, In Proceedings of International Association of Science and Technology for Development Conference (IASTED), Oct, 1995

**Peer-Reviewed Journal Publications and Book Chapters:**

1. H. Jayathilaka, A. Pucher, C. Krintz, and R. Wolski, Using Syntactic and Semantic Similarity of Web APIs to Estimate Porting Effort, International Journal of Services Computing, Vol. 2, No.4, October-December 2014

2. C. Krintz and R. Wolski, Unified API Governance in the New API Economy, Cutter IT Journal, September, 2013
3. C. Bunch, N. Chohan, and C. Krintz, AppScale: Open-Source Platform-As-A-Service, in Open Source Cloud Computing Systems: Practices and Paradigms, IGI Global, Luis Vaquero, Juan Ciceres, and Juan Hierro, Eds., ISBN-13: 978-1466600980, January, 2012
4. C. Bunch, B. Drawart, N. Chohan, L. Petzold, C. Krintz, and K. Shams, Language and Runtime Support for Automatic Configuration and Deployment of Scientific Computing Software over Cloud Fabrics, Journal of Grid Computing, Special Issue on Data Intensive Computing in the Clouds, Mar, 2012
5. M. Wegiel and C. Krintz, The single-referent collector: Optimizing compaction for the common case, ACM Transactions on Architecture and Code Optimization (TACO), Vol. 6, Issue 4, No. 15, Oct, 2009
6. L. Zhang and C. Krintz, As-If-Serial Exception Handling Semantics for Java Futures, Elsevier Journal on the Science of Computer Programming, Vol. 74, Issue 5-6, pgs 314-332, 2009
7. S. Gurun, D. Nurmi, R. Wolski, and C. Krintz, On the Efficiency of Computation Offloading, Decision Making Strategies International Journal of High Performance Computing Applications, Vol. 22, No.4, pg460-479, Nov, 2008
8. Ye Wen, Selim Gurun, Navraj Chohan, Rich Wolski, and Chandra Krintz, Accurate and Scalable Simulation of Network of Heterogeneous Sensor Devices, Journal of Signal Processing Systems: Special Issue on Embedded Computer Systems for DSP, Vol 50, No. 2, pg115-136, Springer Science, Feb, 2008
9. S. Gurun and C. Krintz, NWSLite: A General-purpose, Non-parametric Prediction Utility for Embedded Systems, ACM Transactions on Embedded Systems (TECS), Vol. 80, Issue 7, pp 1037-1056, Jul, 2007
10. Y. Wen, S. Gurun, N. Chohan, R. Wolski, and C. Krintz, Accurate and Scalable Simulation of Network of Heterogeneous Sensor Devices, Journal of VLSI Signal Processing Systems, 2007
11. S. Soman and C. Krintz, Application-specific Garbage Collection, Journal of Systems and Software, Volume 80, Issue 7, pp. 1037-1056, Jul, 2007
12. P. Nagpurkar, H. Mousa, C. Krintz, and T. Sherwood, Efficient Remote Profiling for Resource-Constrained Devices, ACM Transactions on Architecture and Code Optimization (TACO), Vol. 3, Number 1, Mar, 2006, pp 1-32
13. P. Nagpurkar and C. Krintz, Phase-Based Visualization and Analysis of Java Programs, Elsevier Science of Computer Programming – Special Issue on Principles Practices and Programming in Java, Vol. 59, Number 1-2, Jan, 2006, pp 64-81
14. C. Krintz and S. Sucu, Adaptive On-The-Fly Compression, IEEE Transactions on Parallel and Distributed Systems (TPDS), Vol. 17, Number 1, Jan, 2006, pp 15-24
15. L. Zhang and C. Krintz, The Design, Implementation, and Evaluation of Adaptive Code Unloading for Resource-Constrained Devices, ACM Transactions on Architecture and Code Optimization (TACO), Vol. 2, Number 2, Jun, 2005, pp 131-164
16. Y. Wen, R. Wolski, and C. Krintz, Online Prediction of Battery Battery Lifetime for Embedded and Mobile Devices, Lecture Notes in Computer Science (LNCS); Springer-Verlag, V3164/2004, Dec, 2004
17. C. Krintz, Improving Mobile Program Performance Through the Use of a Hybrid Intermediate Representation, in Recent Advances in Java Technology: Theory, Application, Implementation, Chapter 26, Computer Science Press, Trinity College Dublin, J. Power and J. Waldron Eds., Nov, 2002, pp 224-232
18. C. Krintz, Using Adaptive Optimization Techniques To Teach Mobile Java Computing, in Recent Advances in Java Technology: Theory, Application, Implementation, Chapter 7, Computer Science Press, Trinity College Dublin, J. Power and J. Waldron Eds., Nov, 2002 pp 63-69
19. C. Krintz and R. Wolski, Using JavaNws to Compare C and Java TCP-Socket Performance, Journal of Concurrency and Computation: Practice and Experience, Volume 13, Issue 8-9, Jun, 2001, pp 815-859
20. C. Krintz, D. Grove, V. Sarkar, and B. Calder, Reducing the Overhead of Dynamic Compilation, Journal of Software: Practice and Experience, Volume 31, Issue 8, Dec, 2000, pp 717-738

**Service & Professional Activities (Past 2 Years):**

- 2016 General Chair of the ACM Conference for Programming Language
- 2014-Present UCSB Computer Science Vice Chair of Undergraduate Affairs

- 2014-Present: Advisory Board Member, Huawei Distributed Computing Lab
- 2013-Present: IEEE Transactions on Cloud Computing (TCC) Associate Editor
- 2014-Present: EAI Transactions on Cloud Systems Associate Editor
- 2008-2014 – Advisory Board Member, Anita Borg Institute for Women and Technology
- Program Committee Member: PLDI, OOPSLA, VEE, PPOPP, ISMM, SC, SOCC, and others.

**Grants (Current During Past 2 Years):**

- EPIC:Irrigation Optimization and Well Pump Monitoring Leveraging Smart Meter Data, California Energy Commission, FY15-FY17, C. Krintz, Co-PI
- SBIR Phase II: Disaster Recovery and High Availability of Cloud Computing Applications, Data, and Services, NSF, FY15-17 (AppScale Systems, Inc)
- SBIR Phase I/IB: Disaster Recovery and High Availability of Cloud Computing Applications, Data, and Services, NSF, FY14 (AppScale Systems, Inc)
- I-Corps Teams: AppScale – Spurring Innovation Through Cloud Application Portability, NSF, FY13, C. Krintz, PI
- CSR: Language and Runtime Support for Large-Scale Data Analytics, NSF, FY12-FY15, C. Krintz, PI
- Stochastic Simulation Service: A Cloud Computing Framework for Modeling and Simulation of Stochastic Biochemical Systems, National Institute of Health, FY11-FY14, C. Krintz, Co-PI
- 2010-11 IBM X10 Innovation and Open Collaboration Research Award, C. Krintz, PI
- CSR:Systems and Software Research for Compute-Intensive Cloud Computing; NSF, F10-F15, Krintz, PI

**Notable Awards/Recognition:**

- 2015 Named UCSB's Sustainability Champion
- 2015 Won Award for SmartFarm from the California Energy Commission for Energy Efficiency Solutions California's Ag and Water Sectors
- 2015 AppScale selected as a 2015 InfoWorld top pick open source platform
- 2014 AppScale given Bossie Award: The best open source data center and cloud software, by InfoWorld
- 2014 AppScale given Bossie Award: The best open source data center and cloud software, by InfoWorld
- 2014 Named among the top M2M Women by Connected World
- 2014 Named among the top 100 wireless technology experts by Today's Wireless World
- 2014 Finalist of the Spirit of Entrepreneurship Awards
- Named Cloud Computing Pioneer by Information Week (2013)
- Named a 40 Over 40 Top Female Innovator (2013)
- ACM and IEEE Senior Member (2010)
- 2008-9 UCSB Academic Senate Distinguished Teaching Award
- 2008 CRA-W Anita Borg Early Career (BECA) Award for outstanding research and outreach contributions
- 2008 Outstanding Faculty in Computer Science (co-award) for teaching excellence
- CAREER: VIVA – Vertically Integrated VirtualizAtion: Automatic, Full System, Specialization for High-End Computing, NSF FY06-FY11, C. Krintz, PI

**Number of Advisees (PhD, MS, BS):** 4, 1, 0

**Number of Graduated Advisees (PhD, MS, BS):** 8, 33, 2