

# Curriculum Vitae

*Dilma M. da Silva*

Advanced Operating System Group  
IBM T.J. Watson Research Center  
Yorktown Heights, New York 10598  
dilmasilva@us.ibm.com  
Phone 914-945-3715

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## Areas of Expertise

Operating Systems, Distributed Systems, Parallel Computing, Software Engineering.

## Education

- Ph.D. in Computer Science, Georgia Institute of Technology, Atlanta, 1997.
- M.Sc. in Computer Science, University of Sao Paulo, Brazil, 1990.
- B.Sc. in Computer Science, University of Sao Paulo, Brazil, 1986.

## Professional Experience

- October 2000 - present: IBM T.J. Watson Research Center, New York  
*Research Staff Member* at the Advanced Operating System Group.  
Manager of the group since January 2007.  
Led the architecture and implementation of file system support on the K42 research operating system; innovations on dynamic adaptation of operating system services; scalability; part of DARPA's HPCS project and DOE's FAST-OS project. Key contributor to the Commercial Software System Scale-out project. Current projects on virtualization, specialized execution environments, operating system issues in massive multicore processors, file systems, and cloud computing.
- January 1997 - September 2000: *Assistant Professor*, Department of Computer Science, University of Sao Paulo, Brazil  
led system software research group; chaired Graduate Admission committee; taught graduate and undergraduate courses on Operating Systems, Concurrent Programming, Software Engineering, and Networking; obtained research grants: ACCORDS (Automatically Configurable Component-based and Reflective Distributed Systems) project sponsored by NSF/CNPq, SIDAM (Distributed Information Systems for Mobile Agents) project sponsored by FAPESP, RAMS (Regional Atmospheric Modelling System) project sponsored by the Brazilian Ministry of Science and Technology.
- August 1995 - December 1996: *Senior Lecturer*, Department of Computer Science, University of Sao Paulo, Brazil  
Taught Computer Organization, Database Systems, Software Engineering.
- January 1995 - July 1995: *Research Assistant*, Georgia Institute of Technology, Atlanta

- August 1994 - December 1994: *Teaching Assistant*, Georgia Institute of Technology, Atlanta
- March 1987 - August 1990: *Lecturer*, Department of Computer Science, University of Sao Paulo, Brazil

### Professional Honors and Awards

- March 1997 - September 2000: Research Productivity Award, from the Brazilian Federal Research Agency (CNPq)
- September 1990 - July 1994: Doctoral Fellowship, from the Brazilian Federal Research Agency (CNPq)
- February 2008 - Best Paper Award at USENIX File and Storage Technologies (FAST) Conference

### Other Professional Activities

- member of CRA-W board 2008-present
- Founding Member of *Latinas in Computing* group (<http://anitaborg.org/initiatives/systers/latinas-email-list/>)
- Conference Chair, Brazilian School of Computer Science, 2000
- Director for Events, Brazilian Computer Society from July, 1999 to June, 2001
- Member of Educational Board for the Brazilian Computer Society, October 1999 to September 2000
- Member of ACM, Usenix, and Brazilian Computer Society

### Participation in Judging Boards and Committees

- member of 21 thesis committees
- member of Tenure Track Committee
- member of 5 PhD Qualifying Exams boards for Database Systems
- member of 5 PhD Qualifying Exams boards for Operating Systems
- member of Editorial Board for the Journal of the Brazilian Computer Society since 2000
- editor for the Special Issue on Adaptive Software Systems for the Journal of the Brazilian Computer Society
- guest editor for ACM SIGOPS Operating System Review, Jan 2008
- member of the *Invited Technical Talks Committee* for the Grace Hopper Celebration'2004
- chair of the Brazilian Workshop in Operating Systems'2004
- chair of the Brazilian Workshop in Operating Systems'2006

- Program Committees:
  - Brazilian Symposium on Programming Languages 1997, 1999, 2000
  - SBC Thesis and Dissertation Competition, 1998, 2000
  - Brazilian Symposium on Computer Networks, 2000
  - Grace Hopper Celebration of Women in Computing, 2002
  - Workshop on Wireless Communication, 2003, 2004
  - High Performance Computing, 2003
  - SNAPI'2004, SNAPI'2007, SNAPI'2008
  - Brazilian Workshop on Operating Systems 2004, 2005, 2006, 2007, 2008
  - Workshop in High Performance Computing, 2005, 2006, 2007
  - SYSTOR'07 Virtualization Workshop
- Reviewer for:
  - Communications of the ACM
  - ACM Computing Survey
  - Journal of the Brazilian Computer Society
  - Journal RITA
  - IBM Systems Journal
  - Brazilian Symposium on Software and Hardware 1997
  - Brazilian Symposium on High Performance Computing 1998, 1999
  - Brazilian Symposium on Fault Tolerance 1999
  - Brazilian Symposium on Programming Languages 2001, 2002
  - Brazilian Symposium on Computer Networks, 2001
  - International Workshop on Storage Network Architecture, 2004
  - International Conference on High Performance Computing and Applications 2004
  - Brazilian Workshop on Aspect-Oriented Software Development, 2004
  - ASPLOS'2004
  - HPCA'2004
  - IEEE International Symposium on High Performance Distributed Computing (HPDC), 2005
  - IEEE International Parallel & Distributed Processing Symposium (IPDPDS), 2005
  - Eurosys'2006
  - Generative Programming and Component Engineering (GPCE), 2006
  - ICPP'06
  - Brazilian Dissertation Competition 2007
  - ICS'07
  - PACT'07
  - WSO'07
  - SOSP'07
  - ISCA'08

## Publications

### Journal Articles

- [1] Bodhi Mukherjee, Dilma Silva, Karsten Schwan, and Ahmed Gheith. KTK: kernel support for configurable objects and invocations. *Distributed Systems Engineering Journal*, 1:259–270, 1994.
- [2] Thomas Kindler, Karsten Schwan, Dilma M. Silva, Mary Trauner, and Fred Alyea. Parallelization of spectral models for atmospheric transport processes. *Concurrency: Practice and Experience*, 8(9):639–666, November 1996.
- [3] Ana P. Gladcheff, Dilma M. Silva, and Vera Barros. O software educacional e a psicopedagogia no ensino de matematica direcionada ao ensino fundamental. *Brazilian Journal of Computers in Education*, pages 63–70, April 2001.
- [4] D. M. Silva, K. Schwan, and G. Eisenhauer. CTK: Configurable object abstractions for multiprocessors. *IEEE Transactions on Software Engineering*, 27(6):531–550, June 2001.
- [5] Dilma Menezes da Silva and Fabio Kon. Adaptive directory services for highly dynamic environments. *IEEE Distributed Systems Online*, 2(7):<http://computer.org/dsonline/0107/features/kon0107.htm>, November 2001.
- [6] Jonathan Appavoo, Kevin Hui, Craig A. N. Soules, Robert W. Wisniewski, Dilma da Silva, Orran Krieger, Marc Auslander, David Edelsohn, Ben Gamsa, Gregory R. Ganger, Paul McKenney, Michal Ostrowski, Bryan Rosenburg, Michael Stumm, and Jimi Xenidis. Enabling autonomic system software with hot-swapping. *IBM Systems Journal*, 42(1):60–76, 2003.
- [7] Jonathan Appavoo, Marc Auslander, Maria Butrico, Dilma da Silva, Orran Krieger, Mark Mergen, Michal Ostrowski, Bryan Rosenburg, Robert W. Wisniewski, and Jimi Xenidis. K42: an open-source linux-compatible scalable operating system kernel. *IBM Systems Journal*, 44(2):427–440, 2005.
- [8] Dilma Da Silva, Orran Krieger, Robert W. Wisniewski, Amos Waterland, David Tam, and Andrew Baumann. K42: an infrastructure for operating system research. *SIGOPS Oper. Syst. Rev.*, 40(2):34–42, 2006.
- [9] Jonathan Appavoo, Dilma Da Silva, Orran Krieger, Marc Auslander, Michal Ostrowski, Bryan Rosenburg, Amos Waterland, Robert W. Wisniewski, Jimi Xenidis, Michael Stumm, and Livio Soares. Experience distributing objects in an smmp os. *ACM Trans. Comput. Syst.*, 25(3):6, 2007.
- [10] Robert W. Wisniewski, Dilma da Silva, Marc Auslander, Orran Krieger, Michal Ostrowski, and Bryan Rosenburg. K42: lessons for the os community. *SIGOPS Oper. Syst. Rev.*, 42(1):5–12, 2008.
- [11] Maria Butrico, Dilma Da Silva, Orran Krieger, Michal Ostrowski, Bryan Rosenburg, Dan Tsafir, Eric Van Hensbergen, Robert W. Wisniewski, and Jimi Xenidis. Specialized execution environments. *SIGOPS Oper. Syst. Rev.*, 42(1):106–107, 2008.
- [12] Dan Tsafir, Dilma Da Silva, and David Wagner. The murky issue of changing process identity: Revising "setuid demystified". *login: The USENIX Magazine*, 33(3):55–66, June 2008.

## Chapter in Books

- [13] Greg Eisenhauer, Weiming Gu, Thomas Kindler, Karsten Schwan, Dilma Silva, and Jeffrey Vetter. Opportunities and tools for highly interactive distributed and parallel computing. In Rebecca Koskela and Margaret Simmons, editors, *Parallel Computer Systems: Performance Instrumentation and Visualization*. ACM Press, 1996.

## Conference Articles

- [14] Ahmed Gheith, Bodhi Mukherjee, Dilma Silva, and Karsten Schwan. KTK: Configurable objects and invocations. In *Proc. of the International Workshop in object oriented operating systems*, pages 236–240, december 1993.
- [15] Ahmed Gheith, Bodhi Mukherjee, Dilma Silva, and Karsten Schwan. KTK: Kernel support for configurable objects and invocations. In *Proc. of the Second International Workshop in Configurable Distributed Systems*, pages 92–104. IEEE Computer Society Press, may 1994.
- [16] Greg Eisenhauer, Weiming Gu, Thomas Kindler, Karsten Schwan, Dilma Silva, and Jeffrey Vetter. Opportunities and tools for highly interactive distributed and parallel computing. In *Proceedings of The Workshop On Debugging and Tuning for Parallel Computing Systems*, 1994.
- [17] Dilma Menezes da Silva and Karsten Schwan. Achieving high performance through flexible software. In *Proceedings of the XXIV Brazilian Software and Hardware Seminars (SEMISH'97)*, pages 265–276, Brasília, Brazil, August 1997. Available in <http://www.ime.usp.br/~dilma/papers/semish97.ps>.
- [18] Dilma Menezes da Silva and Karsten Schwan. A framework for developing high performance configurable objects. In *Proceedings of the XI Brazilian Symposium on Software Engineering (SBES'97)*, pages 165–180, Fortaleza, Brazil, October 1997.
- [19] Dilma M. Silva, Karsten Schwan, and Greg Eisenhauer. Configurable distributed retrieval of scientific data. In *Proc. 4th International Conference on Configurable Distributed Systems (ICCDs'98)*, pages 120–127, Annapolis, USA, May 1998. IEEE Computer Society. Also available in [www.ime.usp.br/~dilma/papers/](http://www.ime.usp.br/~dilma/papers/).
- [20] Dilma Menezes da Silva, Marco Dimas Gubitoso, and Markus Endler. Sistemas de informao distribudos para agentes mveis. In *Proceedings of the XXV Brazilian Software and Hardware Seminars (SEMISH'98)*, pages 125–140, Belo Horizonte, Brazil, August 1998. SBC. Available in <http://www.ime.usp.br/~dilma/papers/semish98.ps>.
- [21] Jya-Jang Tsai and Dilma M. Silva. Aggregated cells in a java-based distributed ATM simulator. In *Proc. of the SCS International Conference On Web-Based Modelling and Simulation*, San Francisco, USA, January 1999.
- [22] Jorge Euler, Maria do Carmo Noronha, and Dilma M. Silva. Estudo de caso: Desempenho do sistema operacional linux para aplicações multimídia em tempo real. In *Proc. II Workshop de Tempo Real, SBRC*, pages 88–95, Belo Horizonte, 1999.
- [23] Carlos E. Ferreira and Dilma M. Silva. BCC da USP: um novo curso para os desafios do novo milênio. In *Proc. of VII Workshop de in Computer Education (WEI)*, SBC, pages 505–514, Rio de Janeiro, july 1999.

- [24] Dilma Menezes da Silva. Introdução à programação concorrente para a internet. In *JAI (Jornada de Atualização em Informática)*, pages 209–262. SBC, 1999.
- [25] Markus Endler, Dilma M. Silva, and Kunio Okuda. A result delivery protocol for mobile computing. In *Proc. Workshop on Wireless Networks and Mobile Computing (WNMC), ICDCS'2000*. IEEE, April 2000.
- [26] Markus Endler, Dilma M. Silva, and Kunio Okuda. A reliable connectionless protocol for mobile clients. In *Proc. of the Communication Networks And Distributed Systems Modeling And Simulation Conference*, January 2000.
- [27] Jorge E. Vieira and Dilma M. Silva. The SMART scheduling for Linux. In *Proc. of the Workshop in Real Time Linux*, Dec 1999.
- [28] Ana Paula Gladcheff, Dilma M. Silva, and Jose C. Maldonado. Instrumento de avaliação de qualidade para software de ensino. In *Proc of Workshop in Software Engineering Dissertations*, pages 18–22, Florianópolis, Brazil, 1999.
- [29] Uira Kulesza and Dilma M. Silva. Reengineering of the JAWS web server design using Aspect Oriented Programming. In *Proceedings of the Workshop of Aspects and Dimension of Concerns (part of ECOOP)*, June 2000.
- [30] Marcus Endler, Dilma M. Silva, Francisco Silva, Ricardo Rocha, and Marcos Moura. Project SIDAM: Overview and preliminary results. In *Proceedings of the II Brazilian Workshop in Wireless Computing (part of the Brazilian Symposium on Networking)*, June 2000.
- [31] Ana P. Gladcheff, Dilma M. Silva, and Edna Zuffi. Um instrumento para avaliação da qualidade de softwares educacionais de matemática para o ensino fundamental. In *Proc. VIE Workshop in Informatics at School*, Fortaleza, Brazil, 2001.
- [32] Uira Kulesza and Dilma M. Silva. Reengenharia do Projeto do Servidor WEB JAWS utilizando Programação Orientada a Aspectos. In *Proc. Simp. Bras. Engenharia de Software (SBES)*, October 2000.
- [33] Dilma M. Silva, Fabio Kon, and Roy Campbell. Dynamic Configuration of a Directory Service Using the ComponentConfigurator Framework. *Proceedings of the Project SIDAM Workshop*, September 2000.
- [34] Jonathan Appavoo, Kevin Hui, Michael Stumm, Robert Wisniewski, Dilma da Silva, Orran Krieger, and Craig Soules. An infrastructure for multiprocessor run-time adaptation. In *WOSS - Workshop on Self-Healing Systems*, 2002.
- [35] Craig A. N. Soules, Jonathan Appavoo, Kevin Hui, Robert W. Wisniewski, Dilma da Silva, Gregory R. Ganger, Orran Krieger, Michael Stumm, Marc Auslander, Michal Ostrowski, Bryan Rosenburg, and Jimi Xenidis. System support for online reconfiguration. In *USENIX*, pages 141–154, San Antonio, TX, June 9-14 2003.
- [36] Rodrigo S. de Castro, Alair P. Lago, and Dilma M. da Silva. Adaptive compressed caching: Design and implementation. In *15th Symposium on Computer Architecture and High Performance Computing*, Sao Paulo, Brazil, November 2003.

- [37] Jonathan Appavoo, Marc Auslander, David Edelsohn, Dilma da Silva, Orran Krieger, Michal Ostrowski, Bryan Rosenburg, Robert W. Wisniewski, and Jimi Xenidis. Providing a Linux API on the scalable K42 kernel. In *Freenix*, pages 323–336, San Antonio, TX, June 9-14 2003.
- [38] Livio Soares, Orran Krieger, and Dilma Da Silva. Meta-data snapshotting: A simple mechanism for file system consistency. In *SNAPI'03 (International Workshop on Storage Network Architecture and Parallel I/O)*, pages 41–52, 2003.
- [39] Dilma da Silva, Livio Soares, and Orran Krieger. KFS: Exploring flexibility in file system design. In *Proc. of the Brazilian Workshop in Operating Systems*, Salvador, Brazil, August 2004.
- [40] Andrew Baumann, Jonathan Appavoo, Dilma da Silva, Orran Krieger, and Robert W. Wisniewski. Improving operating system availability with dynamic update. In *OASIS - Workshop of Operating System and Architectural Support for the demand IT Infrastructure*, pages 21–27, Boston Massachusetts, October 9, 2004 2004.
- [41] Andrew Baumann, Jonathan Appavoo, Dilma da Silva, Jeremy Kerr, Orran Krieger, and Robert W. Wisniewski. Providing dynamic update in an operating system. In *Proc. of USENIX*, pages 279–291, Anaheim, CA, April 2005.
- [42] Andrew Baumann, Jeremy Kerr, Jonathan Appavoo, Dilma da Silva, and Robert W. Wisniewski. Module hot-swapping for dynamic update and reconfiguration in k42. In *Proc. of the Linux.conf.au*, Canberra, Australia, April 2005.
- [43] Orran Krieger, Marc Auslander, Bryan Rosenburg, Robert W. Wisniewski, Jimi Xenidis, Dilma Da Silva, Michal Ostrowski, Jonathan Appavoo, Maria Butrico, Mark Mergen, Amos Waterland, and Volkmar Uhlig. K42: Building a complete system. In *EuroSys 2006*, pages 143–156, Leuven, Belgium, April 18-21 2006. ACM.
- [44] Suparna Battacharya and Dilma da Silva. Towards a highly adaptable filesystem framework for linux. In *Proc of the Ottawa Linux Symposium*, volume 1, pages 87–100, Ottawa, Canada, July 2006.
- [45] Glenn Ammons, Jonathan Appavoo, Maria A. Butrico, Dilma Da Silva, David Grove, Orran Krieger, Kiyokuni Kawachiya, Bryan S. Rosenburg, Eric Van Hensbergen, and Robert W. Wisniewski. Libra: A library operating system for a jvm in a virtualized execution environment. In *Proc. of Virtual Execution Environments (VEE)*, San Diego, CA, June 2007. ACM.
- [46] Andrew Baumann, Jonathan Appavoo, Robert W. Wisniewski, Dilma M. Da Silva, Orran Y. Krieger, and Gernot Hesier. Reboots are for hardware: Updating an operating system on the fly. In *Proc of USENIX Annual Technical Conference*, San Jose, CA, June 2007. USENIX.
- [47] Daniel Cordeiro, Alfredo Goldman, and Dilma Da Silva. Load balancing on an interactive multiplayer game server. In *Proc. of Euro-Par*, Rennes, France, August 2007.
- [48] Dilma Da Silva, Parijat Dube, Maged Michael, Jose Moreira, Doron Shiloach, and Li Zhang. Scalability of the nutch search engine. In *Proc. of 21st ACM International Conference on Supercomputing*, Seattle, June 2007.

- [49] Jonathan Appavoo, Volkmar Uhlig, and Dilma Da Silva. Scalability: The software problem. In *Proc. of 2nd Workshop on Software Tools for Multi-core Systems*, San Jose, CA, March 2007.
- [50] Dan Tsafir, Tomer Hertz, David Wagner, and Dilma Da Silva. Portably solving file TOCTTOU races with hardness amplification. In *Proc. of Usenix File and Storage Technologies (FAST)*, pages 189–206, San Jose, CA, February 2008. USENIX. Best Paper Award.

### Other Publications

- [51] Dilma M. Silva. Programação por objetos: conceitos, linguagens e uma experiência. Master’s thesis, Instituto de Matemática e Estatística da Universidade de São Paulo, september 1990.
- [52] Dilma Menezes da Silva and Karsten Schwan. CTK: configurable object abstractions for multiprocessors. Technical Report GIT-CC-97-03, Georgia Institute of Technology, Atlanta, GA 30332, January 1997.
- [53] Dilma M. Silva and Markus Endler. Configuração dinâmica de sistemas. Technical Report RT-MAC-9707, Instituto de Matemática e Estatística, Universidade de São Paulo, 1997.
- [54] Dilma M. Silva. COBS-OM performance evaluation. <http://www.ime.usp.br/~dilma/-DataObject/>, March 1998.
- [55] Jorge Euler Vieira, Maria do Carmo Noronha, and Dilma Menezes da Silva. Estudo de caso: Desempenho deficiente do sistema operacional LINUX para carga mista de aplicações. Technical Report RT-MAC-9904, IME-USP, 1999.
- [56] Carlos E. Ferreira and Dilma M. Silva. BCC da USP: um novo curso para os desafios do novo milênio. Technical Report RT-MAC-9902, IME-USP, 1999.
- [57] Markus Endler, Dilma M. Silva, and Kunio Okuda. A reliable connectionless protocol for mobile clients. Technical Report RT-MAC-9911, IME-USP, setembro 1999.
- [58] Jonathan Appavoo, Marc Auslander, Dilma Da Silva, Orran Krieger, Michal Ostrowski, Bryan Rosenberg, Robert W. Wisniewski, Jimi Xenidis, Michael Stumm, Ben Gamsa, Reza Azimi, Raymond Fingas, Adrian Tam, and David Tam. Enabling scalable performance for general purpose workloads on shared memory multiprocessors. Technical Report RC22863, IBM Research, 2003.
- [59] Dilma M da Silva. Mulheres em computação (Women in computing). Computação Brasil, March 2006. SBC (Brazilian Computer Society).
- [60] N. Burke, T. Chao, J. Chen, C.-H. Chen-Ritzo, C. A. Chess, S. Chiras, D. Da Silva, E. Duch, E. Duesterwald, M. Eleftheriou, M. E. Helander, H. Hunter, C. Lasser, S. Mahatma, I. Nnebe, K. Penchuk, A. Sailer, V. Salapura, L. Sekaric, J. L. Snowdon, M. L. Steen, A. Topol, C. K. Tsang, and M. Zhou. Watson women’s network leadership: A best practice at IBM Research for innovative and effective recruitment and retention. In *Proceedings of 2008 WEPAN (Women in Engineering ProActive Network) National Conference*, St Louis, Missouri, June 2008.

## Patents

- Achieving Autonomic Behavior in Operating System via a Hot-Swapping Mechanisms  
Status: Filed in September/2003
- Enhancement of Real-time Operating Ssystem Functionality Using a Hypervisor  
Filed in March 2004
- Memory in Processor (MIP) Morph and Operating System Support  
Status: Filed in November/2004
- Dynamic Update Mechanisms in Operating Systems  
Status: Filed in September/2005

## Conference Panels

- IT for Women in Developping Countries  
Grace Hopper Celebration of Computing, Sept 14-16 2000, Cape Cod, MA
- The Future of Linux on HPC Clusters  
Linux Clusters, The HPC Revolution (LCI), May 20 2004, Austin, TX
- Digital Devide and Women in Developping Countries, Grace Hopper Celebration of Computing, Oct 6-9 2004, Chicago, IL
- “Latinas in Engineering”, Grace Hopper Celebration of Computing, Oct 4-7 2006, San Diego, CA
- “Social and Cultural Impact of ICT on Women”, Grace Hopper Celebration of Computing, Oct 4-7 2006, San Diego, CA
- “Promoting the Success of Minority Graduate Students”, AAAS Annual Meeting, Feb 14th 2008, Boston, MA
- Women in Science and Engineering Event at Princeton University (March 2008)

## Recent Invited Talks

- 3rd Brazilian Workshop in Operating Systems, July 2006
- XXVI Congress of the Brazilian Computer society, July 2006
- University of New Mexico, December 2006
- University of Texas A & M, April 2007
- 4th Brazilian Workshop in Operating Systems, July 2007
- 1st Brazilian Women in Technology Workshop, July 2007
- SOSP’s Women Workshop, October 2007
- University of Sao Paulo, Brazil, November 2007
- Georgia Institute of Technology, January 2008

## **Personal**

Citizen of Brazil. Passionate about literature. Interested in film and knitting. Member of the Westchester Recorder Guild.