

Marcilio Mendonca, PhD

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Objective: To engage in a senior research position in the computer industry

Summary of Skills

- Successful PhD student and Post-Doc researcher in software engineering with several scientific publications
- On-going experience on machine learning techniques applied to mobile systems
- Advanced research and prototyping experience on the BlackBerry smartphone and tablet platforms
- 16-year career in software development playing management and engineering roles
- 13 years of Java experience (Mobile, Desktop, Web)
- 3+ years of high-tech start-up experience
- Led the software team that built the largest Web search engine in Brazil in 2001
- Extensive experience with object orientation, design patterns and application frameworks
- Solid knowledge of distributed systems and algorithms & data structures
- Highly innovative, creator of S.P.L.O.T. (www.splot-research.org), world's largest repository of feature models
- 3 years of teaching/mentoring experience in the academia and the industry
- Fluent in English and Portuguese

Education

- **PhD, Computer Science, University of Waterloo**
Waterloo-ON, Canada, Jan-2009
Research Area: Software Engineering / Artificial Intelligence
- **MSc, Computer Science, PUC-Rio**
Rio de Janeiro-RJ, Brazil, Mar-1996
Research Area: Object orientation, design patterns, CASE tools, components and application frameworks
- **BSc, Computer Science, Federal University of Ceara (UFC)**
Fortaleza-CE, Brazil, Feb-1993
Main subjects: C & C++ Languages, Algorithms and Data Structures, Object Oriented Architectures

Professional Experience

- **Research in Motion (The BlackBerry Company), (Waterloo-ON, Canada)**
Research Staff Member (former senior software developer)
Feb-2010 to present
 - Strong on-going experience on machine-learning-related projects on mobile platforms
 - Advanced software research and prototyping on BlackBerry platform (tablets and smartphones)
 - Java software developer working on core BlackBerry browser-related APIs; invited speaker at BlackBerry's major international developer conference - DEVCON 2010
 - ❖ **Use of Time:** research (50%), software development and prototyping (50%)
 - ❖ **Key technologies:** Machine learning tools, Java, C++, Javascript, HTML5, JDE, Eclipse, Open source projects, perforce, Git, mercurial
- **University of Waterloo, Computer Systems Group (Waterloo-ON, Canada)**
Post-Doctoral Researcher
Feb-2009 to Feb 2010
 - Continued development of S.P.L.O.T. (www.splot-research.org), a highly innovative Java/Ajax-based Web portal that provides state-of-the-art reasoning and configuring tools for Software Product Lines.

- During its first six months, S.P.L.O.T. has been visited regularly by top research groups from 20+ countries including Canada, USA, Belgium, Denmark, Spain, and Brazil.
- Currently, S.P.L.O.T. is the only Web-based system of its kind in the world
- ❖ **Use of Time** 50% research, 50% Java EE development
- ❖ **Key technologies:** Java Servlets, Web Services, Eclipse, XML, JSON, Ajax, Dojo, Javascript, Adobe Flex, JUnit, Tomcat, Ant, Maven, Freemarker, Design Patterns, Linux

- **University of Waterloo, School of Computer Science** (Waterloo-ON, Canada)

- **PhD student and Teaching Assistant**

- Sept-2003 to Jan-2009

- PhD research focused on proposing scalable techniques and efficient algorithms for reasoning on Software Product Lines that resulted in an extensive Java library containing 150+ classes
 - Launched a Web reasoning and configuration system (Servlets/Freemarker/Dojo/Ajax) called S.P.L.O.T. (www.splot-research.org) that has been visited by several research groups from over 15 countries
 - Published 10+ scientific articles in relevant ACM and IEEE international conferences
 - Awarded the prestigious Cheriton scholarship reserved for the School's very top graduate students
 - Assisted with teaching activities by creating marking schemes, marking exams, and mentoring students on subjects including Java, C++, object orientation, design patterns, UML, and software testing (JUnit)
 - ❖ **Use of Time:** 60% research, 30% papers/conferences, 10% taking courses and assisting teaching activities
 - ❖ **Key technologies:** Java (J2EE, J2SE, Threads, Collections, Eclipse, XML), Ajax, Dojo, Javascript, Freemarker, JUnit, Object Orientation, Design Patterns, Application Frameworks, UML, CVS, Tomcat

- **C.E.S.A.R./e-Capture** - Center for Advanced Studies and Systems of Recife (Recife-PE, Brazil)

- **Software Team Lead**

- Oct-2001 to Aug-2003

- e-Capture was a tech start-up funded by C.E.S.A.R. and created to attend the IT needs of the largest credit card brand in the northeast of Brazil called *Hipercard* (as big as Visa and Mastercard in the region)
 - ◆ e-Capture's network: 15,000 POS terminals, thousands of transaction/day, peaks of 10 trans./sec.
 - ◆ Solution: front/back-end applications (ISO 8583, in C), Web back-office/monitoring system (Servlets)
 - ◆ In 2007, the business was acquired by the largest private bank in Brazil, *ITAU/UNIBANCO*, as a recognition of its high-quality and innovative technology
 - Hired to lead the engineering team (about 5 engineers) reporting directly to the company's CTO
 - Management role: hiring engineers, negotiating deadlines, enforcing the soundness of our front- and back-end solutions, meeting with customers to discuss their needs
 - Engineering role: built two monitoring systems (J2SE/Sockets/Swing and Servlets) based on the MVC pattern to collect and display realtime network data; developed a multithreaded Java testing tool to assess the availability and performance of the credit card authorization server
 - Participated in a special training course at Ingenico's headquarter office in Paris about the architecture of Ingenico's new family of 32-bit terminals
 - ❖ **Use of Time:** 30% team lead, 20% meeting w/ customers, 50% software planning and development
 - ❖ **Key technologies:** C, Java (J2SE, Servlets, Sockets, Swing, Collections, web start, XML), MS SQL-Server, MySQL, HTML, Javascript, Freemarker, and Jbuilder.

- **Radix** - Google-like Web Search Engine (Recife-PE, Brazil)

- **Software Team Lead**

- Mar-2000 to Sept-2001

- Radix(.com.br) was a highly innovative tech start-up company w/ venture capital from the Opportunity bank

- ◆ Largest search engine in Brazil in 2001 being visited by thousands of visitors every month
 - ◆ Technology: state-of-the-art information retrieval techniques (e.g., inverted files, b-trees, data caches)
 - ◆ Radix's entire user base and operation were acquired by a leading Web portal in Brazil called *IG* (2001)
 - Hired to lead the search team (about 25 engineers) reporting directly to the company's CTO
 - Management role: interfacing with the company's directors, participating on strategic business decisions, conducting hiring interviews, assessing engineer's performance, fostering knowledge sharing
 - Engineering role: created and led the *Reuse Unit* to foster software reuse; developed a generic object pool component (Java) to manage resources such as threads, sockets and database connections; built a multi-threaded monitoring framework (Java Servlets) to consolidate all monitoring processes.
 - ❖ **Use of Time:** 30% team lead, 50% software planning and development, 20% research
 - ❖ **Key technologies:** Java (J2SE, Servlets, Swing, Collections, RMI, Sockets, Threads, XML, JDBC), HTML, Javascript, Freemarker, JBuilder, CVS, and Oracle.
- **SERPRO** - Federal Data Processing Service (Fortaleza-CE, Brazil)
 - System Analyst**
 - Aug-1998 to Feb-2000
 - SERPRO is the largest IT Company in Brazil that provides IT solutions for the federal government in Brazil such as the income tax software and the Treasure finance control system
 - Served as a system analyst building Web applications (ASP and Java Servlets) to capture and display data gathered from customer satisfaction surveys
 - Trained the internal staff on the subject of *Java and Object Orientation*
 - ❖ **Use of Time:** 50% PL-SQL/Oracle, 20% ASP, 20% Java, 10% training internal staff
 - ❖ **Key technologies:** PL-SQL, ASP, Java (Servlets, CORBA, RMI), HTML, Javascript, and Oracle.
 - **FUNCEME** (Fortaleza-CE, Brazil)
 - System Analyst**
 - Sept-1994 to Jul-1998
 - FUNCEME is a meteorology and water resources company funded by the Ceara state government
 - Worked as system analyst being exposed to a variety of programming languages including C, C++, Java and Delphi and platforms such as Windows, SunOS, AIX and Solaris.
 - Built along with a team of three a C/C++ object-oriented application framework (80+ classes) to support the engineering team in the construction of cross-platform meteorological applications (Unix, Windows).
 - Contributed extensively to the framework's architecture by proposing the inclusion of several design patterns and by developing the concrete classes for the Windows platform
 - Built a graphical Delphi off-the-shelf application for manipulating vectorial maps of the Ceara state
 - Developed one of the first serious Java applets in Brazil (Java 1.01) in early 1997 that enabled a highly interactive experience with vectorial maps (zoom in/out, drags, clicks, coloring)
 - ❖ **Use of Time:** 50% C/ C++ cross-platform framework development, 30% Delphi, 20% Java
 - ❖ **Key technologies:** C, C++, Delphi, Java Applets, Oracle, Unix (SunOS, AIX, Solaris), Windows.

Open Source Projects

- **S.P.L.O.T. - Software Product Lines Online Tools**, 2009-today
 - Role: Project leader
 - Site: <http://www.splot-research.org>
 - Open source repo: <http://code.google.com/p/splot-research/>

- **S.P.L.A.R. - Software Product Lines Automated Reasoning Library**, 2009-today
Role: Project leader
Open source repo: <https://code.google.com/p/splrar>

Research

- **Machine Learning Techniques Applied to Mobile Systems** (Industrial Research)
Research in Motion (The BlackBerry Company)
- **Efficient Reasoning Techniques for Large-Scale Feature Models** (Doctoral Research)
Sept-2003 to Jan/2009
[Computer Systems Group](#) and [Generative Software Development Lab](#)
David R. Cheriton School of Computer Science
[University of Waterloo](#), Waterloo-ON, Canada
My thesis can be found here: <http://hdl.handle.net/10012/4201>
- **Web Information Retrieval Systems**
Mar,2000 to Sept,2001
[Radix.Com](#), Web Search Engine, Recife-PE, Brazil
 - Originated from a Ph.D. research project at the [Federal University of Pernambuco](#), Radix.com, a Google-like search engine, became the largest Brazilian web index in 2000, with more than 15 millions of pages stored, 7 millions of queries per month, and 0.5 sec of response time in average. State-of-the-art information retrieval techniques were employed to grow and update the webpage database and to rank the search results according to their relevance. The project also explored other lines of research including images search, news search, automatic document classification, desktop search, related pages algorithms, keyword-based ad servers, realtime monitoring tools, and so forth.

Technical Talks

- **BlackBerry DEVCON 2010**
San Francisco, CA, United States, Sept 27-30, 2010
Position: BlackBerry software expert, technical session presenter
Audience: Worldwide BlackBerry Developer Community
- **Variability Day Workshop**
University of Toronto, Toronto, ON, Canada, Dec 04th, 2006
Position: Workshop presenter
Subject: Towards a Framework for Collaborative and Coordinated Product Configuration
Audience: UofT and UofW profs and grads
- **Java Open Brasil 2000 Conference**
Brasilia-DF, Brazil, 2000
Position: Invited speaker
Subject: an hour talk on "Object-Orientation, Java and the Construction of a True Software Factory"
Audience: around 250 people including academics, project managers, Java architects and programmers
- **Federal Data Processing Service (SERPRO)**
Fortaleza-CE, Brazil, 1999
Position: Instructor
Duration: 1 week (20h)
Subject: Object-Oriented Paradigm, Java and JDBC Database Connectivity
- **Secretaria da Fazenda do Estado do Ceara (SEFAZ)**
Fortaleza-CE, Brazil, 1999
Position: Instructor
Duration: 1 week (20h)
Subject: Object-Oriented Paradigm and Java

- **CONSIST**
Fortaleza-CE, Brazil, 1999
Position: Instructor
Duration: 2 week (40h)
Subject: Object-Oriented Paradigm, Java and JDBC Database Connectivity

Academic Supervision

- **Co-supervisor – M.Sc. in Computer Science, 1998-1999**
Federal University of Ceara, Fortaleza-CE, Brazil
Student: Akemi Adachi
M.Sc. Dissertation Title: *JNMP - A Web-Based Network Management Tool using Push Technology*
- **Supervisor – Specialization Program in Computer Science, 1999-1999**
University of Ceara State, Fortaleza-CE, Brazil
Program: Developing Internet Systems
Student: 2 students supervised
Subject: *Object Orientation Paradigm and Java Technology*

Participation in Program Committees

- **IEEE Transaction on Software Engineering Journal**; Invited reviewer for academic papers in the Software Product Line field, 2011.
- **FMSPLE'11**, 2nd International Workshop on Formal Methods and Analysis in Software Product Line Engineering, Aug 2011, Munich, Germany (http://www.iese.fraunhofer.de/de/veranstaltungen_messen/fmsple/)
- **CBSOft'11**, Brazilian Conference on Software: Theory and Practice (Tools Session), Oct 2011, Sao Paulo, Brazil (<http://www.each.usp.br/cbsoft2011/>)
- **CBSOft'10**, Brazilian Conference on Software: Theory and Practice (Tools Session), Oct 2010, Salvador, Brazil (<http://wiki.dcc.ufba.br/CBSOFT/CallForPapersTools>)

Industrial Publications

1. M. Mendonca: How to Implement a Web Cache for Your BrowserField2 Application, BlackBerry Official Support Community Forums, <http://supportforums.blackberry.com>, Mar 2011.
2. M. Mendonca: How to enable HTTP Authentication in your BrowserField2 application, BlackBerry Official Support Community Forums, <http://supportforums.blackberry.com>, Nov 2010.
3. M. Mendonca: How to track progress of page loads in your BrowserField2 application, BlackBerry Official Support Community Forums, <http://supportforums.blackberry.com>, Oct 2010.

Academic Publications (also listed in the [ACM](#) and [DBLP](#) websites)

4. C. Gauthier, A. Classen, Q. Boucher, P. Heymans, M. D. Storey, M. Mendonca: XToF - A Tool for Tag-based Product Line Implementation, VaMoS 2010, 163-166
5. A. Hubaux, A. Classen, M. Mendonca, P. Heymans: A Preliminary Review on the Application of Feature Diagrams in Practice, VaMoS 2010, 53-59
6. M. Mendonca, D. D. Cowan: Decision-making Coordination and Efficient Reasoning Techniques for Feature-Based Configuration, Science of Computer Programming, 75(5): 311-332 (2010)
7. M. Mendonca, M. Branco, D. D. Cowan: S.P.L.O.T. – Software Product Lines Online Tools, Companion to the 24th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications, OOPSLA 2009, October 2009, Orlando, Florida, USA (to appear).

8. M. Mendonca, A. Wasowski, K. Czarnecki: SAT-based Analysis of Feature Models is Easy. In Proceedings of the 13th International Software Product Line Conference (SPLC'09). Aug 2009, San Francisco, California, USA.
9. M. Mendonca, A. Wasowski, K. Czarnecki, D.D Cowan: Efficient Compilation Techniques for Large Scale Feature Models. In Proceedings of the 7th ACM International Conference on Generative Programming and Component Engineering (GPCE'08). Oct 2008, Nashville, Tennessee, USA.
10. M. Mendonca, T.T. Bartolomei, D.D Cowan,: Decision-Making Coordination in Collaborative Product Configuration, In Proceedings of the 2008 ACM Symposium on Applied Computing, Special track on Coordination Models, Languages and Applications, (Fortaleza, Brazil, March 16 - 20, 2008). SAC '08. ACM, New York, NY.
11. M. Mendonca, T. Oliveira, D.D. Cowan: Collaborative Product Configuration in Software Product Lines – Formalization and Dependency Analysis, Journal of Software, ISSN 1796-217X, vol. 3, issue 2, pp. 69-82, February 2008.
12. M. Mendonca, T. Oliveira, D.D. Cowan: A Process-Centric Approach for Coordinating Product Configuration Decisions, 40th Hawaii International Conference on Systems Science, HICSS-40 2007, Software Technology track, IEEE Computer Society, January 2007, Waikoloa, Hawaii, USA.
13. M. Mendonca, K. Czarnecki, T. Oliveira, D.D. Cowan: Towards a Framework for Collaborative and Coordinated Product Configuration, Companion to the 21th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications, OOPSLA 2006, Doctoral Symposium, October 2006, Portland, Oregon, USA.
14. L. Penczek, T. Oliveira, M. Mendonca: Systemizing Aspect-Oriented Framework Reuse with AFR, Companion to the 21th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications, OOPSLA 2006, October 2006, Portland, Oregon, USA.
15. M. Mendonca T. Oliveira, D.D Cowan: Collaborative and Coordinated Product Configuration, International Software Product Line Conference, SPLC 2006, Doctoral Symposium, August 2006, Baltimore, Maryland, USA.
16. T. Oliveira, M. Mendonca: Using RDL to Facilitate the Customization of Variability Points, Proceedings of the IEEE International Conference on Software Engineering Advances, ICSEA 2006, October 2006, Tahiti, French Polynesia.
17. M. Mendonca, P. Alencar, T. Oliveira, D.D. Cowan: Model-Driven Framework Instantiation, Graduate Student Research Conference, GSRC 2006, April 2006, University of Waterloo, Waterloo, Canada.
18. M. Mendonca, P. Alencar, T. Oliveira, D.D. Cowan: Assisting Aspect-Oriented Framework Instantiation: Towards Modeling, Transformation and Tool Support, Companion to the 20th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications, OOPSLA 2005, October 2005, San Diego, California, USA ([abstract](#))
19. A. Adachi, M. Mendonca, J.N. Souza: The Push Model in Web-Based Network Management, Proceedings of the IEEE International Conference on Telecommunications (ICT' 2000), Acapulco, Mexico, 2000.

Teaching

- **Part-Time Teacher**, Sept/2010 - present
Conestoga College, Waterloo-ON, Canada
 School of Engineering and Information Technology
 - PROG 3170 - Distributed Application Development, Fall 2010, Fall 2011
- **Teaching Assistant**, Sept-2003 to Aug/2007
University of Waterloo, Waterloo-ON, Canada
 School of Computer Science
 - Introduction to Software Development, Principles of Program Design, Introduction to Object-Oriented Programming, Developing Programming Principles, Principles of Computer Science.
- **Lecturer**, 1999
University of Ceara State, Fortaleza-CE, Brazil
 Specialization Program: Developing Internet Systems

- Subject: Object Oriented Systems and Java
- Final Project's Advisor. Topics: Object Orientation Paradigm and Java Technology
- Participation in the committees for the students project's oral examination
- **Lecturer**, 1999
University of Ceara State, Fortaleza-CE, Brazil
Specialization Program: Database Systems
- Subject: Object Oriented Systems, Java and JDBC
- **Lecturer**, 1997-1999
Federal University of Ceara, Fortaleza-CE, Brazil
Computer Science Department: Bachelor in Computer Science Program
- Courses: Programming Languages II, Programming Techniques II, Introduction to Computer Science
- **Lecturer**, 1997-1999
Federal University of Ceara, Fortaleza-CE, Brazil (1997)
Specialization Program: Information Systems
- Subject: Object Oriented Systems and Java
- **Lecturer**, 1996
Pontifical Catholic University of Rio de Janeiro, Rio de Janeiro-RJ, Brazil
Computer Science Department: Data Processing Technician Program
- Subject: Data Processing (C Language)

International Awards

- **University of Waterloo, Canada**

Doctoral Thesis Completion Award, Graduate Studies Office, May-2008
For highly-qualified doctoral students completing the PhD program

David R. Cheriton Scholarship, School of Computer Science, May-2007 to May-2008
Reserved for the School's very top graduate students ([read more](#))

Volunteering

- University of Waterloo, International Student Office, Global Representative Program
Global Representative for Brazil
Jan-2005 to Jan-2009
 - Assisted newcomer Brazilian students in settling at their graduate programs at the University of Waterloo.

References on LinkedIn profile: (www.linkedin.com) - Marcilio Mendonca