Marcilio Mendonca, PhD

marcilio.mendonca@gmail.com
www.linkedin.com/in/marcilio

Objective: To engage in a challenging research/industrial position in software development

Summary of Skills

- 15-year career in software engineering being exposed to several commercial software projects
- Successful PhD student at the University of Waterloo being awarded among the School's top grad students
- 12 years of Java experience including several industrial Web software projects
- Extensive experience with object orientation, application frameworks, and design patterns
- Solid knowledge of distributed systems and algorithms & data structures
- Participated actively in the team that built from scratch the largest Web search engine in Brazil in 2001
- Fluent in English and Portuguese

Summary of Technologies

- Java EE, Servlets, Web Services, SOAP, JSP, Freemarker, Tomcat, JBoss, Glassfish
- Javascript, Ajax, DOJO, Adobe Flex, ActionScript, JSON, XML
- Oracle, MS SQL Server, MySQL, SQL language
- Scrum, Eclipse, CVS, UML
- JUnit, Ant, Maven, Antlr
- Windows, Unix, Linux
- Java, C, C++, Delphi
- Java Swing, JDBC, Threads, Collections, Sockets, RMI
- Object orientation, Application Frameworks, Design patterns

Education

- **PhD, Computer Science,** University of Waterloo
  Waterloo-ON, Canada, Jan-2009
  Research Area: Software Engineering / Efficient Algorithms for Reasoning on Software Product Lines

- **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

- **University of Waterloo, Computer Systems Group** (Waterloo-ON, Canada)
  Post-Doctoral Researcher / Software Developer
  Feb-2009 to present

  - 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% Web tool development

- ❖ ***Key technologies***: Scrum, 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 proposed scalable techniques and efficient algorithms for reasoning on Software Product Lines that resulted in an extensive Java library containing 150+ classes
  - ○ 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)
  Technical 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 real-time 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)
  Technical Lead
  Mar-2000 to Sept-2001

  - ○ Radix 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: Java + 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) that centralized all monitoring processes into a single GUI

- ❖ ***Use of Time****:* 30% team lead, 50% software planning and development, 20% research on inform. retrieval
- ❖ ***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 public IT organization in Brazil; it provides IT solutions for the federal government such as the income tax software and the treasure finance control system
  - Worked 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 organization 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 product engineering team in the construction of cross-platform meteorological applications (Unix, Windows)
  - Developed one of the first professional 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.

Research

- **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.

Teaching

- **Teaching Assistant,** Sept-2003 to Aug/2007

University of Waterloo, Waterloo-ON, Canada
School of Computer Science

- CS 124-DE – Introduction to Software Development, Fall 2004, Winter 2005
  Level: under-graduate course - distance education course
  Main duties: creating marking scheme, marking the projects, assisting students
  Topics: Java language, documenting and testing programs in Java, Good O.O. design
- CS 126-DE – Introduction to Software Development, Spring 2007
  Level: under-graduate course - distance education course
  Main duties: creating marking scheme, marking the projects, assisting students
  Topics: Java language, documenting and testing programs in Java, Good O.O. design
- CS 132 – Principles of Program Design, Spring-2004, Spring 2005
  Level: under-graduate course (computer science)
  Main duties: marking assignments and exams, and proctoring
  Topics: Java language, documenting and testing programs in Java, Good O.O. design
- CS 131 - Introduction to Object-Oriented Programming, Winter 2004, Spring 2004
  Level: under-graduate course (mathematics)
  Main duties: marking assignments and exams, and proctoring
  Topics: Java language, documenting and testing programs in Java, Good O.O. design
- CS 133 - Developing Programming Principles, Fall 2003, Fall 2005, Fall 2006
  Level: under-graduate course (computer science)
  Main duties: assisting laboratory sessions, marking assignments/exams and proctoring
  Topics: Java language, documenting and testing programs in Java, Good O.O. design
- CS 134 – Principles of Computer Science, Winter 2006
  Level: under-graduate course (computer science)
  Main duties: assisting laboratory sessions, marking assignments/exams and proctoring
  Topics: Java language, documenting and testing programs in Java, Good O.O. design
- CS 246 – Principles of Computer Science, Spring 2006, Winter 2007
  Level: under-graduate course (computer science)
  Main duties: marking assignments/exams and proctoring
  Topics: UML, design patterns, C++

- **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)

Talks and Mentoring

- **Invited Speaker at University of Namur (FUNDP)**
  University of Namur (FUNDP), PReCISE group, Namur, Belgium, Oct 5th, 2009
  Position: Presenter
  Subject: Efficient Reasoning Techniques for Large Scale Feature Models
  Audience: FUNDP faculty and grad students
- **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 Subject: Developing Internet Systems
  Student: 2 students supervised
  Monographies subject: *Object Orientation Paradigm and Java Technology*

Academic 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 Schorlarship, School of Computer Science, May-2007 to May-2008
  Reserved for the School's very top graduate students (read more)

- **CAPES, Ministry of Education Agency, Brazil**

  Doctorate scholarship, Aug-2003 to Jul-2007 (4 years)
  Only 15 computer science students in Brazil were awarded the scholarship in 2002

  Masters scholarship, Mar/1994 to Feb-1996 (2 years)
  Reserved for Brazil's highest talented computer science students

Academic Publications (also listed in the **ACM** and **DBLP** websites)

- Marcilio Mendonca, Moises Branco, Donald Cowan: S.P.L.O.T. - Software Product Lines Online Tools. In Companion to the 24th ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications, OOPSLA 2009, October 2009, Orlando, Florida, USA

- M. Mendonca, A. Wasowski, K. Czarnecki: SAT-based Analyses of Feature Models is Easy. In Proceedings of the 13th International Software Product Line Conference (SPLC'09). Aug 2009, San Francisco, California, USA.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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.

- 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.
- 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)
- 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.

Volunteering

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

References upon request or at my LinkedIn profile (*www.linkedin.com/in/marcilio*)