Roberto Silveira Silva Filho, Ph.D.

3275 Dublin Blvd, Dublin, CA 94568
mobile: (949) 823-9659
e-mail: Roberto.SilvaFilho@gmail.com
http://www.ics.uci.edu/~rsilvafi

EXPERTISE

Industrial work automation and optimization through the combination of Web technologies, IoT, mobile and wearable computing. Automated software engineering: software architecture, model-driven development and testing, event-driven middleware, collaborative software development, workflow management systems and groupware.

EDUCATION

2003 – 2009. University of California, Irvine (UCI), CA, USA
Ph.D. Information and Computer Sciences, GPA: 3.974/4.0
Concentration areas: **Empirical Software Engineering, Extensible Event-Based Middleware, CSCW**
Dissertation Title: An Empirical Study of Publish/Subscribe Middleware Versatility

2000 – 2003. University of California, Irvine (UCI), CA, USA
M.Sc. in Information and Computer Sciences, GPA: 3.906/4.0
Concentration area: **Software Engineering**

1998 – 2000. University of Campinas (UNICAMP), Brazil
M.Sc. in Computer Science, GPA: 3.857/4.0
Thesis Title: Distributed Software Architectures for Large-scale Workflow using CORBA

1993 – 1998. University of Campinas (UNICAMP), Brazil
B.S. in **Computer Engineering,** GPA: 0.748/1.0

EMPLOYMENT

2013 – present. **GE Global Research,** San Ramon, CA
Position: Lead Scientist, Intelligent Industrial Experiences Lab.
Areas: Full stack R&D of industrial intelligent software systems. Applying UX, IoT, AI & Software Engineering techniques to empower industrial workers with insights, simplifying and optimizing their work on different GE businesses. Development of mobile apps, wearable computing prototypes, simulation platforms and UX concepts; including Web apps for collaboration, optimization and knowledge discovery. Production of patents & research publications.

2009 – 2013**. SIEMENS Corporate Technology,** Princeton, NJ
Position: Software Engineering Researcher, Software Architecture Development Lab.
Areas: Applying advanced software engineering tools & methods in the automation and optimization of industrial problems. Software Architecture Analysis and Improvement, Software Quality Assurance, Model-Driven Development & Testing, Workflow Automation. Production of patents & research publications.

Summer 2004. **IBM T. J. Watson Research Center (Collaborative User Experience Group),** Cambridge, MA
Research Intern: Developed, benchmarked and compared different architectural approaches for the construction of contextual collaboration servers. The goal of the research was to investigate the performance trade-offs of integrating synchronous and asynchronous collaboration modes in a single contextual collaboration model.
Technologies: Java, RMI, contextual collaboration servers, performance simulation and benchmarking.

2000 – 2009. **University of California,** Irvine, CA
(2002-2009): **Graduate Research Assistant**
(2000-2002): **Teaching Assistant**

1996 – 1997. **PETROBRAS** (Brazilian Oil Prospecting Company), Campinas, Brazil
Software Engineer Co-op: Develop a decision-making database for sales office in Campinas.

SELECTED PROJECTS

2014 – GE Global Research.
Fieldwork automation and optimization. Developed mobile and wearable apps for contextual information access and optimized data capturing during maintenance and inspection of industrial assets. In-

terfacing with industrial machines and robots using Bluetooth, MQTT protocols, and ROS. Integration with corporate information systems via JDBC and REST APIs.
Knowledge Discovery. Semantic-Web middleware and UI for data integration and analysis.
Distributed Simulation. Software Infrastructure for Reduced Crew train operations. Developed a testbed and human-in-the-loop simulator for remote train operations. Natural language interfaces.
Technologies: **UI**: JavaScript/Android/Natural language; **Server**: Java, REST, OSGi, JDBC, SemTK, ROS.

2009 – 2013. SIEMENS Corporate Research.
Concern-Based Regression Testing and Prioritization in a Model-Driven Environment.: 10x improvement of test quality and coverage through automation. Extended Tedeso/UML, a model-based testing IDE with novel features and capabilities including requirements-driven regression and prioritization of tests.
Role: Product developer and manager of a small team of interns working on Tedeso/UML IDE.
Technologies Java, Eclipse RCP, GEF, model-based testing, Subversion, Ant, Cobertura, Cruise Control.

2007 – 2009. UC, Irvine (UCI). **Analysis of Flexibility Trade-offs in Publish/Subscribe Infrastructures**: Developed benchmarks and conducted empirical quantitative and qualitative evaluation of different research and industrial publish/subscribe infrastructures, measuring and comparing their performance, maintainability, reusability, usability and flexibility. Produced different versatile software design principles and best practices.
Technologies: Java and RMI, CORBA-NS, JMS, JavaSpaces, Siena, YANCEES, OO metrics and analysis.

2004 – 2007. UC, Irvine (UCI). **SWIRL – Effective Security Through Visualizations:** Developed software infrastructures, user interfaces and conducted user studies with Impromptu, an event-driven peer-to-peer file sharing workspace, which provides security awareness through visualizations. I also developed a thin client version of Impromptu for PocketPC. This project investigated the benefits of different security visualizations, running in different devices, in supporting ad-hoc collaboration.
Main Role: chief architect, coordinating the work of four students/developers.
Technologies: WebDAV Servlets, multicast DNS (Zeroconf), notification servers, Java ME for PocketPC.

1998 – 2000. University of Campinas, São Paulo, Brazil (UNICAMP): **WONDER – Workflow on Distributed Environment**: Developed and evaluated the scalability of a distributed architecture for large-scale workflow as part of my Master's Thesis. This work shows the scalability benefits of a peer-to-peer agent-based workflow management system and discusses extra security and management costs induced by the approach.
Technologies: Java, JavaCC, CORBA, Workflow Management Systems, Mobile Agents, benchmarking.

TEACHING EXPERIENCE

Fall 2001 – Spring 2002. Introduction to Computer Science II. UC, Irvine (UCI)
Topics: Data Structures, Software Complexity, Java and Scheme programming.
Fall. 2000. Introduction to Software Engineering. UC, Irvine (UCI)
Topics: Software Engineering fundamental principles, techniques and processes.

HONORS AND AWARDS

2007. Bren School Summer Dissertation Fellowship, UC, Irvine, CA.
2001. **Best thesis award** (second place): VIII CLEI-UNESCO Latin American M.Sc. Thesis Context.
1998 – 2000. Scholarships to support M.Sc. Studies from FAPESP and CNPq, Brazil Research Agencies.

SKILLS

Programming Languages: Java, JavaScript, C#, Python, GoLang, LISP, Pascal, SQL, Prolog, C, C++, others.
Technologies: UI frameworks: AngularJS, React, Polymer; Distributed Systems: REST Web Services, Event-based middleware, Distributed Network Objects (RMI, CORBA); Mobile computing: Android, Cordova; Software Engineering: Software Product Line Engineering, UML Modeling, Software Architecture and ADLs, Aspect-Oriented Programming, Database and Internet Programming. Others: XML, Eclipse RCP and OSGi.
Processes: Rational Unified Process, Agile Methods and Object-Oriented design principles and metrics.
Operating Systems: Unix and Win32 administration.

PUBLICATIONS

Available at the website: http://www.ics.uci.edu/~rsilvafi