Roberto S. Silva Filho, PhD

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Home: San Francisco Bay Area, Dublin, CA.

PROFESSIONAL EXPERIENCE

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, collaboration & Software Engineering techniques in the automation & optimization of industrial work within GE businesses. Development of mobile apps, wearable computing prototypes, simulation & collaboration platforms, collaboration tools, optimization and knowledge discovery systems. Production of patents & research publications.*

2009 – 2013 **SIEMENS Corporate Technology, Princeton, NJ**
Position (2010-2013): *Software Engineering Researcher*
Position (2009-2010)*: Post-doctoral Researcher*
Areas: *Applying advanced software engineering tools & methods in support of SIEMENS business projects. Software Architecture Analysis and Improvement, Software Quality Assurance, Model-Driven Development & Testing, Workflow Automation. Production of patents & publications.*

2000 – 2009 **University of California, Irvine, CA**
Position (2002-2009): *Graduate Research Assistant*
Position (2000-2002): *Teaching Assistant*
Areas: Software Engineering, Middleware and CSCW.

Summer 2004 **IBM T. J. Watson Research Center, Collaborative User Experience Group, Cambridge, MA**
Position: *Research Intern*
Project: *Apply simulation and prototyping to measure the scalability, performance and integration trade-offs of a contextual collaboration server used in IBM Lotus Notes products.*
Mentor: *Werner Geyer,* Manager*: David Millen.*

Fall 1997 **Renato Archer Information Technology Research Center (CTI), Campinas, Brazil**
Position: *Research Intern*
Responsibilities: *Developed a distributed architecture for a VRML-based airship simulator, using Java and CORBA.*

1996 – 1997 **PETROBRAS (Brazilian Oil Prospecting Company), Campinas, Brazil**
Position: *Software Engineer*
Responsibilities**:** *Analyzed and developed a decision support system using MS-FoxPro (xBase programming) and SQL. The system provided a GUI that replaced mainframe terminals in the support for sales representatives and managers.*

1992 – 2000 **IMPETROL Chemicals, Salvador, Brazil**
Position: *IT Analyst/Support*
Responsibilities: *IT support (hardware and software installation and management) on a medium-sized corporative network (approximately 10 workstations and 2 servers) running Windows and Linux.*

EDUCATION

2003 – 2009 **Ph.D., Information and Computer Sciences**
University of California, Irvine (UCI), CA, USA
Concentration Area: ***Software Engineering, Middleware & CSCW.*** GPA: *3.975/4.0*.
Dissertation Title: *An Empirical Study of Publish/Subscribe Middleware Versatility*
Dissertation Committee: *David F. Redmiles (Advisor), Cristina Lopes, André van der Hoek.*

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

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

1993 – 1997 **B.Eng., Computer Engineering**
University of Campinas (UNICAMP), Brazil. GPA: *0.748/1.0*.

SELECTED PROJECTS

GE GLOBAL RESEARCH

2017 - present **Remote & Autonomous Train Operations - Distributed Simulator Platform & Natural Language Controls**
Design and implementation of an event-driven distributed simulator platform and UI for a distributed human-in-the-loop simulator. The project integrates actual and simulated software components with different NUIs and GUIs. The goal is to assess the feasibility of operating freight trains in different scenarios, using different user interfaces, including natural language, and touch interfaces at both co-located and remote settings. [WSC'17]. Technologies: Java, JavaScript & ZeroMQ, Natural Language Processing.

MATERIA – User-driven knowledge discovery app and platform
Web-based UI, micro-services and analytics for multi-source, multi-data knowledge discovery tool. Use of semantic web technologies: RDF, SPARQL, SemTK in support of Material Sciences data exploration, applications and analytics.

Wearable & mobile contextual apps for field work automation
Field work personnel activities automation, including: inspection and repairs, using head-mounted computers, mobile devices and wireless measurement tools. Mobile/wearable Android apps supporting audio/video real-time collaboration, data capture and contextual information access [HCII'15].

2017 **CNC Machine Optimizer:** Developing Web app to help users in applying digital twin predictive analytics and insights to optimize CNC machines usage in aviation workshops. Technology: UI: JavaScript & Polymer; Server: Go language, Python, Docker.

2016 **Robotic Inspection as a Service – UAV UX Server**
Design and implementation of an integration server connecting UI and Robotic UAVs (drones). The server intermediates the communication between drone and end-users (pilots, inspectors, etc.) by interfacing with drone sensors and controls and translating user commands into goals. Technology: ROS (Robot OS), JavaScript & Node.js-

2016 **Wind Farm Power Generation Optimization & Control – Architecture reconstruction**
Software architecture analysis and reconstruction of Web app and controls infrastructure used to manage and optimize wind turbine farms. Interview with stakeholders and developers. Architecture documentation using UML. Knowledge transfer to developers.

2013 – 2014 **Smart Outage / Field Vision – Mobile app for automating field services crew tasks**
Development of a novel iOS mobile app and integration middleware used by GE field engineers during planned power plant outages. The app provides integrated project, task and document management, activity feeds and real-time collaboration. [MS'15].
Technology: UI: JavaScript/Cordova; Server: Java, OSGi, JDBC.

2009 – 2013 **SIEMENS CORPORATE TECHNOLOGY**

National Geothermal Data System (NGDS)
Work on the development of USA DOE (Department of Energy) Web portal used for management, discovery and disseminating of national geothermal data. Performed architecture reconstruction of existing system, and design, agile development & testing of the new distributed document catalog service. Web site: http://geothermaldata.org

Model-Driven Development &Testing
Research and development of **tedeso**, an extensible IDE for mechatronic systems testing. Tedeso IDE allows end-users to create executable tests based on UML system specifications. It supports different test generation strategies including regression testing and prioritization of test cases based on a flexible set of user criteria including: change impact, requirements, features, risk, and other concerns. The tool is actively used in different industrial projects throughout SIEMENS Corporation [STA'10, SBCARS'11, ICST'12].

User Behavior Analysis Notation (UBAN)
Research and develop a novel process definition language, tool and methodology for representing UX design concerns [HFES'12, HFES'13].

Using Aspects for Software Constraints Documentation & Enforcement
Applying Aspect-Oriented Programming for representing and enforcing different types of software static analysis rules in Java code, including architectural, platform and feature-specific constraints [AOSD'11].

Flexible Workflows Management Systems for Large Organizations
Develop and research novel workflow management systems architectural principles, and study their adoption in large organizations [IJCIS'15].

PH. D. DISSERTATION (UC, Irvine)

2007 – 2009 **An Empirical Study of Publish/Subscribe Middleware Versatility**
Designed benchmarks, developed different case studies, defined software metrics and analyzed how versatility design decisions such as: generality, configurability and extensibility inter-relate; and how they affect middleware reuse, API usability, maintainability and performance from the points of view of both framework developers and users. [TR1].

2003 – 2009 **YANCEES: Adding Versatility to Publish/Subscribe Middleware**
Developed YANCEES, a versatile (highly configurable and extensible) publish/subscribe infrastructure. YANCEES has been used in support of different projects, including: usable security (Impromptu/Swirl), software usability monitoring, contextual collaboration, and others [DEBS'03, SEM'05, JUCS'08].

M.Sc. THESIS (UNICAMP)

1998 – 2000 **WONDER: Distributed Architecture for Large-Scale Workflow**

Developed and evaluated a highly scalable distributed workflow management system, based on autonomous mobile software agents. This work demonstrated the scalability benefits, and the security and fault-tolerance overheads of a highly decentralized agent-based peer-to-peer architecture in the support for large-scale workflow [ISADS'99, IJCIS'03].

OTHER PROJECTS

2008 – 2009 **Bridging the Aspect-Oriented Programming Usability Gap**

Designed and conducted user studies to evaluate the benefits of in-line edit-time code weaving as a way to reduce context-switching and errors related to the evolution of base and aspect-code in aspect-oriented software [ASE'08].

2007 –2009 **Continuous Coordination: Combining Formal and Informal Coordination Approaches in Collaborative Distributed Software Engineering Environments**

Continuous Coordination unifies and integrates the formerly opposed strategies of formal and informal coordination into a single concept by leveraging on awareness and synchronous collaboration tools. In this project, I have worked in the development of event-driven infrastructures in support of this integration [Wirtschaftsinformatik'07].

2004 –2007 **Effective Security Through Software Monitoring & Visualizations**

Validate the hypothesis that: By making security configurations, activities, and their implications visible to users, they can make better informed decisions about their behavior during thus improving their security during collaborative activities [IJHCS'05, SOUPS'05, SOUPS'06].

2004 **Analysis of Performance and Scalability Trade-offs of Blending Synchronous and Asynchronous Contextual Collaboration Services**

Contextual collaboration seamlessly integrates existing Groupware technologies into a uniform user experience that combines synchronous and asynchronous multi-media interactions. In this project, I have developed a benchmarked and analyzed the performance and scalability trade-offs of a family of infrastructures developed according to different architectural strategies [JUCS'08].

2000– 2001 **xADL Extensible Software Architecture Description Language**

Developed configuration management and runtime change extensions for xADL, an extensible architecture description language (ADL) based on XML, as a way to support architecture-based software evolution. (Collaborators: Eric Dashofy, André van der Hoek).

1997 **Aurora (Autonomous Unmanned Remote Monitoring Robotic Airship) Project**

Developed a distributed architecture for a VRML-based airship simulator, using Java and CORBA. The goal of this project was to study and evaluate architectural approaches to support the distributed visualization of the airship simulator. (Collaborators: Josué Ramos and Samuel Bueno).

1996–1997 **Distributed Object Domain Management API**

Developed a distributed objects management framework based on CORBA as part of my undergraduate conclusion thesis. The goal of this project was to support developers and system administrators in visualizing and monitoring the behavior of distributed component-based applications [SBRC'98].

TEACHING EXPERIENCE (at UC, Irvine)

Spring 2009 **Software Architecture and Distributed Systems (undergraduate course)**
Position: *Guest Lecturer*
Topic: *Publish/Subscribe Middleware Versatility*

Winter 2006 **Software Engineering (graduate course)**
Position: *Guest Lecturer*
Topic: *Event-Based Architectures and Applications*

Fall 2001- Spring 2002 **Introduction to Computer Science II (undergraduate course)**
Position: *Teaching Assistant*
Responsibilities: For 3 quarters, l*ectured, graded assignments and programs; lead discussion sessions (class teaching) and tutored a group of 40 students*
Topics: *Data Structures, Software Complexity, Java and Scheme programming*

Fall 2000 **Introduction to Software Engineering (undergraduate course)**
Position: *Teaching Assistant*
Responsibilities: *Lectured, graded assignments and programs; lead discussion sessions (class teaching) and tutored a group of 120 students*
Topics: *Software Engineering fundamentals and processes*

PUBLICATIONS

JOURNAL PUBLICATIONS (REFEREED)

J.1. Silva Filho, R. S., McKenna, M., McDevitt, K. **Blending Ad-hoc and Formal Workflow Models in Support of Different Stakeholders Needs**. International Journal of Cooperative Information Systems. Volume 24, Issue 04. World Scientific eds. December 2015

J.2. Silva Filho, R. S., McKenna, M., Budnik, C. J., Hasling, W. M. **Experiences Using Tedeso: an Extensible and Interoperable Model-based Testing Platform**. Journal of Automated Software Engineering. Special issue on Innovative Tools for Automated Software Engineering. Volume 20, Number 3. Springer, January 2013.

J.3. Geyer, W., Silva Filho, R. S., Brownholtz B., Redmiles, D. F. **The Trade-Offs of Blending Synchronous and Asynchronous Communication Services to Support Contextual Collaboration**. Journal of Universal Computer Science (JUCS) - *Special Issue on Groupware: Issues and Applications with a selection of papers presented at 12th International Workshop on Groupware.* Vol 14, No. 1, pp. 4-26, March 2008.

J.4. Redmiles, D. F., Van der Hoek, A., Al-Ani, B., Hildenbrand, T., Quirk, S., Sarma, A., Silva Filho, R. S., De Souza, C. R. B., Trainer, E.. **Continuous Coordination: A New Paradigm to Support Globally Distributed Software Development Projects**. In: Wirtschaftsinformatik -*Special Issue on the Industrialization of Software Development*, Vol. 49, Issue 3, pp. S28-S38, Vieweg Publishers, 2007.

J.5. DePaula, R., Ding, X., Dourish, P., Nies, K., Pillet, B., Redmiles, D. F., Ren, J., Rode, J., and Silva Filho, R. S. **In the Eye of the Beholder: A Visualization-based Approach to Information System Security**. International Journal of Human-Computer Studies (IJHCS) - *Special Issue on HCI Research in Privacy and Security*, Vol. 63, Issue 1-2, pp. 5-24. July 2005.

J.6. Silva Filho, R. S., Wainer, J., Madeira, E. R. M. **A Fully Distributed Architecture for Large-scale Workflow Enactment.** International Journal of Cooperative Information Systems (IJCIS). Vol. 12, No. 4 (2003), pp. 411-440. December 2003.

J.7. Silva Filho, R. S., Wainer, J., Madeira, E. R. M., Ellis, C. **CORBA Based Architecture for Large Scale Workflow.** IEEE/IEICE Transactions on Communications - *Special Issue on Autonomous Decentralized Systems.* Tokyo, Japan, Vol. E83-B, No. 5, pp.988-998., May 2000.

BOOK CHAPTERS (REFEREED)

B.1. Sarma, A., Al-Ani, B., Trainer, E., Silva Filho, R. S., da Silva, I. A., Redmiles, D. F., van der Hoek, A.. **Continuous Coordination Tools and their Evaluation**. Collaborative Software Engineering. ch. 8. Springer, Heidelberg. January 2010.

MAGAZINE ARTICLES (REFEREED)

M.1 Naslavsky, L., Silva Filho, R. S., **Fazendo Doutorado nos Estados Unidos**. SBC Horizontes. (Brazilian Computer Society Magazine on Computer Science Career). Vol. 1, No. 1, pp. 46-49. December 2008.

CONFERENCE PUBLICATIONS (REFEREED)

C.1. Silva Filho, R. S., Carroll, A. Brooks, J. **A Distributed Simulator Platform for Rapid Industrial User Experience Prototype Development**. 50th Winter Simulation Conference. Dec 3-6th, Las Vegas, NV, 2017

C.2. Silva Filho, R.S., Huang, C.L., Tewari, A., Jobin, J., Modi, P. **Using Wearable and Contextual Computing to Optimize Field Engineering Work Practices**. HCI International 2015. Los Angeles, CA, USA. 2-7 August 2015.

C.3. Silva Filho, R. S., Tewari, A. **Distributed Architecture for Mobile Contextual Integrated Fieldwork Applications**. In Proceedings of the IEEE 4th International Conference on Mobile Services, New York, USA. June 27 - July 2, 2015.

C.4. Zheng, X. S., Silva Filho, R. S., Costa, J. M. R., Song, X. **User Workflow Centered Design: Creating Effective Software User Interface for Complex Interactive Systems**. in Proceedings of 57th Annual Meeting of the Human Factors and Ergonomics Society. San Diego, CA. September 30th -October 4th, 2013.

C.5. Costa, J. M. R., Zheng, X. S., Silva Filho, R. S., Song, X.. **Fast, Formal, & Beautiful: Effectively Capture, Document, and Communicate User Workflow Information for Designing Complex Healthcare Software Systems**. in Proceedings of 56th Annual Meeting of the Human Factors and Ergonomics Society. Boston, MA. October 22-26, 2012.

C.6. Silva Filho, R. S., Budnik, C. J. **An Integrated Model-Driven Approach for Mechatronic Systems Testing**. In Proceedings of the Fifth IEEE International Conference on Software Testing, Verification and Validation (ICST'12). Montreal, Canada April 17-21, 2012

C.7. Crelier, O., Silva Filho, R. S., Hasling, W. M., Budnik, C. J. **Design Principles for Integration of Model-Driven Quality Assurance Tools**. in Proceedings of the Brazilian Symposium on Components, Architectures and Reuse of Software (SBCARS'11). Sao Paulo, Brazil, September 26-30, 2011.

C.8. Silva Filho, R. S., Bronsard, F., Hasling, W. M. **Experiences Documenting and Preserving Software Constraints using Aspects.** in Proceedings of the 10th International Conference on Aspect-Oriented Software Development (AOSD'11). Pp. 7-18. Porto de Galinhas, Pernambuco, Brazil, March 21-25, 2011.

C.9. Silva Filho, R. S., Budnik, C. F., Hasling, W. M., McKenna, M., Subramanyan, R. **Supporting Concern-Based Regression Testing and Prioritization in a Model-Driven Environment**. in Proceedings of the IEEE/COMPSACW. 2nd International Workshop on Software Test Automation (STA 2010). pp.323-328. Seoul, Korea, July 19, 2010.

C.10. Ruegmee, W., Silva Filho, R. S., Bajracharya, S. K., Lopes, C. V. and Redmiles, D. F.. **XE (eXtreme Editor) – Bridging the Aspect-Oriented Programming Usability Gap.** Proceedings of the 23rd IEEE/ACM International Conference on Automated Software Engineering (ASE'08). pp. 435-438. L'Aquila, Italy, September 15-19, 2008.

C.11. Silva Filho, R. S. and Redmiles, D. F. **Managing Feature Interaction by Documenting and Enforcing Dependencies in Software Product Lines.** Proceedings of the 9th International Conference on Feature Interactions in Software and Communication Systems (ICFI'07). pp.33-48, Grenoble, France, Sept 3-5, 2007.

C.12. Silva Filho, R. S., Redmiles, D. F. **Towards the use of Dependencies to Manage Variability in Software Product Lines.** Presented at the Workshop on Managing Variability for Software Product Lines: Working with Variability Mechanisms, co-located with the 10th International Software Product Line Conference (SPLC'06). pp. 10-15, Baltimore, MD, August, 21-24th, 2006.

C.13. Silva Filho R. S., Geyer, W., Brownholtz, B., Redmiles, D. F. **Understanding the Trade-offs of Blending Collaboration Services in Support of Contextual Collaboration**. Proceedings of the 12th International Workshop on Groupware (CRIWG'06). Lecture Notes in Computer Science, Vol. 4154, pp. 270-285, 2006.

C.14. Silva Filho, R. S., Redmiles, D. F. **Extending Desktop Applications with Pocket-size Devices**. Presented in the Symposium on Usable Privacy and Security (SOUPS'06). Pittsburgh, PA, July 12-14, 2006.

C.15. Rode, J., Johansson, C., DiGioia, P, Silva Filho, R. S., Nies, K., Nguyen, D. H., Ren, J., Dourish, P., Redmiles, D. F. **Seeing Further: Extending Visualization as a Basis for Usable Security**. Proceedings of the Symposium on Usable Privacy and Security (SOUPS'06). pp. 145-155. Pittsburgh, PA. July 12-14, 2006

C.16. Silva Filho, R. S., Redmiles, D. F. **Striving for Versatility in Publish/Subscribe Infrastructures**. Proceedings of the 5th International Workshop on Software Engineering and Middleware (SEM'05), co-located with the ACM ESEC/FSE Conference. pp. 17-24. Lisbon, Portugal. September, 5th-6th, 2005.

C.17. DePaula, R., Ding, X., Dourish, P., Nies, K., Pillet, B., Redmiles, D. F., Ren, J., Rode, J., and Silva Filho, R. S. **Two Experiences Designing for Effective Security**. Proceedings of the Symposium On Usable Privacy and Security (SOUPS'05). pp. 25-34. Pittsburgh, PA. July 6-8, 2005.

C.18. Van der Hoek, A., Redmiles, D. F., Dourish, P., Sarma, A., Silva Filho, R. S., De Souza, C. R. B. **Continuous Coordination: A New paradigm for Collaborative Software Engineering Tools**. Proceedings of the Workshop on Directions in Software Engineering Environments (WoDiSEE'04), co-located with the 26th ICSE. pp. 29-36. Edinburgh, UK, May 25th, 2004.

C.19. Naslavsky, L., Silva Filho, R. S., De Souza, C. R. B., Dias, M., Richardson, D., Redmiles, D. F. **Distributed Expectation-Driven Residual Testing.** Presented in the Second International Workshop on Remote Analysis and Measurement of Software Systems (RAMSS'04), co-located with the 26th ICSE. Edinburgh, UK, May 24th, 2004.

C.20. Silva Filho, R. S., De Souza, C. R. B., Redmiles, D. F. **The Design of a Configurable, Extensible and Dynamic Notification Service**. Proceedings of the Second International Workshop on Distributed Event-Based Systems (DEBS'03), co-located with The ACM SIGMOD/PODS Conference, San Diego, CA, pp.1-8, June 8th, 2003.

C.21. Silva Filho, R. S., Slabyak, M., Redmiles, D. F. **Web-based Infrastructure for Awareness Based on Events**. Presented in the Workshop on Network Services for Groupware, co-located with the ACM Conference on Computer Supported Cooperative Work (CSCW'02). New Orleans, LA, November 16-20, 2002.

C.22. Silva Filho, R. S., Wainer, J., Madeira, E. R. M. **A Distributed Architecture for Large-scale Workflow**. Proceedings of the XXVII Latino American Informatics Conference. September 24-26th, 2001. Mérida, Venezuela. **Best master's thesis award: second place in the VIII Master's Thesis Contest CLEI - UNESCO 2001.**

C.23. Silva Filho, R. S., Wainer, J., Madeira, E. R. M., Ellis, C. **CORBA Based Architecture for Large Scale Workflow**. Proceedings of the 4th International Symposium on Autonomous Decentralized Systems (ISADS'99). Tokyo, JAPAN. pp. 276-283. March 20-23, 1999. ISBN 0-7695-0137-0. IEEE Computer Society Eds.

C.24. Silva Filho, R. S., Wainer, J., Madeira, E. R. M., Ellis, C. **Wonder: A Distributed Architecture for Large Scale Workflow Using CORBA**. Presented in the 17th Brazilian Symposium on Computer Networks - (SBRC'99) - Salvador, BA, Brazil. May 25-28, 1999. pp. 379-380.

C.25. Queiroz, J. A. G., Silva Filho, R. S. and Madeira, E. R. M. **Facilidade de Domínios em um Ambiente de Gerência CORBA.** Proceedings of the 16th Brazilian Symposium on Computer Networks (SBRC'98). Rio de Janeiro, RJ, Brazil - May, 1998, pp. 765.

FILED PATENTS

PT.1. Silva Filho, R. S., et al. **A system and method to provide situational awareness to the autonomous robot operator**. Doclet: 319468, March 23, 2017.

PT.2. Silva Filho, R. S. et al. **A system, method, and architecture for end-to-end asset health management.** Doclet 319425 Mar 22, 2017.

GRANTED PATENTS

PT.3. Jobin, J., Silva Filho, R. S., Yu, B. **Context-Aware Wearable Safety System**. US 20170124832 A1. May 2017.

PT.4. Silva Filho, R. S., Tewari, A. **Method, System and Apparatus for Agent-Based Architecture for Integrated Mobile Applications.** US 9749426 B2. August 2017.

PT.5. Silva Filho, R. S.; Budnik Christof J.; Masticola, Stephen. **Automatic Testing of Mechatronic Systems.** US 20130185594 A1. July 2013.

PT.6. McKenna, Monica; Silva Filho, Roberto S.; McDevitt, Kevin. **Approach and Tool Blending Ad-Hoc and Formal Workflow Models in Support of Different Stakeholder Needs.** US 20120310699 A1. December 2012.

MEDIA REPORTS

M.1. **Implementing Mechatronic Testing Technologies**. Desktop Engineering Magazine, August 1, 2012.

TECHNICAL REPORTS

TR.1. Crelier, O., Silva Filho, R. S., Hasling, W. M., Budnik, C. J., Subramanyan R. **Design Principles for Integration of Model-Driven Quality Assurance Tools**. SCR-10-TR-877, Siemens Corporate Research, Princeton, NJ, September 2010.

TR.2. Silva Filho, R. S., and Redmiles, D. F.. An **Analysis of Publish/Subscribe Middleware Versatility.** Technical Report UCI-ISR-09-3. University of California, Irvine, CA, August 2009.

TR.3. Reugme, W., Silva Filho, R. S., Bajracharya, S. K., Lopes, C. V., Redmiles, D. F. **XE (Extreme Editor) - Tool Support for Evolution in Aspect-Oriented Programming.** Technical Report UCI-ISR-08-1. University of California, Irvine. Irvine, CA, June 2008.

TR.4. Silva Filho, R. S., Geyer, W., Brownholtz, B., Guy, I., Redmiles, D. F., Millen, D. R.. **Architectural Trade-Offs for Collaboration Services Supporting Contextual Collaboration**. IBM T. J. Watson Technical Report RC23756. Cambridge, MA, October 2005.

TR.5. Silva Filho, R. S., Redmiles, D. F. **A Survey on Versatility for Publish/Subscribe Infrastructures**. Technical Report UCI-ISR-05-8. UC, Irvine, May 2005.

TR.6. Silva Filho, R. S., Redmiles, D. F. **Preserving Versatility in Event-based Middleware**. Technical Report UCI-ISR-04-7. UC, Irvine, October 2004.

TR.7. Silva Filho, R. S., De Souza, C. R. B., Redmiles, D. F. **Design and Experiments with YANCEES, a Versatile Publish-Subscribe Service**. TR-UCI-ISR-04-1. UC, Irvine, April 2004.

TR.8. Silva Filho, R. S., Queiroz, J. A. G., Madeira, E. R. M.. **Distributed Object Domains for a CORBA Based platform**. Technical Report. Institute of Computing, Campinas, São Paulo, Brazil 1997.

THESIS AND DISSERTATION

D.1. **Ph.D. Dissertation**: An Empirical Study of Publish/Subscribe Middleware Versatility – September 2009.

D.2. **Master's Thesis**: A CORBA Based Architecture for Large Scale Workflow. Portuguese tittle: "*Uma Arquitetura Baseada em CORBA para Workflow de Larga Escala"* – June 2000.

STUDENT & INTERN SUPERVISION

As part of my Ph.D. duties and my work, I've assisted on the supervision of the following:

- Mohamed Mohamedin (Intern, Siemens 2013, M.Sc.. Virginia Tech)
- Diego Damasceno (Intern, Siemens, 2012, B.S. Computer Science, Federal University of Pará, Brazil, 2013)
- Lars Lucas (Intern, Siemens, 2012, B.S. Computer Science, Univ. Munich, Germany, 2011)
- Matheus Costa (Intern, Siemens, 2012; Compute Engineer UFES, Brazil, 2011)
- Talles Santana (Intern, Siemens, 2011; B.S Computer Science UNIRIO, Brazil, 2012)
- Jean Costa (Intern, Siemens, 2011, M.S. Computer Science, UFPA, Brazil, 2011)
- Othon Crelier (Intern, Siemens, 2009-2010; B.S. Computer Science UFRJ, Brazil, 2010)
- Wiwat Ruengmee (Ph.D. UC, Irvine. USA, 2010)
- David Bentolia (M.Sc. UFPA, Brazil. 2010)

GOVERNMENT GRANT PROPOSALS

I contributed significantly in the writing and preparation of the following awarded grants:

G.1 Towards a Socio-technical Dependency Visualization Infrastructure for Jazz. IBM Eclipse Innovation Award. October 2008, with a budget of US$20,000

G.2 Unifying Formal and Informal Collaboration through Continuous Coordination. NSF Award number 0534775. 2005-2008, with a budget of US$681,402.

G.3 Study of Scalability Trade-offs of Large-Scale Workflow. FAPESP (São Paulo State Research Foundation, Brazil) award # 98/06648-0, Jun.1998 - Apr. 2000 with a budget of: R$22,000 approximately US$10,000.

FORMAL PRESENTATIONS & DEMOS

P.1 **December 2017,** INFORMS 50th Winter Simulation Conference, Las Vegas, NV

P.2 **July 2015,** IEEE Mobile Services 2015, Panel on Mobile and IoT Servcies, New York, NY

P.3 **April 2012,** 5th International Conference on Software Testing, Verification and Validation, Montreal, Canada

P.4 **March 2011,** 10th International Conference on Aspect-Oriented Software Development, Recife, Brazil

P.5 **June 2009,** Siemens Corporate Research, Princeton, NJ

P.6 **September 2007,** International Conference on Feature Interaction, Grenoble, France.

P.7 **August 2006,** Workshop on Managing Variability in Software Product Lines, 10th International Software Product Line Conference, Baltimore, MD.

P.8 **July 2006,** Symposium on Usable Privacy and Security (SOUPS'06), Pittsburgh, PA.

P.9 **September 2005,** Fifth International Workshop on Software Engineering and Middleware (SEM'2005). ACM ESEC/FSE Conference, Lisbon, Portugal.

P.10 **September 2004,** *The Trade-offs of Blending Synchronous and Asynchronous Services in a Collaboration Infrastructure*. IBM T.J. Watson, Cambridge, MA.

P.11 **June 2003,** Second International Workshop on Distributed Event-Based Systems (DEBS'03), ACM SIGMOD/PODS Conference, San Diego, CA.

P.12 **November 2002,** Workshop on Network Services for Groupware. CSCW2002. New Orleans, LA.

P.13 **July 1-4, 2002,** Awareness Gauges, *Formal Tool Demonstration, DARPA - DASADA Demo Days,* Baltimore, MD.

P.14 **September 2001,** XXVII Latino American Informatics Conference. Mérida, Venezuela.

P.15 **June 2000,** University of Campinas, Campinas, SP, Brazil.

P.16 **May 1999,** 17th Brazilian Symposium on Computer Networks - (SBRC'99)

P.17 **December 1997,** Renato Archer Information Technology Research Center (CTI), Campinas, SP, Brazil.

SOFTWARE

SW.1. **AMCO Web UI** – Digital Twin web app for drill-bit usage optimization

SW.2. **IaaS UX Server** – Integration server between autonomous drone and users

SW.3. **RCO Simulation Services** - Human-in-the-loop event-driven simulation platform, GE 2016

SW.4. **Customer Reporting REST API** –supporting wearable computer apps used by inspection crew, GE 2015

SW.5. **iAcquire** for Android on Golden-I, **Remote Collaboration** for Android on Golden-I, GE 2015

SW.6. **Smart Outage** – Field services mobile app & integration server, GE, 2014

SW.7. **NGDS** (National Geothermal Data System), 2013

SW.8. **Tedeso (former TDE/UML)** (Test Driven Environment) developed at SIEMENS, 2009 - 2013

SW.9. **Impromptu**: A collaborative P2P file sharing tool and
Tiny-Impromptu: JavaME thin clients for PocketPC, 2005.

SW.10. **IC contextual collaboration server prototype and client simulator**, IBM Cambridge, 2004.

SW.11. **YANCEES** : A versatile publish/subscribe infrastructure, 2003.

SW.12. **WONDER**: A distributed workflow management system based on software agents, 2000.

RESEARCH COMMUNITY SERVICE

PROGRAM COMMITTEE

- IEEE Mobile Services. IEEE Conference on Mobile Services (2015, 2016, 2017)
- ICGSE'2016. Tutorials co-chair. International Conference on Global Software Engineering (2016)
- CHASE'2011. Intl. Workshop on Cooperative and Human Aspects of Software Engineering (2011)
- PESOS'2010. Intl. Workshop on Principles of Engineering Service-Oriented Systems (2010)
- SBSC'2006. Brazilian Symposium on Collaborative Systems (2006).

REVIEWER

- Ad-hoc consultant: FACEPE State Research Funding Agency, Pernambuco, Brazil (2017)
- Primary: Elsevier Journal of Systems and Software (2006, 2014, 2015)
- External: IEEE International Symposium on Software Reliability Engineering (2012)
- Primary: Springer Software Quality Journal (2010)
- External: 33rd International Conference on Software Engineering (ICSE'11) (2010)
- External: 24th Brazilian Symposium on Software Engineering (2010)
- External: 34th Annual IEEE Computer Software and Applications Conference (COMPSAC) (2010)
- External: International Conference on Secure Software Integration and Reliability Improvement (2010)
- External: International Workshop on Automation of Software Test (2010)
- Primary: Journal of Management & Engineering Integration (2009)
- External: ACM Transactions on Software Engineering and Methodology (2009)

STUDENT VOLUNTEER

- 20th IEEE/ACM Conference on Automated Software Engineering (ASE'2005), Nov. 7-11, 2005.
- Artwork designer for both the proceedings cover and the conference program booklet for the ASE'2005 conference, Fall 2005.
- OOPSLA 2003 conference, Anaheim, CA, October 36-30, 2003.

AWARDS & FELLOWSHIPS

- Bren School Summer Dissertation Fellowship, UC, Irvine, CA, 2007.
- Best Master's Thesis Award (second place): VIII CLEI-UNESCO Latin American MS Thesis Context, 2001.
- Scholarship to support M.Sc. Studies from FAPESP (Sao Paulo State Science Foundation), Brazil, 1998-2000.
- Scholarship to support M.Sc. Studies from CNPq (Brazilian National Science Foundation), Brazil, 1998.

PROFESSIONAL AFFILIATIONS

- Member of the ACM (Association of Computer Machinery)

LANGUAGES

- Portuguese: Native
- English: Fluent written and spoken
- Spanish: effective communication

SOFWARE DEVELOPMENT SKILLS

PROGRAMMING LANGUAGES

Java, JavaScript/HTML5, Golang, C#, Python, SQL, LISP, Pascal, x86 Assembly, Prolog, C, C++, others.

TECHNOLOGIES

REST Web Services, mobile app development with Android, Web UI: JavaScript/HTML5/Angular-JS/Polymer, Web server: Node.js, Event-based Middleware (notification servers, ZeroMQ), Distributed Objects (RMI, CORBA), Software Product Line Engineering, Object-Oriented UML Modeling, Software Architecture and ADLs (xArch), Design Patterns, Databases, Aspect-Oriented Programming (AspectJ), XML technology, OSGi, Eclipse plug-in development with RCP and GEF.

SOFTWARE DEVELOPMENT METHODOLOGIES

Agile software development, User-workflow centered design.