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Antonio Bucchiarone

Curriculum Vitae et Studiorum

Antonio Bucchiarone received his PhD degree in Computer Science and Engineering, with the "Doctor Europaeus" certification, from **IMT of Lucca** (Italy) in July 2008 and two masters degree, the first in Computer Science ("old law") from the **University of L'Aquila** (Italy) in April 2003 and the second in Information Technologies from **University of Pisa** (Italy) in October 2005. Since 2004 he was a collaborator of Formal Methods and Tools Group at **ISTI-CNR of Pisa** (Italy) and actual he is a researcher of the **SOA Research Unit of FBK** in Trento (Italy). Antonio's research interests are in the Computer Science, Software Engineering and Service Oriented Computing. He has been visiting for eight months at **Nokia Siemens Networks** in Lisbon involved in a research project on Software Architectures for Embedded Systems. His PhD thesis topic was on Dynamic Software Architecture-based development and analysis techniques of Global Computing Systems. In particular, his main research interests are in the field of Dynamic Software Architecture, Service Oriented Architecture, Formal Methods, Component-Based Systems, Model-Checking and Testing. More information may be found at www.antonibucchiarone.it.

Contacts

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- Via Rocca di Cambio, 9
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- Home Address
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38100, Trento - Italy
- Phone Numbers
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Current Position and Activities

- Position
- Researcher at SOA Research Unit of FBK in Trento (Italy)

Research Areas

- Software Engineering
 - Software Architectures
 - Component-based Systems
 - Service-Oriented Applications (Services Composition)
 - Requirements Engineering
 - Testing
 - UML and MDA
 - Architecture Programming Languages (ArchJava, JavaA)
- Formal Methods
 - Typed Graph Grammars
 - Model Checking
 - First-Order Logic (Alloy)

Curriculum Studiorum

- January - October 2008
 - Researcher at Formal Methods and Tools Group of ISTI-CNR (Pisa, Italy) involved in EU project SENSORIA.
- July 2008
 - I received a PhD degree, with the "*Doctor Europaeus*" certification, from "**IMT of Lucca**" (Italy).
Title of the dissertation: Dynamic Software Architectures for Global Computing Systems.
Supervisor: Dott.ssa Stefania Gnesi
- March 2008
 - From March 2008 I am working at Formal Methods and Tools Group of ISTI-CNR as researcher involved in EU project **Sensoria**.
- April 2007
 - From April 2007 spent eight months at Nokia Siemens Networks of Lisbon involved in researches in the area of **software architecture for embedded systems**.
- April 2006
 - **IPA06:** International Summer school on Model-Based Testing of Software Applications, Eindhoven University of Technology, Eindhoven (The Netherlands).
- April 2006
 - **LUGANO06:** International Summer school on Dependable Software Systems, University of Lugano, Switzerland.
- February 2006
 - I have received the qualification to the **Profession of Engineer (Section A)** from University of Pisa with 209/240.
- October 2005
 - **Graduate in "Information Technology" (23/S)**, University of Pisa with 101/110.
- July 2005
 - **LIPARI05:** International Summer School on Formal Methods: Theory And Practice, Lipari Island (Italy)
- March 2005
 - **PhD Student in Computer Science and Engineering**, IMT Graduate School of Lucca.
- April 2003
 - **Graduate in "Computer Science" (old low, 5 years)**, University of L'Aquila with 101/110.

Presentations

- June 2008 • **Dynamic Software Architectures for Global Computing Systems**, PhD Thesis Defence, 21 July 2008, Lucca, Italy.
- June 2008 • **Formal Specification and Validation of Dynamic Software Architectures**, FM08 Doctoral Symposium, 27 June 2008, Turku, Finland.
- May 2008 • **Dynamic Software Architectures Verification using DynAlloy**, GT-VMT08 Workshop, March 29-30, 2008 Budapest, Hungary.
- September 2007 • **Modelling Dynamic Software Architectures using Typed Graph Grammars**, GT-VC07 Workshop, 3 September 2007, Lisbon, Portugal.
- October 2006 • **Dynamic Software Architectures for Global Computing**, GIIS06 Workshop, 2 October 2006, Genova, Italy.
- September 2006 • **Architecting Fault-tolerant Component-based Systems: from requirements to testing**, VODCA06 Workshop, 16 September 2006, Bertinoro, Italy.
- June 2006 • **A Practical Architecture-centric Analysis Process**, QOSA06 Conference, 27 June 2006, Vasteras, Sweden.
- June 2006 • **A Survey on Service Composition Languages and Models**, WsMaTe06 Workshop, 9 June 2006, Palermo, Italy.
- June 2006 • **A New Quality Model for Natural Language Requirements Specification**, REFSQ06 Working Conference, 5 June 2006, Luxembourg, Grand-Duchy of Luxembourg.
- September 2005 • **An Architecture-centric Approach for producing Quality Systems**, QOSA05 Conference, 21 September 2005, Erfurt, Germany.
- September 2005 • **Quality Analysis of NL Requirements: An Industrial Case Study**, RE05 Conference, 2 September 2005, Paris, France.

Working Experiences

- Current Projects
- I am currently involved in the following projects:
 - **ALLOW**. The objective of the project is to develop a new programming paradigm for human-oriented pervasive applications. This paradigm will enable pervasive technical systems to adapt automatically and seamlessly to humans involved and embedded in them, explicitly supporting people in achieving well-defined goals in dynamically changing environments and contexts. Furthermore, it will enable the integration of humans into pervasive business and working processes in an unobtrusive way. One of the major goals of the project is to design this technology such that the resulting environments are secure and trustworthy.
 - **S-CUBE**. S-CUBE aims to establish an integrated, multidisciplinary, vibrant research community, to enable Europe to lead the software-services revolution, thereby helping to shape the softwareservice-based Internet, which is the backbone of our future interactive society. S-Cube will produce an integrated research community of international reputation and acclaim that will help define the future shape of the field of software services, so critical for European competitiveness. S-Cube will provide service engineering methodologies which facilitate the development, deployment and adjustment of sophisticated hybrid service-based systems that cannot be addressed with today's limited software engineering approaches. Finally, S-Cube intends to bring strategic added value to European industry by using industry best-practice models and by implementing research results into pilot business cases and prototype systems.

Working Experiences (continued)

- Past Projects
- I was involved in the following projects:
 - **SENSORIA**. The aim of SENSORIA (Software Engineering for Service-Oriented Overlay Computers) is to develop a novel comprehensive approach to the engineering of software systems for service-oriented architectures where foundational theories, techniques and methods are fully integrated in a pragmatic software engineering approach.
 - **MODCONTROL**. The key objective of MODCONTROL was the standardization of TCMS functional modules and their interfaces with other subsystems, on-board and external to the train, through the development of a "Virtual Train Control System" and its demonstrators. The MODCONTROL approach was to elaborate generic Functional Requirements Specification and System Requirements Specification for a new generation of TCMS.
 - **SWARCES**. The Objective of the project was the development of a component/service-based software architecture for a Multi-Service Access Network Element (MSAN) system.
- During 2009
- **Program Committee Member** of Model Driven Engineering session of the 35th EUROMICRO Conference on Software Engineering and Advanced Applications (SEAA), Patras, Greece, August 27-29, 2009.
- During 2008
- **Program Committee Member** of the IADIS International Conference on Applied Computing 2008 , Algarve, Portugal 10-13 April 2008.
- During 2007
- **Program Committee Member** of the IADIS International Conference on Applied Computing, Salamanca, Spain, 18-20 February 2007.
- During 2007
- 7 months as Sholarship at **Nokia Siemens Networks - Lisbon** involved in the SWARCES project, Software Architecture for Embedded Systems. The Objective of the project was the development of a component/service-based software architecture for a Multi-Service Access Network Element (MSAN) system.
- During 2007
- Web Developer at **IMT of Lucca** using Macromedia Dreamweaver 8, PHP, JavaScript and MySQL. Design and Development of FAQ and News Services.
- During 2006
- Teacher of "European Computer Driving Licence" at **Centro Territoriale Permanente per L'Istruzione di Lucca**".
- During 2005
- 3 monts at **ISTI-CNR of Pisa ISTI-CNR (A. Faedo) of Pisa**, as researcher in the MODCONTROL Project, study of Quality Analysis of Natural Language Requirements Specification using IBM Rational Tools and integration of them with Academic tools like Cow-Suite e QuARS.
- During 2004
- 14 months at **Eco Service Consulting SRL of Avezzano**, Italy as collaborator using images elaboration softwares (Photoshop, 3D Studio, Autocad) and responsible of the company Data Base.
- During 2003-2004
- I worked at **Siemens C.N.X. of L'Aquila**. The contents developed during this experience are listed below:
 - Use of UML methodologies and tools for the development of Telecommunication system;
 - Design of a generic Telecommunication System and the MSI-FP product with Rational Requisite Pro and Rose RT toolsets;
 - Generation of test cases to starting with system architecture and model-checking and Testing Integration;
 - Study of the business flow and documentation production with IMB Rational tools.

Working Experiences (continued)

- During 2003
- Six months as teacher of Informatic and Matematic courses at **J. Maritain Private Institute of L'Aquila** (Secondary Private School).

Reviewer For Publications

- Journals and Book Chapters
- Requirements Engineering Journal
- Conferences
- ACM/IEEE International Conference on Software Engineering (ICSE)
 - IEEE International Conference on Engineering of Complex Computer Systems (ICECCS)
 - Software Product Line Conference (SPLC)
 - International Conference on Business Process Management (BPM)
 - European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE)
 - ACM/IEEE International Conference on Model Driven Engineering Languages and Systems (MoDELS)
 - International Working Conference on Requirements Engineering: Foundantion of Software Quality (REFSQ)
 - Argentine Symposium on Software Engineering (ASSE)
- Workshops
- International Workshop on Variability Modelling of Software-intensive Systems (VaMoS)
 - International Workshop on Formal Methods for Industrial Critical Systems (FMICS)
 - International Workshop on Rapid Integration of Software Engineering techniques (RISE)

Technical Knowledge

- Programming Languages
- Pascal, C, C++, Caml light, Ada, Java.
- Web Services Languages
- WSDL, WSCI, BPEL4WS.
- Scripting Languages
- PHP, JavaScript.
- Markup Languages
- HTML, XHTML, XML (XSLT, XSD, DTD, CSS).
- Operating Systems
- Windows 95/98/2000/XP/Vista, Linux (Mandrake).
- Relational DBMS
- MySQL, Access.
- Web Server
- Apache, Microsoft IIS
- CASE Tools and Frameworks
- IBM Rational Rose RT, IBM RequisitePro, SoDA, MagicDraw, StarUML, Omondo, Eclipse (EMF), ActiveBPEL Designer.

Languages

- **Italian**, native speaker
- **English**, Intermediate level

Tutoring

- 2008
- **Title:** Study of Graph Transformation Techniques for Modeling Dynamic Software Architectures
Student: Charlie Vattani
Department: Faculty of Computer Science - University of L'Aquila, Italy

Tutoring (continued)

- 2008 • **Title:**E-DSA: An Editor for Dynamic Software Architectures Design
Student: Guido di Ridolfi
Department: Faculty of Computer Science - University of L'Aquila, Italy
- 2007 • **Title:**Studio comparativo sui framework di testing per Web Services
Student: Francesco Severoni
Department: Faculty of Computer Science - University of L'Aquila, Italy

Scientific Publications

Book Chapter

- MDSDIQA07 • A. Bucchiarone, D. di Ruscio, H. Muccini and P. Pelliccione. "From Requirements to code: an architecture-centric approach for producing quality systems". Chapter of the book "Model-Driven Software Development: Integrating Quality Assurance" edited by Joerg Rech (Fraunhofer IESE, Kaiserslautern, Germany) and Christian Bunse (International University, Bruchsal, Germany).

Journals

- JSS08 • P. Pelliccione, M. Tivoli, A. Bucchiarone, and A. Polini. *An architectural approach to the correct and automatic assembly of evolving component-based systems*. Journal of Systems and Software, accepted on May 2008. To appear.
- ATM08 • M.H. ter Beek, A. Bucchiarone, and S. Gnesi. *Formal Methods for Service Composition*. Annals of Mathematics, Computing & Teleinformatics 1, 5 (2007), 1-10.

International Conferences and Workshops

- ASE08 • A. Bucchiarone, S. Gnesi, G. Lami and G. Trentanni. *QuARS Express - A Tool Demonstration*. 23rd IEEE/ACM International Conference on Automated Software Engineering, ASE2008 September 15-19 2008 L'Aquila, Italy, To Appear.
- CGM08 • A. Bucchiarone, S. Gnesi, D. Hirsch and A. Lluch Lafuente. *Graph-Based Design and Analysis of Dynamic Software Architectures*. Concurrency, Graphs and Models, LNCS, vol. 5065, pages. 37-56, 2008.
- GTVMT08 • A. Bucchiarone and J. P. Galeotti. *Dynamic Software Architectures Verification using DynAlloy*. In Proceedings of the 7th International Workshop on Graph Transformation and Visual Modeling Techniques (GT-VMT'08), To Appear in 2008.
- FM08 • A. Bucchiarone. *Formal specification and validation of dynamic software architectures*. Doctoral Symposium at the 15th International Symposium on Formal Methods (FM'08), May 26 - 30, 2008, Turku, Finland.
- SEEFM07 • A. Bucchiarone, M. ter Beek and S. Gnesi. "Formal Methods for Service Composition", 3rd South-East European Workshop on Formal Methods (SEEFM'07), 30 November 2007 to 1 December 2007 Thessaloniki, Greece.
- GT-VC07 • A. Bucchiarone, H. Melgratti, S. Gnesi and R. Bruni. "Modelling Dynamic Software Architectures using Typed Graph Grammars", Graph Transformation for Verification and Concurrency (GT-VC 2007). Gulbenkian Foundation, Lisbon (Portugal), September 3, 2007.
- ASSE07 • A. Bucchiarone, H. Melgratti and F. Severoni, "Testing Service Composition", in Proceedings of the 8th Argentine Symposium on Software Engineering (ASSE'07) Mar del Plata, Argentina August 29-31, 2007.

Scientific Publications (continued)

- ICIW07 • A. Bucchiarone and L. Presti, "QoS Composition of Services for Data-Intensive Application", in Proceedings of the 2nd International Conference on Internet and Web Applications and Services (ICIW'07), IEEE Computer Society, 2007.
- ICIW07 • M.H. ter Beek, A. Bucchiarone and S. Gnesi, "Web Service Composition Approaches: From Industrial Standards to Formal Methods", in Proceedings of the 2nd International Conference on Internet and Web Applications and Services (ICIW'07), IEEE Computer Society, 2007.
- VODCA06 • A. Bucchiarone, P. Pelliccione and H. Muccini. "Architecting Fault-tolerant Component-based Systems: from requirements to testing", 2nd International Workshop on Views On Designing Complex Architectures (VODCA) 2006. September 16-17, 2006 - Bertinoro, Italy. Published on Electronic Notes in Theoretical Computer Science (ENTCS), Volume 168, Pages 77-90.
- ROSATEA06 • A. Bucchiarone, P. Pelliccione, A. Polini and M. Tivoli. "Towards an architectural approach for the dynamic and automatic composition of software components", Workshop on the Role of Software Architecture for Testing and Analysis (ROSATEA06). Portland, Maine July 17, 2006.
- WsMaTe 2006 • A. Bucchiarone and S. Gnesi. "A Survey on Service Composition Languages and Models", in 1st International Workshop on Web Services Modeling and Testing (WsMaTe 2006), Palermo (9 June 2006).
- QoSA 2005 • A. Bertolino, A. Bucchiarone, S. Gnesi and H. Muccini: "An Architecture-centric Approach for Producing Quality Systems", in 1st International Conference on Quality of Software Architectures (QoSA 2005). Lecture Note in Computer Science, LNCS 3712
- RE 2005 • A. Bucchiarone, S. Gnesi and P. Pierini: "Quality Analysis of NL Requirements: An Industrial Case Study", in 13th IEEE International Requirements Engineering Conference (RE05), Paris, France, 29th August - 2nd September 2005.
- CBSE 2005 • P. Pelliccione, H. Muccini, A. Bucchiarone, and F. Facchini: "TeStor: Deriving Test Sequences from Model-based Specifications", in Eighth International SIGSOFT Symposium on Component-based Software Engineering (CBSE 2005), St. Louis, Missouri (USA), 15-21 May, 2005. Lecture Notes in Computer Science
- ITM 2004 • A. Bucchiarone, H. Muccini, P. Pelliccione, and P. Pierini: "Model-Checking plus Testing: from Software Architecture Analysis to Code Testing", in Proceedings of 1st International Workshop on Integration of Testing Methodologies ITM 2004, October 1-2, 2004, Toledo, Spain. Lecture Notes in Computer Science, LNCS, vol. 3236, pp. 351-365 (2004).
- WETICE 2003 • P. Inverardi, M. Tivoli and A. Bucchiarone: "Automatic synthesis of coordinators of COTS group-ware applications: an example", in Proceedings of international Workshop on Distributed and Mobile Collaboration (DMC 2003), IEEE, June 9-11, 2003, Linz, Austria, pp. 123-128.

Technical Reports

CNR - Istituto di Scienza e Tecnologie dell'Informazione 'A. Faedo'

- 2006-TR-20 • A. Bucchiarone, S. Gnesi, A. Fantechi and A. Winzen. *A Quality Evaluation Process for Collaborative Requirements: An Industrial Case Study.*
- 2006-TR-15 • M. ter Beek, A. Bucchiarone and S. Gnesi. *A Survey on Service Composition Approaches: From Industrial Standards to Formal Methods.*
- 2005-TR-50 • A. Bucchiarone, P. Pelliccione, A. Polini and M. Tivoli. *Towards an architectural approach for the dynamic and automatic composition of software components.*

Technical Reports (continued)

- 2005-TR-26 • A. Bertolino, A. Bucchiarone, S. Gnesi and H. Muccini. *An Architecture-centric Approach for producing Quality Systems.*
- 2005-TR-25 • A. Bucchiarone, S. Gnesi and P. Pierini. *Quality Analysis of NL Requirements: An Industrial Case Study.*

Università degli Studi dell'Aquila, Dipartimento di Informatica

- TRCS 002/2005 • P. Pelliccione, H. Muccini, A. Bucchiarone, and F. Facchini. *Deriving Test Sequences from Model-based Specifications.*
- TRCS 035/2004 • H. Muccini, P. Pelliccione, A. Bucchiarone and P. Pierini *Software Architecture-driven System Testing through Model-Checking.*
- TRCS 014/2004 • H. Muccini and A. Bucchiarone. *Formal Behavioral Specification of a Product Line Architecture.*
- TRCS 021/2004 • H. Muccini and A. Bucchiarone: *Test+: Testing Product Line Architectures.*

December, 29 2008

Antonio Bucchiarone