

Salvatore Alessandro SARCIA', Ph.D.
Chief of sub-branch/Mid-Senior Researcher Equivalent
General Planning and Finance Division
Army General Staff – Ministry of Defense (Italy)

Short introduction

Salvatore Alessandro received his Laurea degree¹ in Computer Science (1994) and master's degree with honors in Strategy and Project Management (2001) from the University of Torino (Italy). He achieved his second Laurea degree in Political Science (2004) from the University of Trieste (Italy) and holds a Ph.D. in Informatics and Automation Engineering from the University of Rome "Tor Vergata" (Italy). In 2006-08, he was with the Department of Computer Science - University of Maryland at College Park, MD, USA as a Visiting Scientist working with Prof. Dr. Victor Robert Basili. In 2009, he was a Contract Professor of object-oriented programming at the Department of Engineering of the University of Rome "Tor Vergata" (Italy) and an Adjunct Professor of Information Processing at the Department of Economics of the Free University of Bolzano-Bozen (Italy). In 2011, he participated in Senior Course 117 at NATO Defense College in Rome. He works for the Italian Army General Staff as a senior researcher - chief of sub-branch with the rank of Lieutenant Colonel. He defined a performance model, which has been applied to the Italian Army. He develops and maintains a Business Intelligence system for the Army. His current research interests are Advanced Statistics, Generalized Models, Predictive Models, Game Theory, Performance Models, and Machine Learning. He applies empirical techniques to conduct experiments on Mathematical Models, Strategy and Economics, Software Engineering, Quality, Risk Analysis, and Performance.

Contacts

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Education

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| 2008 | <i>Doctor of Philosophy (Ph.D.) Informatics and Automation Engineering</i>
Department of Engineering University of Rome "Tor Vergata", Italy |
| 2006-2008 | <i>Doctor of Philosophy Course - Visiting Scientist</i>
Dept. of Computer Science - University of Maryland at College Park, MD, USA |
| 2004 | <i>Laurea¹ Degree Political Science – Economics</i>
University of Trieste, Italy |
| 2002 | <i>University Master (2°/advanced level) cum laude Strategic Science (Project Management, General Planning and Strategy)</i>
University of Torino, Italy |
| 1994 | <i>Laurea¹ Degree Computer Science</i>
University of Torino, Italy |

Further education

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| 2011 | <i>NATO Joint Staff College – Master equivalent (planning, communication, politics, economics)</i>
NATO Defense College, Rome, Italy |
| 2010 | <i>Resource Management Postgraduate Course</i>
Naval Postgraduate School, Monterey, CA, USA |
| 2005 | <i>Executive Project Management and Marketing in sportive organizations</i>
Olympic Games Committee – Italian Chapter, Rome, Italy |
| 2002 | <i>Advanced Italian Army Staff College</i>
Army War College, Torino, Italy |
| 2001 | <i>Basic Italian Army Staff College</i>
Army War College, Torino, Italy |
| 1989 - 1994 | <i>Military Academy Course</i>
Italian Military Academy, Modena-Torino, Italy |

¹ Laurea degree was the full (4-year) university degree in Italy now transformed into 3 (bachelor's)+ 2 (master's) year degree.
Update Dec. 2012

Further Courses at professional level

- 2002 ***Institutional Communication Course***
Army Education and Selection School, Civitavecchia (RM), Italy
- 1999 ***Nuclear, Radiological, Biological, and Chemical Defense Course***
NRBC Defense School, Rieti, Italy
- 1997 ***Light weapons Course for Instructors***
Carabinieri School, Rome, Italy
- 1990 ***Military Parachuting Course***
Army Parachuting School, Pisa, Italy

Licensures

- 2002 ***4th level Researcher Licensure in Land Weapons***
Ministry of Defense - Army, Rome, Italy
- 2001 ***Professional Teacher Licensure in Computer Science***
Ministry of Education, Padua, Italy

Foreign Languages

English

- 2010 ***JFLT NATO 6001 STANAG - Professional Working Proficiency***
Ministry of Defense - Army, Perugia, Italy
- 2006-08 ***Lived in Maryland, MD, USA***
- 2007 ***Test of English as a Foreign Language (TOEFL) IBT – University level in English***
Educational Testing Service (ETS.org), Washington DC, USA
- 2007 ***CASA Test of English, USA School level in English***
Literacy Council, Prince George County, Maryland, USA

French

Professional Working Proficiency, lived in France for 6 months and studied 5 years in high school

Publishing

- 2012 1. Sarcia', S.A., "Timed Strategic Games", IEEE-CogSima, in press.
- 2011 2. Suppa, A., Zardini, A., Sarcia', S.A., "IT helps the Italian Army implement a Performance Management System", **ITAIS**, 7-8 Oct. 2011, Rome, Italy.
- 2011 3. F. Mulazzani and S. A. Sarcia', Cyber Security on Military Deployed Networks - A Case Study on Information Leakage, **ICCC 2011, IEEE**, Jun. 7 – 11, Tallinn, Estonia.
- 2011 4. S. Marciuska, S.A Sarcia', A. Sillitti, G. Succi, Analysis Methods in Agile Development", **ACM - ESEC/FSE 2011**, Sep. 5-9, Szeged, Hungary.
- 2010 5. Sarcia', S.A., "Is GQM+Strategies really applicable as is to non-software development domains?", **ACM-IEEE, ESEM 2010**, Sep. 16-17, Bolzano-Bozen, Italy.
- 2010 6. Falessi D., Cantone G., Sarcia' S.A., Calavaro G., D'Amore C., Subiaco P., "Peaceful Coexistence: Agile Developer Perspectives on Software Architecture," **IEEE Software**, vol. 27, no. 2, pp. 23-25, Mar./Apr. 2010, doi:10.1109/MS.2010.49
- 2009 7. Sarcia' S.A., Basili V.R., and Cantone G., "Scope Error Detection and Handling concerning Software Estimation Models," **ACM-IEEE ESEM 2009**, Orlando, FL, 2009.
- 2009 8. Sarcia' S.A., Cantone G., and Basili V.R., "Using Uncertainty as a Model Selection and Comparison Criterion," **ACM-PROMIS** Co-located ICSE 2009, Vancouver, CA, 2009
- 2009 9. Sarcia' S.A. "An Approach to Improving Parametric Estimation Models in Case of Violation of Assumptions", **GIIS 2009**, Salerno, Italy, 2009
- 2009 10. Sarcia' S.A., Cantone G., and V.R. Basili, "Auto-associative Neural Networks to estimate Accuracy of Estimation Models", chapter in the book "Artificial Intelligence Applications for Improved Software Engineering Development: New Prospects (Eds: Farid Meziane and Sunil Valeda), **IGI Global**, USA.
- 2008 11. Sarcia' S.A., "An Approach to Improving Parametric Estimation Models in Case of Violation of Assumptions", **ESEIW 2008 - IDOESE08**, Kaiserslautern, Germany, 2008
- 2008 12. Sarcia' S.A., Cantone G., and V.R. Basili, "Adopting Curvilinear Component Analysis

to estimate Software Cost Estimation Accuracy,” **British Computer Society EASE08**, Bari, Italy, 2008

- 2007 13. Sarcia’ S.A., Cantone G., and V.R. Basili, “A Statistical Neural Network framework for Risk Management Process,” **ICSOF 2007**, Barcelona, SP, 2007
- 2006 14. Sarcia’ S.A., Cantone G., “Using Measurable Lesson Learned for estimating Risk Probability,” **Technical Report, Tor Vergata**, 2006
- 2006 15. Sarcia’ S.A., Cantone G., “Dependable Risk Management: New Methodological Perspectives and Related Support Systems,” 2006, **Technical Report Tor Vergata**, 2006.

Topic of research dealt with in the above papers

- Data mining techniques
- Machine learning
- Artificial Neural Networks
- Advanced statistics and nonlinear predictive models
- Improvement of predictive models
- Empirical and experimental approaches
- Bayesian statistics
- Risk Analysis
- Business intelligence and data-warehousing
- Quality improvement process
- Measurement techniques (GQM and GQM+Strategies)
- Software Engineering

Grants and International Projects

2007 USA National Science Foundation (NSF) Grant CCF-0438933 Flexible High Quality Design for Software - University of Maryland (Principal investigator Prof. Victor BASILI)

2006-08 DARPA, NASA, DoE, ARL, High Productivity Computing Systems Analysis and Performance Assessment - University of Maryland (Principal investigator Prof. Victor BASILI)

Activity in Program Committees and Journals

- Journal of Information and Software Technology, 2012 (Elsevier)
- Journal of Systems and Software, 2011 (Elsevier)
- Conference Experimental Software Engineering and Metrics 2009, 2010, 2011, 2012 (IEEE/ACM)
- Conference on Predictive Models on Software Engineering 2010, 2011, 2012 (ACM)
- Conference on Software Engineering and Knowledge Engineering 2009, 2010, 2011, 2012, 2013
- International Symposium on Empirical Software Engineering, 2006 (IEEE/ACM)
- International Conference on Product-Focused Software Development and Process Improvement, 2008
- Founder and Director of “On Empirical Software Engineering FORUM” an Independent Research Division. OnESE.org is an open (no-profit) forum allowing interested people/companies/research groups to exchange/share their empirical experience

Professional Teaching

Mar. 2009 – Mag. 2009 **Contract Professor** Object-Oriented Programming, Dept. of Engineering - University of Rome “Tor Vergata”, Italy (**Topics:** Java, C#, C++, UML, Multitasking)

Mar. 2009 – Giu. 2009 **Adjunct Professor** Computer Science and Information Processing Dept. of Economics - University of Bolzano-Bozen, Italy (**Topics:** MATLAB, R, SPSS, WEKA, STATGRAPH)

Feb. 2009 **Professor Assistant** Software Architectures, Analysis and Design, Dept. of Engineering - University of Rome “Tor Vergata”, Italy (**Topics:** MVC, SOA, Pattern, Frameworks)

Apr. 2008 – Giu. 2008 **Professor Assistant** Object-Oriented Programming, Dept. of Engineering - University of Rome “Tor Vergata”, Italy (**Topics:** Java, C++, UML, Multitasking)

Mar. 2008 – Mag. 2006 **Professor Assistant** Software Architectures, Analysis and Design, Dept. of Engineering - University of Rome “Tor Vergata”, Italy (**Topics:** MVC, SOA, Pattern, Frameworks, Rational-IBM suites, Requirements elicitation, OO Analysis, Design, and Implementation, Hibernate, JBoss, JUnit)

Ott. 2006 – Feb. 2008 **Visiting Researcher**, Department of Computer Science, University of Maryland, MD, USA (**Topics:** Software Engineering, Machine Learning, Advanced Statistics, Predictive Models, Experimental and empirical approaches, Cost Models, GQM, QIP, Data Mining/

MATLAB/WEKA, Artificial Neural Networks)

- Mar. 2006 – Mag. 2006 **Professor Assistant** Experimental Software Engineering, Dept. of Engineering - University of Rome “Tor Vergata”, Italy (Advanced Statistics, Empirical and Experimental approach applied to Software Engineering, Cost Models, Predictive Models)
- Dic. 2005 – Feb. 2006 **Professor Assistant** Software Architectures, Analysis and Design, Dept. of Engineering - University of Rome “Tor Vergata”, Italy (**Topics:** MVC, SOA, Pattern, Frameworks, Rational-IBM suites, Requirements elicitation, OO Analysis, Design, and Implementation, Hibernate, JBoss, JUnit)
- Set. 2000 – Ago. 2001 **Professor Assistant** Basic Course in *Computer Science*, University of Modena e Reggio Emilia/Military Academy (**Topics:** computer architectures, compilers)

Experience in Software Development

- 2010 In conjunction with the University of Bolzano - CASE and as a **business analyst**, led a group of 7 people (of a team of 15) for the development of a Business Intelligence, Strategic Control, and Performance System for the Army. The used technologies were: Linux, Eclipse/STS 3.2.1, Tomcat 6.x, Java Sun JDK 6, Spring (Spring Roo 1.1.0.M1, Spring Webflow, Selenium, Hudson, JUnit 4, Jasper Reports & iReport 3.7.2, Spring Security, Hibernate, and Postgres)
- 2008 As a **team leader**, led a team of 2 people in the development of a software system, *Army human resource*, using Visual Basic, Visual Basic for Applications, Access, SQL Server, and Oracle. I was directly responsible for developing: system architecture, system requirements, analysis and design. Followed an iterative and incremental process
- 2006 As a **team leader**, led a team of 4 people in the development of an information system to manage Army sport facilities using Visual Basic, Access, and SQL Server. Followed an iterative and incremental process
- 2004 As a **software architect** (in a team of 30 people), I was responsible for developing a new release of the **Army Financial System** (based upon ASP.NET, VB.NET, SQL Server) to allow planning and managing of Army training activities. I performed use case analysis, requirements elicitation, and test planning
- 1999-2000 As a **team leader**, led a team of 3 people in the development of an information system to manage all the production activities of Army companies using Visual Basic, Access, and SQL Server.

Experience in Project Management

- 2009-current **Financial control:** Data gathering, analysis and reporting, on Army Financial Management, Measurement Programs, Organizational performance, Improvement, and maturity
- 2005 **Legal:** Written an Italian Law Proposal (D.P.R. 19 aprile 2005, n.113) to recruit athletes in the Defense sector
- 2004 **Marketing:** Planned and managed a project to bring the Army sport team to the Olympic Games in 2008 and 2012
- 2003 **Marketing:** Planned and Managed a Army event, which consisted of a 10K run held in Rome (Italy) with about 8,500 runners (“DECAMILIA”)
- 2003 **Planning:** Scheduled a 10 year plan to set up simulation in the Army. Applied linear analysis for planning investments

Affiliations

- 2005-today ACM, Member
- 2008-today IEEE, Member
- 2008-today OnESE.org Forum – Independent Research Division
- 2006-2009 Experimental Software Engineering Group at University of Maryland, and Fraunhofer Center Maryland, USA (Prof. Victor Basili, Dr. Forrest Shull)
- 2005-11 Experimental Software Engineering Group at University of Rome Tor Vergata (Prof. G. Cantone)

Military (Operational) Appointments

- 2012-current Mid-Senior Researcher Equivalent (Chief of sub-branch – Internal Control Branch – General Planning and Finance Division – General Staff of the Italian Army, Rome, Italy)

2012 Cavalry Battalion Commander, Bellinzago Novarese, Novara, Italy

2009-20011 Staff officer/Researcher equivalent (Internal Control Branch – General Planning and Finance Division – General Staff of the Italian Army, Rome, Italy)

2002-2006 Staff officer (Training Branch – General Planning and Finance Division – General Staff of the Italian Army, Rome, Italy)

1999-2001 Company Commander (Officer Cadets) at Military Academy of Modena, Italy

1994-1999 Cavalry Company Commander, Codroipo, Udine, Italy

Awards

2012 Praise from the Regiment Commander for high performance on duty as a Battalion Commander in a Homeland Security Operation (“TAV”) in Italy

2010 High Praise from the Deputy Chief of Staff of the Italian Army for the development of a Performance Model applied to the Army as a tool for evaluation and decision making

2005 Praise from the Chief of training branch of the Army General Staff for the marketing project on the Army Sport Team

2004 High Praise from the Deputy Chief of Staff of the Italian Army for the marketing event called “DECAMILIA”

2004 Medal from the Joint Chief Defense Staff for high achievement in Sport

2002 Laude for the highest achievement among 54 participants from the University of Torino in the Strategic Science and Project Management Master

Hobbies

Road running