






## PERSONAL INFORMATION



## Dr. Fabrizio Pastore

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Sex Male | Date of birth 21/09/1982 | Nationality Italian

## WORK EXPERIENCE

01 Jan. 2011 - Present

**Postdoctoral Researcher**

University of Milano - Bicocca, Department of Informatics Systems and Communications, viale Sarca 336, Milano, ITALY.

- Definition and experimentation of static and dynamic program analysis techniques: a technique for debugging regression faults, an approach to solve the oracle problem by adopting Crowd Sourcing, a technique to automatically detect regression faults by combining dynamic analysis and model checking.
- University and Industrial collaborations with ABB Switzerland/Germany, University of Oxford, IBM, University of Lugano, and VTT Technical Research Center of Finland within the context of the EU STREP project PINCETTE.
- Publications: 4 Conference Papers, 3 Formal Tool Demo papers, 2 Articles in International Journals, 1 Paper for an International Workshop, 3 National Workshops.

[University](#)

Jun. 2011 – Apr. 2012

**External Consultant**

Akhela s.r.l.

- Software Quality Assurance for an Automotive Software Project
- Definition of quality metrics using Parasoft C/C++ Test

[Software Company](#)

01 Jan. 2010 – 31 Dec. 2010

**Postdoctoral Researcher**

Università della Svizzera Italiana, Department of Informatics. Via G. Buffi 10, Lugano, Switzerland.

- Supervision of 2 Ph.D. students: Mehdi Mirzaaghaei and Farzad Habibipour Roudsari working on Test Cases Evolution and Design for Cloud Computing.
- Design and implementation of a monitoring framework and controller infrastructure for Cloud computing, within the EU IP project RESERVOIR.
- Publication of a conference paper with Mehdi Mirzaaghaei.

[University](#)

2007 – Present

**Teaching Assistant**

University of Milano - Bicocca, Department of Informatics Systems and Communications, viale Sarca 336, Milano, ITALY.

- Teaching Assistant for “Fondamenti di Informatica” (Foundations of Informatics) Dipartimento di Elettronica, Informazione e Bioingegneria. Politecnico di Milano. 2013/2014 (Frontal lessons 40 hours). Instructor: Prof. Cristiana Bolchini.
- Teaching Assistant for “Ingegneria del Software” (Software Engineering) Department of Informatics Systems and COmmunications, University of Milano – Bicocca. 2011/2012 (Laboratory 24 hours). Instructors: Dr. Leonardo Mariani, Prof. Francesca Arcelli.

- Teaching Assistant for “Gestione di Documenti in Ambiente Web” (Document Management on the Web) Department of Informatics Systems and COmmunications, University of Milano – Bicocca. 2011/2012 (Frontal lessons 12 hours). Instructor: Dr. Hue Le Van.
- Teaching Assistant for “Laboratorio di Sistemi Operativi e Reti” (Operating Systems and Networking Lab.) Department of Informatics Systems and COmmunications, University of Milano – Bicocca. 2008/2009 (Frontal lessons 36 hours + Laboratory 24 hours), 2011/2012 (Frontal lessons 24 hours + Laboratory 24 hours). Instructors: Prof. Flavio De Paoli, Dr. Hue Le Van.
- Teaching Assistant for “Laboratorio di Progettazione” (Software Design Lab.). Department of Informatics Systems and COmmunications, University of Milano – Bicocca. 2007/2008 (Frontal lessons 12 hours), 2008/2009 (Frontal lessons 12 hours), 2009/2010 (Frontal lessons 12 hours). Instructor: Dr. Leonardo Mariani.
- Teaching Assistant for “Laboratorio di Informatica per Fisici” (Informatics for Physician Lab.). Department of Phisics, University of Milano – Bicocca. 2006/2007 (Laboratory 40 hours), 2007/2008 (Laboratory 30 hours), 2008/2009 (Laboratory 24 hours). Instructor: Dr. Luca Bernardinello.

University

EDUCATION AND TRAINING

01 Nov. 2006 – 31 Dec. 2009

**Ph.D. Student – Thesis “Automatic Diagnosis of Software Functional Faults by Means of Inferred Behavioral Models”**

University of Milano - Bicocca, Department of Informatics Systems and Communications, viale Sarca 336, Milano, ITALY.

- Definition and experimentation of dynamic program analysis techniques for the debugging of functional faults.
- Industrial collaborations with IBM, Israel Aerospace Industries, Artysis and Telefonica in the context of the EU STREP project SHADOWS.
- Publications: 2 Conference Papers, a Formal Tool Demo paper, 1 Paper for an International Workshop.

Dec. 2008

**Professional Engineer Qualification**

University of Milano - Bicocca, Department of Informatics Systems and Communications, viale Sarca 336, Milano, ITALY.

01 Oct. 2004 – 20 Oct. 2006

**Master Degree in Computer Science. Thesis: Verifica Sperimentale di Tecniche di Analisi Dinamica del Software (Empirical Validation of Dynamic Analysis Techniques). Advisor: Prof. Mauro Pezzè. Co-advisor: Dr. Leonardo Mariani.**

110/110 cum Laude

University of Milano - Bicocca, Piazza dell'Ateneo Nuovo, 1, C.A.P. 20126, Milano.

- Courses attended: Software Quality Assurance, Software Project Management, C++ programming, Data Mining, Business Intelligence, Numerical Analysis, Information Systems, Software Systems Security, Soft Computing, Reverse Engineering, Information Theory, Knowledge Management, Theoretical Computer Science.

01 Oct. 2001 – 20 Oct. 2004

**Bachelor Degree in Computer Science. Thesis: “ThunderDB: progettazione e sviluppo di un RDBMS open source (ThunderDB: design and development of an open source RDBMS)”. Advisor: Dr. Stefania Montani.**

110/110 cum Laude

Università degli Studi del Piemonte Orientale, viale Teresa Michel, 11, C.A.P. 15121, Alessandria.

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user  
Common European Framework of Reference for Languages

Communication skills

Excellent communication skills developed in order to give interesting talks in conferences and classes. In particular I gave 8 talks in International Conferences, I presented 4 formal tool demonstrations at international conferences, and 2 presentations in national workshops. Furthermore I taught frontal lessons for three different courses: Foundations of Informatics, Operating Systems, Document Management for the Web.

Good ability in working in international teams developed within the context of the different international collaborations I had with: University of Lugano, University of Sheffield, ABB Corporate Research, and IBM Research Labs in Haifa.

Organisational / managerial skills

- Vision and Planning: I developed different research techniques within the context of different research projects, while respecting the strict timing constraints of the EU project deliverables.
- Coordination: I successfully supervised 15 Bachelor, 3 Master and 2 Ph.D. students in their software development and research activities.

Job-related skills

Good Software Engineering skills, developed through 7 years of research in the field of Software Engineering. My research results in the field of Software Engineering have been published in top Software Engineering Conferences and Journals.

Expert of development processes RUP, XP, Scrum (I supervised group of students attending Software Engineering and Software Design courses/laboratories).

Software Testing and Analysis expert (I developed 6 different tools that automate software testing and analysis activities).

Computer skills

- Advanced programming knowledge in Java, C, C++, Python.
- Well known program analysis frameworks: Eclipse JDT (APIs), Eclipse CDT (APIs), Soot (<http://www.sable.mcgill.ca/soot/>), Parasoft C/C++ Test.
- Well known testing automation frameworks: Evosuite (<http://www.evosuite.org/>), JavaPathFinder (<http://javapathfinder.sourceforge.net/>), Google CodePro.
- Expert Eclipse plug-in developer (6 different program analysis and software automation plug-ins developed).
- Continuous automation frameworks: Jenkins.
- Well known development platforms: Eclipse RCP, JavaEE (Glassfish).

Driving licence

- B

ADDITIONAL INFORMATION

Publications

- Fabrizio Pastore. Automatic Diagnosis of Software Functional Faults by Means of Inferred Behavioral Models. Ph.D. Thesis. University of Milano -Bicocca, <http://hdl.handle.net/10281/7818>, 2010.
- Mehdi Mirzaaghaei, Fabrizio Pastore, and Mauro Pezzè. Automatic Test Case Evolution. Software Testing, Verification and Reliability. Wiley Interscience. 2013 (Paper selected for the ICST special issue, not published yet)
- Leonardo Mariani, Fabrizio Pastore. MASH: tool integration made easy. Software: Practice and Experience, John Wiley & Sons, Ltd, 2012, doi:10.1002/spe.2129. 2012

- Leonardo Mariani, Fabrizio Pastore, Mauro Pezzè. Dynamic Analysis for Diagnosing Integration Faults. *IEEE Transactions on Software Engineering (Impact Factor 3.75)*, Vol. 37 (4). Pages 486 - 508. IEEE Computer Society, 2011
- Alessandra Gorla, Mauro Pezzè, Jochen Wuttche, Leonardo Mariani, Fabrizio Pastore. Achieving cost-effective software reliability through self-healing. *Computing and Informatics*, 2. Pages 1001 - 1022. Institute of Informatics, Slovak Academy of Sciences, Bratislava, Slovakia. 2010.
- Leonardo Mariani, Fabrizio Pastore, Mauro Pezzè, Mauro Santoro. Mining Finite-State Automata with Annotations. *Mining Software Specifications: Methodologies and Applications*. CRC Press, 2011.
- F. Pastore and L. Mariani and A. Goffi. RADAR: a Tool for Debugging Regression Problems in C/C++ Software. *Proceedings of the International Conference on Software Engineering (ICSE) - Tool Demo Track*. Pages 1335 – 1338. San Francisco, USA, 2013. IEEE Press.
- F. Pastore and L. Mariani. AVA: Supporting Debugging with Failure Interpretations. *Proceedings of the International Conference on Software Testing Verification and Validation (ICST) - Tool Demo Track*. Pages 416 – 421. Luxemburg. 2013. IEEE Computer Society.
- Fabrizio Pastore, Leonardo Mariani, Gordon Fraser. CrowdOracles: Can the Crowd Solve the Oracle Problem?. In *ICST'13: Proceedings of the 6th IEEE International Conference on Software Testing, Verification and Validation*. Pages 342-351. Luxemburg. 2013. IEEE Computer Society.
- Fabrizio Pastore, Leonardo Mariani, Alberto Goffi, Manuel Oriol and Michael Wahler. Dynamic Analysis of Upgrades in C/C++ Software. In *ISSRE'12: Proceedings of the 23rd IEEE International Symposium on Software Reliability Engineering*. Dallas, USA, 2012. IEEE Computer Society.
- Mehdi Mirzaaghaei, Fabrizio Pastore, and Mauro Pezzè. Supporting Test Suite Evolution through Test Cases Adaptation. In *ICST'12: Proceedings of the 5th International Conference on Software Testing, Verification and Validation*. Montreal, Canada. 2012. IEEE Computer Society.
- Leonardo Mariani, Fabrizio Pastore. MASH: A Tool For End- User Plug-In Composition. In *ICSE'12: Proceedings of the 34th International Conference on Software Engineering (Formal Tool Demo paper)*. Zurich, Switzerland. 2012. IEEE Computer Society.
- Leonardo Mariani, Fabrizio Pastore. Supporting Plug-in Mashers to Ease Tool Integration. In *Proceedings of the First International Workshop on Developing Tools as Plug-ins (TOPI) – co-located with the International Conference on Software Engineering (ICSE)*. Pages 1-4. Waikiki, HI, USA. 2011. ACM.
- Alessio Gambi, Giovanni Toffetti, Fabrizio Pastore, Mauro Pezzè. A Kriging-based Controller for the Cloud. In *ICAC'11: Proceedings of the 8th International Conference on Autonomic Computing (Tool Demo paper)*. Karlsruhe, Germany. 2011. ACM.
- Mehdi Mirzaaghaei, Fabrizio Pastore, Mauro Pezzè. Automatically Repairing Test Cases for Evolving Method Declarations. In *ICSM'10: Proceedings of 26th IEEE International Conference on Software Maintenance (short paper)*. Timisoara, Romania. 2010. ACM.
- Anton Babenko, Leonardo Mariani and Fabrizio Pastore. AVA: Automated Interpretation of Dynamically Detected Anomalies. In *ISSTA'09: Proceedings of the 2009 International Symposium on Software Testing and Analysis*. Chicago, IL, USA. Pages 237- 248. 2009. ACM.
- Leonardo Mariani, Fabrizio Pastore, Mauro Pezzè. A toolset for Automated Failure Analysis. In *proceedings of the 2009 IEEE 31st International Conference on Software Engineering – Volume 00 (Formal Tool Demo paper)*. Vancouver, Canada. Pages 563-566. 2009. IEEE Computer Society.
- Leonardo Mariani, and Fabrizio Pastore. Automated Identification of Failure Causes in System Logs. In *proceedings of the 2008 19th International Symposium on Software Reliability Engineering*. ISSRE. Seattle, WA, USA . Pages 117-126. 2008. IEEE Computer Society.
- Domenico Cotroneo, Roberto Pietrantuono, Leonardo Mariani, Fabrizio Pastore. Investigation of Failure Causes in Workload- Driven Reliability Testing. In *Fourth international Workshop on Software Quality Assurance: in Conjunction with the 6th ESEC/FSE Joint Meeting*. SOQUA '07. Dubrovnik, Croatia. Pages 78-85. 2007. ACM.
- Fabrizio Pastore, Leonardo Mariani, Alberto Goffi: RADAR: Supporting Developers in Debugging Regression Faults. In *Proceedings of the Seventh Workshop of the Italian Eclipse Community, Eclipse-IT 2012*. Pozzuoli. 2012.
- Leonardo Mariani, Fabrizio Pastore. Enabling End-User Plug-in Compositions with MASH. In *Proceedings of the Sixth Workshop of the Italian Eclipse Community, Eclipse-IT 2011*. Milano. 2011.
- Mehdi Mirzaaghaei, Fabrizio Pastore. TestCareAssistant: Automatic Repair of Test Case Compilation Errors. In *Proceedings of the Sixth Workshop of the Italian Eclipse Community, Eclipse-IT 2011*. Milano. 2011.
- RADAR: A Tool for Debugging Regression Problems in C/C++ Software. 35th International Conference on Software Engineering (ICSE'13). Formal Tool Demo session. San Francisco, USA. May 2013
- CrowdOracles: Can the Crowd Solve the Oracle Problem? 6th IEEE International Conference on Software Testing, Verification and Validation (ICST'13). Luxemburg, LU. March, 2013

## Presentations

- **AVA**: Supporting Debugging With Failure Interpretations. 6th IEEE International Conference on Software Testing, Verification and Validation (ICST'13). Tool Demo. Luxembourg, LU. March, 2013
- Static upgrade checking with dynamically generated assertions. 2nd Workshop on Validation Strategies for Software Evolution (VSSE'13), co-located with European Joint Conferences on Theory and Practice of Software (ETAPS). Invited Talk. Rome, Italy. March, 2013.
- **Dynamic Analysis of Upgrades in C/C++ Software**. 23rd IEEE International Symposium on Software Reliability Engineering. Richardson, Dallas, USA. November, 2012.
- **RADAR**: Supporting Developers in Debugging Regression Faults. 7th Workshop of the Italian Eclipse Community, Eclipse-IT. Pozzuoli, Italy, September 2012.
- **MASH**: A Tool for End-User Plug-In Composition, 34th International Conference on Software Engineering - Formal Tool Demo, ICSE 2012. Zurich, Switzerland, June 2012.
- **Enabling End-User Plug-in Compositions with MASH**, Sixth Workshop of the Italian Eclipse Community, Eclipse-IT 2011. Milano, Italy, September 2011.
- **Supporting Plug-in Mashers to Ease Tool Integration**, First International Workshop on Developing Tools as Plug-ins (TOPI) - colocated with 33rd International Conference on Software Engineering (ICSE). Waikiki, HI, USA. June 2011.
- **RESERVOIR Tutorial, Service and Software Architectures, Infrastructures and Engineering Summer School**, Heraklion, Crete, Greece, June 2010.
- **Automatically Repairing Test Cases for Evolving Method Declarations**, 26th IEEE International Conference on Software Maintenance (ICSM'10), Timisoara, Romania, September 2010.
- **A toolset for Automated Failure Analysis**, Formal Tool Demo at 31st International Conference on Software Engineering (ICSE'09), Vancouver, CA, May 2009.
- **Automated Identification of Failure Causes in System Logs**, 19th IEEE International Symposium on Software Reliability Engineering (ISSRE 2008), Seattle, WA, November 2008.
- **Investigation of Failure Causes in Workload-Driven Reliability Testing**, International Workshop on Software Quality Assurance (SOQUA'07), Dubrovnik, Croatia, September 2007.
- **A Self-Healing Solution for Functional Faults**, Doctoral Symposium of the 2007 GIIS Doctorate School in Computer Engineering, Palermo, 19 September 2007.

## Tools

List of tools that I developed and maintain:

- **MASH** is a framework that enables runtime composition of plug-in functionalities. I presented MASH at the Formal Tool Demo Session of the 34th International Conference on Software Engineering (ICSE'12). Web site: <http://www.lta.disco.unimib.it/tools/mash/>
- **BCT (Behavior Capture and Test)** is a dynamic analysis tool to support software developers in debugging software faults. I presented BCT at the Formal Tool Demo Session of the 31st International Conference on Software Engineering (ICSE'09). BCT has been adopted in two EU projects: SHADOWS and PINCETTE. Web site: <http://www.lta.disco.unimib.it/tools/bct/>
- **RADAR** is a dynamic analysis tool built upon BCT that leverages program diffing and dynamic program analysis to identify and present the anomalous software behaviors that cause a regression failure. I presented a demo of RADAR at the Formal Tool Demo Session of the 35th International Conference on Software Engineering (ICSE'13) and at the 7th Workshop of the Italian Eclipse Community (Eclipse-IT 2012). RADAR has been detailed in a paper published at ISSRE 2012.
- **AVA (Automata Violations Analyzer)** is a tool that provides human readable interpretations of finite state automata violations. I presented a demo of AVA at the Formal Tool Demo Session of ICST 2013. AVA has been described in different research papers. Web site: <http://www.lta.disco.unimib.it/tools/ava/>
- **KLFA** is a tool that identifies anomalous behaviors in log files. KLFA has been described in different research papers. Web site: <http://www.lta.disco.unimib.it/tools/klfa/>
- **VART** is a tool that combines dynamic and static program analysis to augment traditional regression testing with verification capabilities. VART is a joint work developed within the context of the EU project PINCETTE.

## Projects

- **UE STREP PINCETTE**, from January 1st, 2011 to November 30th, 2013. University of Milano - Bicocca. Goal of the project: development of a framework for the automatic detection and localization of regression faults. Role within the project: design, development and experimentation of dynamic analysis solutions, design, development and experimentation of solutions that combine static and dynamic analysis technologies developed by different partners. Consortium: IBM Haifa Research Laboratory, Israel; Israel Aerospace Industries, Israel; ABB Corporate Research, Switzerland/Germany; VTT Technical Research Center of Finland, Finland; The University of Oxford, UK; University of Lugano, Switzerland; University of Milano – Bicocca, Italy.

- UE IP RESERVOIR, from January 1st, 2010 to December 31st, 2010. University of Lugano, Switzerland. Goal of the project: development of a federated Cloud computing infrastructure (also known as Sky Computing). Role within the project: design, development and experimentation of a monitoring framework and a Kringing Controller for scaling up/down virtual machines. Consortium: IBM Haifa Research Laboratory, Israel; Israel Aerospace Industries, Israel; Telefónica Research and Development, Spain; University College of London, UK; Oracle; SAP Research Labs, Ireland; Thales, France; Umea University, Sweden; Universidad Complutense de Madrid, Spain; University of Lugano, Switzerland; University of Messina, Italy.
- UE STREP SHADOWS, from November 1st, 2006 to September 3rd, 2009. University of Milano – Bicocca. Goal of the project: development of a software self-healing framework. Role within the project: design, development and experimentation of dynamic analysis solution, design, development and experimentation of solutions that integrate technologies from different partners. Consortium: IBM Haifa Research Laboratory, Israel; Israel Aerospace Industries, Israel; Telefónica Research and Development, Spain; ARTISYS, Czech Republic; Net Technologies LTD, Greece; Scapa Technology, UK; Brno University of Technology, Czech Republic; University of Milano - Bicocca, Italy; University of Potsdam, Germany.

#### Workshops Organization

- Co-organizer with Gordon Fraser, Leonardo Mariani, Thomas LaToza, and Nikolai Tillman of CSI-SE 2014, First International Workshop on Crowdsourcing in Software Engineering, co-located with the 36th International Conference on Software Engineering, May 31 – June 7, 2014, Hyderabad, India.

#### Program Committees

- First International Workshop on Crowdsourcing in Software Engineering (CSI-SE), co-located with the 36th International Conference on Software Engineering, May 31 – June 7, 2014, Hyderabad, India.
- Sixth International Conference on Software Testing Verification and Validation - Tool Demo Track, ICST 2013, March 18 - 22, 2013 - Barcelona, Luxembourg
- 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> International Conference on Software Engineering Advances, ICSEA 2009/2010/2011/2012

#### Review Activity for Journals

- Software: Practice and Experience. Edited By: R. Nigel Horspool, Andy J. Wellings. Impact Factor: 0.573. Wiley.
- International Journal on Advances in Software. Edited by: Jon G. Hall. ISSN: 1942- 2628. IARIA

#### References

- Prof. Mauro Pezzè (supervisor) – pezze@disco.unimib.it
- Dr. Leonardo Mariani (supervisor) – mariani@disco.unimib.it
- Dr. Gordon Fraser – Co-author - gordon.fraser@sheffield.ac.uk
- Dr. Manuel Oriol – Co-author and Project Collaborator - manuel.oriol@ch.abb.com
- Dr. Hana Chockler – UE PINCETTE Project coordinator - hana.chockler@kcl.ac.uk