

# Curriculum Vitae et Studiorum

Margherita Zorzi

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## 1 General informations

- Born on July 22th, 1981;
- Web Page: <http://profs.sci.univr.it/~zorzim>
- Email addresses: [margherita.zorzi@univr.it](mailto:margherita.zorzi@univr.it) or [bravemargot@gmail.com](mailto:bravemargot@gmail.com)
- Main research interests: lambda calculus and mathematical logic, quantum computing and “non-classical” computational paradigms, implicit computational complexity, programs’ extraction from proofs.

## 2 Education

- July, 20th, 2005: Master Degree in Computer Science, University of Verona, 110/110 cum laude.  
Thesis title: *PSL: Logica di Separazione Parametrica (Parametric Separation Logic)*.  
Advisor: Prof. Roberto Giacobazzi.
- January 2006 - december 2008, PhD Student in Computer Science, University of Verona.  
Thesis title: *Lambda Calculi and Logics for Quantum Computing*.  
Advisor: Prof. Andrea Masini.  
Referees: Simonetta Ronchi della Rocca. Computer Science Department, University of Torino; Peter Selinger, Department of Mathematics and Statistics, Dalhousie University.  
Thesis defended on May, 14th, 2009;  
Jury: Prof. Simone Martini (President of the jury), University of Bologna, Prof.ssa Simonetta Ronchi della Rocca, Prof. Luca Viganò (University of Verona), Prof. Andrea Masini.  
Judgement: **Excellent**.

## 3 Positions

- From October 2012: Post-doc position at Computer Science Department, University of Verona. “Assegno a Progetto” . My personal research project: **QUASAR: QU**antum **l**Anguages, **logicS** **A**nd **inteR**action, funded by University of Verona.

- From October 2011 to September 2012: Post-doc position at the Computer Science lab LIPN-UMR CNRS 7030- Institut Galilée - Université Paris-Nord (Paris XIII), COMPLICE (Implicit Computational Complexity, Concurrency and Extraction) ANR project.
- From January 2009 to September 2011: Post-doc position at Computer Science Department, University of Verona.
- Teacher, University of Verona, A.A. 2009/2010, 2010/2011, 2013/2014, 2014/2015, 2015/2016 (see Section 6).

## 4 Qualifications

- From February 2013: “Qualifiée aux fonctions de Maître de conférences” (Ministère de l’Enseignement Supérieur et de la Recherche Française): n. 13227244217, from 12/02/2013 to 31/12/2017.

## 5 Publications

### Submitted Papers

- [CZPM16] C. Combi, M.Zorzi, G. Pozzani, U. Moretti, From narrative descriptions to MedDRA: automagically encoding adverse drug reactions, journal paper, submitted, 2016.
- [SZPB16b] U. Solitro, M. Zorzi, M. Pasini, M. Brondino, Computational thinking: high school training and academic education, conference paper, submitted, 2016.

### Journal and Electronic Journal Papers

- [VVZ15] M. Volpe, L. Viganò, M. Zorzi, A Branching Distributed Temporal Logic for Reasoning about Quantum State Transformations. Accepted for publication in Information&Computation, 2016.

- [AZ15] F. Aschieri, M. Zorzi, Natural Deduction in Classical First-Order Logic: Exceptions, Strong Normalization and Herbrand’s Theorem. *Theoretical Computer Science*, Vol. 625, pp. 125–146, 2016.
- [MZ14] M. Zorzi, Quantum Lambda Calculi: a foundational perspective. *Mathematical Structures in Computer Science*, Volume 26, Issue 7, pp. 1107-1119, 2016. ISSN: 0960-1295, 2014.
- [DLZ12] U. Dal Lago, M. Zorzi, Probabilistic Operational Semantics for the Lambda Calculus. *RAIRO–Theoretical Informatics and Applications*. ISSN: 0988-3754. DOI: <http://dx.doi.org/10.1051/ita/2012012>, pp. 38. Published online by Cambridge University Press, 2012
- [MVZ11] A. Masini, L. Viganò, M. Zorzi, Modal Deduction Systems for Quantum States Transformations. *Journal of Multiple-Valued Logic and Soft Computing*, ISSN: 1542-3980 (print), ISSN: 1542-3999 (online), Volume 17, Number 5-6, pp 475-519. 2011.
- [DLMZ11] U. Dal Lago, A. Masini, M. Zorzi, Confluence Results for A Quantum Lambda Calculus with Measurements. *Electronic Notes in Theoretical Computer Science*, ISSN: 1571-0661, DOI:10.1016/j.entcs.2011.01.035, Volume 207, 2011.
- [DLMZ10] U. Dal Lago, A. Masini, M. Zorzi, Quantum Implicit Computational Complexity. *Theoretical Computer Science*, ISSN: 0304-3975, DOI:10.1016/j.tcs.2009.07.045, Volume 411, Issue 2, pp 377-409, Elsevier, 2010.
- [DLMZ09] U. Dal Lago, A. Masini, M. Zorzi, On a Measurement Free Quantum Lambda Calculus with Classical Control. *Mathematical Structures in Computer Science*, ISSN: 0960-1295, EISSN: 1469-8072, DOI 10.1017/S096012950800741X, Volume 19, Issue 02, pp 297–335, Cambridge University Press, UK, 2009.

### **International Conference and Workshop Papers**

- [SZPB16] U. Solitro, M. Zorzi, M. Pasini, M. Brondino, A “light” application of Blended Extreme Apprenticeship in teaching Programming to Students of Mathematics, Proceedings of 6th International Conference in Methodologies and intelligent Systems for Technology Enhanced Learning (MIS4TEL’16), University of Sevilla, Sevilla (Spain) ,1st-3rd June, 2016. To appear.

- [CLMPZ15] C. Combi, R. Lora, U. Moretti, M. Pagliarini, M. Zorzi, *Automagically Encoding Adverse Drug Reactions in MedDRA*, IEEE International Conference on Healthcare Informatics 2015 (ICHI 2015), Dallas, TX, USA, 21-24 October, 2015.
- [CMOZ14] C. Combi, A. Masini, B. Oliboni, M. Zorzi. *A Logical Framework for XML Reference Specification*, LECTURE NOTES IN COMPUTER SCIENCE, Springer Verlag Germany , Atti di 26th International Conference on Database and Expert Systems Applications - DEXA 2015, Valencia (Spain), 1-4 september 2015, 9262, pp. 258-267.
- [DLZ14] U. Dal Lago, M. Zorzi, *Wave-Style Token Machines and Quantum Lambda Calculi*, Post-Proceedings of LINEARITY'14, part of VSL-FLOC'14, EPTCS 176, pp. 64-78, DOI: 10.4204/EPTCS.176.6, 2015 (long version [DLZ13], 2013, available at <http://arxiv.org/abs/1307.0550>).
- [VVZ14] M. Volpe, L. Viganò, M. Zorzi, *Quantum State Transformations and Branching Distributed Temporal Logic*. In proceedings of 21st International Workshop on Logic, Language, Information and Computation (Wollic'14), (U. Kohlenbach, P. Barcel, R. de Queiroz Eds.), Lecture Notes in Computer Science, Vol. 8652, ISBN 978-3-662-44145-9, 1–19, 2014.
- [AZ14] F. Aschieri, M. Zorzi, *An Intuitionistic “Game Semantical” Realizability Validating Markov’s Principle*, Post-proceedings of 19th International Conference on Types for Proofs and Programs (TYPES 2013), Leibniz International Proceedings in Informatics, Vol. 26, ISBN 978-3-939897-72-9, 2014.
- [AZ13] F. Aschieri, *Non-Determinism and the Strong Normalization of System T*. TLCA'13 (Typed Lambda Calculi and Applications, parts of International Conference on Rewriting, Deduction, and Programming, June 23 to June 28, 2013, Eindhoven (The Netherlands) ). LNCS 7941, 31–47. Springer, Heidelberg, 2013.
- [AZ12] F. Aschieri, M. Zorzi, *Eliminating Skolem Functions in Peano Arithmetic with Interactive Realizability*. Proceeding of 4th Classical Logic and Computation - (CL&C'12 Icalp 2012), Warwick - England, 8th July, Electronic Proceedings in Theoretical Computer Science, vol. 97, pp. 1-18, 2012.
- [DLMZ10b] U. Dal Lago, S. Martini, M. Zorzi, *General Ramified Recurrence is Sound for Polynomial Time*. Proceedings of *International Workshop*

*on Developments in Implicit Computational complexity*, (DICE 2010, part of ETAPS 2010), march 27-28, 2010, Cyprus. Published in Electronic Proceedings in Theoretical Computer Science, editor P. Baillot ISSN: 2075-2180, DOI: 10.4204/EPTCS.23.4, Volume 23, pp. 47-62, 2010.

[MVZ08] A. Masini, L. Viganò, M. Zorzi, A Qualitative Modal Representation of Quantum Register Transformations. Proceedings of *38th IEEE International Symposium on Multiple Valued Logic*, may 22-24, 2008, Dallas TX, USA, editor Gerhard Dueck, IEEE computer society, ISBN 978-0-7695-3155-7, ISSN Number 0195-623X, DOI 10.1109/ISMVL.2008.36, USA, pp 131-137, 2008.

### Book chapters and miscellaneous

[BSZ15] M. Boscaini, U. Solitro, M. Zorzi: L'insegnamento dell'Informatica e i linguaggi di programmazione. In: Anna Labella (a cura di) , *E questo tutti chiamano Informatica. L'esperienza del TFA nelle discipline informatiche*. p. 117-128, ROMA: Sapienza Editrice, ISBN: 978-88-98533-63-3, doi: 10.13133/ 978-88-98533-63-32015.

### Manuscript, Work in Progress and Unpublished works

[PPZ14] L. Paolini, M. Piccolo, M. Zorzi: Linear data and Quantum programming languages, 2015.

[CLMPZ15] C. Combi, R. Lora, U. Moretti, M. Pagliarini, M. Zorzi, Automatically Encoding Adverse Drug Reactions in MedDRA, journal version.

[CMOZ14] C. Combi, A. Masini, B. Oliboni, M. Zorzi. A Logical Framework for XML Reference Specification, journal version.

### Thesis

**PhD Thesis** *Lambda Calculi and Logics for Quantum Computing*. Computer Science Department, University of Verona, 2009.

**Master Degree Thesis** *PSL: Logica di Separazione Parametrica (Parametric Separation Logic)*, 2005.

## 6 Teaching Activities and Supervision of Students

### 6.1 Holder teaching activities

#### A.A. 2015-2016

- Teacher of the course **Informatica Documentale** (Documental information technology), bachelor degree in Scienze della Comunicazione, University of Verona, 36 h.
- Teacher of the course **Sistemi Informativi e Sicurezza–Fondamenti** (Information Systems and Security–Foundations), TFA A042 Computer science (secondary school), University of Verona, 12 h.

#### A.A. 2014-2015

- Teacher of the course **Informatica Documentale** (Documental information technology), bachelor degree in Scienze della Comunicazione, University of Verona, 36 h.

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#### A.A. 2013-2014

- Teacher of the course **Informatica Documentale** (Documental information technology), bachelor degree in Scienze della Comunicazione, University of Verona, 36 h.

#### A.A. 2010-2011

- Teacher of the course **Algoritmi** (Advanced algorithms), master degree in Ingegneria e scienze informatiche, University of Verona, 48 h.
- Teacher of the course **Complessità** (Complexity Theory), master degree in Ingegneria e scienze informatiche, University of Verona, 48 h.
- Teacher of the course **Informatica Documentale** (Documental information technology), bachelor degree in Scienze della Comunicazione (Science of Communication), University of Verona, 36 h.

- Teacher of the course **Informatica di Base** (Basic information and technology), bachelor degree in Scienze della Comunicazione (Science of Communication), University of Verona, 36 h.

#### A.A. 2009-2010

- Teacher of the course **Informatica Documentale** (Documental information technology), bachelor degree in Scienze della Comunicazione-Editoria e giornalismo (Science of Communication), University of Verona, 40 h.
- Teacher of the course **Informatica di Base** (Basic information and technology), bachelor degree in Scienze della Comunicazione (Science of Communication), University of Verona, 36 h.
- Teacher of the course **Informatica e Statistica-modulo Informatica**), bachelor degree in Scienze e tecnologie viticole ed enologiche, University of Verona, 24 h.

## 6.2 Advisor activities

- Thesis title: Editoria Digitale: Progettazione Concettuale e Logica della struttura (titolo provvisorio). Candidate: Federica Gionta, Corso di Laurea in Scienze della Comunicazione, Università di Verona, in preparation.
- Thesis title: La formazione musicale: Progettazione Concettuale e Logica (titolo provvisorio). Candidate: Federica Gionta, Corso di Laurea in Scienze della Comunicazione, Università di Verona, in preparation.
- Thesis title: Progettazione Concettuale e Logica della struttura di un'azienda (titolo provvisorio). Candidate: Alessandro Albiero, Corso di Laurea in Scienze della Comunicazione, Università di Verona, in preparation.
- Thesis title: Progettazione Concettuale e Logica della Struttura Redazionale di un Quotidiano. Candidate: Jennifer Sartori, Corso di Laurea in Scienze della Comunicazione, Università di Verona. A.A. 2013/2014.
- Thesis title: Progettazione Concettuale e Logica del Catalogo Pubblicazioni di una Biblioteca di Ateneo. Candidate: Marta Veronesi, Corso di Laurea in Scienze della Comunicazione, Università di Verona. A.A. 2013/2014.



- Thesis title: One more thing: il fenomeno Apple nell’era della comunicazione di massa. Candidate: Francesco Didonato, Corso di Laurea in Scienze della Comunicazione, Università di Verona. A.A. 2013/2014.
- Thesis title: Comunicare con efficacia in rete: l’Usabilità dei siti Web. Candidate: Michele Bertani. Corso di Laurea in Scienze della Comunicazione, Facoltà di Lettere e Filosofia, Università di Verona. A.A. 2010/2011.
- Thesis title: L’uso dei Tour Virtuali nella comunicazione Internet: un caso di studio. Candidate: Anna Cinacchi. Bachelor degree in Scienze della Comunicazione (Science of Communication), University of Verona, A.A. 2010/2011.

### 6.3 Co-advisor activities

- M. Busti, Calcolo Quantistico, Master Degree in Computer Science, University of Verona, A.A. 2007/2008.

### 6.4 Collateral Teaching Activities

- **Course Semantics** (Teacher: Prof. Andrea Masini), University of Verona:  
A.A. 2006/2007, Lesson on untyped lambda calculus: syntax, Turing-completeness and confluence results  
A.A. 2007/2008, Girard’s System F: syntax and encodings.
- **Course Quantum Computing** (Teacher: Prof. Alessandra Di Pierro), University of Verona:  
A.A 2007/2008, Quantum lambda calculi: syntax and expressive power;  
A.A. 2008/2009, Quantum Turing Machine: mathematical description and equivalence results with quantum circuit families;  
A.A 2009/2010, Introduction to quantum lambda calculus.  
A.A. 2011/2012, *Lambda Calculi for Quantum Computing*. Lesson-seminar.  
A.A. 2012/2013, *Toward a quantum programming language*. Lesson-seminar.

## 7 Projects and Collaborations

### 7.1 Projects

- 2 years (from 1/10/2012 to 30/9/2014) **personal research project**, Assegno a Progetto, postdoctoral fellowship, founded by University of Verona: QUASAR: QUantum lAnguages, logicS And inteRaction.
- LINTEL (Linear Techniques For The Analysis Of Languages): Research Project funded by the non-profit foundation Compagnia di San Paolo in a competitive funding program. The project evaluation has been submitted to peer-review by the European Science Foundation. **Member**. Lintel web page: <https://sites.google.com/site/tolintel/>
- COMPLICE: COMPLICE (Implicit Computational Complexity, Concurrency and Extraction) project, ref.: ANR-08-BLANC-0211-01, research project funded by ANR. Involvement as **member/post-doctoral fellow**.
- COFIN07 : CONCERTO project (CONtrollo e CERTicazione dell'uso delle risorse) 2008-2010, funded by Progetti di Rilevanza Nazionale (PRIN) 2007, Ministero dell'Istruzione, Università e Ricerca (MIUR). Active involvement as Ph.D student and post-doc researcher.
- COFIN04 : FOLLIA project (FONDazioni Logiche di LInguaggi Astrattati di Programmazione) 2005-2007, funded by Progetti di Rilevanza Nazionale (PRIN) 2004, Ministero dell'Istruzione, Università e Ricerca (MIUR). Active involvement as Ph.D student and post-doc researcher.

### 7.2 Collaborations

- Andrea Masini (Full Professor of Computer Science), Alessandra Di Pierro (Associate Professor of Computer Science), Marco Volpe (Ph.D in Computer Science), Department of Computer Science, University of Verona.
- Federico Aschieri (Ph.D in Computer Science), Ecole Normale Supérieure de Lyon.
- Luca Viganò (Full Professor of Computer Science), Department of Informatics, King's College, London, UK.
- Stefano Guerrini (Full Professor of Computer Science), Laboratoire d'Informatique de Paris-Nord UMR CNRS 7030 - Institut Galilée - Université Paris-Nord (Paris XIII).

- Ugo Dal Lago (Researcher of Computer Science), Simone Martini (Full Professor of Computer Science), Department of Computer Science, University of Bologna.

## 8 Programming languages/ software instruments knowledge

- Java, ML: mid level
- COQ proof assistant: basic level

## 9 Main Seminars, invited seminars and official talks

- Sept. 28th 2006, *A Quantum Lambda Calculus*. University of di Torino, Computer Science Department, invited seminar.
- Jun. 27th 2007, *Q-Calcolo: un lambda calcolo quantistico*. University of Verona, department seminar.
- Dec.12th 2008, *Modal Deduction Systems for Quantum State Transformation*. Trends in Logics VI, Studia Logica International Conference, University Foundation, Brussels.
- Feb.18th 2009, *Lambda Calculi and Logics for Quantum Computing*. CONCERTO project meeting, University of Bologna.
- Mar.16th 2010, *Un viaggio dentro ICC*. University of Verona, Department seminar.
- Jun. 9th, 2010 *On probabilistic lambda calculus*. CONCERTO project final meeting, University of Torino.
- Feb.7th 2011, *On quantum lambda calculi*. Computer science department LIPN, Université Paris Nord (Paris 13), invited seminar.
- Oct. 24th 2011, *Quantum complexity classes and quantum ICC*. Computer science department LIPN, Université Paris Nord (Paris 13), department seminar.

- Dec. 1th 2011, *A probabilistic operational semantics for the lambda calculus (and some considerations about probabilistic ICC)*. Computer science department LIPN, Université Paris Nord (Paris 13), COMPLICE Project annual meeting.
- Dec. 6th 2011, *Lambda Calculi for Quantum Computing*. Lesson-seminar, University of Verona.
- Feb. 16th 2012, *An introduction to quantum complexity classes and quantum ICC*, INRIA (Paris 7), invited seminar.
- Dec.14th 2012, *Toward a quantum programming language*. Lesson-seminar, University of Verona.
- Jul. 11th 2013, *Wave-Style Token Machines and Quantum Lambda Calculi*, University of Torino, Computer Science Department, invited seminar.
- Jan. 30th 2014, *Quantum Turing Machines*. University of Torino, Computer Science Department, invited lesson.

Note: PhD activities not included.

## 10 Review Activities

### International Journals

- Theoretical Computer Science, Elsevier.
- Journal of Applied Logic, Elsevier.
- Mathematical Structures in Computer Science, Cambridge University Press.

### International workshops/conferences

- TLCA- International Conference on Typed Lambda Calculi and Applications.
- MFCS-International Symposium on Mathematical Foundation of Computer Science.
- DCM- International Workshop on Developments in Computational Models.

- LSFA- Workshop on Logical and Semantic Frameworks with applications.
- ICALP- International Colloquium on Automata, Languages and Programming.
- LICS- Symposium on Logic in Computer Science.
- FOSSACS-International Conference on Foundations of Software Science and Computation Structures.