
Contact information

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Qualifications

March 2006 ***Ph.D. in Computer Science at Udine University.***
*Thesis title “Automata for Branching and Layered Temporal Structures”,
thesis advisor Prof. Angelo Montanari.*

August 2018 ***National qualification for Associate Professor in Computer Science.***

September 2019 ***National qualification for Full Professor in Mathematics***
(area: mathematical logic and complementary mathematics).

Grants and prizes

October 2010 ***Junior Research Fellowship at Linacre College, Oxford.***

November 2009 ***Research Membership of the Common Room at Wolfson College, Oxford.***

August 2007 ***E.W. Beth Dissertation Prize award, granted by the Association of Logic, Language,
and Information (FoLLI).***

January 2005 ***Ph.D. mobility grant for a scientific collaboration with Prof. Wolfgang Thomas at RWTH
Aachen University.***

November 2002 ***Grant for triennial doctorate in Computer Science at Udine University.***

Research contracts

2012 – present ***CNRS researcher at Laboratoire Bordelais de Recherche en Informatique.***

2009 – 2012 ***Postdoc at Dept. of Computer Science of Oxford University***
EPSRC project “Enforcement of constraints on XML streams”.

2006 – 2008 ***Postdoc at Dept. of Mathematics and Computer Science of Udine Univ.***
project “Formal methods for the verification of infinite state systems”.

Publications

Books

2010 ***Automata for Branching and Layered Temporal Structures: an investigation
into regularities of infinite transition systems. FoLLI LNAI Monograph, volume
5955, Springer. (link to PDF)***

Peer-reviewed journal papers

- 2016 **Bounded Repairability for Regular Tree Languages**, with Pierre Bourhis, Cristian Riveros, and Slawomir Staworko. In *ACM Transactions on Database Systems*, volume 41(3), pages 1-45, ACM. ([link to PDF](#))
- 2016 **Walking on Data Words**, with Amaldev Manuel and Anca Muscholl. In *Theory of Computing Systems*, volume 89(2), pages 180-208, Springer. ([link to PDF](#))
- 2015 **A decidable weakening of Compass Logic based on cone-shaped cardinal directions**, with Angelo Montanari and Pietro Sala. In *Logical Methods in Computer Science*, volume CoRR abs/1510.03319, 32 pages. ([link to PDF](#))
- 2015 **The complexity of higher-order queries**, with Michael Benedikt and Hui Vu. In *Information and Computation*, volume 244, pages 172-202, Springer. ([link to PDF](#))
- 2015 **Logics with Rigidly Guarded Data Tests**, with Thomas Colcombet and Clemens Ley. In *Logical Methods in Computer Science*, volume CoRR abs/1410.2022, 56 pages. ([link to PDF](#))
- 2015 **Games, Automata, Logics, and Formal Verification (GandALF 2013)**, with Angelo Montanari and Tiziano Villa. In *Special issue of Information and Computation*, volume 245, pages 1-2, Springer. ([link to PDF](#))
- 2015 **Which XML schemas are streaming bounded repairable?**, with Pierre Bourhis, Slawomir Staworko, and Cristian Riveros. In *Theory of Computing Systems*, pages 1-72, Springer. ([link to PDF](#))
- 2014 **The Per-character Cost of Repairing Word Languages**, with Michael Benedikt and Cristian Riveros. In *Theoretical Computer Science*, volume 539, pages 38-67, Elsevier Science Publishers Ltd. ([link to PDF](#))
- 2013 **Bounded Repairability of Word Languages**, with Michael Benedikt and Cristian Riveros. In *Journal of Computer and System Sciences*, volume 79(8), pages 1302-1321, Elsevier Science Publishers Ltd. ([link to PDF](#))
- 2009 **A Theory of Ultimately Periodic Languages and Automata With an Application to Time Granularity**, with Davide Bresolin and Angelo Montanari. In *Acta Informatica*, volume 46(5), pages 331-360, Springer. ([link to PDF](#))
- 2007 **Compact and Tractable Automaton-based Representations for Time Granularities**, with Ugo Dal Lago and Angelo Montanari. In *Theoretical Computer Science*, volume 373(1-2), pages 115-141, Elsevier Science Publishers Ltd. ([link to PDF](#))
- 2006 **On the Relationships Between Theories of Time Granularity and the Monadic Second-order Theory of One Successor**, with Angelo Montanari and Adriano Peron. In *Journal of Applied Non-Classical Logics*, volume 16(3-4), pages 433-455, Oxford University Press. ([link to PDF](#))

Peer-reviewed conference papers

- 2017 **Untwisting two-way transducers in elementary time**, with Félix Baschenis, Olivier Gauwin, and Anca Muscholl. In *Proceedings of the 32nd Annual ACM/IEEE Symposium on Logic in Computer Science (LICS)*, pages 1-12, IEEE Computer Society. ([link to PDF](#))
- 2017 **On the decomposition of finite-valued streaming string transducers**, with Paul Gallot, Anca Muscholl, and Sylvain Salvati. In *Proceedings of the 34th International Symposium on Theoretical Aspects of Computer Science (STACS)*, *Leibniz International Proceedings in Informatics (LIPIcs)*, volume 66, pages 1-14, Schloss Dagstuhl – Leibniz-Zentrum fuer Informatik. ([link to PDF](#))
- 2016 **Minimizing resources of sweeping and streaming string transducers**, with Félix Baschenis, Olivier Gauwin, and Anca Muscholl. In *Proceedings of the 43rd International Colloquium on Automata, Languages and Programming (ICALP)*, *Leibniz International Proceedings in Informatics (LIPIcs)*, volume 55, pages 1-14, Schloss Dagstuhl – Leibniz-Zentrum fuer Informatik. ([link to PDF](#))

- 2016 **Querying Visible and Invisible Information**, with Michael Benedikt, Pierre Bourhis and Balder ten Cate. In *the Proceedings of the 31st Annual IEEE Symposium on Logic in Computer Science (LICS)*, pages 297-306, ACM. ([link to PDF](#))
- 2015 **One-way definability of sweeping transducers**, with Félix Baschenis, Olivier Gauwin, and Anca Muscholl. In *Proceedings of the 35th IARCS Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), Leibniz International Proceedings in Informatics (LIPIcs)*, volume 45, pages 178-191, Schloss Dagstuhl – Leibniz-Zentrum fuer Informatik. ([link to PDF](#))
- 2014 **Logics with rigidly guarded data tests**, with Thomas Colcombet and Clemens Ley. In *Proceedings of the conference on Frontiers of Recognizability (FREC)*, CoRR abs/1410.2022. ([link to PDF](#))
- 2014 **Decidability of the interval temporal logic \overline{AABB} over the rationals**, with Angelo Montanari and Pietro Sala. In *Proceedings of the 39th International Symposium on Mathematical Foundations of Computer Science (MFCS)*, LNCS, volume 8634, pages 451-463, Springer. ([link to PDF](#))
- 2013 **Walking on Data Words**, with Amaldev Manuel and Anca Muscholl. In *Proceedings of the 8th International Computer Science Symposium in Russia (CSR)*, pages 64-75, Springer. ([link to PDF](#))
- 2013 **Which DTDs are Streaming Bounded Repairable?**, with Pierre Bourhis and Cristian Riveros. In *Proceedings of the 16th International Conference on Database Theory (ICDT)*, pages 57-68, ACM. ([link to PDF](#))
- 2012 **Bounded Repairability for Regular Tree Languages**, with Cristian Riveros and Slawomir Staworko. In *Proceedings of the 15th International Conference on Database Theory (ICDT)*, pages 155-168, ACM. ([link to PDF](#))
- 2011 **On the Use of Guards for Logics with Data**, with Thomas Colcombet and Clemens Ley. In *Proceedings of the 36th International Symposium on Mathematical Foundations of Computer Science (MFCS)*, LNCS, volume 6907, pages 243-255, Springer. ([link to PDF](#))
- 2011 **The Cost of Traveling between Languages**, with Michael Benedikt and Cristian Riveros. In *Proceedings of the 38th International Colloquium on Automata, Languages and Programming (ICALP)*, LNCS, volume 6756, pages 234-245, Springer. ([link to PDF](#))
- 2011 **Regular Languages of Words over Countable Linear Orderings**, with Olivier Carton and Thomas Colcombet. In *Proceedings of the 38th International Colloquium on Automata, Languages and Programming (ICALP)*, LNCS, volume 6756, pages 125-136, Springer. ([link to PDF](#))
- 2011 **Regular Repair of Specifications**, with Michael Benedikt and Cristian Riveros. In *Proceedings of the 26th Annual IEEE Symposium on Logic in Computer Science (LICS)*, pages 335-344, IEEE Computer Society. ([link to PDF](#))
- 2010 **Automata vs Logics on Data Words**, with Michael Benedikt and Clemens Ley. In *Proceedings of the 19th Annual Conference on Computer Science Logic (CSL)*, LNCS, volume 6247, pages 110-124, Springer. ([link to PDF](#))
- 2010 **Maximal Decidable Fragments of Halpern and Shoham's Modal Logic of Intervals**, with Angelo Montanari and Pietro Sala. In *Proceedings of the 37th International Colloquium on Automata, Languages and Programming (ICALP)*, LNCS, volume 6199, pages 345-356, Springer. ([link to PDF](#))
- 2010 **What You Must Remember When Processing Data Words**, with Michael Benedikt and Clemens Ley. In *Proceedings of the 4th Alberto Mendelzon International Workshop on Foundations of Data Management (AMW)*, CEUR Workshop Proceedings, volume 619, CEUR-WS.org. ([link to PDF](#))
- 2010 **Positive Higher-order Querier**, with Michael Benedikt and Huy Vu. In *Proceedings of the 29th ACM SIGMOD-SIGACT-SIGART Symposium on Principles of Database Systems (PODS)*, pages 27-38, ACM. ([link to PDF](#))

- 2010 ***Decidability of the Interval Temporal Logic ABB Over the Natural Numbers***, with Angelo Montanari, Pietro Sala, and Guido Sciavicco. In *Proceedings of the 27th International Symposium on Theoretical Aspects of Computer Science (STACS), Leibniz International Proceedings in Informatics (LIPIcs)*, volume 5, pages 597-608, Schloss Dagstuhl-Leibniz-Zentrum fuer Informatik. ([link to PDF](#))
- 2009 ***A Decidable Spatial Logic with Cone-shaped Cardinal Directions***, with Angelo Montanari and Pietro Sala. In *Proceedings of the 18th Annual Conference on Computer Science Logic (CSL), LNCS*, volume 5771, pages 394-408, Springer. ([link to PDF](#))
- 2007 ***A Contraction Method to Decide MSO Theories of Deterministic Trees***, with Angelo Montanari. In *Proceedings of the 22nd Annual IEEE Symposium on Logic in Computer Science (LICS)*, pages 141-150, IEEE Computer Society. ([link to PDF](#))
- 2007 ***On the Equivalence of Automaton-Based Representations of Time Granularities***, with Ugo Dal Lago and Angelo Montanari. In *Proceedings of the 14th International Symposium on Temporal Representation and Reasoning (TIME)*, pages 82-93, IEEE Computer Society. ([link to PDF](#))
- 2004 ***Decidability of the Theory of the Totally Unbounded omega-Layered Structure***, with Angelo Montanari. In *Proceedings of the 11th International Symposium on Temporal Representation and Reasoning (TIME)*, pages 156-160, IEEE Computer Society. ([link to PDF](#))
- 2004 ***Decidability of MSO Theories of Tree Structures***, with Angelo Montanari. In *Proceedings of the 24th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), LNCS*, volume 3328, pages 430-442, Springer. ([link to PDF](#))
- 2004 ***Time Granularities and Ultimately Periodic Automata***, with Davide Bresolin and Angelo Montanari. In *Proceedings of the 9th European Conference on Logics in Artificial Intelligence (JELIA), LNCS*, volume 3229, pages 513-525, Springer. ([link to PDF](#))
- 2003 ***Towards Compact and Tractable Automaton-based Representations of Time Granularity***, with Ugo Dal Lago and Angelo Montanari. In *Proceedings of the 8th International Conference on Theoretical Computer Science (ICTCS), LNCS*, volume 2841, pages 72-85, Springer. ([link to PDF](#))

Publications as editor

- 2015 ***Special issue of Information and Computation***, with Angelo Montanari and Tiziano Villa. Invited contributions for the best papers selected from the *Proceedings of the 4th International Symposium on Games, Automata, Logics and Formal Verification (GandALF)*, volume 245, Springer.
- 2013 ***Proceedings of the 4th International Symposium on Games, Automata, Logics and Formal Verification (GandALF)***, with Tiziano Villa. volume 119 of *Electronic Proceedings in Theoretical Computer Science*, 2013.

Ph.D. thesis

- 2006 ***Automata for Branching and Layered Temporal Structures***. Department of Mathematics and Computer Science, Udine Univeristy.

Supervision of research activities

- 2017 – now ***Co-supervisor***, with Anca Muscholl and Olivier Gauwin, of the Ph.D. thesis of Sougata Bose on “Expressiveness and Resource Minimization of Transducers” at LaBRI, Bordeaux University.
- 2014 – 2017 ***Co-supervisor***, with Anca Muscholl and Olivier Gauwin, of the Ph.D. thesis of Félix Baschenis on “Transformations of streams of data with bounded resources” at LaBRI, Bordeaux University.
- 2016 – 2017 ***Co-advisor***, with Sylvain Salvati, for a student internship on “Decomposition theorems for transducers” at LaBRI, Bordeaux University.

- 2014 **Co-advisor**, with Anca Muscholl, for a student internship on “Resources for automata and transducers” at LaBRI, Bordeaux University.
- 2012 – 2013 **Co-advisor**, with Anca Muscholl, for a Study and Research Project (PER) for M.Sc. in Computer Science, Bordeaux University.
- 2010 – 2011 **Student tutoring** for M.Sc. in Computer Science and Mathematics, Oxford University.
- 2003 – 2007 **Co-supervisor**, with Angelo Montanari, of the Ph.D. thesis of Davide Bresolin on “Automaton-based reasoning on time granularities in database systems”, Udine University.

Scientific committees and editorial activities

- 2017 **Member of the Program Committee** of the 20th Joint International Conference on Extending Database Technology (EDBT) and Database Theory (ICDT) in Venice.
- 2015 **Guest co-editor** of a special issue of the Journal of Information and Computation for the 4th International Symposium on Games, Automata, Logics and Formal Verification.
- 2014 **Member of the Program Committee** of the 21st International Symposium on Temporal Representation and Reasoning (TIME) in Verona.
- 2014 **Member of the Program Committee** of the 33rd ACM SIGMOD-SIGACT-SIGART Symposium on Principles of Database Systems (PODS) in Snowbird.
- 2013 **Co-chair of the Program Committee** of the 4th International Symposium on Games, Automata, Logic, and Formal Languages (GandALF) in Borca di Cadore.
- 2013 **Member of the Program Committee** of the 20th Workshop on Logic, Language, Information and Computation (WoLLIC) in Darmstadt.
- 2012 **Member of the Program Committee** of the 3rd International Symposium on Games, Automata, Logic, and Formal Languages (GandALF) in Naples.
- 2011 **Member of the Program Committee** of the 2nd International Symposium on Games, Automata, Logic, and Formal Languages (GandALF) in Minori.
- 2010 **Member of the Program Committee** of the 1st International Symposium on Games, Automata, Logic, and Formal Languages (GandALF) in Minori.
- 2009 **Member of the Organizing Committee** of the Annual Workshop of the ESF Networking Programme on Games for Design and Verification (GAMES) in Udine.

Teaching

Courses for Researchers and Ph.D. students

- August 2016 **Logical Foundations of Databases**
European Summer School in Logic Language and Information (ESSLLI), Bolzano University.
- July 2015 **Introduction to Logical Foundations of Databases.**
Escuela de Ciencias Informáticas (ECI), Buenos Aires University.
- May 2014 **Verification of Infinite State Systems.**
Doctoral program, Udine University.
- August 2006 **Verification of Infinite State Systems.**
European Summer School in Logic Language and Information (ESSLLI), Malaga University.

Courses for Bachelor and M.Sc. students

- 2016 **Automata and Complexity**
tutorial of 24 hours, Bordeaux University.
- 2015 **Automata and Complexity**
tutorial of 24 hours, Bordeaux University.
- 2014 **Automata and Complexity**
tutorial of 24 hours, Bordeaux University.

- 2009 **Computer Science II**
course of 32 hours, Udine University.
- 2008 **Computer Science II**
course of 12 hours, Udine University.
- 2008 **Computers and Databases**
course of 30 hours, Udine University.
- 2008 **Databases and Information Systems**
tutorial of 24 hours, Udine University.
- 2007 **Model Checking**
course of 16 hours, Udine University.
- 2007 **Databases and Information Systems**
tutorial of 24 hours, Udine University.
- 2007 **Computers and Databases**
course of 30 hours, Udine University.
- 2006 **Databases and Information Systems**
tutorial of 24 hours, Udine University.
- 2006 **C & C++ Programming**
course of 57 hours, Consorzio Formazione Pordenone.
- 2006 **Computer Architecture**
tutorial of 25 hours, Udine University.
- 2005 **Databases and Information Systems**
tutorial of 24 hours, Udine University.
- 2004 **Computer Science II**
course of 24 hours, Udine University.
- 2004 **Databases and Information Systems**
tutorial of 28 hours, Udine University.
- 2004 **Databases and Information Systems**
tutorial of 24 hours, Udine University.

Participation in research projects

- 2016 – 2020 ANR project “DELTA – Défis pour la Logique, les Transducteurs et les Automates”.
- 2016 – 2018 STIC-AmSud project “FOG – Foundations of Graph structured data”.
- 2014 – 2016 ANR project “EXSTREAM – Extensions of Stream processing”.
- 2012 – 2014 ANR project “FREC – Frontiers of Recognizability”.
- 2009 – 2012 EPSRC project “Enforcement of constraints on XML streams”.
- 2010 – 2010 GNCS project “Logics, automata, and games for the formal verification of complex systems”.
- 2008 – 2010 ESF Networking Programme “GAMES – Games for design and verification”.
- 2006 – 2007 PRIN project “Constraints and preferences as a unifying formalism for system analysis and solution of real-life problems”.
- 2005 – 2006 INTAS project “Algebraic and deduction methods in non-classical logics and their applications to Computer Science”.
- 2003 – 2004 CoFin project “Constraint-based verification of reactive systems”.

Other activities

- 2011 – present **Sub-reviewer for international conferences** (*LICS'17, ICALP'17, STACS'16, CSL'16, CSL-LICS'14, ICALP'14, PODS'14, FOSSACS'14, MFCS'14, TIME'14, STACS'13, FOSSACS'13, ICALP'12, LATA'12, STACS'12, STACS'11*) **and journals** (*Fundamenta Informaticae '17, JCSS'16, TODS'15, TCS'15, JCSS'14, RAIRO-ITA'14, AMAI'14, TOCS'13, JCSS'13, Information and Computation '12, TOCS'11*)
- 2016 **Local co-organizer** of the *19th Joint International Conference on Extending Database Technology (EDBT) and Database Theory (ICDT), Bordeaux*.
- 2015 **Project reviewer** for the *Polish National Science Centre*.
- 2008 **Developer** of *MetaPost* package “*automata.mp*”, available online at *CTAN* archives www.ctan.org/tex-archive/graphics/metapost/contrib/macros/automata and included in standard distributions of *(La)TeX*.