

# Davide Lanti

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Bolzano  
Italy

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## Personal Information

Date of Birth: 02/03/1986  
Place of Birth: Teramo  
Nationality: Italian

## Education

Dates 04/01/2014 - ongoing  
 Title or Qualification PhD in Computer Science  
 Thesis Title Benchmarking and Optimization of Ontology-based Data Access Systems  
 Subject Area Semantic Web, Knowledge Representation Systems, Databases, Logic  
 Institution(s) Free University of Bolzano/Bozen  
 Place(s) Bozen-Bolzano (Italy)

Dates 01/03/2016 - 31/07/2016  
 Title or Qualification Visiting student at INRIA  
 Argument Ontology-based Data Access Optimization  
 Institution(s) Inria-Saclay Ile-de-France  
 Place(s) Saclay-Paris (France)

Dates 1/10/2010 - 11/04/2013  
 Title or Qualification Master Degree in Computational Logic  
 Final Mark 1.3/4.0 (German System), A (ECTS System)  
 Subjects Covered Propositional Logic  
 First Order Logic  
 Modal Logic  
 Model Checking  
 SAT Solving  
 Foundations of Logic Programming, and Prolog  
 Answer Sets Programming  
 Term Rewriting Systems  
 Description Logics, and Fuzzy Description Logics  
 Information Integration  
 English  
 Institution(s) Free University of Bozen-Bolzano, Technische Universität Dresden  
 Place(s) Bolzano (Italy), Dresden (Germany)

Dates 01/10/2005 - 15/03/2010  
 Title or Qualification Bachelor Degree in Computer Science  
 Final Mark 110/110 cum Laude  
 Thesis Title DALI Interpreter Re-engineering and Integration with the Semantic Web  
 Subjects Covered Foundations of Computer Science and Mathematics  
 Programming Languages and Computer Architectures  
 Mathematical Analysis  
 Probability Calculus  
 Institution(s) Università de L'Aquila  
 Place L'Aquila (Italy)

## Experience in Academic Teaching

Dates	1/10/2017 - 30/09/2018 (ongoing)
University	Free University of Bozen-Bolzano
Type of Collaboration	Teaching Assistant (tutor)
Course Name	Intelligent Systems
Academic Level	Undergraduate
Task Description	Exercises on: Search, Logic Programming, Knowledge Representation
Results of Evaluations	Not Applicable
Place(s)	Bolzano-Bozen (Italy)

Dates	1/10/2016 - 30/09/2017
University	Free University of Bozen-Bolzano
Type of Collaboration	Teaching Assistant (tutor)
Course Name	Operating Systems
Academic Level	Undergraduate
Task Description	Bash Scripting
Results of Evaluations	Not Applicable
Place(s)	Bolzano-Bozen (Italy)

## Other Academic Responsibilities

Dates	A.Y. 2015/2016
University	Free University of Bozen-Bolzano
Responsibility	Faculty-level PhD Students' Representative
Boards	PhD Committee Students Council
Faculty	Computer Science
Place(s)	Bolzano-Bozen (Italy)

Dates	A.Y. 2014/2015
University	Free University of Bozen-Bolzano
Responsibility	Faculty-level PhD Students' Representative
Boards	PhD Committee Students Council
Faculty	Computer Science
Place(s)	Bolzano-Bozen (Italy)

## Work Experience

Dates	01/10/2013 - 31/12/2013
Company	Free University of Bozen-Bolzano
Type of Collaboration	Fixed-term Contract
Task Description	<i>Ontology-based Data Access</i> (OBDA) goal is to access heterogeneous physical data sources through a unified conceptual layer provided by a mediating ontology. My work focused on the production of a survey on OBDA research and the understanding of the weaknesses of implemented OBDA systems, through empirical analysis (benchmark).
Place(s)	Bolzano-Bozen (Italy)
Dates	01/11/2012 - 31/03/2013
Company	SAP A.G.
Type of Collaboration	Internship
Task Description	<i>Complex Event Processing</i> (CEP) describes search patterns inside a continuous stream of events. In this internship I implemented and tested a software component that can flexibly migrate resource demanding components (i.e., <i>correlated aggregations</i> ) of queries over an existing CEP system (more specifically, over Sybase Event Stream Processor) to SAP HANA database.
Place(s)	Dresden (Germany)
Dates	2005-2009 (Occasionally)
Company	Abruzzo Vetro - Ardagh Glass
Type of Collaboration	Fixed-term Contract
Task Description	Manual checking and discarding of defective glass bottles.
Place(s)	Montorio al Vomano (Italy)

## Attended Events

### Summer Schools

Dates	15/08/2016 - 26/08/2016
Name	European Summer School in Logic, Language and Information (ESSLLI)
Attended Lectures/Talks	Description Logics Type Theory Algebraic Specification and Verification Logic Foundations of Databases Probabilistic Interpretation Ontology-mediated Query Answering
Place(s)	Bozen-Bolzano (Italy)

Dates	31/08/2015 - 04/08/2015
Name	Reasoning Web Summer School (RW) + RR Doctoral Consortium
Attended Lectures/Talks	Fuzzy Description Logics Modal Higher Order Logic TPTP (Automated Theorem Proving Competitions) Legal RuleML Datalog+/- Answer Set Programming
Given Talk(s)	Benchmarking and Optimization of OBDA Systems
Poster(s)	Benchmarking and Optimization of OBDA Systems
Place(s)	Berlin (Germany)
Dates	26/01/2015 - 30/01/2015
Name	International Winter School on Big Data (BigDat)
Attended Lectures/Talks	Decision Trees for Big Data Analytics Programming with Big Data Data-stream Security Search Engines Online Social Networks Kernel Models for Big Data
Place(s)	Tarragona (Spain)
Dates	08/09/2014 - 13/09/2014
Name	Reasoning Web Summer School (RW)
Attended Lectures/Talks	Linked Data Description Logics Query-processing for RDF Databases Graph Databases Ontology-based Query Answering Temporal Ontology-based Data Access Probabilistic Databases Smart Cities Machine Learning on Graphs
Poster(s)	The NPD Benchmark for OBDA Systems
Place(s)	Athens (Greece)
Dates	27/07/2014 - 1/08/2014
Name	EATCS Young Researchers School—Automata, Logic and Games
Attended Lectures/Talks	Logic Foundations of Databases
Place(s)	Telč (Czech Republic)
Dates	29/01/2014 - 31/01/2014
Name	Foundations and Challenges of Change in Ontologies and Databases (FCCOD)
Attended Lectures/Talks	Talks regarding dynamic aspects of logic and data access (Temporal Logics)
Given Talk(s)	A Survey of Temporal Extensions of DLs
Place(s)	Bolzano-Bozen (Italy)

Dates	01/08/2011 - 12/08/2011
Name	European Summer School in Logic, Language and Information (ESSLLI)
Attended Lectures/Talks	Logic in Action Logics of knowledge and strategic abilities in multi-agent systems Ordinals and Cardinals Strategies in Game: A logic automata study
Place(s)	Ljubljana (Slovenia)

## Conferences

- Dates 21/10/2017 - 25/10/2017  
Name International Semantic Web Conference (ISWC)  
Topic(s) Semantic Web  
Given Talk(s) Cost-driven Ontology-based Data Access  
Place(s) Vienna (Austria)
- Dates 06/07/2016 - 09/07/2016  
Name International Web Rule Symposium (RuleML)  
Topic(s) Rule Systems  
Ontology-based Data Access  
Legal Rules and Reasoning  
Given Talk(s) OBDA Constraints for Effective Query Answering  
Talk Video <https://www.youtube.com/watch?v=ivcRyy8a-Fw>  
Place(s) Stony-Brook, New York (USA)
- Dates 04/08/2015 - 05/08/2015  
Name International Conference on Web Reasoning and Rule Systems (RR)  
Topic(s) Rule Systems  
Given Talk(s) (Doctoral Consortium): Benchmarking and Optimization of OBDA Systems  
Place(s) Berlin (Germany)
- Dates 19/10/2014 - 23/10/2014  
Name International Semantic Web Conference (ISWC)  
Topic(s) Semantic Web  
Place(s) Riva del Garda (Italy)
- Dates 20/07/2014 - 24/07/2014  
Name International Conference on Principles of Knowledge Representation and Reasoning (KR)  
Topic(s) Knowledge Representation and Reasoning  
Place(s) Vienna (Austria)
- Dates 7/01/2013 - 11/01/2013  
Name Learning and Intelligent Optimization Conference (LION)  
Topic(s) Combinatorial Optimization  
Large-scale Parallelization in Search  
Games and Computational Intelligence  
Given Talk(s) Information Sharing in Parallel SAT Solving  
Place(s) Catania (Italy)

## Workshops

Dates	20/10/2014
Name	International Workshop on Scalable Semantic Web
Topic(s)	Semantic Web repositories etc.
Given Talk(s)	The NPD Benchmark for OBDA Systems
Place(s)	Riva del Garda (Italy)
Dates	17/07/2014 - 20/07/2014
Name	International Workshop on Description Logics (DL)
Topic(s)	Description Logics
Place(s)	Wien (Austria)
Dates	13/07/2014
Name	OWL Reasoner Evaluation Workshop (ORE)
Topic(s)	Knowledge Representation Systems OWL Benchmarks
Given Talk(s)	A Scalable Benchmark for OBDA Systems: Preliminary Report
Place(s)	Wien (Austria)
Dates	14/04/2014 - 17/04/2014
Name	EPCL PhD Workshop 2014
Topic(s)	Static and dynamic aspects of OBDA Argumentation theory SAT Solving Semantic Web Computer Science (Polynomial Hierarchy)
Given Talk(s)	Towards a Scalable Benchmark for OBDA Systems
Place(s)	Dresden (Germany)

## Meetings

Dates	11/06/2014 - 14/06/2014
Name	OPTIQUE Plenary Meeting
Topic(s)	OPTIQUE—Scalable End-user Access to Big Data
Place(s)	Rome (Italy)

## Language Skills

Native Italian Speaker  
Excellent knowledge of English language, both written and oral.

## Language Certificates

Institutional paper based TOEFL, August 06 2010. Released by the Wayne State University (Michigan) with a score of 580.



FCE certificate, obtained in 2011.

## Actual Position

I am a PhD student at the Free University of Bozen-Bolzano. My research is focused on Ontology-based Data Access (OBDA), where OBDA concerns about accessing heterogeneous physical data sources through a conceptual layer provided by a mediating ontology. In particular, I am interested in benchmarking and optimization of OBDA systems.

I was a former student of *EMCL*, the European Master in Computational Logic. During this master I studied the problem of autarky search through a Conflict-Driven Clause Learning solver. In particular, I introduced a new algorithm to find autark assignments in propositional formulae in conjunctive normal form. In my master thesis, I focused the attention on information sharing in search space partitioning parallel SAT solvers, where a SAT solver is a procedure to solve the boolean satisfiability problem. This work led to an improvement of previous state-of-the-art techniques, and it is currently being successfully exploited by the present state-of-the-art cooperative parallel SAT solver, *pcasso*, that was submitted to the SAT Competitions 2013 and 2014.

## Theoretical Knowledge

I have a deep knowledge in fields closely related to my research, such as Description Logics, Semantic Web, RDBMS Systems, Benchmarking, and Theoretical Computer Science. I have a solid knowledge in the field of Computational Logic (Classical Logic, Non-Monotonic Logic, Modal Logic) and in the theory of Logic Programming (Prolog Procedural and Declarative Interpretations). I know the principles of Model Checking, and hence both temporal (modal) logics Linear Temporal Logic and Computational Tree Logic. I have also some knowledge in the area of Term Rewriting Systems. In the past I acquired some knowledge in the area of Operations Research and Combinatorial Optimization (also from the Constraint Programming view of these kind of problems).

## Practical Knowledge

### *Known Programming Languages*

*Imperative* : Good knowledge of C++ and C. Excellent knowledge of Java.

*Functional, Logic, etc.* : Fair knowledge of Lisp, Haskell, OcaML, Prolog, ASP.

*Web* : Fair knowledge of PHP.

*Constraint Programming* : Good knowledge of ECLiPSe.

*Script* : Excellent knowledge of Bash, fair knowledge of Python and Javascript.

### *Other Skills*

Good knowledge of LATEX and Beamer.

Fair knowledge of Sybase Event Stream Processor.

## Research Interests

I am interested in everything related to logic, and I actively worked in the area of SAT solving SAT solvers. I am now working in the context of Ontology-based Data Access systems, with particular focus on the problems of benchmarking and optimization.

## Prizes

2015: Best Doctoral Consortium Contribution Award in RR Conference 2015

## Scholarships, Waivers, etc.

Date Granted 2017  
 Award Holder(s) Davide Lanti  
 Funding Body Semantic Web Science Association (SWSA) and the US National Science Foundation (NSF)  
 Title Student Travel Award for participation at the International Semantic Web Conference 2017  
 Amount Received 300 Eur.

Date Granted 2016  
 Award Holder(s) Davide Lanti  
 Funding Body Euregio  
 Title Euregio Grant for participation at ESLLI Summer School 2016  
 Amount Received Fee Waiver, corresponding to 450 Eur.

Date Granted 2014-2016  
 Award Holder(s) Davide Lanti  
 Funding Body Free University of Bozen-Bolzano  
 Title PhD bursary

Date Granted 2011  
 Award Holder(s) Davide Lanti  
 Funding Body Province of Bozen-Bolzano  
 Title Bursary “per meriti particolari” (special merit)  
 Amount Received 1160 Eur.

## Publications

### *Papers in Refereed International Journals*

- [JI-1] E. Kharlamov, D. Hovland, M. G. Skjæveland, D. Bilidas, E. Jiménez-Ruiz, G. Xiao, A. Soylu, D. Lanti, M. Rezk, D. Zheleznyakov, M. Giese, H. Lie, Y. E. Ioannidis, Y. Kotidis, M. Koubarakis, and A. Waaler. Ontology based data access in statoil. *J. Web Sem.*, 44:3–36, 2017. DOI: 10.1016/j.websem.2017.05.005.
- [JI-2] M. Giese, A. Soylu, G. Vega-Gorgojo, A. Waaler, P. Haase, E. Jiménez-Ruiz, D. Lanti, M. Rezk, G. Xiao, Ö. L. Özçep, and R. Rosati. Optique: Zooming in on big data. *IEEE Computer*, 48(3):60–67, 2015. DOI: 10.1109/MC.2015.82. \*
- [JI-3] D. Calvanese, B. Cogrel, S. Komla-Ebri, R. Kontchakov, D. Lanti, M. Rezk, M. Rodriguez-Muro, and G. Xiao. Ontop: Answering SPARQL queries over relational databases. *Semantic Web*, 8(3):471–487, 2017. DOI: 10.3233/SW-160217. \*

### *Papers in Refereed International Conferences*

- [CI-4] D. Lanti, G. Xiao, and D. Calvanese. Cost-driven ontology-based data access. In *The Semantic Web - ISWC 2017 - 16th International Semantic Web Conference, Vienna, Austria, October 21-25, 2017, Proceedings, Part I*, pages 452–470, 2017. DOI: 10.1007/978-3-319-68288-4\_27. \*

- [CI-5] Davide Lanti and N. Manthey. Sharing information in parallel search with search space partitioning. In *Proceedings of the 7th International Conference on Learning and Intelligent Optimization (LION 2013)*, Lecture Notes in Computer Science. Springer, 2013. \*
- [CI-6] Davide Lanti, M. Rezk, G. Xiao, and D. Calvanese. The NPD benchmark: Reality check for OBDA systems. In *Proceedings of the Eighteenth International Conference on Extending Database Technology (EDBT 2015)*, 2015. \*
- [CI-7] T. Bagoši, D. Calvanese, J. Hardi, S. Komla-Ebri, D. Lanti, M. Rezk, M. Rodriguez-Muro, M. Slusnys, and G. Xiao. The ontop framework for ontology based data access. In *The Semantic Web and Web Science - 8th Chinese Conference, CSWS 2014, Wuhan, China, August 8-12, 2014, Revised Selected Papers*, pages 67–77, 2014. DOI: 10.1007/978-3-662-45495-4\_6.
- [CI-8] E. Kharlamov, D. Hovland, E. Jiménez-Ruiz, D. Lanti, H. Lie, C. Pinkel, M. Rezk, M. G. Skjæveland, E. Thorstensen, G. Xiao, D. Zheleznyakov, and I. Horrocks. Ontology based access to exploration data at statoil. In *Proceedings of the 14th International Semantic Web Conference (ISWC 2015)*, pages 93–112. Springer International Publishing, 2015. DOI: 10.1007/978-3-319-25010-6\_6.
- [CI-9] D. Calvanese, B. Cogrel, S. K. Ebri, D. Lanti, M. Rezk, and G. Xiao. How to stay ontop of your data: Databases, ontologies and more. In *Proceedings of the 12th Extended Semantic Web Conference, Posters & Demos Track (ESWC 2015)*, 2015.
- [CI-10] D. Hovland, Davide Lanti, M. Rezk, and G. Xiao. OBDA constraints for effective query answering. In *Proceedings of the 10th International Web Rule Symposium (RuleML 2016)*, 2016. \*
- [CI-11] Davide Lanti, G. Xiao, and D. Calvanese. An evaluation of VIG with the BSBM benchmark. In *Proceedings of the ISWC 2016 Posters & Demonstrations Track co-located with 15th International Semantic Web Conference (ISWC 2016), Kobe, Japan, October 19, 2016.*, 2016.

### *Papers in Refereed National Conferences and Workshops*

- [CN-12] D. Calvanese, B. Cogrel, E. G. Kalayci, S. Komla-Ebri, R. Kontchakov, D. Lanti, M. Rezk, M. R. Muro, and G. Xiao. OBDA with the ontop framework. In *Proceedings of the 23rd. Italian Symposium on Database Systems (SEBD 2015)*, 2015.

### *Papers in Refereed International Workshops*

- [WI-13] A. Irfan, D. Lanti, and N. Manthey. Modern cooperative parallel SAT solving. In *Proceedings of The International Workshop on Pragmatics of SAT 2013*, 2013.
- [WI-14] A. Balint, D. Lanti, A. Irfan, and N. Manthey. Clas – a parallel SAT solver that combines CDCL, look-ahead and SLS search strategies. In *Proceedings of SAT Competition 2014*, volume B-2014-2 of *Department of Computer Science Series of Publications B*, page 21. University of Helsinki, Helsinki, Finland, 2014.
- [WI-15] D. Calvanese, Davide Lanti, M. Rezk, M. Slusnys, and G. Xiao. A scalable benchmark for OBDA systems: Preliminary report. In *Proceedings of the Third International Workshop on OWL Reasoner Evaluation (ORE 2014)*, volume 1207 of *CEUR Electronic Workshop Proceedings*, <http://ceur-ws.org/>, 2014.
- [WI-16] Davide Lanti, M. Rezk, M. Slusnys, G. Xiao, and D. Calvanese. The NPD benchmark for OBDA systems. In *Proceedings of the 10th International Workshop on Scalable Semantic Web Knowledge Base Systems (SSWS 2014)*, CEUR Electronic Workshop Proceedings, <http://ceur-ws.org/>, 2014.

- [WI-17] Davide Lanti, G. Xiao, and D. Calvanese. Fast and simple data scaling for OBDA benchmarks. In *Proceedings of the Workshop on Benchmarking Linked Data (BLINK 2016)*, volume 1700 of *CEUR Electronic Workshop Proceedings*, <http://ceur-ws.org/>, 2016.

### *Technical Reports and Project Deliverables*

- [TR-18] E. Botoeva, D. Calvanese, B. Cogrel, E. G. Kalayci, S. Komla-Ebri, D. Lanti, M. Rezk, G. Xiao, A. Artale, E. Franconi, W. Nutt, , and S. Tessaris. Optique Project Deliverable D6.3. Optique Project Consortium, 2015.
- [TR-19] K. Bereta, E. Botoeva, D. Calvanese, B. Cogrel, D. Lanti, M. Rezk, S. Komla-Ebri, and G. Xiao. Optique Project Deliverable D6.2. Optique Project Consortium, 2014.
- [TR-20] D. Lanti, G. Xiao, and D. Calvanese. Cost-driven ontology-based data access (extended version). Technical report, Free University of Bozen-Bolzano, 2017.
- [TR-21] D. Lanti, M. Rezk, G. Xiao, and D. Calvanese. The NPD benchmark: Reality check for OBDA systems. Technical report. Technical report, Free University of Bozen-Bolzano, 2015. Available at <http://www.inf.unibz.it/~dlanti/techreportNPD-EDBT.pdf>.
- [TR-22] D. Hovland, Davide Lanti, M. Rezk, and G. Xiao. OBDA Constraints for Effective Query Answering (Extended Version). *ArXiv e-prints*, May 2016. Available at <http://arxiv.org/abs/1605.04263>.
- [TR-23] Davide Lanti, G. Xiao, and D. Calvanese. Data Scaling in OBDA Benchmarks: The VIG Approach. *ArXiv e-prints*, July 2016. Available at <http://arxiv.org/abs/1607.06343>.

### *National Journals and Newsletters in Italian*

- [NTNI-24] S. Costantini, D. Lanti, and A. Paolucci. Agenti ed ontologie: verso la web intellicence. *AIDAinformazioni*, 28(2):63–86, 2011.

### *Other Publications*

- [O-25] D. Lanti. Benchmark and optimization of OBDA systems. In *Doctoral Consortium of the 9th International Conference on Web Reasoning and Rule System (RR 2015)*, 2016. To appear.