

DIEGO CALVANESE

August 2021

1 PERSONAL DATA

Born in Innsbruck, Austria in 1966. Nationality: Italian.

Languages: Italian (mother tongue), German (mother tongue), English (C2 - IELTS).

<http://www.inf.unibz.it/~calvanese/> ORCID: 0000-0001-5174-9693 DBLP: <https://dblp.org/pid/c/DiegoCalvanese>

2 EDUCATION

11/1996 Ph.D. in Computer Science and Engineering, Sapienza University of Rome, Italy.

12/1990 Graduation cum laude in Electronics Engineering, Sapienza University of Rome, Italy.

3 EMPLOYMENT

11/2019 – today Wallenberg Guest Professor at the Department of Computing Science, Umeå University, Sweden.

01/2015 – today Tenured full professor in Computer Engineering (ING-INF/05), Faculty of Computer Science, Free Univ. of Bozen-Bolzano, Italy.

02/2015 – 09/2019 Vicedean for Research, Faculty of Computer Science, Free Univ. of Bozen-Bolzano, Italy.

01/2014 – 10/2018 Director of the PhD Program in Computer Science, Free Univ. of Bozen-Bolzano, Italy.

01/2014 Italian National Habilitation as full professor in the Scientific Sector 01/B1 (Computer Science).

12/2013 Italian National Habilitation as full professor in the Scientific Sector 09/H1 (Computer Engineering).

10/2010 – 12/2013 Faculty representative in the Research Committee of the Free Univ. of Bozen-Bolzano, Italy.

03/2004 – 10/2007 Director of the MSc Program in Computer Science, Free Univ. of Bozen-Bolzano, Italy.

11/2003 – 12/2014 Tenured associate professor in Computer Engineering (ING-INF/05), Faculty of Computer Science, Free Univ. of Bozen-Bolzano, Italy.

09/2000 – 10/2003 Tenured assistant professor in Computer Engineering (ING-INF/05), Faculty of Engineering, Sapienza Univ. of Rome, Italy.

02/1991 – 07/1992 Responsible for software development, “Ionen-Technik”, Innsbruck, Austria.

4 RESEARCH FELLOWSHIPS

06/2014 Visiting Researcher (1 month) at Universitat Politècnica de Catalunya, Barcelona, Spain.

08/2013 Visiting Researcher (1 month) at University of Melbourne, Australia.

09/2012 – 06/2013 Visiting Professor under a Wolfgang Pauli Fellowship, Technical University Vienna, Austria.

09/2009 Visiting Researcher (1 month) at Meraka Institute, Pretoria, South Africa.

08/2008 Visiting Researcher (1 month) at IBM Watson Research Center, USA.

03/1998 – 08/2000 Postdoctoral Scholarship by CNR, Sapienza Univ. of Rome, Italy.

11/1996 – 02/1998 Postdoctoral Fellow, Sapienza Univ. of Rome, Italy.

10/1994 – 07/1995 Visiting Scholar at Technical Univ. Aachen (RWTH), Germany.

09/1992 – 08/1995 PhD Scholarship, Sapienza Univ. of Rome, Italy.

5 RESEARCH SUMMARY AND RESEARCH GRANTS

He is a member of the Research Centre for Knowledge and Data (KRDB) at the Faculty of Computer Science of the Free Univ. of Bozen-Bolzano, where he carries out research on Knowledge Representation in Artificial Intelligence, Databases, Information Systems, and Business Process Modeling. In these areas, he authored more than 350 publications that appeared in top-tier, international journals, conferences, and workshops, such as AIJ, JAIR, ACM TOCL, IC, JCSS, IS, SWJ, IJCAI, AAI, KR, PODS, ICDT, VLDB, EDBT, ICDE, EDBT, LICS, ISWC, BPM, CAiSE, ICSSOC. He is one of the editors of the *Description Logic Handbook*. His research excellence is testified also by his bibliometric data: his current h-index is 72, and his i-10 index 248, with more than 33000 overall citations, of which almost 9000 in the last 5 years (source: Google Scholar, 16 August 2021).

He has established research collaborations with well known researchers, such as Moshe Y. Vardi (Rice Univ, USA), Richard B. Hull (IBM Research, USA), Thomas Eiter (Univ. of Vienna, Austria), Marcelo Arenas (UPC Chile), Ernest Teniente (UPC, Spain) Franz Baader (Univ. of Dresden, Germany), Alexander Borgida (Rutgers Univ., USA), and Michael Zakhariashev (Birkbeck College London, UK).

He has been the coordinator and principal investigator of several international, national, and local research projects in the areas of knowledge representation, data management, and business process management, acquiring €3 800 000 in research grants, including the following:

03/2021 – 02/2022 Coordinator, *Heterogeneous Data Integration into Virtual Knowledge Graphs* (HIVE), Sparkasse Foundation; €52.400.

10/2020 – 12/2022 PI, *Medieval Explorations in Neuro-Science* (MENS), Province of Bolzano, € 120.000.

11/2019 – 10/2022 PI, *Intelligent Open Data Exploration* (INODE), H2020 INFRAEOSC-02-2019, € 765.500.

09/2019 – 08/2022 PI, *High quality Open data Publishing and Enrichment* (HOPE), PRIN Italy, € 155.332.

04/2019 – 03/2022 PI, *Data Integration for Energy Efficiency* (IDEE), EFRE-FESR 2014-2020, € 245.250.

03/2019 – 02/2021 PI, *Process-aware Analytics Support based on Conceptual Models for Event Logs* (PACMEL), EU CHIST-ERA, € 126.160.

06/2016 – 05/2019 Coordinator, *Knowledge-Aware Operational Support* (KAOS), Euregio IPN, € 110.250.

11/2012 – 10/2016 PI, *Scalable End-user Access to Big Data* (Optique), EU FP7 IP, € 873.000.

06/2010 – 05/2013 PI, *Artifact-centric Service Interoperation* (ACSI), EU FP7 STREP, € 452.800.

02/2007 – 02/2009 PI, *New Technologies and Tools for the Integration of Web Search Services* (NGS), PRIN Italy, € 66.500.

09/2005 – 12/2008 Coordinator, *Thinking Ontologies* (TONES), EU FP6 STREP, € 352.000.

6 ENTERPRENEURSHIP

04/2019 Originator and co-founder of ONTOPIC S.R.L. (<https://ontopic.biz/>), the first spin-off of the Free University of Bozen-Bolzano.

01/2017 – today Director of the *Smart Data Factory* (<https://smart.inf.unibz.it/en>), the laboratory for technology transfer of the Faculty of Computer Science of the Free University of Bozen-Bolzano.

7 COMMUNITY SERVICES

01/2019 – today President of the Web Reasoning and Rule Systems Association (RRA).

11/2018 – today Member of the Steering Committee of the Int. Conference on Principles of Knowledge Representation and Reasoning (KR).

06/2015 – 10/2018 Member of the Description Logic Steering Committee.

10/2014 – today Member of the Advisory Team of the CEUR Workshop Proceedings Series.

06/2014 – 05/2017 Member of the Executive Committee of the ACM Symposium on the Principles of Database Systems (PODS).

02/2013 – today Member of the Mgmt. Board of the Consorzio Interuniv. Nazionale per l'Informatica (CINI), Italy.

10/2008 – 12/2018 Member of the Steering Committee of the Int. Conf. on Web Reasoning and Rule Systems.

02/2008 – 12/2012 Member of the World-Wide-Web Consortium (W3C) OWL working group.

04/2002 – 06/2007 Member of the Description Logic Steering Committee.

He is an associate editor of AIJ, the most prestigious journal in Artificial Intelligence, and has been an associate editor of JAIR. He is a member of the editorial board of the IOS Press series *Studies on the Semantic Web*. He has contributed to the organization of many international conferences and scientific events, serving in more than 150 organization and program committee roles. He has been invited many times to present his research work, and has been keynote speaker at PODS 2013, AIMS 2014, JELIA 2014, DL 2016, AMW 2016, CLEI-LACLO 2018, AIKE 2020, and CSICC 2021.

8 AWARDS

2021 Classic Paper Award at the 35th AAAI Conf. on Artificial Intelligence (AAAI).

2019 Nominated Fellow of the Association for Computing Machinery (ACM).

2019 Best paper award at the 23rd IEEE Int. Enterprise Distributed Object Computing Conf. (EDOC).

2018 Best paper award at the 17th Int. Conf. of the Italian Association for Artificial Intelligence (AI*IA).

2017 Best paper award at the 2nd Int. Joint Conf. on Rules and Reasoning (RuleML+RR).

2016 Best paper award at the 14th Int. Conf. on Business Process Management (BPM).

2016 Semantic Web Journal outstanding paper award.

2015 Nominated Fellow of the European Association for Artificial Intelligence (EurAI).

2013 Best paper award at the 7th Int. Conf. on Web Reasoning and Rule Systems (RR).

2013 Award for the most influential 10 year paper of the Int. Conf. on Service Oriented Computing (ICSOC).

2013 Recipient of the first edition of the South-Tyrolean Scientific Prize.

2008 IBM Research award for research achievements on artifact-centric systems.

9 SELECTED PUBLICATIONS

- [1] F. Baader, D. Calvanese, D. McGuinness, D. Nardi, and P. F. Patel-Schneider, eds. *The description logic handbook: theory, implementation, and applications*. 2nd. Cambridge University Press, 2007.
- [2] D. Calvanese, M. Lenzerini, and D. Nardi. Unifying class-based representation formalisms. *J. of Artificial Intelligence Research* 11 (1999), pp. 199–240.
- [3] D. Calvanese, G. De Giacomo, and M. Lenzerini. Representing and reasoning on XML documents: A description logic approach. *J. of Logic and Computation* 9.3 (1999), pp. 295–318.
- [4] D. Calvanese, G. De Giacomo, and M. Lenzerini. Modeling and querying semi-structured data. *Networking and Information Systems* 2.2 (1999), pp. 253–273.
- [5] D. Calvanese, G. De Giacomo, and R. Rosati. Data integration and reconciliation in data warehousing: Conceptual modeling and reasoning support. *Networking and Information Systems* 2.4 (1999), pp. 413–432.
- [6] D. Calvanese, G. De Giacomo, M. Lenzerini, D. Nardi, and R. Rosati. Data integration in data warehousing. *Int. J. of Cooperative Information Systems* 10.3 (2001), pp. 237–271.
- [7] D. Calvanese, T. Catarci, and G. Santucci. LAURIN: A distributed digital library of newspaper clippings. *World Wide Web J.* 4.1/2 (2001), pp. 5–20.
- [8] D. Calvanese, G. De Giacomo, M. Lenzerini, and M. Y. Vardi. Rewriting of regular expressions and regular path queries. *J. of Computer and System Sciences* 64.3 (2002), pp. 443–465.
- [9] A. Cali, D. Calvanese, G. De Giacomo, and M. Lenzerini. On the role of integrity constraints in data integration. *Bull. of the IEEE Computer Society Technical Committee on Data Engineering* 25.3 (2002), pp. 39–45.
- [10] G. Lanfranchi, P. Della Peruta, A. Perrone, and D. Calvanese. Toward a new landscape of system management in an autonomic computing environment. *IBM Systems J.* 42.1 (2003), pp. 119–128.
- [11] D. Calvanese, G. De Giacomo, M. Lenzerini, and M. Y. Vardi. Reasoning on regular path queries. *SIGMOD Record* 32.4 (2003), pp. 83–92.
- [12] A. Cali, D. Calvanese, G. De Giacomo, and M. Lenzerini. Data integration under integrity constraints. *Information Systems* 29.2 (2004), pp. 147–163.
- [13] D. Calvanese and G. De Giacomo. Data integration: A logic-based perspective. *AI Magazine* 26.1 (2005), pp. 59–70.
- [14] D. Calvanese, G. De Giacomo, and M. Y. Vardi. Decidable containment of recursive queries. *Theoretical Computer Science* 336.1 (2005), pp. 33–56.
- [15] D. Berardi, D. Calvanese, G. De Giacomo, M. Lenzerini, and M. Mecella. Automatic service composition based on behavioral descriptions. *Int. J. of Cooperative Information Systems* 14.4 (2005), pp. 333–376.
- [16] D. Berardi, D. Calvanese, and G. De Giacomo. Reasoning on UML class diagrams. *Artificial Intelligence* 168.1–2 (2005), pp. 70–118.
- [17] D. Calvanese, L. Dragone, D. Nardi, R. Rosati, and S. M. Trisolini. Enterprise modeling and data warehousing in Telecom Italia. *Information Systems* 31.1 (2006), pp. 1–32.
- [18] D. Calvanese, G. De Giacomo, M. Lenzerini, and M. Y. Vardi. View-based query processing: On the relationship between rewriting, answering and losslessness. *Theoretical Computer Science* 371.3 (2007), pp. 169–182.
- [19] D. Calvanese, G. De Giacomo, D. Lembo, M. Lenzerini, and R. Rosati. Tractable reasoning and efficient query answering in description logics: the *DL-Lite* family. *J. of Automated Reasoning* 39.3 (2007), pp. 385–429.
- [20] A. Poggi, D. Lembo, D. Calvanese, G. De Giacomo, M. Lenzerini, and R. Rosati. Linking data to ontologies. *J. on Data Semantics* 10 (2008), pp. 133–173.
- [21] D. Calvanese, G. De Giacomo, and M. Lenzerini. Conjunctive query containment and answering under description logics constraints. *ACM Trans. on Computational Logic* 9.3 (2008), pp. 22.1–22.31.
- [22] D. Calvanese, G. De Giacomo, D. Lembo, M. Lenzerini, and R. Rosati. Inconsistency tolerance in P2P data integration: An epistemic logic approach. *Information Systems* 33.4–5 (2008), pp. 360–384.
- [23] M. Ortiz, D. Calvanese, and T. Eiter. Data complexity of query answering in expressive description logics via tableaux. *J. of Automated Reasoning* 41.1 (2008), pp. 61–98.
- [24] D. Calvanese, G. De Giacomo, M. Lenzerini, M. Mecella, and F. Patrizi. Automatic service composition and synthesis: the Roman Model. *Bull. of the IEEE Computer Society Technical Committee on Data Engineering* 31.3 (2008), pp. 18–22.
- [25] A. Cali, D. Calvanese, and D. Martinenghi. Dynamic query optimization under access limitations and dependencies. *J. of Universal Computer Science* 15.1 (2009), pp. 33–62.
- [26] A. Artale, D. Calvanese, R. Kontchakov, and M. Zakharyashev. The *DL-Lite* family and relations. *J. of Artificial Intelligence Research* 36 (2009), pp. 1–69.
- [27] D. Calvanese, G. De Giacomo, D. Lembo, M. Lenzerini, A. Poggi, M. Rodriguez-Muro, R. Rosati, M. Ruzzi, and D. F. Savo. The Mastro system for ontology-based data access. *Semantic Web J.* 2.1 (2011). Listed among the **5 most cited papers in the first five years of the *Semantic Web Journal***, pp. 43–53.
- [28] D. Calvanese, G. De Giacomo, M. Lenzerini, and R. Rosati. View-based query answering in description logics: semantics and complexity. *J. of Computer and System Sciences* 78 (2012), pp. 26–46.

- [29] A. Queralt, A. Artale, D. Calvanese, and E. Teniente. OCL-Lite: finite reasoning on UML/OCL conceptual schemas. *Data and Knowledge Engineering* 73 (2012), pp. 1–22.
- [30] C. Thorne and D. Calvanese. Tractability and intractability of controlled languages for data access. *Studia Logica* 100.4 (2012), pp. 787–813.
- [31] D. Calvanese, G. De Giacomo, D. Lembo, M. Lenzerini, and R. Rosati. Data complexity of query answering in description logics. *Artificial Intelligence* 195 (2013), pp. 335–360.
- [32] E. Kharlamov, D. Zheleznyakov, and D. Calvanese. Capturing model-based ontology evolution at the instance level: The case of *DL-Lite*. *J. of Computer and System Sciences* 79.6 (2013), pp. 835–872.
- [33] D. Calvanese, G. De Giacomo, M. Lenzerini, and M. Y. Vardi. On simplification of schema mappings. *J. of Computer and System Sciences* 79.6 (2013), pp. 816–834.
- [34] B. Bagheri Hariri, D. Calvanese, M. Montali, G. De Giacomo, R. De Masellis, and P. Felli. Description logic Knowledge and Action Bases. *J. of Artificial Intelligence Research* 46 (2013), pp. 651–686.
- [35] D. Calvanese, M. Ortiz, M. Simkus, and G. Stefanoni. Reasoning about explanations for negative query answers in *DL-Lite*. *J. of Artificial Intelligence Research* 48 (2013), pp. 635–669.
- [36] D. Calvanese, S. Hartmann, and E. Teniente. Automated reasoning on conceptual schemas (Dagstuhl Seminar 13211). *Dagstuhl Reports* 3.5 (2013), pp. 43–77.
- [37] D. Calvanese and T. Lukasiewicz. Preface to the special issue on selected papers presented at the 4th International Conference on Web Reasoning and Rule Systems (RR 2010). *Semantic Web J.* 4.4 (2013), p. 349.
- [38] D. Calvanese, T. Eiter, and M. Ortiz. Answering regular path queries in expressive description logics via alternating tree-automata. *Information and Computation* 237 (2014), pp. 12–55.
- [39] D. Calvanese, M. Koubarakis, and D. Toman. Preface to the special issue on ontology-based data access. *J. of Web Semantics* 33 (2015), pp. 1–2.
- [40] D. Calvanese, P. Liuzzo, A. Mosca, J. Remesal, M. Rezk, and G. Rull. Ontology-based data integration in EPNNet: Production and distribution of food during the Roman Empire. *Engineering Applications of Artificial Intelligence* 51 (2016), pp. 212–229.
- [41] M. Montali and D. Calvanese. Soundness of data-aware, case-centric processes. *Int. J. on Software Tools for Technology Transfer* 18.5 (2016), pp. 535–558.
- [42] M. Arenas, E. Botoeva, D. Calvanese, and V. Ryzhikov. Knowledge base exchange: The case of OWL 2 QL. *Artificial Intelligence* 238 (2016), pp. 11–62.
- [43] 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 J.* 8.3 (2017). **Semantic Web Journal outstanding paper award for 2016**, pp. 471–487.
- [44] S. Ahmetaj, D. Calvanese, M. Ortiz, and M. Simkus. Managing change in graph-structured data using description logics. *ACM Trans. on Computational Logic* 18.4 (2017), 27:1–27:35.
- [45] D. Calvanese, G. De Giacomo, M. Montali, and F. Patrizi. First-order mu-calculus over generic transition systems and applications to the Situation Calculus. *Information and Computation* 259.3 (2018), pp. 328–347.
- [46] S. Abiteboul, M. Arenas, P. Barceló, M. Bienvenu, D. Calvanese, C. David, R. Hull, E. Hüllermeier, B. Kimelfeld, L. Libkin, W. Martens, T. Milo, F. Murlak, F. Neven, M. Ortiz, T. Schwentick, J. Stoyanovich, J. Su, D. Suciu, V. Vianu, and K. Yi. Research directions for principles of data management (Dagstuhl Perspectives Workshop 16151). *Dagstuhl Manifestos* 7.1 (2018), pp. 1–29.
- [47] D. Calvanese, M. Dumas, Ü. Laurson, F. M. Maggi, M. Montali, and I. Teinmaa. Semantics, analysis and simplification of DMN decision tables. *Information Systems* 78 (2018), pp. 112–125.
- [48] D. Calvanese, M. Montali, M. Dumas, and F. M. Maggi. Semantic DMN: Formalizing and reasoning about decisions in the presence of background knowledge. *Theory and Practice of Logic Programming* 19.4 (2019), pp. 536–573.
- [49] D. Zheleznyakov, E. Kharlamov, W. Nutt, and D. Calvanese. On expansion and contraction of DL-Lite knowledge bases. *J. of Web Semantics* 57 (2019), pp. 1–19.
- [50] E. Güzel Kalayci, S. Brandt, D. Calvanese, V. Ryzhikov, G. Xiao, and M. Zakharyashev. Ontology-based access to temporal data with Ontop: A framework proposal. *Applied Mathematics and Computer Science* 29.1 (2019), pp. 17–30.
- [51] D. Lanti, G. Xiao, and D. Calvanese. VIG: Data scaling for OBDA benchmarks. *Semantic Web J.* 10.2 (2019), pp. 413–433.
- [52] G. Xiao, L. Ding, B. Cogrel, and D. Calvanese. Virtual Knowledge Graphs: An overview of systems and use cases. *Data Intelligence* 1.3 (2019), pp. 201–223.
- [53] E. Botoeva, D. Calvanese, B. Cogrel, J. Corman, and G. Xiao. Ontology-based data access – Beyond relational sources. *Intelligenza Artificiale* 13.1 (2019), pp. 21–36.
- [54] L. Ding, G. Xiao, D. Calvanese, and L. Meng. Consistency assessment for open geodata integration: An ontology-based approach. *GeoInformatica* (2019).
- [55] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin. SMT-based verification of data-aware processes: A model-theoretic approach. *Mathematical Structures in Computer Science* 30.3 (2020), pp. 271–313.