

## UNIVERSITÀ DEGLI STUDI DI MILANO

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Codice concorso **4961**

**Pietro Galliani**

## CURRICULUM VITAE

### PERSONAL INFORMATION

<i>surname</i>	Galliani
<i>name</i>	Pietro
<i>born</i>	Bologna, 22/12/1983
<i>nationality</i>	Italian
<i>children</i>	None
<i>address (BZ)</i>	Via Renon 11, 39100 Bolzano (BZ)
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<i>email</i>	<a href="mailto:pietro.galliani@imperfectinformation.net">pietro.galliani@imperfectinformation.net</a> <b>PREFERRED</b>

### CONTACT

### EDUCATION

<i>University of Bologna</i>	2002-2005	B.Sc. in Mathematics Thesis: <i>Metodi Matematici per l'Analisi del Linguaggio Naturale</i> ( <i>Mathematical Methods for Natural Language Analysis</i> ) Final grade: 110/110 e lode (110/110 cum laude)
<i>University of Bologna</i>	2002-2005	Collegio Superiore Graduate of the "Collegio Superiore" School of Excellence Website: <a href="http://www.collegio.unibo.it/">http://www.collegio.unibo.it/</a>
<i>University of Amsterdam</i>	2006-2008	M.Sc. in Logic Track: Logic and Mathematics Thesis: <i>Game Values and Equilibria for Undetermined Sentences of Dependence Logic</i> Available from <a href="http://dare.uva.nl/record/419952">http://dare.uva.nl/record/419952</a> Cum laude, <b>Huygens Scholarship winner</b> (2007-2008)
<i>University of Sussex</i>	2015	M.Sc. in Evolutionary and Adaptive Systems Thesis: <i>An adaptive semantic similarity measure over the Gene Ontology</i> Available from <a href="https://github.com/PietroGalliani/similarity/blob/master/notes.pdf">https://github.com/PietroGalliani/similarity/blob/master/notes.pdf</a> With Distinction
<i>University of Amsterdam</i>	2008-2012	Ph.D. in Mathematical Logic Dissertation: <i>The Dynamics of Imperfect Information</i> Available from <a href="http://dare.uva.nl/record/425951">http://dare.uva.nl/record/425951</a>

## ABILITAZIONE SCIENTIFICA NAZIONALE (ITALIAN SCIENTIFIC HABILITATION)

*Sector 01/A1* Logica Matematica e Matematiche Complementari  
II Fascia, 01/08/2018 – 01/08/2024

*Sector 11/C2* Logica, Storia e Filosofia della Scienza  
II Fascia, 30/07/2018 – 30/07/2024

## CURRENT POSITION

Researcher ("RTDa"), KRDB Research Centre for Knowledge and Data, Free University of Bozen-Bolzano

*Topic:* KRDB Technologies - foundations and applications (KRDBTech)  
*Task:* Foundational and applied research activity within the group working on Knowledge Representation and Databases (KRDB) technologies for intelligent information design, integration, access, and navigation with conceptual models, ontologies, and databases.

## WORK EXPERIENCE

Free University of Bozen-Bolzano	2019-2020	Research Associate ("Assegno di Ricerca") <i>Duties:</i> Research on evaluation of concepts and on semantic interoperability, with special emphasis on applications to cognitive Artificial Intelligence, ontology debugging, and concept invention.
Free University of Bozen-Bolzano	2017-2019	Research Associate ("Assegno di Ricerca") <i>Duties:</i> Foundational and applied research in the area of computational creativity, focusing in particular on the problem of the automated or semiautomated evaluation of novel concepts or theories.
Sussex University SMiLe CLiNiC	2015-2017	Research Fellow <i>Duties:</i> Research on scalable human-in-the-loop nonparametric Bayesian methods (in particular, applications of variational methods in the context of Gaussian Processes and structured classification)
Studio Davoli SRL	2014	Software Developer/IT Technician <i>Duties:</i> Technical assistance, computer security, software development for accounting firm (April–September 2014)
Clausthal University of Technology	2013–2014	Postdoctoral Researcher <i>Duties:</i> Research on logics for multi-agent systems, teaching (as TA)
University of Helsinki	2012–2013	Postdoctoral Researcher <b>Väisälä Scholarship winner</b> (2012) <i>Duties:</i> Research on logics of imperfect information (i.e. Dependence Logic and its variants), teaching
University of Amsterdam	2008–2012	Doctoral Researcher

## TEACHING EXPERIENCE

Free University of Bozen-Bolzano	2021	Teacher for: Data Structures and Algorithms
Free University of Bozen-Bolzano	2020	Teaching Assistant for: Probability Theory and Statistics, Data Structures and Algorithms, Programming Paradigms

<i>Free University of Bozen-Bolzano</i>	2018-2019	Teaching Assistant for: Logic and Discrete Mathematics
	2018	Teaching Assistant for: Computational Mathematics
<i>TU Clausthal</i>	2013-2014	Teaching Assistant for: Logics for Multi-Agent Systems
<i>University of Helsinki</i>	2013	Teacher for: Finite Model Theory
<i>University of Amsterdam</i>	2011	Teaching Assistant for: Proof Theory, Lambda Calculus
	2008, 2009	Teaching Assistant for: Model Theory

#### AWARDS AND SCHOLARSHIPS

- “Collegio Superiore” scholarship/excellence school at University of Bologna (2002-2005)
- Huygens Scholarship winner (2007-2008)
- Väisälä Scholarship winner (2012)

#### OTHER ACADEMIC RESPONSIBILITIES

- Co-Organizer for MiDiSoVa (Modelling Interaction, Dialog, Social Choice and Vagueness) cross-CRP workshop
- PC member for PRUV 2018 (Reasoning with Preferences, Uncertainty and Vagueness)
- PC member for GALOP-19 (14th Workshop on Games for Logic and Programming Languages)
- PC member for IJCAI-19 (28th International Joint Conference on Artificial Intelligence)
- PC member for AAAI-20 (Thirty-Fourth AAI Conference on Artificial Intelligence)
- PC member for IJCAI-PRICAI 2020 (International Joint Conference on Artificial Intelligence - Pacific Rim International Conference on Artificial Intelligence)
- Organizing Committee member for BOSK (Bolzano Summer of Knowledge) 2020
- PC member for IJCAI 2021 (30th International Joint Conference on Artificial Intelligence)
- PC member for DAO-XAI 2021 (Workshop on Data meets Applied Ontologies in XAI)
- PC member for ESSLLI 2021 workshop on logics of dependence and independence
- PC member for LORI 2021 (Eighth International Conference on Logic, Rationality and Interaction)

## THIRD MISSION

- Encyclopedia entry on Dependence Logic for the Stanford Encyclopedia of Mathematics  
<https://plato.stanford.edu/entries/logic-dependence/>
- Interview/lecture on Continuum Hypothesis and Infinity for Oggiscienza (Italian scientific divulgation journal)  
<https://oggiscienza.it/2016/03/10/infinito-logica-matematica-cantor/>
- Interview/lecture on Incompleteness Theorems for Oggiscienza (Italian scientific divulgation journal)  
<https://oggiscienza.it/2015/02/11/hard-times-ii-le-conseguenze-dellassioma/>

## INVITED TALKS

- *On the extensions of Dependence Logic*, ILIAS seminars, Interdisciplinary Lab for Intelligent and Adaptive Systems, University of Luxembourg
- *Definability Issues in Team Semantics*, Dependence Logic: Theory and Applications, Schloss Dagstuhl, Germany
- *Some Results on the Characterization of Safe and Strongly First Order Dependencies*, Logiikan Seminaari, University of Helsinki, Finland
- *Some Results on the Characterization of Safe and Strongly First Order Dependencies*, Finite Model Theory Seminar, Tampere, Finland
- *Teams, Dependencies, and Expressivity: Open Problems and New Results* – Bruno Kessler Foundation, Trento, Italy.
- *What is it like to first order? Lessons from Compositionality, Teams and Games*. Helsinki Logic Workshop, University of Helsinki, Finland.
- *Strongly first order dependencies in team semantics*. ESSLLI 2020 workshop "Logics of Dependence and Independence".

## PUBLICATIONS (IN BOOKS AND PROCEEDINGS)

Oct 2021      Doubly Strongly First Order Dependencies  
Proceedings of WoLLIC 2021: Logic, Language, Information, and Computation  
[doi:10.1007/978-3-030-88853-4\\_4](https://doi.org/10.1007/978-3-030-88853-4_4)

Sep 2021      Percetron Operators That Count  
Proceedings of the 34th International Workshop on Description Logics (DL 2021).  
With Oliver Kutz and Nicolas Troquard  
<http://ceur-ws.org/Vol-2954/paper-15.pdf>

Oct 2020      Perceptron Connectives in Knowledge Representation  
In Proceedings of EKAW 2020: Knowledge Engineering and Knowledge Management  
With Guendalina Righetti, Oliver Kutz, Daniele Porello and Nicolas Troquard  
[doi:10.1007/978-3-030-61244-3\\_13](https://doi.org/10.1007/978-3-030-61244-3_13)

- Sep 2020*      **Towards Even More Irresistible Axiom Weakening**  
In Proceedings of 33rd International Workshop on Description Logics (DL 2020)  
With Roberto Confalonieri, Oliver Kutz, Daniele Porello, Guendalina Righetti and Nicolas Troquard  
<http://ceur-ws.org/Vol-2663/paper-8.pdf>
- Sep 2020*      **Two Knowledge-driven Approaches to Explaining Black-box Models.** In Proceedings of the Explainable Logic-Based Knowledge Representation (XLoKR 2020)  
With Roberto Confalonieri, Guendalina Righetti, Oliver Kutz, Daniele Porello, and Nicolas Troquard  
<https://lat.inf.tu-dresden.de/XLoKR20/XLoKRpaper397.pdf>
- Aug 2020*      **Embedding causal team languages into dependence logic**  
In Proceedings of Workshop on Logics of Dependence and Independence (LoDE 2020V)  
With Fausto Barbero  
<https://helda.helsinki.fi/handle/10138/317202?locale-attribute=en>
- Jan 2020*      **Diversity, Dependence and Independence**  
In Proceedings of Foundations of Information and Knowledge Systems (FoIKS) 2020  
With Jouko Väänänen  
[doi:10.1007/978-3-030-39951-1\\_7](https://doi.org/10.1007/978-3-030-39951-1_7)
- Dec 2019*      **Weighted Description Logic for Classification Problems**  
In *Proceedings of GCAI 2019*  
With Guendalina Righetti, Oliver Kutz, Claudio Masolo, Daniele Porello and Nicolas Troquard  
[doi:10.29007/vdlq](https://doi.org/10.29007/vdlq)
- Dec 2019*      **On Knowledge Dependence in Weighted Description Logic**  
In *Proceedings of GCAI 2019*  
With Oliver Kutz, Daniele Porello, Guendalina Righetti and Nicolas Troquard  
[doi:10.29007/hjt1](https://doi.org/10.29007/hjt1)
- Aug 2019*      **Characterizing Strongly First Order Dependencies: The Non-Jumping Relativizable Case**  
In *Proceedings of GandALF 2019*.  
[doi:10.4204/EPTCS.305.5](https://doi.org/10.4204/EPTCS.305.5)
- June 2019*      **A Toothful of Concepts: Towards a Theory of Weighted Concept Combination**  
In *Proceedings of the 32nd International Workshop on Description Logics*.  
With Daniele Porello, Oliver Kutz, Guendalina Righetti, Nicolas Troquard and Claudio Masolo.  
<http://ceur-ws.org/Vol-2373/paper-24.pdf>
- Sep 2018*      **Safe Dependency Atoms and Possibility Operators in Team Semantics**  
In *Proceedings of GandALF 2018*.  
[doi:10.4204/EPTCS.277.5](https://doi.org/10.4204/EPTCS.277.5)

- Sep 2018      A Roadmap Towards Tuneable Random Ontology Generation  
In *Proceedings of 10<sup>th</sup> International Conference on Knowledge Engineering and Ontology Development (KEOD 2018)*.  
With Roberto Confalonieri and Oliver Kutz.  
[doi:10.5220/0006961103510357](https://doi.org/10.5220/0006961103510357)
- Jul 2018      Two Approaches to Ontology Aggregation Based on Axiom Weakening  
In *Proceedings of the Twenty-Seventh International Joint Conference on Artificial Intelligence, IJCAI-18*.  
With Daniele Porello, Nicolas Troquard, Rafael Peñaloza, Roberto Confalonieri and Oliver Kutz.  
[doi:10.24963/ijcai.2018/268](https://doi.org/10.24963/ijcai.2018/268).
- Apr 2018      Repairing Ontologies via Axiom Weakening  
In *Thirty-Second AAAI Conference on Artificial Intelligence (AAAI 2018)*. AAAI Press, 2018.  
With Nicolas Troquard, Roberto Confalonieri, Rafael Peñaloza, Daniele Porello, and Oliver Kutz.  
<https://www.aaai.org/ocs/index.php/AAAI/AAAI18/paper/view/17189>.
- Mar 2018      Towards an Algebraic Approach to Theory and Concept Evaluation  
In *Proceedings of Comprehensibility and Explanation in AI and ML (CEX) 2017*.  
[http://ceur-ws.org/Vol-2071/CExAIIA\\_2017\\_paper\\_5.pdf](http://ceur-ws.org/Vol-2071/CExAIIA_2017_paper_5.pdf).
- Mar 2018      Two Applications of Concept Refinement  
In *Proceedings of Comprehensibility and Explanation in AI and ML (CEX) 2017*.  
With Roberto Confalonieri, Nicolas Troquard, Olivier Kutz, Rafael Peñaloza and Daniele Porello.  
[http://ceur-ws.org/Vol-2071/CExAIIA\\_2017\\_paper\\_4.pdf](http://ceur-ws.org/Vol-2071/CExAIIA_2017_paper_4.pdf).
- Feb 2018      Dynamic Logics of Imperfect Information: From Teams and Games to Transitions  
In van Ditmarsch and Sandu editors,  
*Jaakko Hintikka on knowledge and game theoretical semantics*,  
Outstanding Contributions to Logic, Springer.  
[doi:10.1007/978-3-319-62864-6\\_12](https://doi.org/10.1007/978-3-319-62864-6_12)
- Oct 2017      Repairing Socially Aggregated Ontologies Using Axiom Weakening  
In An, Bazzan and Leite editors,  
*PRIMA 2017: Principles and Practice of Multi-Agent Systems*.  
*20th International Conference, Lecture Notes in Computer Science*, 2017.  
With Daniele Porello, Nicolas Troquard, Roberto Confalonieri, Oliver Kutz, and Rafael Peñaloza.  
[doi:10.1007/978-3-319-69131-2\\_26](https://doi.org/10.1007/978-3-319-69131-2_26).
- Jul 2017      Coherence, Similarity, and Concept Generalisation  
In Artale, Glimm, and Kontchakov editors,  
*Proceedings of the 30th International Workshop on Description Logics*.  
With Roberto Confalonieri, Oliver Kutz, Rafael Peñaloza, Daniele Porello, Marco Schorlemmer, and Nicolas Troquard.  
<http://ceur-ws.org/Vol-1879/paper45.pdf>

Apr 2017      Gray-box inference for structured Gaussian process models

In Singh and Zhu editors,  
*Proceedings of Machine Learning Research Vol. 54: Artificial Intelligence and Statistics*  
 With Amir Dezfouli, Edwin V. Bonilla and Novi Quadrianto.  
<http://proceedings.mlr.press/v54/galliani17a/galliani17a.pdf>

Feb 2017      Dependence Logic

in Edward N. Zalta editor,  
 Stanford Encyclopedia of Philosophy (Spring 2017 edition; revised for Summer 2021 edition)  
<https://plato.stanford.edu/entries/logic-dependence/>

Jun 2016      On strongly first-order dependencies

in Abramsky, Kontinen, Väänänen and Volmer editors,  
*Dependence Logic, Theory and Applications*, pages 53–71, Springer,  
[doi:10.1007/978-3-319-31803-5\\_4](https://doi.org/10.1007/978-3-319-31803-5_4)

Mar 2015      The doxastic interpretation of team semantics

in Hirvonen, Kontinen, Kossak and Villaveces editors,  
*Logic without Borders*, pages 167–192,  
 Ontos Mathematical Logic, Volume 5, De Gruyter,  
[doi:10.1515/9781614516873.167](https://doi.org/10.1515/9781614516873.167)

Aug 2014      On Dependence Logic

in Baltag and Smets editors,  
*Johan van Benthem on Logics and Information Dynamics*, pages 101–119,  
 Outstanding Contributions to Logic, Volume 5 2014, Springer.  
 With Jouko Väänänen.  
[doi:10.1007/978-3-319-06025-5\\_4](https://doi.org/10.1007/978-3-319-06025-5_4)

Jul 2013      Upwards closed dependencies in team semantics

in Puppis and Villa editors,  
*Proceedings of GandALF 2013*, pages 93–106,  
 EPTCS 119, 2013,  
[doi:10.4204/EPTCS.119.10](https://doi.org/10.4204/EPTCS.119.10).

Apr 2013      Hierarchies in independence logic

in Ronchi Della Rocca editor,  
*Computer Science Logic 2013 (CSL 2013)*, pages 263–280,  
 Leibniz International Proceedings in Informatics (LIPIcs), Volume 23 2013.  
 With Miika Hannula and Juha Kontinen.  
[doi:10.4230/LIPIcs.CSL.2013.263](https://doi.org/10.4230/LIPIcs.CSL.2013.263).

Apr 2013      Inclusion logic and fixed point logic

in Ronchi Della Rocca editor,  
*Computer Science Logic 2013 (CSL 2013)*, pages 281–295,  
 Leibniz International Proceedings in Informatics (LIPIcs), Volume 23 2013,  
 With Lauri Hella.  
[doi:10.4230/LIPIcs.CSL.2013.281](https://doi.org/10.4230/LIPIcs.CSL.2013.281).

Jan 2011      Sensible semantics of imperfect information

in Mohua Banerjee and Anil Seth editors,  
*Logic and Its Applications*,  
 volume 6521 of *Lecture Notes in Computer Science*, pages 79–89,  
[doi:10.1007/978-3-642-18026-2\\_8](https://doi.org/10.1007/978-3-642-18026-2_8).

## PUBLICATIONS (IN SCIENTIFIC JOURNALS)

- Nov 2021* Diversity, Dependence and Independence  
Annals of Mathematics and Artificial Intelligence 90:211–233  
With Jouko Väänänen.  
[doi:10.1007/s10472-021-09778-8](https://doi.org/10.1007/s10472-021-09778-8)
- Jun 2021* Safe dependency atoms and possibility operators in  
team semantics.  
Information and Computation 278 (2021)  
[doi:10.1016/j.ic.2020.104593](https://doi.org/10.1016/j.ic.2020.104593)
- Sep 2019* Characterizing downwards closed, strongly first  
order, relativizable dependencies  
Journal of Symbolic Logic 84(3): 1136–1167  
[doi:10.1017/jsl.2019.12](https://doi.org/10.1017/jsl.2019.12)
- Dec 2015* Upwards closed dependencies in team semantics  
Information and Computation 245:124–135  
[doi:10.1016/j.ic.2015.06.008](https://doi.org/10.1016/j.ic.2015.06.008)
- Aug 2013* Transition semantics: The Dynamics of Dependence  
Logic  
Synthese 191(6):1249–1276  
[doi:10.1007/s11229-013-0327-8](https://doi.org/10.1007/s11229-013-0327-8).
- May 2013* The dynamification of modal dependence logic  
Journal of Logic, Language and Information 22(3):269–295  
[doi:10.1007/s10849-013-9175-7](https://doi.org/10.1007/s10849-013-9175-7).
- Mar 2013* Epistemic operators in dependence logic  
Studia Logica 101(2):367–397,  
[doi:10.1007/s11225-013-9478-3](https://doi.org/10.1007/s11225-013-9478-3).
- Mar 2013* Lottery semantics: A compositional semantics  
for probabilistic first-order logic with  
imperfect information  
Studia Logica 101(2):293–322.  
With Allen. L. Mann.  
[doi:10.1007/s11225-013-9475-6](https://doi.org/10.1007/s11225-013-9475-6).
- Feb 2013* General models and entailment semantics for  
independence logic  
Notre Dame Journal of Formal Logic 54(2):253–275,  
[doi:10.1215/00294527-1960506](https://doi.org/10.1215/00294527-1960506).
- Jan 2012* Inclusion and exclusion dependencies in team  
semantics: On some logics of imperfect  
information.  
Annals of Pure and Applied Logic 163(1):68 – 84,  
[doi:10.1016/j.apal.2011.08.005](https://doi.org/10.1016/j.apal.2011.08.005).

DATE: 3 / 22 / 2022

PLACE: BOLOGNA

I authorise the processing of my personal data in compliance with  
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