Academic Curriculum Vitae

Alessandro Gianola

Overview

I am an **Assistant Professor (tenure track)** at Instituto Superior Técnico, Universidade de Lisboa (Portugal), and a **Senior Researcher** at INESC-ID Lisboa (Portugal). Previously, I was a Postdoctoral Researcher in Computer Science at the Free University of Bozen-Bolzano, Italy. I hold a **PhD in Computer Science**, earned **cum laude** at the Free University of Bozen-Bolzano. I work on Business Process Management (BPM), formal methods and AI: specifically, my research focuses on AI techniques and formal methods for the analysis of complex business processes with data, and multi-perspective process mining. I have a h-index of 16 (Google Scholar), and I co-authored **more than 50 referred papers** accepted in a wide range of venues, including top-tier venues (both Information Systems and AI) such as **top-rated journals** (Information Systems, Engineering Applications of Artificial Intelligence, Journal of Automated Reasoning) and **premier conferences** like AAAI, IJCAI, IJCAR, BPM, CAiSE and ECAI: among the others, I have **6 papers in A* conferences**, **15 papers in A conferences, and 5 articles in Q1 journals.** As a single author, I published a **Springer Nature monograph** titled 'Verification of Data-Aware Processes via Satisfiability Modulo Theories'. My **PhD dissertation won three prestigious awards**: the **2022 Best Italian PhD Thesis in Theoretical Computer Science Award**, and the **2022 Best BPM Dissertation Award**, and the **2023 CADE Bill McCune PhD Award in Automated Reasoning**. I was a recipient of the **ECAI 2024 Outstanding PC member Award**, and I was awarded the **INESC-ID 2024 Best Young Researcher**. Two papers that I co-authored won the **Best Paper Award** (PRIMA 2020 and BPM 2021). I was/am member of the **Program Committee** of BPM (2023, 2024, 2025), ECAI (2023, 2024, 2025), KR (2023, 2024, 2025) IJCAI (2023, 2024, 2025), AAAI (2024, 2025), ICPM (2024, 2025), CAiSE 2025, CADE 2025, JELIA 2025, SMT 2025. I am **PC co-chair** of EDOC 2025, **Workshops Chair** of FLoC 2026 (the 9th Federated Logic Conference), **Proceedings Co-Chair** of ECAI 2025, **co-chair** of FM-BPM 2023, 2024 and 2025 (workshops co-located with the BPM conference) and of the CBI/EDOC Forum Track, **publicity chair** of AIxIA 2024. I was **Invited Speaker** at iPRA 2022, co-located with FLoC 2022, and at the Math4AIML 2025 workshop. I am **Principal Investigator (PI)** of two projects: the FCT project 'OptiGov' (125k euros) and the INESC-ID project 'eProcess' (bilateral project with Link Consulting, 80k euros).

Personal information

Alessandro Gianola
Place of birth: Sondrio (SO), Italy
Date of birth: 25/02/1993
Nationality: Italian
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Education

- **PhD in Computer Science (cum laude),** Free University of Bozen-Bolzano, 2022.
- Master's Degree in Mathematics, Università degli Studi di Milano, 2017. Final mark: 110/110, cum laude.

- Bachelor's Degree in Mathematics, Università degli Studi di Milano, 2015. Final mark: 110/110, cum laude
- Diploma Liceo Classico, Istituto Comprensivo ``G. Piazzi-L. Perpenti'' (Sondrio), 2012. Final mark: 100/100, cum laude

Present appointment

- **Assistant Professor (Professor Auxiliar)** in **Information Systems** at IST and **Senior Researcher (Investigador Integrado)** at INESC-ID
- Start of appointment: September 2023
- Employer: **INESC-ID/Instituto Superior Técnico (IST),** Universidade de Lisboa, Lisbon, Portugal
- Currently, I am an **Assistant Professor (tenure track)** in Information Systems at the Departamento de Engenharia Informática (DEI) of the Instituto Superior Técnico, Universidade de Lisboa, and a **Senior Researcher** at INESC-ID Lisboa. I work on multi-perspective process mining and verification of complex business processes enriched with structured data using automated reasoning techniques, formal methods and computational logic.
- Main Research Areas: Business Process Management, Automated Reasoning, Process Mining, Formal Methods, Model Checking, Artificial Intelligence, Computational Logic, Mathematical Logic

Previous professional experience

- **Research Assistant (Postdoctoral Researcher)** in Computer Science at the Faculty of Computer Science of the Free University of Bozen-Bolzano, Italy (01/11/2022 - 14/09/2023).
- **Research Assistant (Postdoctoral Researcher)** in Computer Science at the Faculty of Computer Science of the Free University of Bozen-Bolzano, Italy (01/11/2021 – 31/10/2022).
- **Lecturer** of the *Preparatory Course in Mathematics* for the Bachelor in Computer Science and Bachelor in Business Informatics at the Free University of Bozen-Bolzano (academic year 2022/2023)
- **Lab Instructor** in the courses of Advanced Statistics for the Master in Computational Data Science at the Free University of Bozen-Bolzano (academic years 2021/2022 and 2022/2023).
- **Internship** at the University of California San Diego (UCSD), as a research affiliate in the Database Lab (https://dbucsd.github.io/).
- **Teaching Assistant** in the course of Probability Theory and Statistics for the Bachelor in Computer Science at the Free University of Bozen-Bolzano (academic year 2019/2020).
- **PhD student with scholarship** at the Faculty of Computer Science of the Free University of Bozen-Bolzano, Italy (November 2017 - March 2022).

Bibliometric info according to Google Scholar

- Google Scholar ID: 7D8gWSUAAAAJ
- Google Scholar Profile: https://scholar.google.it/citations?user=7D8gWSUAAAAJ
- Google Scholar H-index: 16
- Google Scholar overall citations: 836
- Google Scholar i10-index: 26

Research

Research Topics

I work on Business Process Management (BPM), process mining, formal methods and AI: specifically, my research activity focuses on foundational and methodological aspects of logic and formal methods for the automated analysis of complex business processes enriched with data, and on process mining in the context of multi-perspective processes (control flow, data, time etc.). My

research activity is at the intersection of several fields, both theoretical/foundational ones (automated reasoning, formal methods, computational logic, database theory) and practice-oriented ones (AI, SMT, information systems/business process management, process mining and machine learning). The research I carried out during my PhD paved the way for the theoretical foundations of the safety verification of data-aware processes via SMT solving, and for the applications to the analysis of real-world business processes enriched with concrete data and data-aware extensions of Petri nets: this work built bridges among distant areas such as AI, database theory, SMT/automated reasoning, Information Systems/BPM and theoretical computer science. Recently, I have been developing techniques for performing process mining such as (exact and approximate) conformance checking for object-centric and rich multi-perspective processes.

Research Impact

My research activity has a big impact in both symbolic AI and BPM.

Thanks to my research achievements in 2024, I was awarded the **2024 INESC-ID Best Young Researcher**, given by INESC-ID to the best researcher of the institution among the researchers who completed their PhD within the past six years.

My **PhD dissertation** won **three prestigious awards**: the **2022 Best Italian PhD Thesis in Theoretical Computer Science Award** given by the Italian Chapter of EATCS, the **2022 Best BPM Dissertation Award** given by the BPM Association at BPM 2022, and the **2023 CADE Bill McCune PhD Award in Automated Reasoning** given by CADE Inc.

According to the evaluating jury for the BPM Dissertation award, my PhD dissertation 'is an enormous body of work (a magnum opus) that considerably advances our understanding of data-aware business processes. It includes a substantial theoretical component along with two other parts that develop algorithmic techniques and practical approaches for the modeling and verification of business processes plus data'.

The impact of my research is also witnessed by **two Best Paper Awards** (PRIMA 2020 and BPM 2021), and by the wide range of venues where I published papers, including top-tier venues (both for Information Systems and AI) such as top-rated journals like **Information Systems**, **Engineering Applications of Artificial Intelligence**, the **Journal of Automated Reasoning**, **ACM Transactions on Computational Logic**, and premier conferences like **AAAI, IJCAI, IJCAR, BPM, ECAI and CADE**.

As a single author, I published a **Springer Nature monograph** titled '*Verification of Data-Aware Processes via Satisfiability Modulo Theories'*. This book introduces the first SMT-based approach, using automated reasoning techniques, for the analysis and verification of **complex business processes** enriched with data.

I have also co-authored **52 referred papers**: 13 articles in referred journals, 30 papers in international conferences with peer-reviewed formal proceedings, 1 referred book chapter and 8 workshop papers, 1 authored book. I have **15 papers in A conferences** (according to CORE), i.e., 10 BPM papers, 2 CAiSE, 1 CADE, 1 IJCAR and 1 ECAI, and **6 papers in A* conferences** (according to CORE), i.e., 4 AAAI and 2 IJCAI, all published in the last 5 years. I have **5 journal papers in Q1 journals** (according to Scimago), i.e., 3 in the 'Information Systems' journal (Scimago Q1 for information systems), 1 in 'Annals of Pure and Applied Logic' (Scimago Q1 for logic), and 1 in the 'Engineering Applications of Artificial Intelligence' journal (Scimago Q1 for AI).

According to Google Scholar, my h-index is 15 (all 733 citations in the last 5 years).

- According to Google Scholar, as of July 6, 2025:
  - my papers have received 836 overall citations
  - I have an h-index of 16
  - I have an i-10 index of 26
- According to Scopus, as of July 6, 2025:
  - my papers have received 628 overall citations;
  - I have an h-index of 12.

See below (in the 'Publications' Section) the complete list of the publications, divided into journal articles in refereed academic journals, conference papers with refereed proceedings, chapters in refereed books, authored books and workshop papers with refereed proceedings.

Coordination of scientific projects

- **OptiGov:** FCT project, on the optimization of Public Administration processes via Process Mining, AI and LLMs. March 2025 - January 2026 ***Principal Investigator.*** 125 000 euros
- **eProcess (INESC-ID/Link Consulting SA)**: bilateral project between INESC-ID and Link Consulting SA. September 2024 - February 2025. ***Principal Investigator.*** 80 000 euros
- **exPlainable kNowledge-aware PrOcess INTelligence (PINPOINT)**: PRIN project - Project on the empowering of Process Mining techniques and on extraction of interpretable, explainable process knowledge. November 2022 - September 2023. UNIBZ unit 168 000 euros
  Work Package Leader.

Participation in scientific projects

- **VERification of Business Artifacts (VERBA)**: start-up fund - Project on the verification of business artifacts via SMT. 2021-2022.
  Team Member. 50 000 euros
- **SMT-based Verification of Data-Aware Multi-Agent Systems (SMARTEST):** RTD UNIBZ project – internal research fund. November 2019 – July 2020
  Team Member. 6000 euros

Scientific Awards

- Winner of the **ECAI 2024 Outstanding PC Award**, which honors 2-3% of the PC members for their outstanding service to the community.
- Winner of the **2024 INESC-ID Best Young Researcher,** given by INESC-ID to the best researcher of the institution among the researchers who completed their PhD within the past six years.
- Winner of the **2023 CADE Bill McCune PhD Award**, given by the **CADE Inc.**
- Winner of the **2022 Best BPM Dissertation award**, given by the **BPM Association** at the 20th International Conference on Business Process Management (**BPM 2022**).
- Recipient of the **2022 Best Italian PhD Thesis in Theoretical Computer Science award**, given by the **Italian Chapter of the European**

Association for Theoretical Computer Science (EATCS), presented at ICTCS 2022.
- Recipient of the **Best Paper Award** at the 19th International Conference on Business Process Management (**BPM 2021**).
- Recipient of the **Best Paper Award** at the 23rd International Conference on Principles and Practice of Multi-Agent Systems (**PRIMA 2020**).
- Recipient of the **Woody Bledsoe Award** 2019 at 27th International Conference on Automated Deduction (CADE-27), which honors outstanding contributions of students to automated reasoning and automated deduction.

Other Awards (Italy)

- **XX olimpiade di filosofia, fase nazionale**, final round, Torino, Italy. 2012
  Second Place
- **XX olimpiade di filosofia, fase regionale (Lombardia)**, semi-final round (regional contest),Bergamo, Italy. 2012
  First Place

Academic Responsibilities

Organization of Conferences

- **Workshops Co-Chair** of FLoC 2026 (Federated Logic Conference 2026). https://www.floc26.org/committees/
- **PC Co-Chair** of the 29th International Conference on Enterprise Design, Operations, and Computing **(EDOC 2025).** https://cbi-edoc-2025.inesc-id.pt/organization/
- **Proceedings Co-Chair** of 28th European Conference on Artificial Intelligence **(ECAI 2025).** https://ecai2025.org/organizers/
- **Co-chair** together with Claudio Di Ciccio and Andrey Rivkin, of the following BPM 2025 workshop: ***Third International Workshop on Formal Methods for Business Process Management (FM-BPM 2025).***
- **Publicity Co-Chair** of **AIxIA 2024** (23rd International Conference of the Italian Association for Artificial Intelligence) https://aixia2024.events.unibz.it/organization/
- **Co-chair** together with Claudio Di Ciccio and Andrey Rivkin, of the following BPM 2024 workshop: ***Second International Workshop on Formal Methods for Business Process Management (FM-BPM 2024).***
- **Co-chair** together with Claudio Di Ciccio and Andrey Rivkin, of the following BPM 2023 workshop: ***First International Workshop on Formal Methods for Business Process Management (FM-BPM 2023).*** https://fm-bpm2023.github.io/
- **Co-chair**, together with Andrea Brunello and Fabio Mogavero, of the **OVERLAY 2023 workshop**, co-located with AIxIA 2023. https://overlay.uniud.it/workshop/2023/
- Member of the Local Organization Team of the **4th International Conference on Process Mining (ICPM 2022)**, Bolzano, Italy. October 23-28, 2022.

Memberships

Program Committee of Workshops and Conferences

- Member of the **Program Committee** of the **22nd International Conference on Principles of Knowledge Representation and Reasoning (KR 2025)**, Melbourne, Australia. 2025.
- Member of the **Program Committee** of the **23rd International Conference on Business Process Management (BPM 2025)**, Seville, Spain. 2025.
- Member of the **Program Committee** of the **28th European Conference on Artificial Intelligence (ECAI 2025)**, Bologna, Italy. 2025.

- Member of the **Program Committee** of the **34th International Joint Conference on Artificial Intelligence (IJCAI 2025)**, Montreal, Canada. 2025
- Member of the **Program Committee** of the **39th Annual AAAI Conference on Artificial Intelligence (AAAI 2025)**, Philadelphia, USA. 2025
- Member of the **19th European Conference on Logics in Artificial Intelligence (JELIA 2025),** Kutaisi, Georgia. 2025
- Member of the **Program Committee** of the **21st International Conference on Principles of Knowledge Representation and Reasoning (KR 2024)**, Hanoi, Vietnam. 2024.
- Member of the **Program Committee** of the **6th International Conference on Process Mining (ICPM 2024)**, Copenhagen, Denmark. 2024.
- Member of the **Program Committee** of the **22nd International Conference on Business Process Management (BPM 2024)**, Krakow, Poland. 2024.
- Member of the **Program Committee** of the **33rd International Joint Conference on Artificial Intelligence (IJCAI 2024)**, Jeju, South Corea, 2024.
- Member of the **Program Committee** of the **38th Annual AAAI Conference on Artificial Intelligence (AAAI 2024)**, Vancouver, Canada, 2024.
- Member of the **Program Committee** of the **27th European Conference on Artificial Intelligence (ECAI 2024)**, Santiago de Compostela, Spain. 2024.
- Member of the **Program Committee** of the **21st International Conference on Business Process Management (BPM 2023)**, Utrecht, Netherlands. 2023.
- Member of the **Program Committee** of the **32nd International Joint Conference on Artificial Intelligence (IJCAI 2023)**, Macao,S.A.R. 2023.
- Member of the **Program Committee** of the **20th International Conference on Principles of Knowledge Representation and Reasoning (KR 2023)**, Rhodes,Greece. 2023.
- Member of the **Program Committee** of the **26th European Conference on Artificial Intelligence (ECAI 2023)**, Kraków, Poland. 2023.
- Member of the **Program Committee** of the **4th Workshop on Artificial Intelligence and Formal Verification, Logic, Automata and Synthesis (OVERLAY 2022)**, Udine, Italy. 2022.

Membership of scientific societies and research groups

- **Member** of the **ELLIS Society** – the European Laboratory for Learning and Intelligent Systems. 2024 – ongoing
- **Faculty Member** of the **LUMLIS unit** - the ELLIS Lisbon unity
- **Member** of SPL – Sociedade Portuguesa de Lógica. 2024 - ongoing
- **Member** of the ***OVERLAY research group on Formal Methods for AI***, which fosters collaboration among a diverse team of Formal Methods and AI researchers, aiming at pursuing multidisciplinary research at the border of the two fields. 2022-ongoing.
- **Member** of **AIxIA** – 'Associazione Italiana per l'Intelligenza Artificiale' (Italian Association for Artificial Intelligence). 2022-ongoing
- **Member** of **EATCS** (European Association for Theoretical Computer Science) and of the **Italian Chapter of EATCS**. 2022-ongoing
- **Member** of **GULP** – 'Gruppo Ricercatori e Utenti Logic Programming' (Group of Logic Programming Researchers and Users). 2019-2020
- **Member** of **AILA** – 'Associazione Italiana di Logica e sue Applicazioni' (Italian Association of Logic and its Applications). 2023- ongoing

Editorial Activity

Scientific Journals

- **Guest Editor,** Special Issue 'Augmented Business Process Management', Data & Knowledge Engineering (Journal, Elsevier). 2024 https://www.sciencedirect.com/journal/data-and-knowledge-engineering/about/call-for-papers#augmented-business-process-management
- **Reviewer,** BISE - Business & Information Systems Engineering (Journal). 2023
- **Reviewer,** AI Communications (Journal). 2023
- **Reviewer,** EAAI - Engineering Applications of Artificial Intelligence (Journal), 2023
- **Reviewer,** JAIR - Journal of Artificial Intelligence Research (Journal), 2022
- **Reviewer,** Bulletin of the Section of Logic (Journal). 2022
- **Reviewer,** Journal of Automated Reasoning (Journal). 2021
- **Reviewer**, Theoretical Computer Science (Journal) – 2 reviews. 2020
- **Additional Reviewer**, Journal of Automated Reasoning - CADE 26 Special Issue (Journal). 2018

Reviewing for International Conferences (where not PC member)

- **Additional Reviewer,** 29th International Conference on Automated Deduction (CADE 29), Rome, Italy (Conference) – 2 reviews. 2023
- **Additional Reviewer,** 11th International Joint Conference on Automated Reasoning (IJCAR 2022), Haifa, Israel (Conference). 2022
- **Additional Reviewer**, 28th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2022), Munich, Germany (Conference). 2022
- **Additional Reviewer,** 28th International Conference on Automated Deduction (CADE 28), Pittsburgh, PA, USA (Conference). 2021
- **Additional Reviewer**, 10th International Joint Conference on Automated Reasoning (IJCAR 2020), Paris, France (Conference). 2020
- **Additional Reviewer**, 12th International Symposium on Frontiers of Combining Systems (FroCoS 2019), London, UK (Conference). 2019
- **Additional Reviewer**, 27th International Conference on Automated Deduction (CADE 27), Natal, Brazil (Conference). 2019
- **Additional Reviewer**, 34th Italian Conference on Computational Logic (CILC 2019), Trieste, Italy (Conference). 2019
- **Additional Reviewer**, 9th international Joint Conference on Automated Reasoning (IJCAR 2018), Oxford, UK (Conference) 2018
- **Additional Reviewer**, 11th International Symposium on Frontiers of Combining Systems (FroCoS 2017), Brasilia, Brazil (Conference). 2017
- **Additional Reviewer,** 26th International Conference on Automated Deduction (CADE 26), Gothenburg, Sweden (Conference). 2017

Talks

Invited Talks at International Events

- **Keynote Speaker** at the **3rd Workshop of UMI Group Mathematics for Artificial Intelligence and Machine Learning (Math4AIML),** Bari, Italy. 2025, where I gave a talk with the title *'Formal Analysis of Data-Aware Processes via Symbolic AI'*
- **Invited Speaker** at **iPRA 2022**, a **FLoC 2022 workshop**, Haifa, Israel. August 2022. I was invited speaker at ***iPRA 2022*** – *the 4th Workshop on Interpolation: From Proofs to Applications*, a **FLoC 2022** workshop affiliated with **IJCAR 2022**, where I gave the talk with the title '*Uniform Interpolants and Model Completions in Formal Verification of Infinite-State Systems'*

Presentations at International Conferences and Workshops

- **22nd International Conference on Business Process Management (BPM 2024)**, Krakow, Poland. 2024. Speaker: presentation of accepted conference paper
- **First International Workshop on Formal Methods in Business Process Management (FM-BPM 2023),** co-located with **BPM 2023,** Utrecht, Netherlands. September 2023. Speaker: presentation of accepted conference paper
- **32nd International Joint Conference on Artificial Intelligence (IJCAI 2023),** Macao, SAR. August 2023. Speaker: presentation of accepted conference paper
- **10th International Conference on Topology, Algebra and Categories in Logic (TACL 2022)**, Coimbra, Portugal. June 2022. Speaker: presentation of accepted contribution.
- **3rd Workshop on Artificial Intelligence and Formal Verification, Logic, Automata, and Synthesis (OVERLAY 2021),** Padova, Italy. September 2021. Speaker: presentation of accepted workshop paper
- **24th International Conference on Foundations of Software Science and Computation Structures (FoSSaCS 2021),** Online. March 2021. Speaker: presentation of accepted conference paper
- **10th International Joint Conference on Automated Reasoning (IJCAR 2020),** Online. July 2020. Speaker: presentation of accepted conference paper
- **35th Italian Conference on Computational Logic (CILC 2020)**, Rende, Italy. October 2020. Speaker: presentation of accepted conference paper
- **27th International Conference on Automated Deduction (CADE 27),** Natal, Brazil. August 2019. Speaker: presentation of accepted conference paper
- **2nd International ARCADE (Automated Reasoning: Challenges, Applications, Directions, Exemplary Achievements) Workshop,** Natal, Brazil. August 2019. Speaker: presentation of accepted workshop paper.
- **34th Italian Conference on Computational Logic (CILC 2019)**, Trieste, Italy. June 2019. Speaker: presentation of accepted conference paper.
- **33rd Italian Conference on Computational Logic (CILC 2018)**, Bolzano, Italy. September 2018. Speaker: presentation of accepted conference paper

International Seminars and Talks

- **Logic4Peace (fundraising online Logic event for Peace)**, Talk, Online. April 2022. Sponsored by the University of Amsterdam and other institutions. Speaker
- **Uniform Interpolation and Quantifier Elimination for Verification of Data-Aware Processes**, Talk at UCSD, San Diego (CA), USA. April 2020. Speaker
- **Towards a compositional, SMT-based verification of data-aware processes**, Talk at the MIT Categories Seminar, Boston (MA), USA. March 2020. Speaker
- **SMT-based verification of data-aware processes**, Talk at UCSD, San Diego (CA), USA. February 2020. Speaker

Teaching, Supervision and Dissemination

I have several years of experience in teaching courses on statistics, basic mathematics, process modeling and databases (both lectures and labs). I have been supervising 8 Master's theses, and co-supervising 4 Master's theses and 5 Bachelor's theses.

- **Course Coordinator and Lecturer** in **Databases:** Instituto Superior Técnico, Universidade de Lisboa, undergraduate course (Bachelor in Computer Science and Engineering), academic year 2024/2025.
- **Lecturer** in **Engineering and Technologies of Business Processes:** Instituto Superior Técnico, Universidade de Lisboa, graduate course (Master in Computer Science and Engineering), academic year 2024/2025.
- **Lecturer** in **Databases:** Instituto Superior Técnico, Universidade de Lisboa, undergraduate course (Bachelor in Computer Science and Engineering), academic year 2023/2024.
- **Lab Lecturer** in **Information Systems and Databases**: Instituto Superior Técnico, Universidade de Lisboa, graduate course (Master in Computer Science and Engineering), academic year 2023/2024.
- **Lab Instructor** in **Data and Process Modeling**: Free University of Bozen-Bolzano, ING-INF/05, undergraduate course (Bachelor in Business Informatics), academic year 2022/2023. Lecturer: Marco Montali.
- **Lab Instructor** in **Advanced Statistics**: Free University of Bozen-Bolzano, MAT/06, graduate course (Master in Computation Data Science), academic year 2022/2023. Lecturer: Emanuele Taufer.
- **Lecturer** of the **Preparatory Course in Mathematics**: Free University of Bozen-Bolzano, MAT/02 (Bachelor in Computer Science and Bachelor in Business Informatics), academic year 2022/2023.
- **Lab Instructor** in **Advanced Statistics**: Free University of Bozen-Bolzano, MAT/06, graduate course (Master in Computation Data Science), academic year 2021/2022. Lecturer: Emanuele Taufer.
- **Teaching Assistant** in **Probability Theory and Statistics**: Free University of Bozen-Bolzano, MAT/06, undergraduate course (Bachelor in Computer Science), academic year 2019/2020. Lecturer: Werner Nutt.

Student advising and supervision

- Advisor (together with prof. Damien Pellier) of José Lopes - SMT-based HTL-planning with numeric constraints, 2025-ongoing
- Advisor of Diogo Falcão - MaxSAT for railway scheduling with disruptions, 2025-ongoing
- Advisor (together with prof. Inês Lynce) of David Martins - SAT-based analysis of BPMN models, 2024-ongoing
- Advisor (together with prof. José Fragoso Santos) of José João Ferreira - FO-LTL for verifying distributed protocols, 2024-ongoing
- Advisor (together with prof. Sérgio Guerreiro) of Artur Guerra - splitter of BPMN end-to-end processes, 2024-ongoing
- Advisor (together with prof. Chrysoula Zerva) of Bruno Leitão - reasoning in LLMs, 2024-ongoing.
- Advisor (together with prof. Chrysoula Zerva) of Lucas Fortunato das Neves - LLM in process mining, 2024-ongoing.
- Advisor (together with prof. André Vasconcelos) of Andreia Azevedo - BPM for optimizing public administrations, 2024-ongoing.
- Co-supervisor (with prof. Matteo Papini) of Fausto Lasca - Logic-based Reward Specifications in Reinforcement Learning, 2024-ongoing.
- Co-advisor of a Master's student in the topic of Business Process Modeling and Process Mining, 2022-ongoing.
- Co-advisor of two Bachelor's students in the topic of Business Informatics and Business Process Modeling, 2022-ongoing.
- Co-supervisor of a Master's thesis in Mathematics (academic year 2020-2021): Chiara Naso. Thesis Title: *Interpolation and Amalgam for Arrays*. Supervisor: Prof. Silvio Ghilardi
- Co-supervisor of a Bachelor's thesis in Computer Science (academic year 2018-2019): Davide Cremonini. Title of the thesis: *An SMT-based formalization of data-aware BPMN*. Supervisor: Prof. Marco Montali

- Co-supervisor of a Bachelor's thesis in Computer Science (academic year 2018-2019): Marco Briozzi. Title of the thesis: *Extending the ePNK Petri Net Framework towards DB-Net support*. Supervisor: Prof. Marco Montali

Thanks to my experiences in teaching at the academic level (both bachelor's and master's), I have developed several skills for explaining challenging topics in applied and theoretical mathematics and statistics to students. I always try to find new effective techniques to make the students more confident: in particular, I have also experience in teaching preparatory courses for students of the first year of the bachelor's in Business Informatics.
The experience of (co-)supervising bachelor's and master's students in Computer Science, Business Informatics and in Advanced Mathematics taught me how to deeply understand and help to solve in many different ways several types of problems that the students can come across in different scientific areas.

Non-academic dissemination

- **Tutoring and Dissemination** in classes of mathematics at the 'Donegani' High School ("Liceo Scientifico'', Sondrio, Italy), 2015.
- **Dissemination** on Logic and Artificial Intelligence through independent seminars and events, since 2016.

Scholarships

- I held a **research assistant contract** at the Free University of Bozen-Bolzano (November 2022- September 2023): € 32.000,00 per year.
- I held a **research assistant contract** at the Free University of Bozen-Bolzano (November 2021- October 2022): € 28.000,00 per year.
- I held a **four-year PhD scholarship** at the Free University of Bozen-Bolzano (November 2017- October 2021): € 17.000,00 per year.

Publications
(*) = significant
(PhD) = related to the PhD

The following peer-reviewed publications are divided into four different categories: journal articles in refereed academic journals, conference papers with refereed proceedings, chapters in refereed books, and workshop papers with refereed proceedings.

- **Journal articles in refereed academic journals**

(*) *Scimago (Logic): Q1*
[J1] S. Ghilardi and A. Gianola, *Modularity Results for Interpolation, Amalgamation and Superamalgamation*. **Annals of Pure and Applied Logic**, volume 169, n. 8, pages 731-754, 2018. https://doi.org/10.1016/j.apal.2018.04.001

[J2] A. Gianola, S. Kasangian, D. Manicardi, N. Sabadini, F. Schiavio, S. Tini. *CospanSpan(Graph): a compositional description of the heart system.* **Fundamenta Informaticae**, volume 171 (1-4), pages 221–237, 2020. https://doi.org/10.3233/FI-2020-1880

(*),(PhD) [J3] 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**, volume 30, n. 3, pages 271–313, 2020. https://doi.org/10.1017/S0960129520000067

(*),(PhD) [J4] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali and A. Rivkin. *Model completeness, Uniform Interpolants and Superposition Calculus (with Applications to Verification of Data-Aware Processes).* **Journal of**

Automated Reasoning, volume 65, n. 7, pages 941-969, 2021. https://doi.org/10.1007/s10817-021-09596-x

(*),(PhD)

Scimago (IS): Q1

[J5] S. Ghilardi, A. Gianola, M. Montali and A. Rivkin. *Petri Net-Based Object-Centric Processes with Read-Only Data.* **Information Systems**, volume 107, 2022. https://doi.org/10.1016/j.is.2022.102011

(*),(PhD)

[J6] S. Ghilardi, A. Gianola and D. Kapur. *Uniform Interpolants in EUF: Algorithms using DAG- representations.* **Logical Methods in Computer Science,** volume 18, n. 2, 2022. https://doi.org/10.46298/lmcs-18(2:2)2022

(*),(PhD)

[J7] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali and A. Rivkin. *Combination of Uniform Interpolants via Beth Definability,* **Journal of Automated Reasoning**, volume 66, n. 3, 2022. https://doi.org/10.1007/s10817-022-09627-1

[J8] E. Di Lavore, A. Gianola, M. Román, N. Sabadini and P. Sobociński. *Span(Graph): a Canonical Feedback Algebra of Open Transition Systems*, **Software and Systems Modeling**, volume 22, issue 2, 2023. https://doi.org/10.1007/s10270-023-01092-7

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[J9] S. Ghilardi, A. Gianola, D. Kapur, C. Naso. *Interpolation Results for Arrays with Length and MaxDiff.* **ACM Transactions on Computational Logic**, volume 24, issue 4, 2023. https://doi.org/10.1145/3587161

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Scimago (IS): Q1

[J10] P. Felli, A. Gianola, M. Montali, A. Rivkin, S. Winkler. *Data-aware Conformance Checking with SMT*. **Information Systems**, volume 117, 2023. https://doi.org/10.1016/j.is.2023.102230

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Scimago (AI): Q1

[J11] P. Felli, A. Gianola, M. Montali, A. Rivkin, S. Winkler. *Multi-perspective conformance checking of uncertain process traces: An SMT-based approach*. **Engineering Applications of Artificial Intelligence**, 2023.

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[J12] A. Gianola, J. Ko, F. M. Maggi, M. Montali, S Winkler. *Approximate conformance checking: Fast computation of multi-perspective, probabilistic alignments*. **Information Systems**, 2025. https://doi.org/10.1016/j.is.2024.102510

[J13] A. Gianola, M. Montali, S. Winkler. *SMT Techniques for Data-Aware Process Mining*. **KI - Künstliche Intelligenz**, 2025. https://doi.org/10.1007/s13218-025-00890-z

- **Conference papers with refereed proceedings**

[C1] A. Gianola, S. Kasangian and N. Sabadini. *Cospan/Span(Graph): an Algebra for Open, Reconfigurable Automata Networks.* Proceedings of **CALCO 2017**, volume 72, pages 2:1–2:17,Schloss Dagstuhl: LIPIcs, 2017. https://doi.org/10.4230/LIPIcs.CALCO.2017.2

[C2] S. Ghilardi and A. Gianola, *Interpolation, Amalgamation and Combination (the non-disjoint signatures case).* Proceedings of **FroCoS 2017**, volume 10483 of LNCS (LNAI), pages 316-332, Springer, 2017. https://doi.org/10.1007/978-3-319-66167-4_18

(*),(PhD)

CORE: A

[C3] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin. *Formal Modeling and SMT-based Parameterized Verification of Data-Aware BPMN.* Proceedings of **BPM 2019**, volume 11675 of LNCS, pages 157-175, Springer, 2019. https://doi.org/10.1007/978-3-030-26619-6_12

(*),(PhD)

CORE: A

[C4] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin. *Model Completeness, Covers and Superposition*. Proceedings of **CADE-27**, volume 11716 of LNCS (LNAI), pages 142-170, Springer, 2019. https://doi.org/10.1007/978-3-030-29436-6_9

(*),(PhD)

CORE: A

[C5] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin. *Combined Covers and Beth Definability*. Proceedings of **IJCAR 2020**, volume 12166 of LNCS (LNAI), pages 181-200, Springer, 2020. https://doi.org/10.1007/978-3-030-51074-9_11

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(PhD) [C7] S. Ghilardi, A. Gianola, D. Kapur, *Computing Uniform Interpolants for EUF via (conditional) DAG-based Compact Representations*. Proceedings of **CILC 2020**, volume 2710, pages 67-81, CEUR-WS, 2020. http://ceur-ws.org/Vol-2710/paper5.pdf

(*),(PhD) CORE: A [C8] S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin. *Petri Nets with Parameterised Data: Modelling and Verification*. Proceedings of **BPM 2020**, volume 12168 LNCS (LNAI), pages 55-74, Springer, 2020. https://doi.org/10.1007/978-3-030-58666-9_4

(*),(PhD) [C9] P. Felli, A. Gianola, M. Montali. *A SMT-based Implementation for Safety Checking of Parameterized Multi-Agent Systems*. Proceedings of **PRIMA 2020**, volume 12568, LNCS (LNAI), pages 259-280, Springer, 2021. **Best Paper Award at PRIMA 2020.** https://doi.org/10.1007/978-3-030-69322-0_17

(*) [C10] S. Ghilardi, A. Gianola, D. Kapur. *Interpolation and Amalgamation for Arrays with MaxDiff*. Proceedings of **FoSSaCS 2021**, volume 12650 of LNCS, pages 268-288, Springer, 2021. https://doi.org/10.1007/978-3-030-71995-1_14

(*),(PhD) CORE: A* [C11] P. Felli, A. Gianola, M. Montali. *SMT-based Safety Checking of Parameterized Multi-Agent Systems*. Proceedings of **AAAI 2021**, pages 6321-6330, AAAI Press, 2021. https://ojs.aaai.org/index.php/AAAI/article/view/16785

(*),(PhD) CORE: A [C12] P. Felli, A. Gianola, M. Montali, A. Rivkin, S. Winkler. *CoCoMoT: Conformance Checking of Multi-Perspective Processes via SMT.* Proceedings of **BPM 2021**, volume 12875 of LNCS, pages 217-234, Springer. 2021. **Best Paper Award at BPM 2021.** https://doi.org/10.1007/978-3-030-85469-0_15

(*),(PhD) CORE: A [C13] S. Ghilardi, A. Gianola, M. Montali, A. Rivkin. *Delta-BPMN: a Concrete Language and Verifier for Data-Aware BPMN.* Proceedings of **BPM 2021**, volume 12875 of LNCS, pages 179-196, Springer. 2021. https://doi.org/10.1007/978-3-030-85469-0_13

[C14] E. Di Lavore, A. Gianola, M. Román, N. Sabadini, P. Sobociński. *A canonical algebra of open transition systems.* Proceedings of **FACS 2021**, volume 13077 of LNCS, pages 63-81, Springer. 2021

(*) CORE: A* [C15] L. Geatti, A. Gianola, N. Gigante. *Linear Temporal Logic Modulo Theories over Finite Traces*. Proceedings of **IJCAI 2022,** pages 2641-2647. 2022. https://www.ijcai.org/proceedings/2022/366

(*) CORE: A [C16] P. Felli, A. Gianola, M. Montali, A. Rivkin, S. Winkler. *Conformance Checking with Uncertainty via SMT.* Proceedings of **BPM 2022**, volume of LNCS, pages, Springer. 2022. https://doi.org/10.1007/978-3-031-16103-2_15

[C17] A. Gianola. *SMT-based Safety Verification of Data-Aware Processes: Foundations and Applications (Extended Abstract)*. Proceedings of **BPM (PhD/Demos)**. CEUR-Worksop Proceedings. 2022. http://ceur-ws.org/Vol-3216/paper_133.pdf

(*),(PhD) CORE: A* [C18] D. Calvanese, A. Gianola, A. Mazzullo, M. Montali. *SMT Safety Verification of Ontology-Based Processes*. Proceedings of **AAAI 2023**. 2023. https://doi.org/10.1609/aaai.v37i5.25772

(*),(PhD) CORE: A* [C19] S. Ghilardi, A. Gianola, M. Montali, A. Rivkin. *Safety Verification and Universal Invariants for Relational Action Bases*. Proceedings of **IJCAI 2023**. 2023. https://doi.org/10.24963/ijcai.2023/362

(*) CORE: A [C20] A. Gianola, J. Ko, F. M. Maggi, M. Montali, S. Winkler. *Approximating Multi-Perspective Trace Alignment Using Trace Encoding*. Proceedings of **BPM 2023**. 2023. https://doi.org/10.1007/978-3-031-41620-0_5

CORE: A [C21] Y. Fontenla-Seco, S. Winkler, A. Gianola, M. Montali, M. Lama and A. Bugarín-Diz. *The Droid You're Looking For: C-4PM, a Conversational Agent for Declarative Process Mining*. Proceedings of **BPM 2023 (Demo).** 2023

(*) CORE: A [C22] L. Geatti, A. Gianola, N. Gigante, S. Winkler. *Decidable Fragments of LTLf Modulo Theories.* Proceedings of **ECAI 2023.** 2023. https://doi.org/10.3233/FAIA230348

(*) CORE: A* [C23] A. Gianola, M. Montali, S. Winkler. *Linear-Time Verification of Data-Aware Processes Modulo Theories via Covers and Automata*. Proceedings of **AAAI 2024.** 2024. https://doi.org/10.1609/aaai.v38i9.28922

(*) CORE: A [C24] A. Gianola, M. Montali, S. Winkler. *Object-Centric Conformance Alignments with Synchronization.* Proceedings of **CAiSE 2024**. 2024 https://doi.org/10.1007/978-3-031-61057-8_1

(*) CORE: A [C25] A. Burigana, A. Gianola, M. Montali, S. Winkler. *Glocal Conformance Checking*. Proceedings of **BPM 2024**. 2024. https://doi.org/10.1007/978-3-031-70396-6_5

(*) CORE: A* [C26] L. Geatti, A. Gianola, N. Gigante. *First-order Automata*. Proceedings of **AAAI 2025**. 2025. https://doi.org/10.1609/aaai.v39i14.33638

(*) CORE: A [C27] A. Gianola, M. Montali, S. Winkler *Object-centric Processes with Structured Data and Exact Synchronization: Formal Modelling and Conformance Checking.* Proceedings of **CAiSE 2025**. Accepted. To appear.

(*) CORE: A [C28] J. Casas-Ramos, S. Winkler, A. Gianola, M. Montali, M. Mucientes, M. Lama *Efficient Conformance Checking of Rich Data-Aware Declare Specifications.* Proceedings of **BPM 2025**. Accepted. To appear.

CORE: A [C29] A. Gianola, A. Rivkin, M. Slazynski, Constraint-based reasoning and analysis for BPM: CSP to the rescue. Proceedings of BPM 2025 (Tutorial). To appear.

- **Chapters in refereed books**

(PhD) [CB1] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin. *From Model Completeness to Verification of Data Aware Processes*. In C. Lutz, U. Sattler, C. Tinelli, A.-Y. Turhan, and F. Wolter, editors, *Description Logic, Theory Combination, and All That*, volume 11560 of *LNCS,* pages 212-239, Springer, 2019. https://doi.org/10.1007/978-3-030-22102-7_10

- **Authored Books**

(*) [B1] A. Gianola. *Verification of Data-Aware Processes via Satisfiability Modulo Theories.* LNBIP. Springer, 2023. https://link.springer.com/book/10.1007/978-3-031-42746-6

- **Edited referred books**

[E1] A. Brunello, A. Gianola, F. Mogavero, *Proceedings of the 5th Workshop on Artificial Intelligence and Formal Verification, Logic, Automata, and Synthesis hosted by AIxIA 2023*, CEUR-WS, volume 3629, 2024.

- **Workshop papers with referred proceedings**

(PhD) [W1] D. Calvanese, S. Ghilardi, A. Gianola, M. Montali, and A. Rivkin. *Verification of Data-Aware Processes: Challenges and Opportunities for Automated Reasoning*. Proceedings of **ARCADE 2019**, 2nd International Workshop on Automated Reasoning: Challenges, Applications, Directions, Exemplary Achievements. EPTCS, volume 311, pages 53–58, 2019. http://dx.doi.org/10.4204/EPTCS.311.9

[W2] J. A. Castellanos Joo, S. Ghilardi, A. Gianola and D. Kapur. *AXDInterpolator: a Tool for Computing Interpolants for Arrays with MaxDiff.* Proceedings of **SMT 2021**, volume 2908, pages 40-52, CEUR-WS, 2021. http://ceur-ws.org/Vol-2908/paper15.pdf

[W3] A. Burattin, A. Gianola, Hugo A. López, M. Montali. *Exploring the Conformance Space (Extended Bastract).* Proceedings of **ITBPM 2021**, volume 2952, pages 62-67, CEUR-WS, 2021. http://ceur-ws.org/Vol-2952/paper_301a.pdf

(PhD) [W4] D. Calvanese, A. Gianola, A. Mazzullo, M. Montali. *SMT-Based Safety Verification of Data-Aware Processes under Ontologies (Preliminary Results).* Proceedings of **DL 2021**, volume 2954, CEUR-WS, 2021. http://ceur-ws.org/Vol-2954/paper-9.pdf

(PhD) [W5] A. Gianola, M. Montali, M. Papini. *Automated Reasoning for Reinforcement Learning Agents in Structured Environments.* Proceedings of **OVERLAY 2021**, volume 2987, pages 43-48, CEUR-WS, 2021. http://ceur-ws.org/Vol-2987/paper8.pdf

[W6] A. Gianola. *Uniform Interpolation for the Automated Verification of Data-Aware Business Processes*. Proceedings of **OVERLAY 2022**, volume 3311, pages 73-79, CEUR-WS, 2022. https://ceur-ws.org/Vol-3311/paper12.pdf

[W7] A. Gianola, N. Gigante. *LTL Modulo Theories over Finite Traces: modeling, verification, open questions.* Proceedings of **OVERLAY 2022**, volume 3311, pages 13-19, CEUR-WS, 2022. https://ceur-ws.org/Vol-3311/paper3.pdf

[W8] P. Felli, A. Gianola, M. Montali, A. Rivkin, S. Winkler. *A Modular SMT-based Approach for Data-aware Conformance Checking*. Proceedings of **OVERLAY 2022**, volume 3311, pages 87-92, CEUR-WS, 2022. https://ceur-ws.org/Vol-3311/paper14.pdf

Societal Impact **What news say about me**

- INOV LinkedIn: Panel organized by the ISACA Lisbon Chapter on the use of AI for the future of auditing and risk management (https://www.linkedin.com/posts/inov_inov-innovation-isaca-activity-7321244176556150785-6JR6?utm_source=share&utm_medium=member_desktop&rcm=ACoAABqVx-UBzx0xgKAfjjf6-MQvtGr8ChF6pAE)
- INESC-ID News: Alessandro Gianola is PI of one of the new FCT projects (https://www.inesc-id.pt/inesc-id-secures-eight-new-fct-funded-projects-to-drive-ai-data-science-and-cybersecurity-in-public-administration/)
- DEI Técnico Lisboa News: DEI Professor honored with Outstanding PC Member Award (https://dei.tecnico.ulisboa.pt/en/news/award/dei-professor-honored-with-outstanding-pc-member-award)
- INESC-ID News Outstanding PC Member Award at ECAI 2024 (https://www.inesc-id.pt/ruxandra-barbulescu-and-alessandro-gianola-recognized-with-the-outstanding-pc-member-award-at-ecai-2024/)
- INESC-ID LinkedIn: Alessandro Gianola - INESC-ID 2024 Best Young Researcher (https://www.linkedin.com/posts/inescid_inescid-researchexcellence-inescnetworking-ugcPost-7259174803780079616-8T1y?utm_source=share&utm_medium=member_desktop&rcm=ACoAABqVx-UBzx0xgKAfjjf6-MQvtGr8ChF6pAE)

- UNIBZ Newsroom (Free University of Bozen-Bolzano): ‘Alessandro Gianola Wins the 2023 CADE Bill McCune PhD Award’ (https://www.unibz.it/en/news/article/alessandro-gianola-wins-the-2023-cade-bill-mccune-phd-award)
- BPM newsletter (October 2022): Best BPM Dissertation Award (https://bpm-conference.org/assets/docs/newsletter/BPM-newsletter-2022-10.pdf)
- UNIBZ Newsroom (Free University of Bozen-Bolzano): ‘Computer Scientist Alessandro Gianola wins two prestigious Awards’ (https://www.unibz.it/en/home/newsroom/news/633beaff5077a)
- BPM newsletter (October 2021): Best Paper Award at BPM 2021 (https://bpm-conference.org/assets/docs/newsletter/BPM-newsletter-2021-10.pdf)

Computer Skills

- **Computer Languages:** C, Matlab, R, LaTeX, SQL, Python
- **Software Employed**: Z3 (SMT Solver), Yices (SMT Solver), Mathsat (SMT Solver), cvc5 (SMT solver), SPASS (first order theorem prover), MCMT (model checker), Camunda (tool for business process modeling), ProM Tools, Apromore (Process Mining tool), BLACK (LTL-sat solver), BIZAGI (Process Automation tool).

Language competence

Italian: Native Speaker (C2)
English: Fluent (C1)
Portuguese: Fluent (C1)

Updated on 06/07/2025.

Alessandro Gianola

Assinado por: **Alessandro Gianola**
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