



## Experience in academic teaching

2023

- Lab Instructor, Logica e Ragionamento, Corso di Laurea in Scienze e Tecnologie della Comunicazione, Dipartimento di Psicologia e Scienze Cognitive, Università di Trento (RTD-A).
- Lab Instructor, Programmazione 1, Corso di Laurea in Informatica, Dipartimento di Ingegneria e Scienza dell'Informazione, Università di Trento (RTD-A).

2022

- Lab Instructor, Logica e Ragionamento, Corso di Laurea in Scienze e Tecnologie della Comunicazione, Dipartimento di Psicologia e Scienze Cognitive, Università di Trento (AR).

2021

- Lab Instructor, Logica e Ragionamento, Corso di Laurea in Scienze e Tecnologie della Comunicazione, Dipartimento di Psicologia e Scienze Cognitive, Università di Trento (Phd Student).

2020

- Lab Instructor, Logica e Ragionamento, Corso di Laurea in Scienze e Tecnologie della Comunicazione, Dipartimento di Psicologia e Scienze Cognitive, Università di Trento (Phd Student).

## Other academic responsibilities

- Reviewer for the following journals: *Information and Computation*, *Journal of Automated Reasoning*, *Journal of Artificial Intelligence Research*, *Journal of Philosophical Logic*, *Artificial Intelligence*, *Synthese*.
- Reviewer for the following conferences and workshops: AAI 2021, IJCAI-ECAI 2022, KR4HI 2022, AAI 2023, IJCAI 2023, DL 2023, ECAI 2023, JELIA 2023, OVERLAY 2023, AAI 2024, DL 2024, IJCAI 2024, KR 2024, RuleML+RR 2024.

## Memberships

- PC Member for the following conferences and workshops: AAI 2021, IJCAI-ECAI 2022, KR4HI 2022, AAI 2023, IJCAI 2023, DL 2023, ECAI 2023, JELIA 2023, OVERLAY 2023, AAI 2024, DL 2024, IJCAI 2024, KR 2024, RuleML+RR 2024.

## Research and scholarships

My main research interests are logics for knowledge representation, in particular description logics (DLs), with a focus on the following topics.

- Temporal logics, in particular Linear Temporal Logic (LTL) and temporal DLs, for verification, planning, temporal conceptual modelling, and temporal ontology-based data access.
- DLs based on free logic semantics for non-denoting and temporally non-rigid terms, as well as the problem of explicit definability of individual names by means of definite descriptions.
- Modal logics and DLs with non-normal modalities, used to represent obligations and permissions in normative settings, as well as forms of coalitional reasoning and epistemic notions.
- Ontology-based models for data-aware business processes,

addressing safety verification by means of Satisfiability Modulo Theory techniques.

- Complexity of learning query-inseparable lightweight DL ontologies, at the intersection of DLs and computational learning theory.
- Integration of LTL process mining and DL concept learning tasks with Large Language Model generative capabilities for knowledge extraction from semi-structured data.

## Publications

### Journal Papers

2024

\* A. Artale, A. Ozaki, A. Mazzullo: First-order Temporal Logic on Finite Traces: Semantic Properties, Decidable Fragments, and Applications. *ACM Trans. Comput. Log.* (just accepted).

2023

• A. Artale, J.C. Jung, A. Ozaki, A. Mazzullo, F. Wolter: Living Without Beth and Craig: Definitions and Interpolants in Description and Modal Logics with Nominals and Role Inclusions. *ACM Trans. Comput. Log.* 24(4): 34:1-34:51 (2023).

### Conference Papers

2023

• A. Artale, L. Geatti, N. Gigante, A. Mazzullo, A. Montanari: A Singly Exponential Transformation of  $LTL[X, F]$  into Pure Past LTL. *KR 2023*.

• A. Artale, L. Geatti, N. Gigante, A. Mazzullo, A. Montanari: Complexity of Safety and coSafety Fragments of Linear Temporal Logic. *AAAI 2023*.

• A. Artale, L. Geatti, N. Gigante, A. Mazzullo, A. Montanari: LTL over Finite Words Can Be Exponentially More Succinct Than Pure-Past LTL, and vice versa. *TIME 2023*.

\* D. Calvanese, A. Gianola, A. Mazzullo, M. Montali: SMT Safety Verification of Ontology- Based Processes. *AAAI 2023*.

• T. Dalmonte, A. Mazzullo: CoNP Complexity for Combinations of Non-normal Modal Logics. *TABLEAUX 2023*.

\* T. Dalmonte, A. Mazzullo, A. Ozaki, N. Troquard: Non-Normal Modal Description Logics. *JELIA 2023*.

2021

• A. Artale, J.C. Jung, A. Ozaki, A. Mazzullo, F. Wolter: Living Without Beth and Craig: Explicit Definitions and Interpolants in Description Logics with Nominals and Role Inclusions. *AAAI 2021*.

\* A. Artale, A. Mazzullo, A. Ozaki, F. Wolter: On Free Description Logics with Definite Descriptions. *KR 2021*.

2020

- A. Ozaki, C. Persia, A. Mazzullo: Learning Query Inseparable ELH Ontologies. AAI 2020.

2019

- \* A. Artale, A. Mazzullo, A. Ozaki: Do You Need Infinite Time?. IJCAI 2019.

### **Workshop Papers**

2023

- \* A. Artale, A. Mazzullo: Non-Rigid Designators in Epistemic and Temporal Free Description Logics (Extended Abstract). DL 2023.
- \* A. Artale, L. Geatti, N. Gigante, A. Mazzullo: A Landscape of First-Order Linear Temporal Logics in Infinite-State Verification and Temporal Ontologies. OVERLAY 2023.
- \* P. Giorgini, A. Mazzullo, M. Robol, M. Roveri: Towards Large Language Model Architectures for Knowledge Acquisition and Strategy Synthesis. OVERLAY 2023.

2022

- J.C. Jung, A. Mazzullo, F. Wolter: More on Interpolants and Explicit Definitions for Description Logics with Nominals and/or Role Inclusions. DL 2022.
- \* T. Dalmonte, A. Mazzullo, A. Ozaki: Reasoning in Non-normal Modal Description Logics. ARQNL 2022.

2021

- \* D. Calvanese, A. Gianola, A. Mazzullo, M. Montali: SMT-Based Safety Verification of Data-Aware Processes under Ontologies (Preliminary Results). DL 2021.

2020

- A. Artale, J.C. Jung, A. Mazzullo, A. Ozaki, F. Wolter: Living Without Beth and Craig: Explicit Definitions and Interpolants in Description Logics with Nominals (Extended Abstract). DL 2020.
- \* A. Artale, A. Mazzullo, A. Ozaki: Finite vs. Infinite Traces in Temporal Logics. OVERLAY 2020
- \* A. Artale, A. Mazzullo, A. Ozaki, F. Wolter: On Free Description Logics with Definite Descriptions. DL 2020.
- A. Ozaki, C. Persia, A. Mazzullo: Learning Query Inseparable ELH Ontologies (Extended Abstract). DL 2020.

2019

- \* T. Dalmonte, A. Mazzullo, A. Ozaki: On Non-normal Modal Description Logics. DL 2019.
- \* A. Artale, A. Mazzullo, A. Ozaki: Temporal DL-Lite over Finite Traces (Preliminary Results). DL 2019.

2018

\* A. Artale, A. Mazzullo, A. Ozaki: Temporal Description Logics over Finite Traces. DL 2018

**Publications about  
the applicant**

Mention in Alto Adige Innovazione news article (in Italian): "*Il Gotha dell'Intelligenza Artificiale a congresso a Washington. C'era anche Unibz*", 1 March.

<https://www.altoadigeinnovazione.it/il-gotha-dellintelligenza-artificiale-a-congresso-a-washington-cera-anche-unibz/>

**Further data**

**Invited Talks:**

2023

Formal Ontologies, Applied Sciences and Data, OntoCommons. October 2-4. Department of Arts, University of Bologna

**Conference and Workshop Talks:**

DL 2018, DL 2019, DL 2020, OVERLAY 2020, IJCAI 2019, DL 2021, KR 2021, ARQNL 2022, DL 2022, OVERLAY 2023, JELIA 2023

2023

Special mention for Prize "Marco Cadoli" to recent PhD graduates in Artificial Intelligence (awarded yearly by the Italian Association for Artificial Intelligence).

**Statement of interest**

My work in knowledge representation, originally carried out as a PhD student in Computer Science, currently fits the research interests in Description Logics, Temporal Logics and Business Process Management that are under active investigation at the Knowledge Representation and Database (KRDB) Research Centre in the Faculty of Engineering at the Free University of Bozen-Bolzano.

**Language  
competence**

Italian (native), English (fluent), Greek (basic)

Date

05/04/2024