

# Valentina Anita Carriero

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Valentina Anita Carriero is a PhD student in Computer Science and Engineering at the University of Bologna, and works on ontologies, ontology design patterns and knowledge graphs, with a focus on the cultural heritage domain.

## EDUCATION

### PhD student in Computer Science and Engineering

Bologna, IT | Nov 2019 - ongoing

UNIVERSITY OF BOLOGNA

**PhD project:** Patterns emerging from ontologies and knowledge graphs: support for understanding and reuse | Understanding large ontologies and knowledge graphs, and being able to compare them, is still an issue: we propose a method for extracting ontology design patterns emerging from ontologies and knowledge graphs, in order to support their understanding and reuse.

**Research period abroad:** INtelligent Data Engineering Lab (INDELab), Informatics Institute, University of Amsterdam, Amsterdam, NL | Prof. Paul Groth | Sept 2021 - Dec 2021 | extraction of patterns from Wikidata

**Keywords:** Semantic Web technologies; Ontology Design; Knowledge Graph; Ontology Design Pattern; Empirical Knowledge Engineering

### International Semantic Web Research Summer School

Bertinoro, IT | Jul 2018

BERTINORO INTERNATIONAL CENTER FOR INFORMATICS

**Activities:** Lessons; Research task force on a research problem (Linked Data Incompleteness); Poster session (2nd best poster)

**Keywords:** KR Querying Reasoning for Large Knowledge Graphs; Ontology Design Patterns and Linguistic Frames; Machine Learning, embeddings for large Knowledge Graph; Crowdsourcing; Distributed decentralised Semantic Web

### Linked Data for Cultural Heritage Summer School

Ravenna, IT | Jul 2017

UNIVERSITY OF BOLOGNA

(original name: Linked Data per i Beni Culturali)

**Activities:** Lessons

**Keywords:** Linked Data as global language; Linked Data for bibliography; LOD Lifecycle; Data Modelling; RDF Vocabularies and Authority Lists; Triple Construction; Data Cleaning and Reconciliation; Data Interlinking, Enriching and Publication; Query and Consumption

### MA in Italianistica, Culture Letterarie Europee, Scienze Linguistiche

Bologna, IT | Oct 2014 - Mar 2017

UNIVERSITY OF BOLOGNA

(Italian Studies and Linguistics)

110/110 cum Laude

**Thesis:** Thesis in Digital Archives | The concept of creator in MAB. A proposal for ontology | This work addresses the current convergence phenomena between three areas of cultural heritage protection in the MAB - museums, archives and libraries - in the light of semantic web. An analysis of the contemporary horizon regarding the description of the creators and the relationships between same, is followed by an ontology, which aims to allow a correct and complete representation of the relationships between creative entities and their roles, limiting the loss of information and facilitating semantic research.

**Exams:** Digital Archives; Digital Printing; Cognitive Science; Rhetoric; Linguistics

### BA in Lettere, Classical Studies

Bologna, IT | Oct 2011 - Oct 2014

UNIVERSITY OF BOLOGNA

110/110 cum Laude

**Thesis:** Thesis in Digital Humanities | Affixes' dictionary for CORIS/CODIS: from markup to ontology | The aim of this thesis is to study the best approach to represent the affixes0 dictionary of the Italian corpus CORIS/CODIS, from markup to ontology.

**Exams:** Digital Humanities; Applied Linguistics; Sociolinguistics

### High School Diploma

Pescara, IT | 2006 - 2011

LICEO CLASSICO D'ANNUNZIO

100/100 cum Laude

## WORK EXPERIENCE

### UNIVERSITY OF BOLOGNA | TEACHING ASSISTANT (TA)

Bologna, IT | 2019 - ongoing

- Teaching Assistant of the course Informatica di Base: 2019/2020, 2020/2021, 2021/2022, 2022/2023

### STLAB, ISTC-CNR | RESEARCH ASSISTANT (RA)

Rome, IT | Dec 2017 – Oct 2019

- Main contribution to ArCo (Architecture of Knowledge), a CNR and ICCD (MiC) project, for cultural heritage enhancement through the publication of LOD
- Design of a network of ontologies for representing the data contained in the general catalogue of Italian cultural heritage (Catalogo Generale dei Beni Culturali)
- Generation of a knowledge graph with the catalogue's data, modelled according to ArCo's ontologies
- Management of an Early Adoption Program and interaction with the stakeholders

### HERES SRL | CONVERSATIONAL DESIGNER

Bologna, IT | May 2017 - Nov 2017

- Design of Heres' chatbots: development of conversational interfaces
- Building the whole conversation, from the customer's questions to the bot's answers and actions
- Testing activities

### SOCIETÀ EDITRICE IL MULINO | EDITOR PART-TIME, DIGITAL PRINTING

Bologna, IT | Apr 2014 - Jun 2019

- Editing of digital editions
- Review of website HTML pages
- Publishing papers' abstracts and keywords on rivisteweb.it
- Conversion of PDF books' indexes to HTML
- Creation of book's search indexed and bibliographies

### REGESTA.EXE | INTERN (150H)

Rome, IT | Apr 2016

- In the frame of a project with IBC (Institute for Cultural Natural and Artistic Heritage) Emilia-Romagna: contribution to the creation of a stylesheet with XSL Transformation, for data extraction, followed by the publication online
- Contribution to a project with CDEC (Foundation of Contemporary Jewish Documentation Center), for the implementation of an ontology in the domain of the Shoah: revision and extension of the ontology

### DUDAT | INTERN (150H)

Bologna, IT | Dec 2013 - Feb 2014

- Editorial activities: proof-reading of school books, drafting of exercises for both students and teachers, chapters' layout (LaTeX)

## PROJECTS

### CONCEPTUAL COMPONENTS EXTRACTION

PYTHON, SPARQL

Method for extracting conceptual components (as abstract modelling problems) and ontology design patterns from a corpus of ontologies.

### WIKIDATA EMERGING PATTERNS EXTRACTION

PYTHON, CYPHER, KYPHER, BASH

Method for extracting patterns emerging from the Wikidata knowledge graph.

### OPLAX ONTOLOGY

OWL, RDF(S)

Ontology for annotating conceptual components, ontology design patterns, and pattern instances.

### POLIFONIA

OWL, RDF(S), SPARQL

Ontology network and knowledge graphs on music heritage (contributor).

### ARCO

OWL, RDF(S), SPARQL, XSLT

Ontology network and knowledge graph on cultural heritage (contributor).

### ATLAS OF PATHS

OWL, RDF(S)

Ontology network on Italian paths – historical, naturalistic, cultural and religious (contributor).

# RESEARCH ROLES AND ACTIVITIES

## 2022

- Co-chair of MK 2022 (Modular Knowledge Workshop)
- Co-chair of WOP 2022 (Workshop on Ontology Design and Patterns)
- Member of the Program Committee of ESWC 2022 (Extended Semantic Web Conference); Member of the Program Committee of The Web Conference 2022: honourable mention as Best Reviewer; Member of the Program Committee of ISWC 2022 (International Semantic Web Conference): honourable mention as Resource Track Best Reviewer; Member of the Program Committee of Linked Archives 2022
- Reviewer at conferences: ESWC 2022, TheWebConf 2022, ISWC 2022, Linked Archives 2022, WOP 2022
- Member of the association ODPa (Association for Ontology Design and Patterns)

## 2021

- Co-chair of WOP 2021 (Workshop on Ontology Design and Patterns);
- Member of the Program Committee of ESWC 2021 (Extended Semantic Web Conference); Reviewer at Journals: Journal on Data Semantics, Journal of Applied Sciences, Journal of Web Semantics, Semantic Web Journal
- Reviewer at Conferences: ESWC 2021, ISWC 2021, WOP 2021
- Member of the association ODPa (Association for Ontology Design and Patterns)
- Staff member at SciRoc 2021 (Smart City Robotics Challenge)
- Lesson at the Master Biennale Internazionale Culture del Patrimonio, Università degli Studi Roma Tre

## 2020

- Member of the Program Committee of the workshop PRAXIS 2020 (The Semantic Web in Practice: Tools and Pedagogy)
- Reviewer at: ESWC 2020 (Extended Semantic Web Conference), ISWC 2020 (International Semantic Web Conference), CIKM 2020 (International Conference on Information and Knowledge Management)
- Member of the association ODPa (Association for Ontology Design and Patterns)

## 2019

- Assistant tutor of ISWS International Semantic Web Research Summer School 2019

# PUBLICATIONS

## Journal papers

Valentina Anita Carriero, Marilena Daquino, and Francesca Tomasi. “Semantic alignment in museums, archives and libraries: the ontologies for describing relationships”. In: JLIS (2019), pages 72–91

Valentina Anita Carriero, Aldo Gangemi, Maria Letizia Mancinelli, Andrea Giovanni Nuzzolese, Valentina Presutti, and Chiara Veninata. “Pattern-based design applied to cultural heritage knowledge graphs”. In: Semantic Web 12.2 (2021), pages 313–357

## Book chapters

Valentina Anita Carriero, Marilena Daquino, Aldo Gangemi, Andrea Giovanni Nuzzolese, Silvio Peroni, Valentina Presutti, and Francesca Tomasi. “The Landscape of Ontology Reuse Approaches”. In: Applications and Practices in Ontology Design, Extraction, and Reasoning. Volume 49. Studies on the Semantic Web. Amsterdam: IOS Press, 2020, pages 21–38

Valentina Anita Carriero, Aldo Gangemi, Andrea Giovanni Nuzzolese, and Valentina Presutti. “An Ontology Design Pattern for Representing Recurrent Situations”. In: Advances in Pattern-Based Ontology Engineering. Volume 51. Studies on the Semantic Web. IOS Press, 2021, pages 166–182

## Conference papers

Valentina Anita Carriero, Aldo Gangemi, Maria Letizia Mancinelli, Ludovica Marinucci, Andrea Giovanni Nuzzolese, Valentina Presutti, and Chiara Veninata. “ArCo: The Italian Cultural Heritage Knowledge Graph”. In: Proceedings of ISWC 2019. Volume 11779. Lecture Notes in Computer Science. Springer, 2019, pages 36–52 - Candidate for the best paper

Luigi Asprino, Valentina Anita Carriero, and Valentina Presutti. “Extraction of Common Conceptual Components from Multiple Ontologies”. In: Proceedings of K-CAP 2021. ACM, 2021, pages 185–192

## Workshop/Demo papers

Valentina Anita Carriero, Aldo Gangemi, Andrea Giovanni Nuzzolese, and Valentina Presutti. “An Ontology Design Pattern for representing Recurrent Events”. In: Proceedings of WOP 2019, co-located with ISWC 2019. 2019

Valentina Anita Carriero, Fabio Mariani, Andrea Giovanni Nuzzolese, Valentina Pasqual, and Valentina Presutti. “Agile Knowledge Graph Testing with TESTaLOD”. in: Proceedings of ISWC 2019 Posters & Demonstrations, Industry, and Outrageous Ideas. Volume 2456. CEUR Workshop Proceedings. CEUR-WS.org, 2019, pages 221–224

Luigi Asprino, Valentina Anita Carriero, Aldo Gangemi, Ludovica Marinucci, Andrea Giovanni Nuzzolese, and Valentina Presutti. “Atlas of Paths: a Formal Ontology of Historical Pathways in Italy”. In: Proceedings of ISWC 2019 Posters & Demonstrations, Industry, and Outrageous Ideas. Volume 2456. CEUR Workshop Proceedings. CEUR-WS.org, 2019, pages 149–152

Valentina Anita Carriero, Aldo Gangemi, Maria Letizia Mancinelli, Ludovica Marinucci, Andrea Giovanni Nuzzolese, Valentina Presutti, and Chiara Veninata. “ArCo ontology network and LOD on Italian Cultural Heritage”. In: Proceedings of ODOCH 2019, co-located with CAiSE 2019. 2019, pages 97–102

Valentina Anita Carriero. “Conceptual components and Ontology Design Patterns extraction across different ontologies”. In: Proceedings of the Doctoral Consortium at ISWC 2021. 2021, pages 1–8

Luigi Asprino, Valentina Anita Carriero, Christian Colonna, and Valentina Presutti. “OPLaX: annotating ontology design patterns at conceptual and instance level”. In: Proceedings of WOP 2021 co-located ISWC 2021. Volume 3011. CEUR Workshop Proceedings. CEUR-WS.org, 2021, pages 1–13

Valentina Anita Carriero, Fiorela Ciroku, Jacopo de Berardinis, Delfina Sol Martinez Pandiani, Albert Meroño-Peñuela, Andrea Poltronieri, and Valentina Presutti. “Semantic integration of MIR datasets with the Polifonia ontology network”. In: Proceedings of ISMIR 2021 Late Breaking Demo Session. 2021

Valentina Anita Carriero, Paul Groth, and Valentina Presutti. “Towards improving Wikidata reuse with emerging patterns”. In: Proceedings of 3rd Wikidata Workshop 2022, co-located with ISWC 2022. Volume 3262. CEUR Workshop Proceedings. CEUR-WS.org, 2022

## SKILLS

**Technical:** Python, XSLT, SPARQL, Cypher, SQL (basic), OWL, RDF(S), HTML, XML, CSS

**Languages:** Italian (mother tongue), English (B2)