# Carlo Teo Pedretti

PhD in Heritage Science

**BIO**

My research explores **digital annotation as a hermeneutic process** in the **digital humanities**. I focus on designing **ontologies** and **interfaces** for the scholarly annotation of multimodal documents, bridging textual and visual layers while supporting **uncertainty** and **provenance**. Currently, I am experimenting with **vision-language models** to **extract knowledge** and **generate captions** from philosophical manuscripts within a semiotic framework.

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**CONTACT**

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https://github.com/friendlynihilist

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**CAREER AND EDUCATION**

**PhD in Heritage Science (XXXVIII° cycle) | 2022–due soon**

University La Sapienza of Rome | University of Bologna

- Semantic annotation workflows and tools for digital editions; ontology engineering; critical information visualization.
- Visiting Researcher, Université Sorbonne Nouvelle – Paris III, under the supervision of Alberto Romele (Winter–Summer 2025).

**Teaching Assistant in *Usability and User Experience Design* | 2022–ongoing**

University of Bologna

**Front-end Developer | 2020–2022**

Net7 srl (Pisa)

- Full-stack development of scholarly digital editions, with a focus on TEI Publisher customization and Angular interfaces.

**Research Grant | 2020**

Department of Classical Philology and Italian Studies – University of Bologna

- Development of a digital exhibition of Lucretius' *De Rerum Natura* in contemporary art (website) using Omeka-S and TEI Publisher.

**Research Intern | 2020**

/DH.ARC – Digital Humanities Advanced Research Centre (Bologna)

**MA in Digital Humanities and Digital Knowledge (*with honors*) | 2018–2020**

University of Bologna

**MA in Philosophical Sciences (*with honors*) | 2014–2018**

University of Bologna

**BA in Philosophy (*with honors*) | 2010–2014**

University of Bologna

| PUBLICATIONS | **2025** | **Pedretti, Carlo Teo**, Davide Picca, and Dario Rodighiero. 2025. "Moving Pictures of Thought: Extracting Visual Knowledge in Charles S. Peirce's Manuscripts with Vision–Language Models." Journal of Digital History, Special Issue on "AI & History" (forthcoming). |
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| | **2025** | Bocchi, Maria Francesca, **Carlo Teo Pedretti**, and Fabio Vitali. 2025. "Enriching Cultural Heritage through Semantic Annotation: A Review of Methods, Tools, and Collaborative Spaces." In DH 2025 Conference Abstracts (forthcoming). |
| | **2025** | Bocchi, Maria Francesca, **Carlo Teo Pedretti**, and Fabio Vitali. 2025. "Between Text and Icon: Towards a Representational Model for Ekphrastic Relations." In AIUCD 2025. Proceedings of the XIV Annual Conference, 663. Verona: AIUCD. https://doi.org/10.6092/unibo/amsacta/8380. |
| | **2024** | **Pedretti, Carlo Teo**, Maria Francesca Bocchi, Francesca Tomasi, and Fabio Vitali. 2024. "What Do We Annotate When We Annotate? Towards a Multi-Level Approach to Semantic Annotations." In Knowledge Graphs in the Age of Language Models and Neuro-Symbolic AI: Proceedings of the 20th International Conference on Semantic Systems, 370–385. Studies on the Semantic Web 60. Amsterdam: IOS Press. https://doi.org/10.3233/SSW240030. |
| | **2023** | Aiola, Chiara, Tiziana Lombardo, and **Carlo Teo Pedretti**. 2023. "Kierunek – Kulturowe Doświadczenie Użytkownika w Projektowaniu Naukowych Edycji Cyfrowych." Sztuka Edycji, September 2. https://doi.org/10.12775/SE.2023.0007. |
| | **2023** | **Pedretti, Carlo Teo**, Andrea Schimmenti, Francesca Tomasi, and Fabio Vitali. 2023. "Seeing the Unseen: An Approach for Visualising Situated Statements in the Cultural Heritage Domain." In AIUCD 2023. Proceedings of the XII Annual Conference, 424. Siena: AIUCD. https://doi.org/10.6092/unibo/amsacta/7721. |
| | **2023** | Pasqual, Valentina, **Carlo Teo Pedretti**, Andrea Schimmenti, Francesca Tomasi, and Fabio Vitali. 2023. "Non-Representational Approaches to Visualise Complex Information in the Cultural Heritage Domain." In DH 2023 Conference Abstracts. https://doi.org/10.5281/zenodo.8107417. |
| | **2021** | **Pedretti, Carlo Teo**. 2021. "An Approach to Semantic Representation and Modeling in the Development of De rerum natura Digital Exhibition." In SWODCH 2021. Proceedings of the International Joint Workshop on Semantic Web and Ontology Design for Cultural Heritage, CEUR Workshop Proceedings 2949. https://ceur-ws.org/Vol-2949/paper1.pdf. |
| | **2021** | Lippolis, Anna Sofia, Davide Maria Apolloni, Milena Corbellini, Lucia Giagnolini, Francesca Mangialardo, **Carlo Teo Pedretti**, and Mattia Spadoni. 2021. "The Digital WHOmanities Project: Best Practices for Digital Pedagogy in the Pandemic Era." Umanistica Digitale 5 (10): 451–460. https://doi.org/10.6092/issn.2532-8816/11829. |

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| SELECTED CONFERENCES AND TALKS | **2025** | Between Text and Icon: Towards A Representational Model for Ekphrastic Relations." Presented with Maria Francesca Bocchi. AIUCD 2025, Verona. |
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| | **2024** | "What Do We Annotate When We Annotate? Towards a Multi-Level Approach to Semantic Annotations." Presented with Maria Francesca Bocchi. SEMANTiCS 2024, Amsterdam. |
| | **2024** | "Prototyping the Future: Design Fiction and AI." Seminar and Workshop in Usability and User Experience Design, University of Bologna. |
| | **2021** | "An Approach to Semantic Representation and Modeling in the Development of De rerum natura Digital Exhibition." SWODCH 2021, Bolzano. |
| | **2021** | Co-organizer. Digital WHOmanities. University of Bologna. |

## TECHNICAL SKILLS

### Web Development and Frameworks

- Frontend: React, Angular, D3.js, Handlebars, Jekyll, Django
- Backend: Node.js, Express, Flask, Serverless (AWS)
- CMS: WordPress, Drupal

### Machine Learning and NLP Libraries

Scikit-learn, Pandas, NumPy, spaCy, NLTK, Transformers (Hugging Face), Transkribus (HTR), Tesseract (OCR)

### Databases and Data Management

MongoDB, NoSQL, GraphDB, Blazegraph, Jena Fuseki, eXistDB

### Linked Data and Digital Humanities

- RDF, OWL, TEI, SPARQL, IIIF
- Platforms: ResearchSpace, Omeka-S, TEI Publisher

### DevOps and Tooling

Docker, Git, Apache (basic), Nginx (basic), CI/CD

### Programming Languages

JavaScript, TypeScript, Python, C#, Java, PHP, R, XQuery

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## LANGUAGES

**English: Fluent (C1/C2)**

**Italian: Native**

**French: Intermediate (B1)**