



Proceedings of the 18th Seminar on Ontology Research in Brazil and 9th Workshop on Theses and Dissertations in Ontologies

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2025

CEUR-WS.org/Vol-4177/preface.pdf



Proceedings of the
18th Seminar on Ontology Research in Brazil
(ONTOBRAS 2025) and
9th Workshop on Theses and Dissertations in
Ontologies (WTDO 2025)

Hosted by: Instituto Tecnológico de Aeronáutica (ITA) e Faculdade de Ciências
Médicas Humanitas, São José dos Campos, SP

Brazil, September 29th to October 2nd 2025



Organization:



humanitas
INSTITUTO DE CIÊNCIAS MÉDICAS DE SÃO JOSÉ DOS CAMPOS



Support:



The
International
Association for
Ontology and
its Applications

Proceedings of the 18th Seminar on Ontology Research in Brazil (ONTOBRAS 2025) and 9th Workshop on Theses and Dissertations in Ontologies (WTDO 2025)

Online publication:

CEUR Workshop Proceedings (CEUR-WS.org), <http://ceur-ws.org>

ISSN publication series: 1613-0073

DOI: 10.5281/zenodo.17508451

Preferred citation:

FARINELLI, F; CARBONERA, J.L; SOUZA, A.D.; RODRIGUES, F.H. (eds.). ONTOBRAS 2025 – 18th Seminar on Ontology Research in Brazil. *Proceedings of the 18th Seminar on Ontology Research in Brazil (ONTOBRAS 2025) and 9th Workshop on Theses and Dissertations in Ontologies (WTDO 2025)*, September 29th - October 2nd, 2025. São José dos Campos, SP, Brazil:CEUR-WS.org, 2025.

It is recommended to include further the CEUR-WS.org volume number and the URL to that volume.

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Preface

Ontology is an interdisciplinary domain that investigates the principles, models, and theories used to construct shared conceptual representations of specific areas of knowledge. Over the past years, interest in ontology has expanded significantly, particularly due to its relevance in addressing modeling, integration, and classification challenges across fields such as Computer Science, Information Science, Artificial Intelligence, Philosophy, Linguistics, and Knowledge Management, among others.

The *Seminar on Ontology Research in Brazil (ONTOBRAS)* provides an academic space and scientific environment for researchers and practitioners from these and related fields to exchange ideas and discuss theories, methodologies, languages, tools, and practical experiences concerning ontology design, development, and application.

In its 18th edition, **ONTOBRAS 2025** continues a tradition established in 2008 in Brazil and recognized by the Brazilian Ontology Community as the main scientific forum for presenting and discussing ontologies and their application cases in the country.

This edition of ONTOBRAS focuses on the theme “**The Influence of Ontologies in Generative AI.**” It is a timely and relevant topic for both academia and the productive sector. Recent studies have shown how ontologies and knowledge graphs contribute to improving the quality and consistency of responses generated by artificial intelligence systems. The theme also aims to strengthen the connection between academic research and industry, fostering collaboration, innovation, and the development of new applications and products.

Participants were invited to submit theoretical, methodological, and applied research papers that are directly or indirectly related to ontology studies, written in Portuguese, English, or Spanish. Submissions were organized into two tracks: the *Main Track* and the *Workshop on Theses and Dissertations in Ontologies (WTDO)*.

All submissions underwent a double-blind review process conducted by our Program Committee, composed of national and international experts in the field. In the *WTDO*, 6 submissions (4 at the doctoral level and 2 at the master’s level) were selected for oral presentation during the event. In total, the *Main Track* received 48 submissions. After the review process, 12 papers were accepted as full papers and 12 as short papers, both for oral presentation and publication in these proceedings. In addition, 11 papers were accepted for poster presentations. During the conference, 11 full papers, 10 short papers, and 5

posters were effectively presented, demonstrating the diversity and quality of the research shared within the ONTOBRAS 2025 community.

The scientific program also featured five keynote talks delivered by renowned national and international experts: Barry Smith (University at Buffalo), Giancarlo Guizzardi (University of Twente), John Beverley (University at Buffalo), Jérémy Ravenel (naas.ai), and Renata Wassermann (University of São Paulo). Additionally, Aaron Damiano (U.S. Customs and Border Protection) presented the ontology demo “Fandaws (Fact and Answer Web Service)”. The event also included two tutorials focusing on the Basic Formal Ontology (BFO) and the Unified Foundational Ontology (UFO), offered by John Beverley and Giancarlo Guizzardi, respectively. These sessions enriched the event by promoting reflection, methodological exchange, and dialogue between academia and practice in the field of ontology.

We hope that the contributions presented in these proceedings will inspire new research, foster collaboration, and continue to strengthen the ontology community in Brazil and beyond.

We thank the organizing committee for their commitment to the success of the event, the authors for their submissions and the program committee for their hard work.

December 2025

**Fernanda Farinelli
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Closing Remarks

The *Workshop on Theses and Dissertations in Ontologies (WTDO)* at ONTOBRAS 2025 once again offered a valuable academic space for discussion and mentoring among graduate students and senior researchers. The works presented reflected the diversity of research being developed in Brazil and abroad, combining theoretical reflection, methodological innovation, and applied ontology development.

This edition included six presentations, divided between doctoral *theses* and master's *dissertations*, as follows:

Theses

- *An Ontology-Based Approach to Streamline the Reconstruction of Genome-Scale Metabolic Models*, by Nahim A. Souza and Renata Wassermann.
- *Ontologia de Alto Nível para Segurança Cibernética em Sistemas de Informação*, by Roberto Monteiro Dias and Sean Siqueira.
- *Classification of Gender Stereotypes in a Legal Context: A Systematic Review and Current Opportunities*, by Tainá Turella Caetano dos Santos and Renata Wassermann.
- *Knowledge Management and Organization in Decentralized Finance*, by Fábio Cossenno and Marcello Bax.

Dissertations

- *Domain Ontology for Mapping Competency Development in Higher Education Engineering Programs*, by Eduardo Perotti, Eduardo Felipe, Giovanni Vitor, Fernanda Farinelli, and Rodrigo Braga.
- *OntoMI: An Ontology Grounded in the Theory of Multiple Intelligences for Semantic Classification of Educational Resources*, by Jefferson Rodrigo Speck, Sidgley Camargo de Andrade, and Clodis Boscaroli.

In addition to the WTDO, ONTOBRAS 2025 also featured a **Poster Session**, which provided an open space for sharing innovative ideas, ongoing work, and exploratory studies that connect ontology to emerging technologies and applied contexts. The following posters were presented:

- *Plugin de Alinhamento Interativo de Ontologias de Cibersegurança com Abordagens de Aprendizado de Máquina e K-Means*, by Roberto Dias.
- *ONTOGEN: Ontology-Guided Knowledge Graph Construction for Generative AI*, by Felipe Nunes.
- *The Annotation Jungle: An Analysis of Annotation Property Usage in the Ontology Community*, by Rafael Petry, Haroldo Silva, and Mara Abel.

- *Uma abordagem XAI baseada em Ontologias para Seleção Multicritério de Fornecedores em Cadeias de Suprimento*, by Mateus da Rocha Peixoto, Fernanda Baião, and Renata Guizzardi.
- *Por que a Embrapa precisa de ontologias? Caminhos para a organização e integração do conhecimento agropecuário brasileiro*, by Celina Takemura, Milena Telles, Leandro Oliveira, Bibiana Almeida, Débora Drucker, Jaudete Daltio, Rochelle Alvorcem, and Maria de Cléofas Alencar.
- *Adequação aos princípios FAIR e ontologias biomédicas em instituto de pesquisa neurocientífica: em que medida isso é eficiente na gestão de dados de saúde no Brasil?*, by Arthur Matta and Jonas Reis.

The diversity of topics and institutions represented in the WTDO and Poster Sessions demonstrates the breadth of ontology research and its intersections with artificial intelligence, data governance, education, and knowledge organization. These contributions reaffirm ONTOBRAS's role as a collaborative and interdisciplinary forum that connects theory, technology, and practice, strengthening the ontology research community in Brazil and beyond.