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Formal Ontology in Information Systems

Proceedings of the 14th International Conference (FOIS 2024)

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Preface

This volume contains all accepted papers presented at the 14th edition of the Formal Ontology in Information Systems conference (FOIS 2024). As with the previous edition, this fourteenth edition of the conference followed a sequentially hybrid approach, leveraging the best of an in-person conference with the additional opportunities offered by a virtual conference. FOIS 2024 is the first annual edition of the conference after several years of biennial events.

Building on the positive experience from the previous edition, FOIS 2024 solicited a diversity of papers in three broad categories: (1) foundational ontological issues, (2) methodological issues around the development, alignment, verification and use of ontologies; and (3) domain ontologies and ontology-based applications. In total, we received 56 full paper submissions of which 19 were accepted after a thorough and deliberate review process (acceptance rate of 34%). Each paper was reviewed by at least three reviewers and the evaluations were then summarized by a meta-reviewer. Of the accepted papers, 16 were presented in-person in Enschede, The Netherlands, where the conference took place from 15 to 19 July. The remaining 3 papers were presented in the virtual portion of the conference, held from 8 to 9 July. The presented papers include 7 foundational papers (from 22 submissions), 4 applications and methods papers (from 15 submissions), and 8 domain ontology (from 19 papers).

The foundational papers addressed philosophical aspects of ontology design, such as exceptions, interpretations, holism and indeterminacy. The application category considered the application of ontology in specific fields, showing how ontology is used to solve problems or enhance understanding within various domains, such as climate science and ecosystems, manufacturing, medicine or physics. Some papers also consider domain ontologies in applied scenarios such as open science and social ontologies, or address hot topics in the state-of-the-art, such as ontologies and machine learning and large language models.

A number of additional papers which did not make it into these proceedings despite their high quality were recommended for presentation as part of the ontology showcase and demonstration track at the conference, or as part of the eight workshops co-located with the in-person conference in Enschede. These papers are published in a separate proceedings volume to appear in the CEUR proceedings series.

The conference had a rich and intensive program, with several parallel sessions on a range of topics (mixing papers from different tracks – main track, showcase and demonstrations): ontological analysis, meaning, interpretation and truth, domain and core ontologies, foundational ontologies, ontology applications, ontology engineering, theoretical issues and cognition, competence and intentionality. Five keynotes (one shared with ICBO), addressed different aspects of applied ontology and artificial intelligence: explainable machine learning, health AI, ontologies for machine learning, philosophical aspects of ontologies, and data sharing. Four panels: applied ontologies in the neuro-symbolic age (together with FOIS online), digital transformation with ontologies (industrial panel), and ontologies, creativity and AI completed the program.

The authors of the submitted papers come from 17 countries (in order of frequency, Germany, France, Brazil, Italy, USA, The Netherlands, Tunisia, Canada,

India, South Africa, Austria, Czech Republic, England, Japan, Poland, Russia, Spain) and the program committee members from 18 countries, and together these came from all continents except Antarctica. Submissions to satellite events, such as the Early Career Symposium, the Ontology Showcase, and the fourteen collocated workshops attracted authors from several more countries.

We organized the papers in this volume by paper type, starting with papers focusing on foundational issues, followed by methodological papers and, finally, by domain ontologies and application papers.

Awards

Among all accepted papers, the PC chairs and a selection committee consisting of senior PC members chose two papers to be awarded prizes in recognition of their outstanding contribution and the exceptionally high quality of both the paper and presentation. The overall high quality of accepted papers made this selection quite difficult, but after thorough deliberation by the selection committee, the best paper award, which comes with a prize of 500 Euros, graciously sponsored by IOS Press, was awarded to the paper “Interpreting Texts and Their Characters” by Emilio M. Sanfilippo, Claudio Masolo, Emanuele Bottazzi and Roberta Ferrario. This paper introduces a novel approach to documenting interpretations of literary characters, grounded in empirical literary analysis, to closely reflect expert methodologies. By analyzing relationships between the names of fictional characters across various texts and authors, this approach effectively links ontological debates on identity with the interests of literary scholars. In addition, we awarded one distinguished paper award, which received a cash prize of 250 Euros sponsored by IAOA. The recipient was the paper “Meaning Holism and Indeterminacy of Reference in Ontologies” by Adrien Barton, Paul Fabry and Jean-François Ethier. This paper examines the extent of the severity of meaning holism for ontology engineering, based on several definitions of the meaning of a class term in an ontology, with regard to the classical analytic/synthetic distinction. Both prizewinning papers stand out for their remarkable cross-disciplinary contributions. They explore novel concepts in ontological and philosophical analysis, applying these ideas to advance ontology engineering. This underscores the dynamism of the Formal Ontology community, which continues to foster innovative research and interdisciplinary engagement.

Acknowledgements

The conference would not have been possible without all of the authors who submitted their work. We want to thank all authors, regardless of whether or not their paper was accepted, for their contribution to the building and sustaining of a community for applied ontology research. Equally important were the contributions of the program committee; over 21 senior PC and 55 PC members, who carefully reviewed and discussed all submissions.

As general chair, Giancarlo Guizzardi (University of Twente, The Netherlands) gave the main direction for this FOIS edition and played a major role in its coordination. The success of the conference also owes much to the local organizer

Tiago Prince Sales (University of Twente, The Netherlands), and to all members of the amazing orange local team, and to the online chair, Sergio de Cesare (University of Westminster, UK) and all the other chairs who helped with publicity, workshops, the ontology showcase, and the early career symposium. The complete list of people who helped to organize FOIS 2024 is included after this preface.

We also warmly thank the invited speakers (Mieke Boon, Michel Dumontier, Frank Van Harmelen, Øystein Linnebo, and Barend Mons, Laura Daniele, Quirien Wijnands, Ivo Velitchkov, Wouter Franke), panelists (Pascal Hitzler, Pawel Garbacz, Fabian Neuhaus, Luciano Serafini, John Beverley, Maria Hedblom, Guendalina Righetti, Shenghui Wang, Greta Adamo) and moderators (Mehwish Alam, Mara Abel, Jan Voskuil, Renata Guizzardi) for making FOIS a very interactive conference.

We also take this opportunity to thank our partners and sponsors. First of all, we thank the International Association for Ontology and its Applications (IAOA) as the association that provides the funding and governing structure for the organization and guidance of the FOIS conference series and which sponsors the distinguished paper awards. We likewise thank IOS Press for their continued support in the publication of the FOIS proceedings and for their sponsorship of the best paper award. In particular, we thank the University of Twente for providing the infrastructure and for their support in organizing the event.

We are happy to end this preface with the announcement that, from now on, the FOIS conference will happen annually (not biennially, as previously) and that the next edition will be organized in Catania (Italy) in September 2025.

Cassia Trojahn
Daniele Porello

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