# 15th International Joint Conference on Knowledge Discovery, Knowledge Engineering and Knowledge Management (IC3K 2023)

Volume 2: KEOD

Rome, Italy 13 – 15 November 2023

**Editors:** 

David Aveiro Jan Dietz Antonella Poggi Jorge Bernardino

ISBN: 978-1-7138-8644-0

#### Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2023) by SCITEPRESS – Science and Technology Publications, Lda. All rights reserved.

Printed with permission by Curran Associates, Inc. (2024)

For permission requests, please contact SCITEPRESS – Science and Technology Publications, Lda. at the address below.

SCITEPRESS – Science and Technology Publications, Lda. Avenida de S. Francisco Xavier, Lote 7 Cv. C, 2900-616 Setúbal, Portugal

Phone: +351 265 520 185 Fax: +351 265520 186

info@scitepress.org

#### Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400

Fax: 845-758-2633

Email: curran@proceedings.com Web: www.proceedings.com

## **CONTENTS**

### INVITED SPEAKERS

KEYNOTE SPEAKERS	
Time Series Machine Learning  Tony Bagnall	5
Combining Entity Resolution and Query Answering in Ontologies Domenico Lembo	7
Deep Reinforcement Learning for Creating Advanced Humanoid Robotic Soccer Skills Luís Paulo Reis	9
Recommendation Systems in Scholarly Publishing Yannis Manolopoulos	11
PAPERS	
FULL PAPERS	
EvdoGraph: A Knowledge Graph for the EVDOXUS Textbook Management Service for Greek Universities  Nick Bassiliades	17
A Data Mesh Adaptable Oil and Gas Ontology Based on Open Subsurface Data Universe (OSDU) Neda Abolhassani, Ana Tudor and Sanjoy Paul	29
Using Paraphrasers to Detect Duplicities in Ontologies Lukáš Korel, Alexander S. Behr, Norbert Kockmann and Martin Holeňa	40
Extending the Meta Model for Enterprise Systems Dynamics from a Software Tooling Perspective <i>Huda Hussain and Marne de Vries</i>	50
OntoEffect: An OntoUML-Based Ontology to Explain SARS-CoV-2 Variants' Effects Ruba Al Khalaf, Anna Bernasconi and Alberto García S.	62
BioSTransformers for Biomedical Ontologies Alignment Safaa Menad, Wissame Laddada, Saïd Abdeddaïm and Lina F. Soualmia	73
UpKG: A Framework to Insert New Domains in Knowledge Graphs  Jesamin Melissa Zevallos-Quispe, André Gomes Regino, Víctor Jesús Sotelo Chico,  Víctor Hochgreb de Freitas and Julio Cesar dos Reis	85
Towards an Ontology of Task Dependence in Organizations Mena Rizk, Mark Fox and Daniela Rosu	96
Ontology-Driven Extraction of Contextualized Information from Research Publications Vayianos Pertsas and Panos Constantopoulos	108
Characterizing Complex Network Properties of Knowledge Graphs  Anderson Rossanez, Ricardo da Silva Torres and Julio Cesar dos Reis	119

Knowledge Graphs Extracted from Medical Appointment Transcriptions: Results Generating Triples Relying on LLMs Rafael Roque de Souza, Thiago Luna Pinheiro, Julio Cesar Barbour Oliveira and Julio Cesar dos Reis	129
SHORT PAPERS	
Development of an OWL Ontology Based on the Function-Oriented System Architecture to Support Data Synchronization Between SysML and Domain Models Yizhe Zhang, Georg Jacobs, Jia Zhao, Joerg Berroth and Gregor Hoepfner	143
A Novel Approach to Ontological View-Based Semantic Mapping in Decentralized Environments Fateh Mohamed Ali Adhnouss, Husam M. Ali El-Asfour and Kenneth McIsaac	155
Mechanical Fault Prediction Based on Event Knowledge Graph Li He, Liang Zhang and Wei Yan	164
An Ontology-Based Question-Answering, from Natural Language to SPARQL Query Davide Varagnolo, Dora Melo and Irene Pimenta Rodrigues	174
Memory Net: Generalizable Common-Sense Reasoning over Real-World Actions and Objects Julian Eggert, Joerg Deigmoeller, Pavel Smirnov, Johane Takeuchi and Andreas Richter	182
IoT-Enabled Agroecology: Advancing Sustainable Smart Farming Through Knowledge-Based Reasoning Nicolas Chollet, Naila Bouchemal and Amar Ramdane-Cherif	190
Discovering Ontological Knowledge in Unstructured Recipes of a Portuguese Monk from the 16th Century Orlando Belo, Bruno Silva and Anabela Barros	200
On the Development of a Collaborative Knowledge Platform for Engineering Sciences Jonas Jepsen, Arthur Zamfir, Brigitte Boden, Jacopo Zamboni and Erwin Moerland	208
Modelling Expressions of Physical Quantities Blair D. Hall	216
Exploring User-Generated Content to Detect Community Problems: The Ontological Model of ALLEGRO Carlos Periñán-Pascual	224
Towards Developing an Ontology for Safety of Navigation Sensors in Autonomous Vehicles <i>Mohammed Alharbi and Hassan A. Karimi</i>	231
Semiotic Knowledge Models for Personal Knowledge Repositories Stefano Casadei	240
Towards Semi-Automatic Approach of Building an Ontology: A Case Study on Material Handling Data Sepideh Sadat Sobhgol, Mario Thron and Giuliano Persico	248
Design a Recommendation System in Real Estate Investment Based on Context Approach Tinh T. Nguyen, Sang Vu, Truc Nguyen, Vuong T. Pham and Hien D. Nguyen	255
A Methodology for Knowledge Integration and Acquisition in Model-Based Systems Engineering Luis Palacios Medinacelli, Florian Noyrit and Chokri Mraidha	264

Event Detection in News Articles: A Hybrid Approach Combining Topic Modeling, Clustering, and Named Entity Recognition Nikos Kapellas and Sarantos Kapidakis	272
Addressing Entity Change in Procedural Ontologies  Tyler Johnson, Mohammed Alliheedi, Yetian Wang and Robert E. Mercer	280
JThermodynamicsCloud: Case Study in an Ontology-Driven NoSQL Database Cloud Based Application in Chemical Domain <i>Edward Blurock</i>	288
A Knowledge Layer in Data-Centric Architectures in the Automotive Industry Haonan Qiu, Adel Ayara and Christian Muehlbauer	296
Developing Digital Media Service Value Creation by Using Emotion Data Nina Helander, Mika Boedeker and Leena Mäkelä	304
Knowledge Graphs Alignment Based on Learning to Rank Methods Victor Yamamoto and Julio Cesar dos Reis	315
An Approach to Developing Ontology-Based Tools for Event Series Analysis  Anton Platunov, Lyudmila Lyadova, Nada Matta, Viacheslav Lanin and Elena Zamyatina	323
Evaluating the Perceived Quality and Functionality of DEMO Models' Representations in the Health Domain  David Aveiro, Vítor Freitas, Dulce Pacheco and Duarte Pinto	331
Navigating Responsible AI Adoption  Daniela Oliveira	339
AUTHOR INDEX	347