# Ontologies and Taxonomies

##### Session 2.4 (SEMANTiCS)

#### Time: Wednesday, September 18, 2024 - 13:00 to 14:30

#### Chair: Anelia Kurteva

## **Talks**

### Investigate the Impact of Contextual Information on LLMs for Taxonomy Expansion

This paper presents an exploratory study that investigates the use of various Large Language Models (LLMs) for the task of taxonomy expansion.

Our objective is to enhance the taxonomical structure by querying LLMs for (1) child taxons and (2) alternative labels of existing taxons. Beginning with an incomplete taxonomy, we explore the most effective ways to prompt LLMs exploiting explicit and shared knowledge captured in manually curated taxonomies to provide context for the task at hand. We experiment with different prompting templates, well-recognized taxonomies (EuroVoc, STW, UNESCO), and popular language models (Claude, Claude3, Llama2).

Our results suggest feasibility of solving of the proposed task with the modern LLMs and human oversight. Moreover, we observe certain patterns and trends in the performance of the models, noting that it was not possible to identify a single best configuration that would fit all models.

| Artem Revenko | Anna Breit | Salma Mahmoud |
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| Mark Szabo | Tomas Knap |  |

### Taking the Next Step: How Semantic Reasoning is Powering Up Knowledge Graphs in Enterprises Today [SP]

This session is aimed at anyone looking to get more value out of their existing knowledge graphs, and those new to graph but wanting to understand ways to accelerate time-to-value. Semantic reasoning, or rules-based AI, is already being used by enterprises to drive more value from their knowledge graphs, by inferencing new knowledge and data based on domain expertise. In this short talk, we will look at several real-world use cases for semantic reasoning over knowledge graphs – covering applications across financial services, manufacturing, publishing, healthcare and retail. We’ll briefly explain the basics to the more advanced concepts, including how to get started, using Knowledge Representation and Reasoning (KRR) technology spun out of the University of Oxford.

| Peter Crocker, CEOOxford Semantic Technologies |
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### Towards Digital Sustainability Reporting: An Ontology for Mapping of Indicators in GRI and ESRS

This paper focuses on developing an ontology for mapping indicators from two significant standards, GRI and ESRS. We introduce the Sustainability Reporting Standards Ontology (RSO). RSO formally represents environmental indicators in GRI and ESRS, emphasizing indicator requirements such as unit, quantity, and measurement variables. RSO is implemented in the RDF/OWL format and will be made available online. Furthermore, we provide an ontology-based mapping between indicators, supported by concrete examples that illustrate the interconnections between them.

| Yuchen Zhou | Yuan Cao |
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| Alexander Perzylo |  |

### Exploring Prompt Generation Utilizing Graph Search Algorithms for Ontology Matching

In this work, we explore how graph search algorithms, namely (i) random walk and (ii) tree traversal can be utilized to retrieve the contextual information to be incorporated into prompt templates. Through these algorithms, our approach refrains from considering all triples connected with a concept to be aligned in its contextual information creation. Our experiments show that including the retrieved contextual information in prompt templates improves the matcher's performance. Additionally, our approach outperforms previous works leveraging zero-shot prompting.

| Julian Sampels | Sefika Efeoglu |
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| Sonja Schimmler |  |