Guest editorial: Recent trends in semantic web and knowledge graphs

Knowledge graphs are considered formally to represent semantics by describing entities and their relationships. Knowledge graphs may make use of ontologies as a schema layer. By doing this, they allow logical inference for retrieving implicit knowledge rather than only allowing queries requesting explicit knowledge. They have a potential role to bridge the semantic gap between unstructured and structured information and foster new research directions and tasks with new possibilities to represent, query, visualize, interact and make more understandable information.

Aside having been around since the 1980s, knowledge graphs have become important nowadays. With an influx of knowledge graph conferences and their ability to help and organize other technologies. Having some key benefits such as siloed data sources, combining structured and unstructured data, helping business leaders make more informed decisions, summarizing relationships and visualizing a flow of information and network data. This special issue has been organized to invite the extended version of the Knowledge Graphs and Semantic Web Conference (Villazón-Terrazas *et al.*, 2022) accepted papers.

This special issue aims to provide a forum for the semantic Web community, bringing together researchers and practitioners in the industry to share ideas about R&D projects and increasing the adoption of semantic Web technologies within the region. In total, nine papers were submitted to this special issue. After a rigorous review according to relevance, originality, technical novelties and presentation quality, we selected three manuscripts. A summary is outlined below.

The first paper (Yagüe *et al.*, 2023) is entitled "FUKG: Answering Flexible Queries over Knowledge Graphs." There is an increasing interest in the use of knowledge graphs to represent real-world knowledge and a common need to manage imprecise knowledge in many real-world applications. This paper aims to study approaches to solve flexible queries over knowledge graphs.

The second paper (Rupp *et al.*, 2024) is entitled "Implementing Data Workflows and Data Model Extensions with RDF-star." The purpose of this work is to explore the new possibilities enabled by the recent introduction of RDF-star, an extension that allows for statements about statements within the Resource Description Framework (RDF). Alongside named graphs, this approach offers opportunities to leverage a meta-level for data modeling and data applications.

The third paper (Jiomekong and Tiwari, 2024) is entitled "An Approach Based on Open Research Knowledge Graph for Knowledge Acquisition from Scientific Papers." The purpose of this research was twofold: curate Open Research Knowledge Graph (ORKG) with papers related to ontology learning and define an approach using ORKG as a computer-assisted tool to organize key insights extracted from research papers. This approach was used to document the "epidemiological surveillance systems design and implementation."

The fourth paper (Gonzalez Garcia *et al.*, 2024) is entitled "Enhancing knowledge graphs with microdata and LLMs: The case of Schema.org and Wikidata in touristic information." This paper reports results from a study that evaluates the potential of using microdata extracted from the Web to augment the large, open and manually curated Wikidata KG for

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the domain of touristic information. Because large corpora of Web text is currently being leveraged via large language models (LLMs), these are used to compare the effectiveness of the microdata enhancement method.

The fifth paper (Liu *et al.*, 2024) is entitled, "Multi-feature Fusion Stock Prediction Based on Knowledge Graph." This study presents a knowledge-driven framework for predicting stock prices. The framework integrates relevant stocks with the semantic and emotional characteristics of textual data. Knowledge graph to extract pertinent stock information and use a knowledge graph representation model to capture both the relevant stock features and the semantic features of news articles. In addition, the authors considered the emotional characteristics of news and investor comments, drawing insights from behavioral finance theory. This paper examined the effectiveness of these features using the combined deep learning model CNN + LSTM + Attention.

The sixth paper (Rajabi *et al.*, 2024) is entitled "The role of knowledge graphs in chatbots." This study investigates the role of knowledge graphs in developing AI assistants and chatbots by reviewing scholarly publications from different lenses and dimensions. The authors also analyze the various AI approaches used for knowledge graph–driven chatbots and how implementing these techniques makes a difference in technology.

The seventh paper (Sharma and Saraswat, 2024) is entitled "A Robust Approach for Aspect Based Sentiment Analysis Using Deep Learning and Domain Ontologies." One of the major areas of attention for sentiment analysis research today is the improvement of granularity at the aspect level, which represents two independent goals of aspect term and opinion extraction and subsequent sentiment classification. The proposed architecture uses neighborhood and dependency tree-based relations for target opinion extraction, a domain-ontology-based knowledge management system for aspect term extraction, and deep learning techniques for classification. This study suggests a novel method for aspect-based sentiment analysis that makes use of deep learning and domain ontologies. The use of domain ontologies allows for enhanced aspect identification, and the use of deep learning algorithms enhances the accuracy of the sentiment analysis task.

The guest editors would like to express their deep gratitude to all the authors who have submitted their valuable contributions and to the highly qualified anonymous reviewers. The editors think that the selected contributions, which represent the current state-of-the-art in the related area, will be of great interest to the community.

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