Special Issue on

Large Language Models and Knowledge Graph 4Semantics-driven Systems Engineering

Guest Editors:

Dimitris Karagiannis
dk@dke.univie.ac.at
OMiLAB/University of Vienna, Austria

Robert Andrei Buchmann
robert.buchmann@ubbcluj.ro
Babeș-Bolyai University, Romania

Dimitris Plexousakis
dp@ics.forth.gr
University of Crete and FORTH, Greece

Important Dates:

- Submission deadline: 30 March 2025
- 1st Review round notification: 15 May 2025
- 2nd Review round notification: 15 September 2025
- Publication: published as accepted, until December 2025

The special issue aims to stimulate research work on how the interplay of Large Language Models (LLMs) and Knowledge Graphs (KG) can add context-awareness and reasoning flexibility to information systems, compensating for the semantic loss of rigid system design methods, enabling semantic enrichment and reasoning during IS operation or engineering processes.

There is a quickly evolving body of work on how to build and tune LLMs, or how to interact with them through prompt engineering. KGs have also been primarily investigated as engineered artifacts – from their underlying formalisms (e.g. description logics), enabling technologies (e.g. RDF, LPG) to their knowledge management capabilities. However less work is dedicated to what LLMs and KGs bring as ingredients of Information Systems and system engineering processes.

To emphasize this, we formulated in a recent Data & Knowledge Engineering paper a notion of Semantics-driven Systems Engineering as an update to traditional Model-driven Engineering with an emphasis on knowledge engineering and new knowledge flows facilitated by LLMs and KGs. This idea reflects, for the practice of systems engineering, the recently advocated shift of role for conceptual modeling – from representation to mediation – as we expect that shift to enable new flavors of Model-driven Engineering and Knowledge-based Systems. The topic also motivated in recent years the KG4SDSE workshop series held at the CAISE conference.

Scan me for more information:

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Therefore the special issue welcomes submissions on the following topics (not limited to these):

- Information Systems engineering methods based on LLMs and/or KGs
- Domain-specific application cases for Semantics-driven Information Systems
- LLMs and/or KGs as mediators between data, stakeholders and software
- LLMs and/or KGs in model-driven engineering
- Machine reasoning and learning for Information Systems engineering
- GraphRAG variants for Information Systems engineering
- System design and analysis augmented by LLMs and/or KGs
- LLMs and/or KGs for Digital Twins and digital-first phenomena
- Engineering environments based on LLMs and/or KGs
- Empirical studies and reports on Information Systems operating based on KGs, LLMs or hybrid knowledge sources (e.g. GraphRAG)

Submission guidelines:

Please communicate your intention to submit in advance by e-mailing the Guest Editors. The intention declaration must indicate the Title, Authors and Abstract (provisional). Submit your manuscript using the D&KE journal submission system at Editorial Manager and make sure you indicate that the manuscript is submitted to this Special Issue. To ensure that all manuscripts are correctly identified, it is important that authors select „VSI: LLMs and KGs for Semantics-driven Sys Engineering-Woo" when they reach the „ArticleType" step in the submission process. In addition, please ensure that a Cover Letter that summarizes and motivates the relevance of your submission refers explicitly to this Special Issue. Please contact the SI guest editors in case you failed to do this.

The Special Issue also accepts extended versions of papers from conferences or workshops, under certain restrictions: The extended paper must present 30% additional core contributions (i.e. not limited to extending related works and background information sections) and must have a similarity score lower than 50% relative to the proceedings version. The proceedings paper must be provided at the time of submission and a description of the extension must be included in the cover letter.

Submitted papers must comply with the general D&KE author guidelines. The guidelines also indicate requirements on formatting, reference styles and other details relevant for editing your manuscript.