

LLM-Powered User-Centric Knowledge Graphs for Unified Enterprise Intelligence

Authors : Rajeev Kumar, Harishankar Kumar

Abstract : Fragmented data silos within enterprises impede the extraction of meaningful insights and hinder efficiency in tasks such as product development, client understanding, and meeting preparation. To address this, we propose a distinct, system-agnostic framework that leverages large language models (LLMs) to unify diverse data sources into a cohesive, user-centered knowledge graph. By automating entity extraction, relationship inference, and semantic enrichment, the framework maps interactions, behaviors, and data around the user, enabling intelligent querying and reasoning across various data types, including emails, calendars, chats, documents, and logs. Its domain adaptability supports applications in contextual search, task prioritization, expertise identification, and personalized recommendations, all rooted in user-centric insights. Experimental results demonstrate its effectiveness in generating actionable insights and enhancing workflows such as trip planning, meeting preparation, and daily task management. This work advances the integration of knowledge graphs and LLMs, bridging the gap between fragmented data systems and intelligent, unified enterprise solutions focused on user interactions.

Keywords : knowledge graph, entity extraction, relation extraction, LLM, activity graph, enterprise intelligence

Conference Title : ICSWNL2025 : International Conference on Semantic Web and Natural Language Processing

Conference Location : Paris, France

Conference Dates : March 17-18, 2025