EFFICIENCY OF QUESTION-ANSWERING PIPELINE IN SYSTEMS WITH COMBINED LLM AND KNOWLEDGE BASE USAGE

M. Androshchuk
National University of Kyiv-Mohyla Academy, Ukraine
maxym.androshchuk@ukma.edu.ua

The integration of a large language model (LLM) with a knowledge base (KB) has been shown to significantly enhance the efficiency of question-answering (QA) pipelines. The KnowledgeNavigator framework has demonstrated effectiveness and generalization in QA tasks [1].

However, there are challenges in this integration, such as the complexity of natural language and the richness of entities and relations in knowledge graphs [2]. Despite these challenges, novel approaches, show the potential of leveraging graphs to improve retrieval and generation processes [3].

Combining LLMs with KBs can lead to more efficient QA pipelines by utilizing the reasoning and few-shot learning capabilities of LLMs, as well as the structured information in KBs. This synergy shows promise in addressing the inherent complexities of natural language and knowledge representation by using context-relevant processing.

References

1. Guo, Tiezheng, Qingwen Yang, Chen Wang, Yanyi Liu, Pan Li, Jiawei Tang, Dapeng Li, and Yingyou Wen. 2023. "KnowledgeNavigator: Leveraging Large Language Models for Enhanced Reasoning over Knowledge Graph." arXiv. doi:10.48550/ARXIV.2312.15880.

2. Xiao, Yuliang, Lijuan Zhang, Jie Huang, Lei Zhang, and Jian Wan. 2022. "An Information Retrieval-Based Joint System for Complex Chinese Knowledge Graph Question Answering." Electronics. MDPI AG. doi:10.3390/electronics11193214.

3. Wang, Yu, Nedim Lipka, Ryan A. Rossi, Alexa Siu, Ruiyi Zhang, and Tyler Derr. 2024. "Knowledge Graph Prompting for Multi-Document Question Answering." Proceedings of the AAAI Conference on Artificial Intelligence. Association for the Advancement of Artificial Intelligence (AAAI). doi:10.1609/aaai.v38i17.29889.