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To
Prof. Hamido Fujita,PhD
Editor-in-Chief
Applied Intelligence
Iwate Prefectural University
Takizawa, Japan

Subject: Submission of Manuscript Entitled **"LLM-KGMQA: A Multilingual Knowledge-Grounded Medical Question Answering Framework"**

Respected Professor Fujita,

The manuscript entitled "**LLM-KGMQA: A Multilingual Knowledge-Grounded Medical Question Answering Framework"** is hereby submitted for your kind consideration for publication in *Applied Intelligence*

This study addresses a critical challenge in medical artificial intelligence: ensuring accuracy, interpretability, and factual reliability in medical question answering systems. While **Large Language Models (LLMs)** demonstrate strong natural language understanding capabilities, their direct application in healthcare is constrained by **hallucinations**, **weak clinical grounding,** and **limited explainability.** To overcome these limitations, LLM-KGMQA is proposed with a hybrid framework that tightly integrates Large Language Models with structured medical knowledge graphs constructed from standardized terminologies such as **ICD-10, ICD-11**, and **SNOMED-CT.**

The proposed system incorporates entity fast linking, n hop subgraph construction, knowledge fusion, and semantics based pruning to enable accurate multi hop medical reasoning. Extensive experimental evaluation on benchmark medical datasets demonstrates that LLM-KGMQA achieves **98.0%** overall accuracy, an Exact Match (EM) of **89.6%,** an F1 score of **0.94,** and an nDCG of **0.96**, while maintaining sub second inference latency. The results confirm significant improvements in factual consistency, reasoning depth, and reliability compared to baseline medical QA models.

From a **knowledge engineering perspective**, this work contributes a scalable and interpretable design that unifies structured medical knowledge representation with LLM driven reasoning, **supporting multilingual,** clinically grounded medical question answering suitable for real world healthcare environments.

This manuscript represents original work and has not been published or submitted elsewhere. All authors have reviewed and approved the manuscript, and there are no conflicts of interest to declare.

It is sincerely believe that the findings presented in this work will be of interest to the readers of *Applied Intelligence*, particularly researchers and practitioners in knowledge engineering, healthcare AI, and explainable intelligent systems.

Thank you for your time and consideration. We would be honored by the opportunity to contribute to your esteemed journal.

With kind regards,

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