Special Issue

Recent Advances in Symmetry-Based Approaches to Retrieval-Augmented Generation in Large Language Models

Message from the Guest Editors

Large Language Models (LLMs) demonstrate remarkable capabilities but face challenges such as hallucinations, outdated information, and opaque reasoning processes. Retrieval-Augmented Generation (RAG) has emerged as a promising approach to mitigate these challenges by integrating external knowledge sources and enhancing the accuracy and reliability of generated content, especially for knowledge-intensive tasks. The concept of symmetry can help ensure a balanced interaction between the internal knowledge of LLMs and the external resources they access, leading to more efficient and accurate performance. We welcome contributions focused on the following topics:

- Breakthroughs in RAG on LLM;
- Real-world case studies in the deployment of RAG on LLM;
- Optimization techniques for enhanced performance and efficiency;
- RAG on LLMs in low-resource settings and languages;
- Cross-disciplinary applications of LLMs;
- Security and privacy concerns related to RAG on LLM applications;
- Future trends and predictions in RAG development;
- Applications of RAG on LLMs in healthcare.

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About the Journal

Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

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