

# LightRAG: Simple and Fast Retrieval-Augmented Generation

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**Abstract:** *LightRAG: Simple and Fast Retrieval-Augmented Generation is a framework designed to enhance large language models (LLMs) by integrating external knowledge sources. Traditional Retrieval-Augmented Generation (RAG) systems often rely on flat data representations, which can lead to fragmented answers and inadequate contextual awareness. LightRAG addresses these limitations by incorporating graph structures into text indexing and retrieval processes. This innovative approach enables comprehensive information retrieval from both low-level and high-level knowledge discovery, significantly improving response times while maintaining contextual relevance. The framework employs a dual-level retrieval system that enhances the efficiency of retrieving related entities and their relationships. By integrating graph structures with vector representations, LightRAG facilitates the efficient retrieval of interconnected data, ensuring that responses are contextually accurate and relevant.*

**Keywords:** LightRAG, Retrieval, Augmented, Generation, Framework, Query

