

Abstract—This study demonstrates the construction of knowledge graphs from Indonesian geography education books using ChatGPT Large Language Models (LLMs) and Neo4j for visualization. The primary objective is to convert unstructured PDF text into structured, interactive knowledge representations to enhance learning experiences. The methodology involves extracting entities, relationships, and triples from the text, and organizing them into coherent knowledge graphs. Evaluations on four individual datasets and a combined dataset used Mean Reciprocal Rank (MRR) and HITS@10 metrics to assess performance. The results showed strong performance, with MRR values between 0.7087 and 0.8592 and HITS@10 values between 0.9274 and 1.0. The combined dataset achieved an MRR of 0.7695 and HITS@10 of 0.9570. These findings underscore the effectiveness of ChatGPT LLMs in converting unstructured text into dynamic, interactive knowledge representations, thereby enhancing the accessibility and utility of educational content. Confidence in using ChatGPT is supported by its high accuracy in data extraction, with minimal inappropriate references generated, which were easily manageable. ChatGPT was chosen over other AI tools due to its superior text generation and entity recognition capabilities. Future work will focus on optimizing the extraction processes, expanding the dataset scope, and further validating and improving the approach to ensure broader applicability and effectiveness in educational settings.

Index Terms—Knowledge Graphs, ChatGPT, Large Language Models (LLMs), Mean Reciprocal Rank (MRR), HITS@10, NLP