Abstract

This research delves into the application of Knowledge Graph Completion (KGC) methods—Translating Embeddings (TransE), Complex Embeddings (ComplEx), and Knowledge Graph Embedding by Translating on Hyperplanes (TransH)—within the unique context of Human Resources (HR) knowledge graphs. The selected methods were chosen due to their classical and commonly employed nature in prior research. The study follows a systematic research flow encompassing data extraction, preprocessing, RDF mapping, and model training, aiming to comprehensively evaluate these models on a non-benchmark employee dataset from Telkomsel. The findings reveal distinct strengths and weaknesses of each model. TransE displays consistent accuracy in placing entities correctly, while ComplEx showcases notable adaptability to diverse HR relationships, contributing to its efficacy in capturing intricate connections, and TransH provides nuanced insights with a unique semantic relationship perspective, offering semantic depth in HR domains. Our research acknowledges that the current performance metrics (MR, MRR, and Hits@K) of TransE, ComplEx, and TransH in adapting to HR knowledge graphs are below those reported in previous studies using benchmark datasets (`FB15K` and `WN18RR`), emphasizing the need for transparent acknowledgment and paving the way for future improvements to achieve higher accuracy. In conclusion, this research pioneers evaluating KGC methods on non-benchmark HR datasets, providing practical insights for HR information system management. It lays a foundation for applying Knowledge Graph Completion methods, bridging the gap between theoretical knowledge and practical applications in HR knowledge graphs.

Keywords: Knowledge Graph, Knowledge Graph Completion, Knowledge Graph Embedding, Non-Benchmark, Human Resources