Leveraging Pre-trained Language Models for Time Interval Prediction in Text-Enhanced Temporal Knowledge Graphs

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Most knowledge graph completion (KGC) methods rely solely on structural information, even though a large number of publicly available KGs contain additional temporal (validity time intervals) and textual data (entity descriptions). While recent temporal KGC methods utilize time information to enhance link prediction, they do not leverage textual descriptions or support inductive inference (prediction for entities that have not been seen during training).

In this work, we propose a novel framework called TEMT that exploits the power of pre-trained language models (PLMs) for temporal KGC. TEMT predicts time intervals of facts by fusing their textual and temporal information. It also supports inductive inference by utilizing PLMs. In order to showcase the power of TEMT, we carry out several experiments including time interval prediction, both in transductive and inductive settings, and triple classification. The experimental results demonstrate that TEMT is competitive with the state-of-the-art, while also supporting inductiveness [1].

References

[1] D. S. Islakoglu, M. W. Chekol, and Y. Velegrakis. Leveraging pre-trained language models for time interval prediction in text-enhanced temporal knowledge graphs. In A. Meroño Peñuela, A. Dimou, R. Troncy, O. Hartig, M. Acosta, M. Alam, H. Paulheim, and P. Lisena, editors, *The Semantic Web*, pages 59–78, Cham, 2024. Springer Nature Switzerland.