

Knowledge Graph Embedding With Attentional Triple Context

Huan Gao^{1,2}, Jun Shi^{1,2}, Guilin Qi³

¹School of Computer Science and Engineering, Southeast University, Nanjing, China

Abstract

Knowledge graph embedding can represent entities and relations with efficient low-dimensional embedding vectors. Due to the outstanding performance on knowledge graph completion has led to an increase in the knowledge graph embedding research. State-of-the-art approaches treat each triple independent and aim to learn a fixed context-free embedding and always neglect rich structure features in knowledge graph. In this paper, an Attentional-Triple-Context-based knowledge Embedding model(ATCE) for entities and relations in their local structures, which we refer to as *triple context*, is proposed to take advantages of structures in knowledge graph. For each triple, two kinds of structure information are considered as its triple context in the graph: 1) Neighbor context is the outgoing relations and neighboring entities of an entity; 2) Path context is connective relation paths between a pair of entities, both of which contains rich useful information and unrelated information for entities and relations. In order to filter unrelated information, ATCE learns embedding for entities and relations with an attention mechanism and is expected to select the useful information in triple context. The experimental results show that our model outperforms the state-of-the-art methods for link prediction and entity prediction.

to generate new probabilistic type assertions. We then introduced novel definitions of support and confidence using negative examples as constraints. The experimental results were provided to compare our system with existing one and showed that SIFS-P performs better with respect to precision and recall in most cases.

In the future, we plan to extend the SIFS-P to learn more kinds of axioms such as the axioms with existential restriction, universal restriction and the limited extensional quantification.

References

- 1 Introduction
- 2 Triple Context
- 3 Knowledge Graph Embedding With Attentional Triple Context
- 4 Experiments
- 4.1 Data Sets
- 5 Related Work
- 6 Conclusion

In this paper, we proposed a novel approach to learning disjointness and subclass axioms from incomplete semantic data under OWA. We first applied the type inference algorithm