Knowledge Graph Embedding With Attentional Triple Context

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Abstract

Knowledge graph embedding can represents 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 neglect structure information. However, as a fact, the rich graph features in knowledge graph can be considered as contexts of a triple which have large information to describe entities and relations. In this paper, we proposes an Attentional-Triple-Context-based knowledge Embedding model(ATCE), which formulates a local structures around a triple as a context of the triple. For each triple, two kinds of structure information are considered as its context, which we refer to *as triple context* : 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 and unrelated information for entities and relations. In order to filter unrelated information, ATCE learns embedding for entities and relations with a 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.

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 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.