cases

doc_1		doc_2		decision	id
authors	• Yinyu Lan • Shizhu He • Kang Liu • Xiangrong Zeng • Shengping Liu • Jun Zhao	**authors**	• Yinyu Lan • Shizhu He • Xiangrong Zeng • Shengping Liu • Kang Liu • Jun Zhao	DUPLICATES	225
title	Path-based knowledge reasoning with textual semantic information for medical knowledge graph completion	**title**	Path-based knowledge reasoning with textual semantic information for medical knowledge graph completion		
publication_date	2021-11-29 00:00:00	**publication_date**	2021-05-28 00:00:00		
source	SupportedSources.INTERNET_ARCHIVE	**source**	SupportedSources.INTERNET_ARCHIVE		
journal	Springer Science and Business Media LLC	**journal**			
volume		**volume**			
doi	10.1186/s12911-021-01622-7	**doi**			
urls	• https://web.archive.org/web/20220204235454/https://bmcmedinformdecismak.biomedcentral.com/track/pdf/10.1186/s12911-021-01622-7.pdf	**urls**	• https://web.archive.org/web/20210602092828/https://arxiv.org/vc/arxiv/papers/2105/2105.13074v1.pdf		
id	id8015902652657482410	**id**	id8403929560720584441		
abstract	Background Knowledge graphs (KGs), especially medical knowledge graphs, are often significantly incomplete, so it necessitating a demand for medical knowledge graph completion (MedKGC). MedKGC can find new facts based on the existed knowledge in the KGs. The path-based knowledge reasoning algorithm is one of the most important approaches to this task. This type of method has received great attention in recent years because of its high performance and interpretability. In fact, traditional methods such as path ranking algorithm take the paths between an entity pair as atomic features. However, the medical KGs are very sparse, which makes it difficult to model effective semantic representation for extremely sparse path features. The sparsity in the medical KGs is mainly reflected in the long-tailed distribution of entities and paths. Previous methods merely consider the context structure in the paths of knowledge graph and ignore the textual semantics of the symbols in the path. Therefore, their performance cannot be further improved due to the two aspects of entity sparseness and path sparseness. Methods To address the above issues, this paper proposes two novel path-based reasoning methods to solve the sparsity issues of entity and path respectively, which adopts the textual semantic information of entities and paths for MedKGC. By using the pre-trained model BERT, combining the textual semantic representations of the entities and the relationships, we model the task of symbolic reasoning in the medical KG as a numerical computing issue in textual semantic representation. Results Experiments results on the publicly authoritative Chinese symptom knowledge graph demonstrated that the proposed method is significantly better than the state-of-the-art path-based knowledge graph reasoning methods, and the average performance is improved by 5.83% for all relations. Conclusions In this paper, we propose two new knowledge graph reasoning algorithms, which adopt textual semantic information of entities and paths and can effectively alleviate the sparsity problem of entities and paths in the MedKGC. As far as we know, it is the first method to use pre-trained language models and text path representations for medical knowledge reasoning. Our method can complete the impaired symptom knowledge graph in an interpretable way, and it outperforms the state-of-the-art path-based reasoning methods.	**abstract**	Knowledge graphs (KGs), especially medical knowledge graphs, are often significantly incomplete, so it necessitating a demand for medical knowledge graph completion (MedKGC). MedKGC can find new facts based on the exited knowledge in the KGs. The path-based knowledge reasoning algorithm is one of the most important approaches to this task. This type of method has received great attention in recent years because of its high performance and interpretability. In fact, traditional methods such as path ranking algorithm (PRA) take the paths between an entity pair as atomic features. However, the medical KGs are very sparse, which makes it difficult to model effective semantic representation for extremely sparse path features. The sparsity in the medical KGs is mainly reflected in the long-tailed distribution of entities and paths. Previous methods merely consider the context structure in the paths of the knowledge graph and ignore the textual semantics of the symbols in the path. Therefore, their performance cannot be further improved due to the two aspects of entity sparseness and path sparseness. To address the above issues, this paper proposes two novel path-based reasoning methods to solve the sparsity issues of entity and path respectively, which adopts the textual semantic information of entities and paths for MedKGC. By using the pre-trained model BERT, combining the textual semantic representations of the entities and the relationships, we model the task of symbolic reasoning in the medical KG as a numerical computing issue in textual semantic representation.		
versions		**versions**			