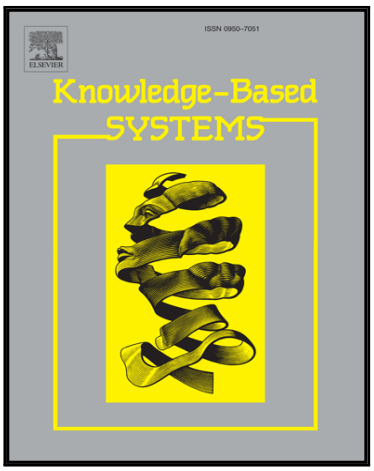

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A Neural Network Framework for Relation Extraction: Learning Entity Semantic and Relation Pattern

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Abstract

Relation extraction is to identify the relationship of two given entities in the text. It is an important step in the task of knowledge extraction. Most conventional methods for the task of relation extraction focus on designing effective handcrafted features or learning a semantic representation of the whole sentence. Sentences with the same relationship always share the similar expressions. Besides, the semantic properties of given entities can also help to distinguish some confusing relations. Based on the above observations, we propose a neural network based framework for relation classification. It can simultaneously learn the relation pattern's information and the semantic properties of given entities. In this framework, we explore two specific models: the CNN-based model and LSTM-based model. We conduct experiments on two public datasets: the SemEval-2010 Task8 dataset and the ACE05 dataset. The proposed method achieves the state-of-the-art result without using any external information. Additionally, the experimental results also show that our approach can represent the semantic relationship of the given entities effectively.

Keywords: Relation Extraction, Deep Neural Network, Convolutional Neural Network, Entity Embedding, Keywords Extraction

1. Introduction

Relation extraction is to identify semantic relation of the entity pairs in one sentence. It serves as an intermediate step in knowledge extraction from unstructured texts, which plays an important role in automatic knowledge base construction.

Classical methods for the task of relation classification focus on designing effective handcrafted features to obtain better classification performance [1, 2, 3, 4]. These handcrafted features are extracted by analyzing the text and

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