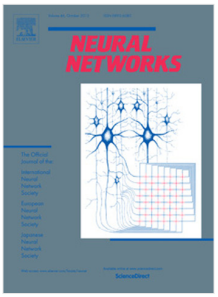
Accepted Manuscript



Distant supervision for relation extraction with hierarchical selective attention

Peng Zhou, Jiaming Xu, Zhenyu Qi, Hongyun Bao, Zhineng Chen, Bo Xu

PII: S0893-6080(18)30242-9
DOI: https://doi.org/10.1016/j.neunet.2018.08.016
Reference: NN 4020

To appear in: *Neural Networks*

Received date : 12 December 2017
Revised date : 7 August 2018
Accepted date : 20 August 2018

Please cite this article as: Zhou, P., Xu, J., Qi, Z., Bao, H., Chen, Z., Xu, B., et al., Distant supervision for relation extraction with hierarchical selective attention. *Neural Networks* (2018), https://doi.org/10.1016/j.neunet.2018.08.016

Distant Supervision for Relation Extraction with Hierarchical Selective Attention

Peng Zhou[a,b], Jiaming Xu[a], Zhenyu Qi[a,*], Hongyun Bao[a], Zhineng Chen[a], Bo Xu[a,b,c]

[a] *Institute of Automation, Chinese Academy of Sciences (CAS), China*
[b] *University of Chinese Academy of Sciences (UCAS), China*
[c] *Center for Excellence in Brain Science and Intelligence Technology, CAS, China*

Abstract

Distant supervised relation extraction is an important task in the field of natural language processing. There are two main shortcomings for most state-of-the-art methods. One is that they take all sentences of an entity pair as input, which would result in a large computational cost. But in fact, few of most relevant sentences are enough to recognize the relation of an entity pair. To tackle these problems, we propose a novel hierarchical selective attention network for relation extraction under distant supervision. Our model first selects most relevant sentences by taking coarse sentence-level attention on all sentences of an entity pair and then employs word-level attention to construct sentence representations and fine sentence-level attention to aggregate these sentence representations. Experimental results on a widely used dataset demonstrate that our method performs significantly better than most of existing methods.

Keywords: Relation Extraction, Distant Supervision, Hierarchical Attention, Piecewise Convolutional Neural Networks

1. Introduction

Distant supervised relation extraction aims to predict semantic relations between pairs of entities in texts supervised by Knowledge Bases (KB). It plays

*Corresponding author: zhenyu.qi@ia.ac.cn