

a framework “Fold” [17] is proposed. It treats the neural network computation graph as a tree, and groups computation nodes in the same layer together to compute in parallel. However, learning Fold changes the way of how to program with TensorFlow, as it introduces many new and complicated concepts. It stopped updating since Nov. 2017. The method we propose is lightweight which may be easier to implement and extend.

6 CONCLUSION

In this paper, we extend the concept of relation extraction from flat relations to nested relations, because the expressions of nested relation are common in natural language. We propose a formal formulation of nested relation extraction problem, which covers the simple binary flatten relation extraction problems, high-arity relation extraction and nested relation extraction. With the development of advanced deep learning models, extracting nested relations becomes possible. We introduce an Iterative Neural Network that consists of text, entity, and relation representation modules. The relation representation module utilize DAG-LSTM to extract complex structured relations. It is able to extract relations layer by layer iteratively, generating candidates on the fly.

Because the number of candidates is huge in each sentence, the naive serial implementation of DAG-LSTM is slow. Therefore, we propose to put relations and candidates in the same layer together, and compute them in parallel. This method is simple yet very effective, speeds up the training process by dozens of times.

Two experiments are conducted on two different nested relation extraction tasks. This model performs well on both tasks. The result shows an error propagation problem for high layer relations. We think this might be an interesting future work.

7 ACKNOWLEDGEMENTS

This work was supported by the National Key Research and Development Program of China under Grant No. 2017YFB1002104, the National Natural Science Foundation of China under Grant No. U1811461, and the Innovation Program of Institute of Computing Technology, CAS.

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