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Abstract—The task of named entity recognition is to identify certain types of entities with special meaning from the text. It is a basic task in natural language processing and the foundation of higher-level tasks such as relation extraction, knowledge graph, and question answering system. The correctness of the entity classification and the accuracy of the boundary have a huge influence on the effect of the upper layer application.

This paper mainly studies the problem of Chinese named entity recognition in the medical field. By extracting the information about the disease in the insurance text and labeling the entity of disease, treatment, and symptom, the data set for entity recognition is established.

The basic network is constructed through the neural network method, and on the basis of the BiLSTM-CRF model, the experimental comparison of different methods is used to improve the recognition effect of the model. By incorporating word boundary information in BiLSTM layer and adding attention mechanism, the effect of entity recognition is further improved.

Keywords—text about disease, entity recognition, word information, attention

I. INTRODUCTION

Named entity recognition (NER) is a fundamental task in natural language processing. The task has been solved as a sequence labeling problem and entity boundary and category labels are jointly predicted.

Chinese NER suffers from word segmentation problem. In most cases, word boundaries are entity boundaries so performing segmentation before word sequence labeling is a good way. However, word segmentation may cause OOV and wrong segmentation leads to incorrect entity boundaries. It has been shown that character-based methods outperform word-based methods in Chinese NER [1].

Although character-based methods perform well, word information has not been explored. Zhang and Yang [2] raise a new lattice structure LSTM which successfully include word information. Unlike the open domain, in the medical domain, entities like disease, medicine, treatment are countable so with the dictionary, it will effectively help find word boundaries and improve the performance of the model. In addition, attention is also integrated to improve the performance.

II. RELATED WORK

Hammerton [3] firstly used a unidirectional LSTM to solve the NER problems and most recent work uses an LSTM-CRF architecture. In Chinese NER, character embedding takes a dominant place since the challenges mentioned above are hard to solve. How to better leverage word information for Chinese NER has received continued research attention [4]. Collobert and Weston[5] firstly proposed the word-based models for NER. Huang[6] proposed a BiLSTM-CRF model for NER which achieves good performance and it has been the basic structure for NER.

Many efforts have been made to leverage word information. Cao and Peng[7] apply adversarial transfer learning using the information of Chinese word information. Zhang and Yang [8] using a lattice LSTM to integrate word information into character-based model.

Attention is widely used in encoder-decoder structure now. It has greatly improved the performance of the network. Attention is used in machine translation first[9]. After that, model that without RNN structure is also proposed as RNN structure is not friendly to parallel calculation. The most popular model is Transformer[10]. In this paper, we combine the lattice model with attention to improve the model performance.

III. MODEL

ACKNOWLEDGMENT (*Heading 5*)

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