Research on Relation Extraction of Computer Remote Supervision Based on Neural Network

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Abstract. With the continuous prosperity of China's computer Internet means and the continuous advancement of information process, we will find that the magnitude of some text information and resources in the network is doubling. A huge information base will be rebuilt in the vast network of our computers. In order to meet people's more detailed information review, people put forward neural network. In the process of studying the informatization of relation extraction, people find that the concept of neural network can help to realize remote supervision and relationship extraction[1]. In fact, relation representation is an important connection theory between relation extraction and remote supervision. How to use neural network to effectively link and optimize the two has become the primary task and goal of current researchers.

Keywords: Neural Network, Remote Supervision, Relation Extraction

1. Introduction

According to the survey report of the Internet Information Center, we can find that the number of Internet users in China today has reached two-thirds of the total number. The Internet penetration rate has also reached a staggering 90%. In today's network progress at the same time, a lot of information extraction problems have emerged. The knowledge of web pages is scattered in different websites, and their forms of expression are also very different[2]. It is very difficult to extract these information. The research of unstructured and unorganized text and various information collection methods in the network has also attracted the attention of many scholars.

The invention of neural network is an important milestone in the reform of computer technology. This is an indisputable fact. On this basis, scholars have done a lot of literature review and Research on the relationship extraction method of computer remote supervision. Relation extraction is an important research topic in the task of information extraction. Remote supervision mainly uses the interoperability of computer Internet to collect and supervise the address of various information. After the research reached the bottleneck period, people suddenly found that the use of neural network can effectively help remote monitoring of the relationship extraction research progress.

2. On the theory of computer neural network

2.1. The origin of neural network
In biological theory, neural network belongs to the nervous system organization of human brain. Researchers have found that this network can connect to the nerve centers of various organs in the brain. It can control the life activities of the human body by invoking the information in the brain. It's the kind of brain tissue that people think of as brain tissue in the early days. It turns out that this view is completely accurate. Foreign scholars put forward the construction of computer neural network through biological theory.

2.2. The function of neural network in electronic information
Each invention has its own unique function and significance. The computer-based neural network system should have the same working mode as the human brain. According to the different needs of users, it can store and extract information anytime and anywhere. Neural networks should be located in the main core areas of computers. It can control the outflow and inflow of computer information.

![Figure 1. Concept map of relation extraction.](image)

2.3. The significance of neural network
In fact, neural network has epoch-making significance. It helps electronic devices no longer be limited to a certain working environment or network, it can make electronic computers like the human brain to carry out intelligent regulation. In the use of computers, we have complained about the instability of the system. The emergence of neural network can help the internal information of computer system to optimize and integrate automatically. It can be compatible with the built-in system.

3. Research on computer remote supervision based on Neural Network

3.1. The purpose of remote supervision
If the invention of a system has no purpose, then the system will have no effect. We know that the information of computer network system is diverse and complex\(^\text{[3]}\). A lot of information comes from unsafe websites or external devices. These information will infringe on users' computers and even steal users' private information. The function of computer remote supervision is to help terminal equipment monitor the safety and effectiveness of user's equipment information.

3.2. Technical setting of remote supervision
In fact, the setting of computer remote supervision mainly comes from the computer database system. In the user's electronic equipment, if the database finds that the internal information has been tampered with or lost, it will directly send the error information to the terminal device. In this way, the terminal equipment can query the original address of the remote computer information and extract the information. In this respect, the settings of the main technologies used are very similar to cloud computing and data mining.
### Table 1. Application of neural network in monitoring relation extraction.

| Application                  | Relationship clues                                      |
|------------------------------|---------------------------------------------------------|
| Information search           | Data relations                                          |
| Language translation         | The relationship between the original text and the translation |
| Duplicate checking of articles| lexical similarity                                      |

3.3. *The relationship between neural network and remote supervision*

If we think of neural network as the brain system of computer, remote supervision can be regarded as its eyes. It can input and extract the information of remote equipment through remote monitoring program. Neural network can deeply view various information resources of users, and it can assist remote supervision system to optimize and integrate information resources.

4. **Computer remote supervision relation extraction based on Neural Network**

4.1. *Relation extraction and informational extraction*

Information extraction means that we can extract some important information through computer equipment. It is a sub field of natural information processing\(^4\). Its goal is to extract structured data from unstructured data. However, relation extraction and information extraction are two different concepts. We can think of relation extraction as a subset of information extraction. It can mine the information relationship between entities. From the side, relation extraction also belongs to data mining.

4.2. *Method of relation extraction in neural network state*

We know that relational extraction has a profound impact on the creation of computer knowledge base and the field of database. In the application state of neural network, relation extraction can be divided into four basic methods. These methods include supervised relation extraction, semi supervised relation extraction, remote supervised relation extraction and unsupervised relation extraction. Among them, remote monitoring relationship extraction is the main way of data mining which is often used by people.

4.3. *Extraction method of remote supervision relationship*

The theory of remote supervision combined with relation extraction was first proposed by foreign scholars. They also put forward the corresponding hypothesis. If there is a relationship between two entities, then we can think that there will be traces of this relationship between the data they produce. We can use the method of relation extraction in remote supervision mode to detect the trace. Therefore, the computer can analyze the relationship between different data or information.

5. **Application of neural network in computer remote supervision relation extraction**

5.1. *Careful query of information in data mining state*

We know that data mining can help us extract some of the main information from electronic devices\(^5\). However, if you want to search information carefully, the technology of data mining is far from enough. Neural network can go deep into all kinds of information inside the computer. It can search information carefully combining with the application of relation extraction.

5.2. *Language translation based on machine learning*

Relationship extraction can find the relationship between two kinds of data. In the process of language translation of electronic equipment, the relationship between the source language and the translation is determined. We can store the relevant data of this relationship into the computer, and it is also a good
choice to use the relation extraction system for language translation.

5.3. Similarity query of related words in articles
The duplicate checking of the article has always been the main process of the graduation of the contemporary college graduates. In the process of duplicate checking, the similarity query of Related words is also a way to determine the intersection of relations. Of course, the method of relation extraction under neural network can also be used for similarity query[6].

6. Conclusion
Neural network is a great achievement in computer science. It has epoch-making significance. However, we are not able to stagnate. In the modern network information mining environment, the research of neural network computer remote supervision relationship extraction is imminent.

References
[1] Deng K, Zhang X, Liu J. Distant supervision for relation extraction via retrieval-based neural networks [C] 2018 IEEE 4th international conference on computer and communications (ICCC). IEEE, 2018.
[2] Shi Y, Xiao Y, Niu L. A brief survey of relation extraction based on distant supervision [J]. 2019.
[3] Nasser M, Asgari M, Minaei-Bidgoli B. Distant supervision for relation extraction in the persian language using piecewise convolutional neural networks [C] 2019 5th International Conference on Web Research (ICWR). 2019.
[4] Lanxia Z, Wenxin H. Character relation extraction in chinese text based on bidirectional gru neural network and dual-attention mechanism [J]. Computer Applications and Software, 2018.
[5] Zhang Z, Zhan S, Zhang H, et al. Joint model of entity recognition and relation extraction based on artificial neural network [J]. Journal of Ambient Intelligence and Humanized Computing: 1-9.
[6] Shao-Wei L. Research on the application of convolution neural network in relation extraction [J]. Modern Computer, 2017.