

The Improvement and Application of Big Data Analysis Method to Traditional International Political Forecasting

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Abstract. In the study of international politics, our country gradually transformed the traditional intuitive prediction method, began to use big data analysis technique, although the relevant theory research has been optimized and innovative, but still does not get rid of the technical defects, such as the inaccurate prediction result, the accuracy of the prediction understanding error, etc. In the era of artificial intelligence, as the focus of traditional international political forecasting work, the forecasting work with big data analysis method as the core can make up for the defects of traditional forecasting methods and ensure that the final prediction results have guiding significance for practical development. Therefore, on the basis of understanding the current situation of big data analysis methods and traditional international political forecasting, this paper mainly discusses the current application of big data analysis methods in international political forecasting, and then verifies the application effect of big data methods by combining practical cases, and identifies effective measures for the future analysis of traditional international political forecasting based on big data. To fully demonstrate the application value of big data technology.

Keywords. Big Data, international politics, forecasting work, cooperation mechanism, data mining

1. Introduction

In the study of international politics, scholars of different academic schools pay great attention to this issue, which has an intuitive impact on the construction and development of modern society no matter from the aspects of discipline construction or policy research. A mature and perfect theoretical system of international politics should have the four functions of describing, explaining, predicting and guiding. However, it can be found that most scholars focus on describing and explaining the existing international political theories, but do not strengthen the research of traditional international political forecasting. Due to the nature of being tested and falsified, prediction is often the bull's eye of theoretical criticism. As a result, most scholars put forward less and less theoretical research and practical content for this work, which does not meet the needs of international political research in the new era. From the perspective of national policies, the current international pattern is in an important

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stage of transformation and development. In the course of practical construction and development, major events and major problems frequently occur, and the international political reality is characterized by extreme complexity and abruptness. It can make the research of international political prediction become the reference basis for foreign policy decision-making, especially in the aspects of international crisis warning and decision management [1,2,3].

After entering the era of big data, all research work is centered on data and technology. Social construction and development pay more attention to data analysis and storage, value extraction, intelligent processing and visual presentation. Big data itself contains rich application value and has a strong impact on the overall environment, logical thinking, technology and methods of prediction. It has gradually expanded the research approach and application range of the traditional international political forecasting work, and gradually attracted extensive attention of the international political academia. Some scholars have proposed a number of research results of international political forecasting based on the big data method, which provides technical support for rebuilding the international political forecasting system. Although there is no unified concept definition of big data, from the perspective of practical research, big data itself has four characteristics: first, a large amount of data information can reach the ZB level; Secondly, the data type is more complex, unstructured data continues to rise; Third, the data generation and processing speed is getting faster and faster, basically can realize real-time processing transmission and effective storage; Finally, a large amount of useless value leads to a low density of data value. In essence, the important application of big data analysis is to effectively predict the future trend of change. Through data mining and data analysis, the change trend of data application can be mastered, so as to facilitate people to understand the roadmap of the generation and development of things. Since all data information has predictive function, people should learn to understand and skillfully use big data analysis technology. Now, the implementation of the national big data strategy has been formally listed in the outline of the 13th Five-Year Plan. Domestic and foreign scientific research scholars and research institutions have made excellent achievements in big data prediction and analysis by relying on technological advantages, which mainly reflects two aspects: on the one hand, it refers to the big data prediction for exploring the law of social activities, and on the other hand, it refers to the big data prediction for crisis warning. Judging from the current application of big data methods in international political forecasting, the success of existing research topics undoubtedly provides strong support for the wide application of big data. Therefore, this paper on the basis of understanding the current study status of international political forecasting work, according to the common big data analysis method, combined with practical cases to verify the improvement direction of international political forecasting work with big data as the core. Driven by the wave of new scientific and technological revolution, an eye-catching phenomenon on the international political stage is the accelerated development of the process of globalization, which has triggered extensive and profound changes in international relations. As the core concept of traditional international political theory, "national interest" can no longer meet the requirements of accurately describing, correctly explaining and properly predicting the changing international social reality. The diversification and interdependence of actors in the international community, the prominence of global issues, the strengthening of the consciousness of the golden human community, and the transformation of the value distribution mechanism have

given birth to "international interests ", which can not be covered by the previous concept of national interests, and become an important concept to explain and analyze the reality, mechanism, meaning and direction of the international society. In order to truly realize their national interests in the process of globalization, international actors (mainly sovereign states) should not only ignore international interests, but also ensure the integration of international interests and national interests to the maximum extent, and then actively explore new ways to realize international interests and promote the common progress and prosperity of mankind.

2. Methods

Nowadays, under the influence of big data analysis techniques and methods, the traditional international political forecasting work has seen a research boom in computer-aided mass data analysis. Although this work has been in the initial stage for a long time, the big data analysis method has gradually been accepted by scientific researchers around the world because it continues the core ideas of quantitative analysis and can ensure the objectivity of data information sources. Several big data analysis methods closely related to international political forecasting are mainly reflected in the following points [4,5,6].

2.1. Data Visualization

Data visualization is the process of turning data and metrics into charts and other visual reports. Since humans receive a lot of information from a visual perspective, it is necessary to pay attention to the visual transformation of these data in the case of a large number of samples, so as to enhance the readability of data information and improve human brain's perception of data information. Nowadays, when studying data visualization platform, scientists propose to build the architecture as shown in Figure 1 below, in which the basic platform is used for application driving and the capability of the basic platform is continuously improved. Data aggregation is mainly used to sort out all kinds of data and information generated by production and operation to provide effective basis for business development and application driving; Data governance achieves the basic objectives of all kinds of production and management data and analysis; Unified operation provides technical support for visualization and task analysis; Data application should be based on the actual needs of the department, and a system of big data application driving intelligent operation should be established.

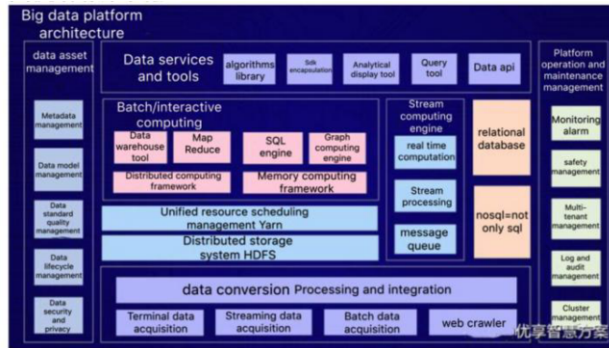


Figure 1. Architecture diagram of data visualization platform

2.2. Automatic Text analysis

Automatic text analysis, also known as computer-aided text analysis, is a technical method proposed based on the traditional content analysis method. It has the unique advantages of fast analysis speed, strong error correction ability, automatic inspection and so on, and can simultaneously produce text classification for multiple different concerns. In the context of the explosive growth of information, semantic recognition and data classification relying on artificial technology cannot meet the needs of international political forecasting in the new era. Therefore, automatic text analysis can be applied reasonably to reduce the errors of artificial semantic coding, quickly extract the themes and relations in text content, and establish the basic content for the forecasting work. With the rapid development of modern network technology, there are more and more unstructured data information. According to the comparison results of unstructured data information analysis methods as shown in Figure 2 below, manual coding analysis has lower requirements on the data form, but it is difficult to deal with a large number of information analysis work, and the use of automatic text software statistical technology for processing, on the basis of ensuring the data form, Fast processing of large volume data analysis according to regulations [7,8,9].

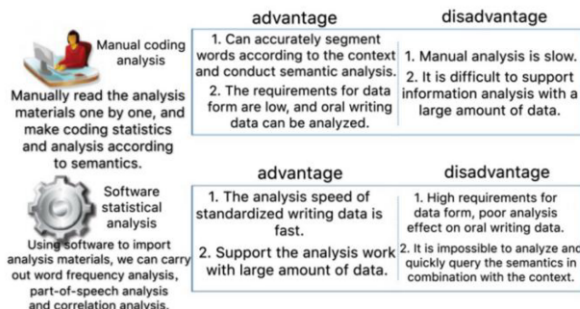


Figure 2. Comparison results of information analysis forms of unstructured data

2.3. Social Network Analysis

Social network analysis is a technical method based on sociology, psychology, anthropology, statistics and other fields, which needs to conduct quantitative research

on the relationship between the whole network actors. With the advent of Internet technology and new media, almost everyone has become a basic member of a unified social network. Combined with the structure analysis of the social network platform shown in Figure 3 below, it can be seen that the overall architecture design requires not only the installation of firewall, but also the pre-authentication proxy server, file processing server, application server, mail server, database server, user master data server, etc. Therefore, the platform has the characteristics of variability, complexity, anonymity, etc. The application scale created by the network platform itself and the data information stored are large. Nowadays, the application of social network analysis in international political forecasting is faced with many challenges and opportunities for both researchers and practical work. By studying users' behaviors and contents in social networks, they can fully grasp their preferences and selection tendencies, and study text information published on social networks within a certain range, which can enable researchers to have an understanding of possible problems and ensure that the predicted results of problems are closer to real life in a short time.

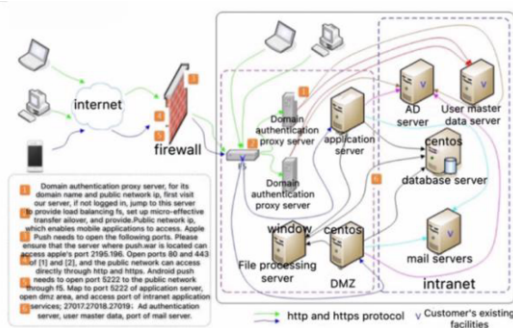


Figure 3. Topology diagram of social network

2.4. Other Methods

In addition to the three methods proposed above, some scholars have also proposed correlation grouping analysis, data mining algorithm and other methods, which have made excellent achievements in traditional international political forecasting. From the perspective of practical development, various methods of big data analysis originated from other disciplines and are now being gradually verified in the research of social sciences. Taking data mining algorithm as an example, it mainly excavates special patterns hidden in data, which can be divided into two forms, one is descriptive pattern, and the other is predictive pattern. The former is to normalize the objective facts contained in the current data, while the latter is to use time as the key parameter to predict the future value based on the time series data. Among them, artificial neural network has the characteristics of strong parallel distributed processing ability, high accuracy of data classification and strong fault-tolerant ability. Combined with the structural analysis shown in Figure 4 below, it can be seen that it only has the structure of input layer, hidden layer and output layer. Although it can play an important role in data classification and analysis, it is not suitable for mass data learning and analysis. Therefore, future research scholars should continue to explore the improvement measures of big data analysis methods in combination with practical cases [10,11,12].

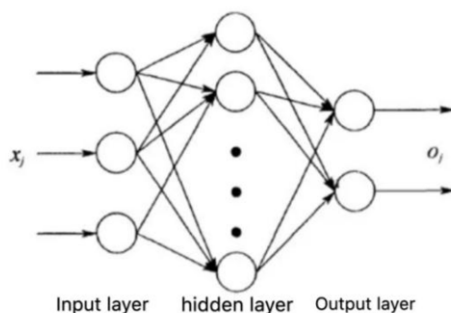


Figure 4. Structure diagram of artificial neural network

3. Result Analysis

After mastering the big data analysis method, this paper studies the prediction verification and analysis of real conflict data collected in the late 20th century by means of retrospective examination, and mainly explores the application effect of automatic text analysis method in big data research. research and analysis are carried out according to the hidden Markov model.[13]

The final results show that the prediction obtained by big data analysis in this paper gives a positive evaluation. It is believed that the model is feasible for the prediction of international political issues. Although it cannot guarantee its perfection, the model can provide a reference for solving various problems. This proves that the big data analysis method has more application value and research significance than the traditional forecasting method. Since the data throughput capacity of big data analysis method is far higher than that of human analysis method, it can rely on active learning and other methods to automatically process text information, which can guarantee data neutrality to a certain extent and avoid data deviation caused by human factors. Therefore, future scholars should improve and optimize the traditional international political forecasting work based on big data analysis method. The reliability of data and information sources should be comprehensively improved, international cooperation between big data analysis should be strengthened, and a data security guarantee mechanism should be fully established, so as to provide reference for international political forecasting services. To apply big data analysis method in traditional international political forecast, it is necessary to start from the existing dilemma, analyze the existing influencing factors and forecasting methods, and finally find the main causes of these problems, which are reflected in the following points: First, the international political environment is unstable. Because the international political fact itself has two attributes of society and system, it is difficult to predict the actual work, and this is also the fundamental problem that must be considered in the application of big data analysis method. Second, existing forecasting methods have limitations. Common application methods include numerical prediction, time series, scenario analysis, intuitive prediction, historical analogy, etc. Natural prediction is the most commonly used method, but the practical application scope is limited. [14] Thirdly, the existing forecasting methods have one-sided philosophical principles. Under the influence of western natural science ideas, the traditional international political

forecasting work has built a forecasting logic system based on analogy, causal law and inertia, which is not in line with the political environment of practical development. Finally, there are some misunderstandings in the existing forecasting research. In the process of forecasting and analyzing the international political environment, some scholars always have expectations that do not meet the actual conditions, and over-ignite the important significance of forecasting to guide reality. The application of big data analysis methods can provide new impetus for international political forecasting in the new era, fully demonstrate the application value of big data technology reconstruction, change the traditional international political forecasting environment, and make practical forecasting work more extensive, the structure and content become diversified, and the data record become more complete. At the same time, with the development and innovation of big data technology, there will be more and more international political forecasting methods, and more and more breakthroughs in practical work thinking. It can not only effectively integrate cultural, political, social, economic and other data information, but also provide important data support and business decision-making for national development. From a long-term perspective, the application of improved big data analysis methods in traditional international political forecasting is a research field with epochal significance. Although no standardized and rigorous theoretical method system has been proposed up to now, more answers are bound to be obtained with the continuous expansion of the research scope.[15]

4. Conclusion

To sum up, as the international society is a complex and changeable system, the traditional methods of international political forecasting have some problems such as data, imperfect grasp and too strong subjectivity, which can easily reduce the accuracy of data analysis during the forecasting period. Therefore, future scholars should reasonably apply them in international political forecasting on the basis of mastering big data analysis methods. To build a solid realistic foundation for forecasting work.

References

- [1] Chuanjun Li. Political Phenomena in the Era of Big Data, Research Methods and Reflections [J]. 2021(2016-3):18-23.
- [2] Qingling Dong. Big Data Security Situation Awareness and Conflict Prediction [J]. 2021(2018-6):172-182.
- [3] Qiang Qu,Kaili Yang,Qijing Zhang, et al. An improved method for power Big Data fusion and anomaly detection [J]. Guizhou Electric Power Technology, 2021, 024(007):24-30.
- [4] Jianzhou Duan. Big Data Analysis Report of "Betting Agreement" Dispute Cases in 2021 [J]. Peking University Magic Weapon Culture, 2021(1):36.
- [5] Tengfei Ge,Zhongshuai Bai. Research on the application of Big data technology in financial audit data analysis [J]. International Business Finance and Accounting, 2022(3):5.
- [6] Zhiqian Sheng,Zixiao Wu. Evaluation and improvement of travel spatial distribution model based on commuting big data [J]. Urban Transportation, 2023, 21(1):6.
- [7] Xiaojuan Xie,Yuemeng Song. Using Big data to innovate the analysis method of ideological and political situation [J]. Ideological and Political Work Research, 2022(6):2.
- [8] Qian Wang,Li Qian,Xiwen Liu. A review of techniques and methods of knowledge evolution analysis [J]. Library and Information Services, 2023, 67(7):121-134. (in Chinese)
- [9] Yunqin Zhong,Yueqin Zhu,Shoutao Jiao. Research on prediction modeling method of edge big data analysis [J]. High-tech Communications, 2022, 32(10):9.

- [10] Chong Chen and Jingtian Hu. Space dependence and armed conflict prediction. *International Political Science*, 2022, 7(2):86-123.
- [11] Rui Huo. Research on the influence of social network on political security [J]. *Times Person*, 2021, 000(030):P.1-2.
- [12] Kai Yang. The conception of teaching plan design System based on Big Data technology [J]. *Century Star -- High School Edition*, 2021(22):0141-0142.
- [13] Hang Luo, Boxuan Li. International structure analysis and State power measurement: Network analysis based on Big Data [J]. *World Economics and Politics*, 2021(6):37. (in Chinese)
- [14] Qian Zhou, Yan Gao, Qiyun Chen. Development Prospect of Chinese data resources under the tide of digital economy [J]. *China Telecom Industry*, 2022(2):22-26.
- [15] Yingying Cheng, Dongshen Cheng, Jian Lu. The influence of international public opinion on the Introduction of Foreign investment in China: An Empirical Study based on Gdelt News Big Data [J]. *World Economic Research*, 2021(7):16.