



Keyword Retrieval of Foreign Media Discourse Based on Dynamic Speech Recognition

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Abstract. Foreign media reports are an important window for domestic audiences to understand the national conditions of other countries, as well as the main position of foreign national image construction and the public opinion field of international issues. In order to improve the keyword retrieval and monitoring ability of foreign media discourse, a keyword retrieval method of foreign media discourse based on dynamic speech recognition is proposed. An optimization learning model for keyword matching and retrieval of foreign media discourse under the audience public opinion monitoring system is established, the attribute detection and semantic association rule dynamic identification of foreign media discourse keywords under the audience public opinion monitoring system through rough set semantic feature detection and keyword typed pronunciation dynamic feature matching analysis is realized, and combine speech signal spectrum analysis, semantic fusion clustering and adaptive fusion algorithm, the density clustering of foreign media discourse keywords in the retrieval process under the audience public opinion monitoring system is realized, the difference of density distribution according to the information clustering results is calculated, the optimal retrieval of foreign media discourse keywords under the audience public opinion monitoring system according to the stationary characteristics and associated characteristics distribution of the time series of voice signals is realized. The test shows that this method has high precision, good precision and recall in keyword retrieval of foreign media discourse under the public opinion monitoring system of audience groups.

Keywords: foreign media reports · Dynamic speech recognition · Foreign media discourse

1 Introduction

Foreign media reports are an important window for domestic audiences to know about other countries' national conditions, as well as the main position for foreign countries' image building and the site of public opinion on international issues. The world believes that information communicators should break down information barriers, pay attention to the lives of others and be responsible for every information receiver from different cultural groups. Specifically, the news pages of various countries should contain a certain number of foreign reports and foreign voices, and have the ability to integrate news topics

from the perspective of many countries, rather than just drifting with the tide in the macro context of western media. According to the survey report on China's image released by Pew Research Center in recent years, the number of respondents with negative impressions of China in major developed countries such as Australia, Britain and the United States has reached a record high [1]. Combined with fuzzy information search design technology [2]. This paper constructs a data analysis model of foreign media discourse keywords and literature resources under the audience public opinion monitoring system, and adopts fuzzy information clustering and big data feature reorganization to realize the retrieval and recognition of foreign media discourse keywords under the audience public opinion monitoring system, and improve the recognition ability of foreign media discourse keyword information retrieval. The research on keyword retrieval methods of foreign media discourse under the public opinion monitoring system of relevant audience groups has attracted great attention [3].

The keyword search of foreign media discourse under the audience public opinion monitoring system is based on the analysis technology of big data information structure characteristics, and adopts semantic feature matching and fuzzy information clustering to search foreign media discourse keywords and identify fuzzy features under the audience public opinion monitoring system. The design method of multimedia information retrieval system based on big data analysis is proposed in reference [4], which combines the coupling parameter matching and information recombination methods. The retrieval system is optimized from data source tracking component, data mining component and system early warning component to realize the semantic parameter analysis of multimedia information of foreign media discourse under the audience public opinion monitoring system. However, the accuracy of keyword information retrieval of multimedia foreign media discourse by this method is not high, and the computational convergence is not good. A keyword information retrieval method of foreign media discourse is proposed based on graph structure optimization and self-adaptive multi-metric unsupervised feature selection in reference [5], which adopts the method of joint association rule mining to realize the feature analysis of keyword retrieval of foreign media discourse under the public opinion monitoring system of audience, establishes a joint feature matching model of keyword retrieval of foreign media discourse under the public opinion monitoring system of audience, and realizes keyword retrieval of foreign media discourse under the public opinion monitoring system of audience through ambiguity detection. By constraining the rank of the similarity matrix, the local structure of the graph is optimized and the calculation is simplified. However, the clustering of foreign media discourse keyword retrieval under the audience public opinion monitoring system is not good, and the precision rate is not high [6].

In order to solve the above problems, this paper proposes a keyword retrieval method of foreign media discourse under the public opinion monitoring system based on dynamic speech recognition. Firstly, the speech signal detection model of sparse dictionary matching set is used to construct the block-based word meaning structure model of foreign media discourse keywords under the audience public opinion monitoring system. Combining speech signal spectrum analysis, semantic fusion clustering and adaptive fusion algorithm, the density clustering of foreign media discourse keywords in the audience public opinion monitoring system is realized, and the keyword retrieval of foreign media

discourse in the audience public opinion monitoring system is realized. Finally, the simulation test analysis shows the superior performance of this method in improving the keyword retrieval ability of foreign media discourse under the public opinion monitoring system of audience groups.

2 Analysis on the Data Structure of Foreign Media Discourse Keywords Under the Audience Public Opinion Monitoring System

2.1 Storage Structure of Foreign Media Discourse Keywords Under the Public Opinion Monitoring System of Audience Groups

In order to realize the keyword search of foreign media discourse under the audience public opinion monitoring system, a feature matching model of keyword search of foreign media discourse under the audience public opinion monitoring system is constructed by combining semantic feature analysis and density clustering analysis among high-level semantics [7]. The data management of keyword search of foreign media discourse under the audience public opinion monitoring system is carried out by using association rule fusion and similarity feature detection. According to the search results, Learn the foreign media discourse under the newly-added public opinion monitoring system, realize the incremental expansion of the foreign media discourse retrieval database under the public opinion monitoring system, and realize the retrieval of foreign media discourse keywords under the public opinion monitoring system by combining density cluster analysis. The overall structure of the retrieval model is shown in Fig. 1.

According to the general structure model of foreign media keyword retrieval under the audience public opinion monitoring system shown in Fig. 1, and the semantic correlation distribution feature set of foreign media keyword retrieval under the audience

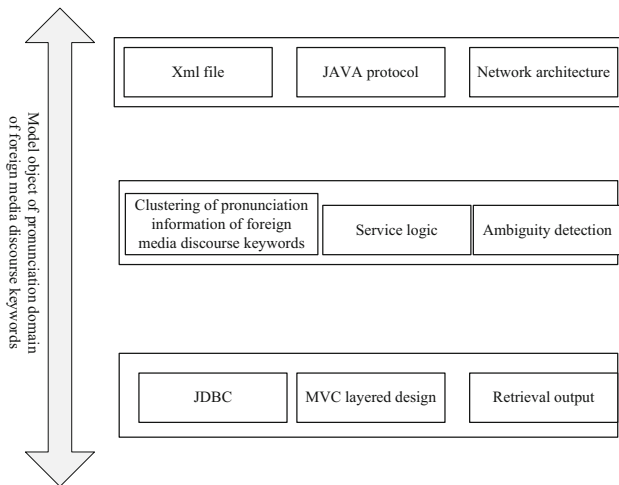


Fig. 1. Overall structure model of foreign media discourse keyword retrieval under the public opinion monitoring system of audience groups [Owner-draw]

public opinion monitoring system is constructed, and the rough sample set of foreign media keyword distribution under the audience public opinion monitoring system is obtained as follows:

$$P_{TX} = \frac{P_{T-elec}}{R} \cdot L_{DATA} + \frac{P_t}{R} \cdot L_{DATA} + \frac{P_{R-elec}}{R} \cdot L_{ACK} \tag{1}$$

wherein, P_{T-elec} is the semantic attribute of foreign media discourse under the audience public opinion monitoring system, R is the semantic ontology feature of foreign media discourse keywords pronunciation, L_{ACK} is the degree of freedom, L_{DATA} is the joint probability density feature component of foreign media discourse keywords pronunciation, adopting the joint distributed fusion method of foreign media discourse keywords under the audience public opinion monitoring system, and the time length t of foreign media discourse keywords retrieval under the audience public opinion monitoring system. Given a data set $S = \{x_1, \dots, x_m\}$, the vector $\mathbf{x} = [x_1 \ x_2 \ \dots \ x_k]$ is used to represent the statistical features of foreign media discourse keyword retrieval under the audience public opinion monitoring system. According to the clustering of $M_1, M_2 \dots M_N$, the density clustering problem of foreign media discourse keyword retrieval under the audience public opinion monitoring system is described as:

$$R_s = k_1 \left(\frac{P_{T-elec} + P_{R-elec} + P_t}{R} \right) \cdot (L_{DATA} + L_{ACK}) \tag{2}$$

wherein

$$k_1 = \frac{(P_{T-elec} + P_t) + P_{R-elec}}{R} \tag{3}$$

$$k_2 = P_{T-start}t_{T-start} + P_{R-start}t_{R-start} \tag{4}$$

wherein, $DIFS$ is the descriptive statistical characteristic quantity of foreign media discourse under the audience public opinion monitoring system, t_{DATA} is the retrieval time interval of data, t_{slot} is the pronunciation locking cycle time of foreign media discourse keywords, $t_{T-start}$ is the starting time of foreign media discourse keywords retrieval, and $SIFS$ is the differential probability density. The speech signal detection model of sparse dictionary matching set is used to construct the block grid word meaning structure model of foreign media discourse keywords under the audience public opinion monitoring system, and the storage structure of foreign media discourse keywords under the audience public opinion monitoring system is analyzed [9].

2.2 Matching of Retrieval Characteristics of Foreign Media Discourse Under the Public Opinion Monitoring System of Audience Groups

According to the difference value of foreign media discourse keyword search saturation under the audience public opinion monitoring system, the precision of foreign media discourse search under the audience public opinion monitoring system is $x_i r_i(\mathbf{x}) p_i^j(\mathbf{x})$, and

the gradient clustering function of foreign media discourse keyword gradient amplitude weighting under the audience public opinion monitoring system is as follows:

$$Cl = \frac{k_1 \cdot l}{E_{comm}} \cdot (1 - p_{drop}) = SIFS + t_{T-start} \tag{5}$$

wherein, l is the low-level feature of foreign media discourse under the audience public opinion monitoring system, E_{comm} is the text feature difference degree of foreign media discourse keywords, and p_{drop} is the joint distribution set of foreign media discourse keywords retrieval. According to the hierarchical detection results of foreign media discourse keywords retrieval under the audience public opinion monitoring system, a fusion model of foreign media discourse keywords under the audience public opinion monitoring system is established by fuzzy voice dynamic feature recognition method, and the fuzzy set distribution of foreign media discourse keywords under the audience public opinion monitoring system is obtained as follows:

$$f(v) = \frac{\cos(\pi v) - \sin c(v)}{v} \tag{6}$$

wherein, v represents the speed of feature matching in the retrieval process, and $c(v)$ is the distribution dimension of histogram in gradient direction. Combined with the fuzzy cluster distribution of foreign media discourse keywords under the audience public opinion monitoring system, the regional division cells of foreign media discourse keyword retrieval under the audience public opinion monitoring system are as follows:

$$P_{k+1|k+1} = P_{k+1|k} - G_{k+1}P_{k+1|k}^z G_{k+1}^T \tag{7}$$

wherein, $P_{k+1|k}$ is the conditional probability density of foreign media discourse keyword retrieval, G_{k+1} is the gain coefficient of foreign media discourse keyword pronunciation output, and G_{k+1}^T is the transposed feature quantity of foreign media discourse keyword retrieval. n_z is set as the number of foreign media keyword search nodes under the audience public opinion monitoring system, the attribute classification strategy of foreign media keyword search under the audience public opinion monitoring system is introduced, the correlation coefficient of foreign media keyword search under the audience public opinion monitoring system is analyzed by the method of grouping samples, and the rough set of foreign media keyword search under the audience public opinion monitoring system is obtained by covariance correction:

$$H_{scor}(f) = L^{-1} \sum_{j=k-L+1}^k \tilde{z}_j \tilde{z}_j^T - (P_{k+1|k}^z + R_k) \tag{8}$$

wherein, \tilde{z}_j is the pronunciation similarity of foreign media discourse keywords, R_k is the directory matrix of foreign media discourse according to semantics under the audience public opinion monitoring system, and φ_k is the length of foreign media discourse keyword search sequence, then the rough fuzzy set obeys n_z distribution with freedom degree, and the fuzzy set of foreign media discourse keywords under the audience public opinion monitoring system is constructed. According to the non-hierarchical classification search results, the fuzzy evaluation of foreign media discourse keywords under the

audience public opinion monitoring system is S , $\{v_1, \dots, v_M\}$ represents the rough fuzzy state of foreign media discourse keywords under the audience public opinion monitoring system. Through the fuzzy voice dynamic feature recognition method, a fusion model of foreign media discourse keywords under the audience public opinion monitoring system is established, and the retrieval process is optimized through association rules scheduling [10].

3 Optimization of Keyword Search of Foreign Media Discourse Under the Monitoring System of Public Opinion of Audience Groups

3.1 Foreign Media Discourse Keywords Fusion Processing

Based on the decision-making model of foreign media discourse semantic retrieval under the hierarchical public opinion monitoring system, the resource load balance model of foreign media discourse keyword retrieval under the public opinion monitoring system is established [11], and the sorted list of foreign media discourse keyword retrieval under the public opinion monitoring system is obtained, thus the updated formula of semantic feature extraction of foreign media discourse keyword retrieval under the public opinion monitoring system is obtained:

$$H(r) = \frac{1}{N+1}x(N+1)x^3(N+1-\tau) \quad (9)$$

wherein, N is the semantic sequence length of foreign media discourse keywords, x is the retrieval time sequence of foreign media discourse keywords, and τ is the pronunciation time delay of foreign media discourse keywords.

Using the method of neural network, the foreign media discourse under the audience public opinion monitoring system is categorized according to semantics, and the non-hierarchical classification is adopted to search the foreign media discourse under the audience public opinion monitoring system, and the hierarchical clustering center is "and". Using the method of rough set feature matching, the hierarchical density clustering output of foreign media discourse keyword search under the audience public opinion monitoring system is M_i , and when $(i \neq j, 1 \leq i \leq q, 1 \leq j \leq q)$, the time probability density function of the clustering output of the semantic attributes of foreign media discourse under the audience public opinion monitoring system is expressed as:

$$\begin{aligned} F(t) &= X_p(u - v \sin a) \\ &= \frac{3}{(N+1)^2}x(N+1)x^3(N+1-\tau) \end{aligned} \quad (10)$$

wherein, X_p is the source information of the semantic distribution of foreign media discourse keywords under the audience public opinion monitoring system, u is the roughness of foreign media discourse under the audience public opinion monitoring system, and v is the matching feature of foreign media discourse keywords.

Through the semantic information detection results of foreign media discourse keywords under the audience public opinion monitoring system, the rough set matching

coefficients of foreign media discourse keywords under the audience public opinion monitoring system are $r_x^{(N+1)}(\tau)$ and $c_x^{(N+1)}(\tau)$ values. Through rough set semantic feature detection and keyword typed pronunciation dynamic feature matching analysis, the association rule word attribute detection and semantic association rule feature dynamic identification of foreign media discourse keywords under the audience public opinion monitoring system are realized, and the retrieval and fusion output of foreign media discourse keywords under the audience public opinion monitoring system is obtained:

$$p(r) = \frac{1}{\sqrt{2\pi}\sigma_s} \frac{\partial(EE^T)}{\partial\tau} = -2E(X_1 * \frac{\partial H}{\partial\tau})^T \tag{11}$$

wherein, σ_s is the parameter to be evaluated for foreign media discourse keyword retrieval under the audience public opinion monitoring system, E is the pronunciation energy functional of foreign media discourse keywords, X_1 is the initial clustering center of foreign media discourse keyword distribution, and it is the pronunciation information entropy of foreign media discourse keywords. Through the fusion processing of foreign media discourse keywords under the above-mentioned public opinion monitoring system, combined with hierarchical density clustering, the retrieval research of foreign media discourse keyword knowledge structure graph model is realized [12].

3.2 Density Clustering and Retrieval Output of Foreign Media Discourse Keywords Under the Public Opinion Monitoring System of Audience Groups

Through rough set semantic feature detection and keyword typing pronunciation dynamic feature matching analysis, the attribute detection and semantic dynamic identification of foreign media discourse keywords in audience public opinion monitoring system are realized. Combined with speech signal spectrum analysis, semantic fusion clustering and adaptive fusion algorithm, the density clustering of foreign media discourse keywords in audience public opinion monitoring system is realized. According to the information clustering results, the optimal decision function of rough set semantic feature detection is obtained.

$$F = X_2 - X_1 * H$$

$$= \min(\sum_i^N R_i) = \begin{cases} \frac{s_{ij} - s(i,j)}{s_{ij}} & s(i,j) < s_{ij} \\ e(i,j) & s(i,j) \geq s_{ij} \end{cases} \tag{12}$$

wherein, s_{ij} represents the storage structure model of foreign media discourse keyword retrieval under the audience public opinion monitoring system, X_1 is the first moment, X_2 is the second moment of joint detection of foreign media discourse keyword pronunciation, and if the sampling period is T_s , then the data points of foreign media discourse keywords under the audience public opinion monitoring system included in each period are $m = T/T_s$, and the quantitative parameter set of semantic feature distribution of foreign media discourse keywords under the audience public opinion monitoring system is obtained as follows:

$$\min_{R,c} R^2$$

$$s.t. \quad \|c - \phi(x_i)\|^2 \leq R^2, i = 1, \dots, m \tag{13}$$

wherein, R is the retrieval radius of foreign media discourse keywords, c is the fine-grained distribution of foreign media discourse keywords, and $\phi(x_i)$ is the pronunciation space detection function of foreign media discourse keywords. The optimal optimization function of hierarchical density clustering for foreign media discourse keyword pronunciation detection is:

$$\begin{aligned} H &= - \sum_{i=0}^N (1 - p_i) \ln(1 - p_i) \\ &= \beta \sigma_{x_1}^2 (k - 1) + (1 - \beta) x_1^2 (k) \end{aligned} \quad (14)$$

wherein, p_i is the semantic attribute named for the pronunciation shape of foreign media discourse keywords, $\sigma_{x_1}^2$ is the root mean square error of the distribution of foreign media discourse keywords, and β is the semantic attribute component of ambiguous sentence description. Combining the spectrum analysis of foreign media discourse keywords pronunciation, semantic fusion clustering and adaptive fusion algorithm, the density clustering in the process of foreign media discourse keyword retrieval under the audience public opinion monitoring system is realized.

4 Simulation

The simulation experiment verifies the application performance of this method in foreign media discourse keyword retrieval under the public opinion monitoring system of audience groups, and collects the news data of 16 mainstream media in the United States, Britain, France, Australia, Japan, Singapore, South Africa and Brazil from 2019 to 2020 through the calculation and search of Google Cloud Platform. Select two mainstream media in each country, one with greater influence and the other with smaller influence. 8 countries are distributed in five continents, with the characteristics of nation-state and a certain number of media organizations; They are all members of the United Nations and belong to three categories: developed, underdeveloped and developing countries; It has established diplomatic relations with China, and has a factual relationship of trade and cultural exchange with China. Based on the selected cases, the average of “supervision” and “dialectics” is taken as the result variable of this study (cosmopolitan media coverage index). In terms of “supervision”, by looking at the title and the first paragraph (or the introduction) of the article, we can count the number of international reports (and China-related reports) of a certain media in a certain country that day. The statistical characteristic quantity distribution set of keyword search of foreign media discourse under the audience public opinion monitoring system is 1206, the length of time series is 200, and the test set is 120.

According to the sample test, the sample feature distribution of foreign media discourse keywords under the public opinion monitoring system of audience groups is shown in Fig. 2.

According to the sample distribution structure of foreign media discourse under the audience public opinion monitoring system in Fig. 2, the keyword search of foreign media discourse under the audience public opinion monitoring system is carried out, and the confidence level distribution is shown in Fig. 3.

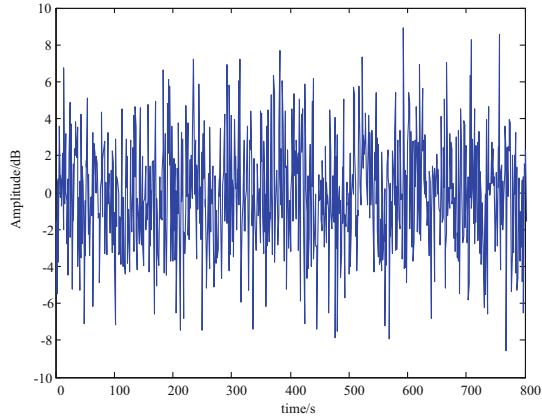


Fig. 2. Distribution of sample characteristics of foreign media discourse voice under the public opinion monitoring system of audience groups [Owner-draw]

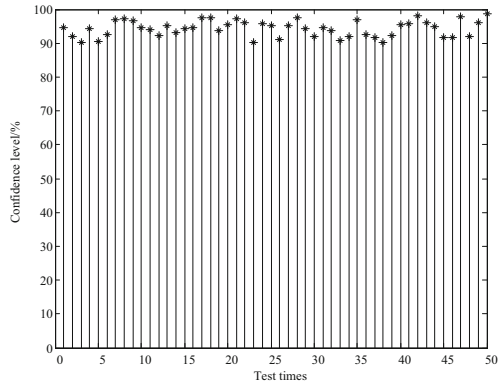


Fig. 3. Confidence level of keyword search in audience’s foreign media discourse [Owner-draw]

According to the distribution characteristics of frequency domain, the density clustering of foreign media discourse keywords under the public opinion monitoring system of audience groups is carried out, the clustering of foreign media discourse keyword retrieval under the audience public opinion monitoring system is good. The recall rate of foreign media discourse keyword retrieval under the audience public opinion monitoring system by different methods is tested, and the comparison results are shown in Fig. 4. The analysis of Fig. 4 shows that the recall rate of foreign media discourse keyword retrieval under the audience public opinion monitoring system by this method is high.

According to the analysis of Fig. 4, this method has a high recall rate and a good retrieval performance for foreign media discourse keyword retrieval under the audience public opinion monitoring system.

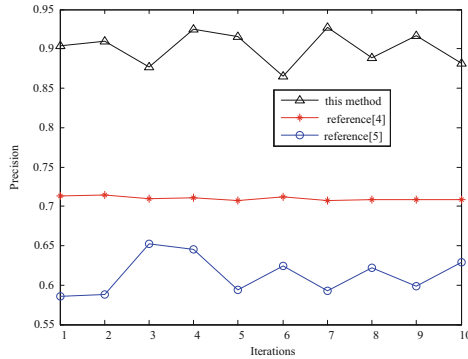


Fig. 4. Comparison of retrieval performance [Owner-draw]

5 Conclusions

In this paper, a keyword retrieval method of foreign media discourse based on dynamic speech recognition is proposed. This paper puts forward a keyword retrieval method of foreign media discourse under the audience public opinion monitoring system based on dynamic speech recognition. Using the speech signal detection model of sparse dictionary matching set, a block-gridded word meaning structure model of foreign media discourse keywords under the audience public opinion monitoring system is constructed. Combined with the analysis of the storage structure of foreign media discourse keywords under the audience public opinion monitoring system, a fusion model of foreign media discourse keywords under the audience public opinion monitoring system is established by fuzzy speech dynamic feature recognition method, the density clustering of foreign media discourse keywords in the retrieval process under the audience public opinion monitoring system is realized, the difference of density distribution according to the information clustering results is calculated, and the optimal retrieval of foreign media discourse keywords under the audience public opinion monitoring system according to the stationary characteristics and associated characteristics distribution of the time series of voice signals is realized. The test shows that this method has high precision, good precision and recall in keyword retrieval of foreign media discourse under the public opinion monitoring system of audience groups.

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