

Construction and Analysis of College Students' Ideological Education System Based on Artificial Intelligence Technology

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Abstract. The combination of intelligent algorithms and the education system of colleges and universities is an inevitable trend for the high-quality development of college teaching in the era of big data. In this paper, for the problem of cumbersome and time-consuming resource search on educational resource websites, it is proposed to utilize the LSTM algorithm, add the combination of input features based on the attention mechanism, and design and form a new intelligent search algorithm based on semantic analysis. Combined with the intelligent search steps of ideological and political education resources, the search results of ideological and political education resources are optimized. Carry out text and image search tasks in the ideological education field dataset, and evaluate the search performance of this paper's algorithm and other algorithms using MAP and top-k Precision evaluation indexes. Combined with teaching applications, analyze the teaching impact of ideological education resources in colleges and universities based on intelligent search algorithms. Based on the ideological education domain dataset, the algorithm model of this paper can improve the MAP performance on different search tasks, and as the value of K increases, the Precision values of this paper's algorithm are 0.431 and 0.411, which are obviously better than the RNN algorithm. Comparing the students' three teaching performance, the education system constructed in this paper can help to improve the students' ideological education performance.

1. Introduction

In the education system, China requires students to realize the overall development of moral, intellectual, physical, aesthetic and laborious, moral education is the basic part of the whole education, and ideological and political education is an important way to realize the moral education, can promote the speed of the cultivation of composite talents, not only can enhance the height of the students' ideological cognition, but also to ensure the overall development of the students. College students are the new force of China's socialist economic construction, but also the main carrier of the quality of social civilization, college students' ideological and political literacy is directly related to the fate of the country's development, but also related to the progress of the social economy [1, 2]. Based on this situation, colleges and universities should recognize the importance of students' civic and political education, establish a civic and political education system that meets the requirements by combining students' current specific conditions, develop

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a reasonable construction path, effectively improve students' civic and political literacy, and better provide comprehensive talents for the construction of socialist economy [3].

In the era of artificial intelligence, major changes have occurred in the field of education, and ideological and political education, as the main channel for colleges and universities to complete the fundamental task of establishing moral character, is inevitably affected by the general environment of education and the new situation in society. In the face of changes in the behavioral characteristics, learning habits, and learning needs of college students, educators should integrate educational resources, innovate educational modes, optimize educational platforms, improve educational evaluation, accurately match the actual learning situation of college students, and enhance the effectiveness of ideological and political education in the balance of supply and demand [4, 5].

Literature [6] points out that in the era of artificial intelligence, ideological and political education in colleges and universities faces new development opportunities. Artificial intelligence technology can be used to realize the sharing of information, which can provide students with an intelligent learning environment. Literature [7] said that college students are full of expectations for artificial intelligence education, and artificial intelligence can bring intelligent services and changes to ideological and political education in colleges and universities. It makes the teaching concept and teaching methods of ideological and political education in colleges and universities gradually omnipotent. Literature [8] emphasizes that with the rapid development of the times, the ideological education of students has received widespread attention, and good international political education can improve the comprehensive quality of students so that they can become excellent members of society. Literature [9] specifies that students' ideological and political practice has always been an important part of educational work, as it relates to the optimization of tasks based on the basic context in moral education. In order to establish a more scientific and rational evaluation model of ideological and political education of college students, the current state of ideological and political education of college students was evaluated. Literature [10], on the basis of understanding the development status of artificial intelligence and ideological and political education in colleges and universities, discusses the ideological and political education system of colleges and universities in the new era, and specifies the measures for effective development.

This paper combines the integration of digital technology in the development of ideological and political education, puts forward the optimization of intelligent search algorithm, and designs the search process of ideological education resources based on intelligent search algorithm. Aiming at the word similarity of ideological and political education disciplines, calculating the relevance of ideological and political words, introducing the attention mechanism, and proposing a semantic analysis intelligent search algorithm based on the attention mechanism. MAP and top-k Precision evaluation indexes are selected to evaluate the performance of the algorithm. Analyze the influencing factors of teachers' use of Civics and Politics online resources, and test the role of teaching resources based on the intelligent search algorithm on the Civics and Politics education system by combining the students' Civics and Politics scores at the pre-semester, mid-semester, and end of the semester.

2. Digital Transformation of Ideological and Political Education

With the continuous development and application of digital technologies represented by emerging technologies such as big data, the Internet of Things, cloud computing, artificial intelligence, blockchain and so on, human society is constantly being influenced and reshaped by technology. The integration between digital technology and various fields of human society is also accelerating, and the era of digital transformation has surged. At present, the issue of digital technology and the high-quality development of ideological and political education still attracts extensive attention and discussion in the academic community. Driven by the wave of digital change resulting from the interaction between technology and society, the digital transformation of ideological and political education is imperative.

2.1. Digital Technology Empowers Ideological and Political Education

"Digital empowerment" refers to the use of digital technologies to empower people to improve their lives and further their development, while at the same time enabling the empowered to maximize the use

of their digital capabilities.

Digital technology-enabled high-quality development of ideological and political education is proposed in multiple contexts such as the new infrastructure of education and high-quality development, which is essentially to adhere to the scientific and technological empowerment to create a high-quality ideological and political education system and to promote the digital transformation of ideological and political education [11, 12].

Specifically, the empowerment of ideological and political education by digital technology is not a simple superposition or random combination of the two, but a process of mutual construction and mutual promotion of digital technology and ideological and political education. The core lies in the realization of all-round, multi-level and multi-disciplinary empowerment of ideological and political education through key technologies such as big data, artificial intelligence, cloud computing, Internet of Things, blockchain and so on. Through the optimization of elements and the stimulation of kinetic energy to promote the concept of ideological and political education to seek new ideas, update resources, model innovation, method innovation, and ultimately realize the process of digital transformation and upgrading of ideological and political education. The reasonable introduction and deep integration of digital technology, the construction of digital base and practical application innovation are the key pivots to realize the empowerment of digital technology.

2.2. Application of Artificial Intelligence Technology in Ideological Education

In the new era of teaching “Curriculum Civics”, teachers can try to utilize more effective teaching methods of traditional Civics classes. Although the Civics of the Curriculum is a new theoretical interpretation of the concept of Civics teaching, in the real process of classroom education, students also need to fully utilize the effective parts of the traditional teaching mode, so that the theory and the curriculum are related to the practical, and the implementation of seminar-type education. Curriculum Civics itself utilizes a variety of disciplines to carry out ideological and political education, touching on the connotation of certain value concepts. Teachers can raise questions based on the ideological and political teaching elements included in the teaching, and guide learners to think around these questions and have the courage to express their own views and opinions.

2.2.1. Intelligent Search for Ideological and Political Education Resources

Educational resource websites provide content about teaching and learning resources. Teachers will often log on to a website to find the information they need about education, and teachers in a particular specialty will often need knowledge about their own particular field, and these teachers will often log on to a website for a particular specialty to find the resources they need for their particular field. Browsing to see what has changed and if new knowledge has been added, all changes are often the information that the viewer is looking for. In addition, when the location of the target page in the web page has changed or the organizational structure and hierarchy of this site has changed, all these issues, with a slight change, often confuse the user. Intelligent search method is to solve these problems. Intelligent search technology according to a particular professional web site users of the required web page content information customization, and the use of web pages and web pages, web links and web links, web pages and web links between the mutual constraints of the relationship between the user to search out the information they care about. Moreover, intelligent search technology can also track and discover updates to the knowledge they care about, and can adapt to changes in the location of target pages in a website or changes in the organizational structure and hierarchical relationships of the website itself. Therefore, the ability of intelligent search technology to accurately and efficiently provide users with information search services can be of great significance to users of a specialized information website. The proposal of intelligent search technology provides a feasible solution for the personalized information service of educational resources Internet. At the same time, the method can have the ability of self-learning in the continuous search process, and eventually update the knowledge.

The user collects data through raw databases, the Internet and the user’s web logs. Through the search analyzer, guided by the knowledge base, it is analyzed to reach the conclusion that the user needs. The

structure of the search engine for ideological education resources based on intelligent search algorithm is described in Figure 1.

1. The user makes a search request and gets the appropriate homepage based on the URL given.
2. Search in the database of ideological educational resources, the Web, and the user's Web log. Based on the current search status and search knowledge, as well as the currently obtained web page, infer the next search URL.
3. Based on the results of the previous step in the analysis, decide whether to continue searching the Ideas Education Resource Database, the Web, and the user's Web log, or whether the search has failed or succeeded.
4. At the end of the current site search results (whether the search has failed or succeeded), analyze and summarize all the search paths experienced in the current search in order to refine their search knowledge.
5. Repeat the above four processing steps until the given websites have been searched.
6. Return the searched results that meet the user's criteria to the user.

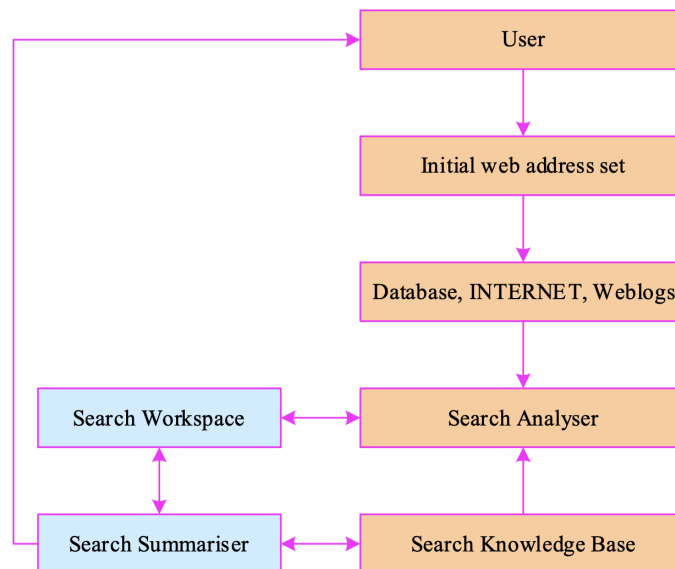


Figure 1: Based on intelligent search, the education resource search engine structure

2.2.2. Calculation of the Relevance of Ideological Words

The most important aspect of concept retrieval based on conceptual semantic networks is to solve the problem of calculating the semantic relevance of words. That is, it is necessary to determine whether two words are semantically related, and if so, what is the degree of relevance. The calculation of the relevance of the words should reflect the relevance of the words in the classification tree of teaching resources in the discipline, but also take into account their own semantic similarity.

1. Relevance in the disciplinary classification tree of ideological and political education

The measure of the relevance of two words in the disciplinary classification tree depends on the length of the path between the two nodes, and a simple node distance is used here to calculate it. Assuming that the node distance between two words in the classification system is d_t , the following formula can be used to calculate the relevance of words in the classification tree:

$$Sim(W_1, W_2) = a/(d_t + a) \quad (1)$$

where $Sim(W_1, W_2)$ denotes the correlation between two words, W_1 and W_2 denote two words, d_t is the node distance of W_1 and W_2 in the classification tree and is a positive integer, and a is an adjustable parameter.

In practice, in addition to the node distance, the depth of the nodes in the subject classification tree should also be taken into account. Two nodes with the same node distance are less correlated if they are closer to the root of the classification tree.

Setting the depth of the root node as 0, t_1 and t_2 are the depths of word W_{t1} and word W_{t2} in the classification tree, respectively, the above formula can be improved as:

$$Sim(W_{t1}, W_{t2}) = a/[d - (t_1 + t_2)/2 + a] \quad (2)$$

2. Semantic relevance of words in the discipline of ideological and political education

For two Chinese words W_1 and W_2 , if W_1 has n semantic items (concepts), $S_{11}, S_{12}, \dots, S_{1n}$, W_2 has m semantic items (concepts), $S_{21}, S_{22}, \dots, S_{2m}$. The relevance of W_1 and W_2 is taken as the maximum of the relevance of each concept, that is:

$$Sim(W_1, W_2) = \max_{i=1, \dots, n; j=1, \dots, m} Sim(S_{1i}, S_{2j}) \quad (3)$$

In this way, the problem of correlation between the semantics of two words is reduced to the problem of correlation between two concepts.

Since all the justification principles form a tree-like hierarchy of justification principles according to the contextual relationship, we do not use the simple approach of correlation by semantic distance meter here. Assuming that the path distance of the two justification principles in this hierarchy is d_p , the semantic distance between these two justification principles can be obtained:

$$Sim(P_1, P_2) = \beta/(d_p + \beta) \quad (4)$$

where P_1 and P_2 denote the two justification principles, d_p is the path length of P_1 and P_2 in the hierarchy and is a positive integer, and β is an adjustable parameter.

3. The relevance of words in the discipline of ideological and political education

The total relevance between words can be obtained by synthesizing the relevance between words in the classification tree and the semantic relevance:

$$Sim(W_1, W_2) = [a/(d - (t_1 + t_2)/2 + a) + \beta/(d_p + \beta)]/2 \quad (5)$$

Where t_1 and t_2 are the depths of words W_1 and W_2 in the classification tree respectively, d_p is the path length of P_1 and P_2 in the semantic hierarchy, and a and β are adjustable parameters.

The above formula, which treats the correlation between words in the classification tree and semantic correlation on average, in order to emphasize the disciplinary characteristics of the teaching resources, we can also take different weights for the two parts, thus obtaining:

$$Sim(W_1, W_2) = (a/(d - (t_1 + t_2)/2 + a)) \cdot \gamma_1 + (\beta/(d_p + \beta)) \cdot \gamma_2 \quad (6)$$

Among them:

$$\gamma_1 + \gamma_2 = 1, \gamma_1 > \gamma_2 > 0 \quad (7)$$

2.2.3. Intelligent Search Algorithm Based on Semantic Analysis

1. Word vector model construction

In this paper, the fasttext model is used as the base model to construct the word vector model, so as to obtain high quality word vectors. The prediction purpose of the fasttext model is to perform document classification, which indirectly obtains the word vectors of the corresponding words of the input word sequences. The algorithmic goal of fasttext follows is to maximize the following log-likelihood function:

$$\sum_{t=1}^T \sum_{c \in C_t} \log p(w_c | w_t) \quad (8)$$

It is desired to predict its input text word w_t by categorizing the label w_c , using a scoring function $s(w_t, w_c)$ that implicitly maps the value of the relationship between w_t and w_c into a real-valued score, employing negative sample sampling as the loss function. Eq. (9):

$$J_k(\theta) = \log(1 + \exp(-s(w_t, w_c))) + \sum_{i=0}^n \log(1 + \exp(s(w_t, n_i))) \quad (9)$$

For the scoring function $s(w_t, w_c)$, since it is a relationship between two vectors, it is defined using the scalar product of the vectors. For w_t , the input vectors, which have subwords combined to form g_{w_t} , and for each subword $g \in g_{w_t}$, are denoted as z_g . The output vector is still v_{w_c} , so the scoring function is:

$$s(w_t, w_c) = \sum_{g \in g_{w_t}} z_g^T v_{w_c} \quad (10)$$

For the trained parameters are shared by all words, the word vectors of each word can be superimposed by their subword vectors, so for the unregistered individual vectors, they can also be superimposed by their subword vectors to obtain their word vectors.

In this paper, we use Gensim to build the model, which is an open source framework based on python, which integrates word2vec and fasttext into the window platform, so that we can unsupervisedly learn the semantic vector expression of the text hidden layer from the original unstructured text.

2. Input feature combination based on attention mechanism

The attention mechanism, also known as the attention model, is a resource allocation scheme, when using a neural network to process a large amount of input information, by using the attention mechanism to select some more critical information inputs to focus on, so that the input information on the neural network is more reasonable. Therefore, the attention mechanism can also be seen as a strategy for rational allocation of data, by learning human attention, scoring the data, the more important the data will receive a higher score, so as to determine the importance of the data.

The weight calculation process of the attention mechanism is roughly divided into two steps, one is to calculate the attention distribution, i.e., the weight value, on all feature input information, and the other is to calculate the weighted average of the feature input information based on the weight value.

The feature input is vector $q = [a, b, c]$ and the final input vector is defined as v . Thus the relationship between the feature input and the final input vector is $s(q, v)$ and is called the attention scoring function.

Thus given q and v , the weight of the i th feature input is α_i :

$$\alpha_i = \text{softmax}(s(q_i, v)) = \frac{\exp(s(q_i, v))}{\sum_{j=1}^3 \exp(s(q_j, v))} \quad (11)$$

where α_i is called the attention distribution of the i th feature input, indicating how much the i th feature input is valued.

The scoring function $s(q, v)$ is generally obtained by a neural network model, i.e., the feature input is passed through a perceptron and then multiplied with a learnable parameter v to obtain the value of the scoring function. Eq. (12):

$$s(q, v) = v^T \tanh(wq + bv) \quad (12)$$

where v, w, b are learnable parameters.

After acquiring the attention α_i , it is possible to acquire the final input vector v . Equation (13):

$$v = \sum_{i=1}^3 \alpha_i q_i \quad (13)$$

In this paper, three main input features are designed to express the semantic features of word sequences as the input vectors of LSTM, which are lexical features, part-of-speech features, and sequence position features.

3. Constructed based on LSTM model

When understanding the information of the user's search text, due to the temporal relationship of the text's word sequence, isolated words are not enough to describe the semantics of the whole text, and it is necessary to understand the semantic information of all the words in the text in order to get the semantic information of the text as a whole, so a recurrent neural network (RNN) model is chosen. The long and short-term memory model is a variant of recurrent neural network, which alleviates the problem of gradient disappearance in the traditional RNN by introducing control gates to determine the flow of information between states. Therefore, in this paper, LSTM is chosen as the base model to construct the neural network model, so as to train the features through this model, obtain the semantic information of the query text, and predict its ideological and political education intention [13, 14]. The model is roughly divided into 3 layers, feature input layer, one-way loop layer, and prediction output layer.

- I. The feature input layer is the input vector after the 3 feature inputs are combined with features, the input text is obtained as a word sequence $\{x_1, x_2, \dots, x_T\}$ after word segmentation, the 3 feature vectors are obtained sequentially according to the word sequence, and the final input vectors $\{e_1, e_2, \dots, e_T\}$, $e_i \in \mathbb{R}^d$ are obtained after the attention model with a dimension of 256 dimensions.
- II. The one-way recurrent layer is used to extract features from the input data using neural networks, and the features of the data are preserved by the weight vectors of the neural networks. The LSTM obtains the output h_t of the current moment by taking the output h_{t-1} produced by the input vector of the previous moment and the input e_t , the next word vector, which are jointly used as inputs for the next moment by means of a nonlinear mapping H and a control gate of the LSTM. Eq. (14):

$$h_t = H(h_{t-1}, e_t) \quad (14)$$

- III. The output sequence of the prediction output layer is $\{h_1, h_2, \dots, h_T\}$, $h_i \in \mathbb{R}^d$, with the same dimension as the input word vector, which is 256 dimensions. When the model parameters are trained, the output values are the word vectors of the product categories, and the loss function is defined as the squared difference loss function, so the loss function is:

$$l(h(t), y(t)) = (h(t) - y(t))^2 \quad (15)$$

The global loss function is:

$$L = \sum_{t=1}^T l(t) = \sum_{t=1}^T (h(t) - y(t))^2 \quad (16)$$

The parameters of the model are updated by minimizing the loss function through the backward gradient algorithm. The loss function L depends on $h(t)$ and $y(t)$ and is obtained according to the chain rule:

$$\frac{\partial L}{\partial w} = \sum_{t=1}^T \sum_{i=1}^M \frac{\partial L}{\partial h_i(t)} \cdot \frac{\partial h_i(t)}{\partial w} \quad (17)$$

Introduce a variable $L(t)$, Eq. (18):

$$L(t) = \sum_{s=1}^T l(s) = l(t) + L(t+1) \quad (18)$$

Thus associating the above equations yields:

$$\frac{\partial L}{\partial h} = \frac{\partial l(t)}{\partial h(t)} + \frac{\partial L(t+1)}{\partial h(t)} \quad (19)$$

The first term of the right equation is the derivative of the loss function $l(t)$ with respect to time t , and the second term is the derivative information of the next node, thus forming a loop for parameter updating through the back propagation algorithm.

In this paper, we use the Keras framework to realize the model construction of deep learning, based on the existing LSTM model as the basis, and add the attention model and other operations in the input layer to construct the neural network model in this paper.

3. Intelligent Search Technology to Empower the Quality Development of the Ideological Education System

3.1. Intelligent Search Application for Datasets in the Field of Ideology and Education

In order to verify the effectiveness of the algorithmic model in this paper, the RNN comparison algorithm is set up. Specifically, firstly, for each label, the topic-concept space is constructed according to the embedded topic model. Then, the query vectors are classified using LSTM, and then the semantic similarity between the query vectors and the expanded words in the topic-concept space under the corresponding label is calculated, and the candidate words exceeding the similarity threshold are selected as the expanded words. Weighted splicing is performed with the original query vectors to serve as the final query vectors.

3.1.1. Evaluation Indicators

In this paper, MAP and top-k Precision objective evaluation metrics are used to quantitatively and objectively evaluate the performance of the algorithms in this paper. The statistical results of the hypothetical search task are shown in Table 1. Where, correctly categorizing positive cases as positive cases is denoted as TP, and incorrectly categorizing positive cases as negative cases is denoted as FN. Correctly categorizing negative cases as negative cases is denoted as TN, and incorrectly categorizing negative cases as positive cases is denoted as FP. As a result, the search task's checking accuracy rate can be calculated as:

$$Precision = \frac{TP}{TP + FP} \quad (20)$$

Table 1: Statistical results of the search task

Actual category	Prediction is the positive example	Predict negative example
Actual positive example	TP	FN
Actual negative example	FP	TN

3.1.2. Experimental Results

In order to fully validate the effectiveness of the proposed algorithm in this paper, the proposed algorithm, on the ideology and education domain dataset, is experimented. The experimental results on the education domain dataset are shown in Figure 2. On the ideology education domain dataset, based on two sub search tasks, image search text and text search image. It can be seen that based on the ideology education domain dataset, the attention model of this paper is helpful for MAP performance on different search tasks. And, the experimental results show that the effect of the semantic analysis search model in this paper is superior to the RNN method. Compared with the optimal comparison algorithm, the MAP metrics of the semantic search algorithm based on the attention mechanism constructed in this paper are improved by 0.0324 and 0.0269 on the two search tasks.

The top-k Precision curves for different search tasks on the dataset in the field of ideology and education are shown in Figure 3. According to the curve in the figure, it can be seen that the accuracy gradually decreases as the value of k increases. This also indirectly indicates that the smaller the value of k in the top-k results returned by the model proposed in this paper, the higher the proportion of true examples returned.

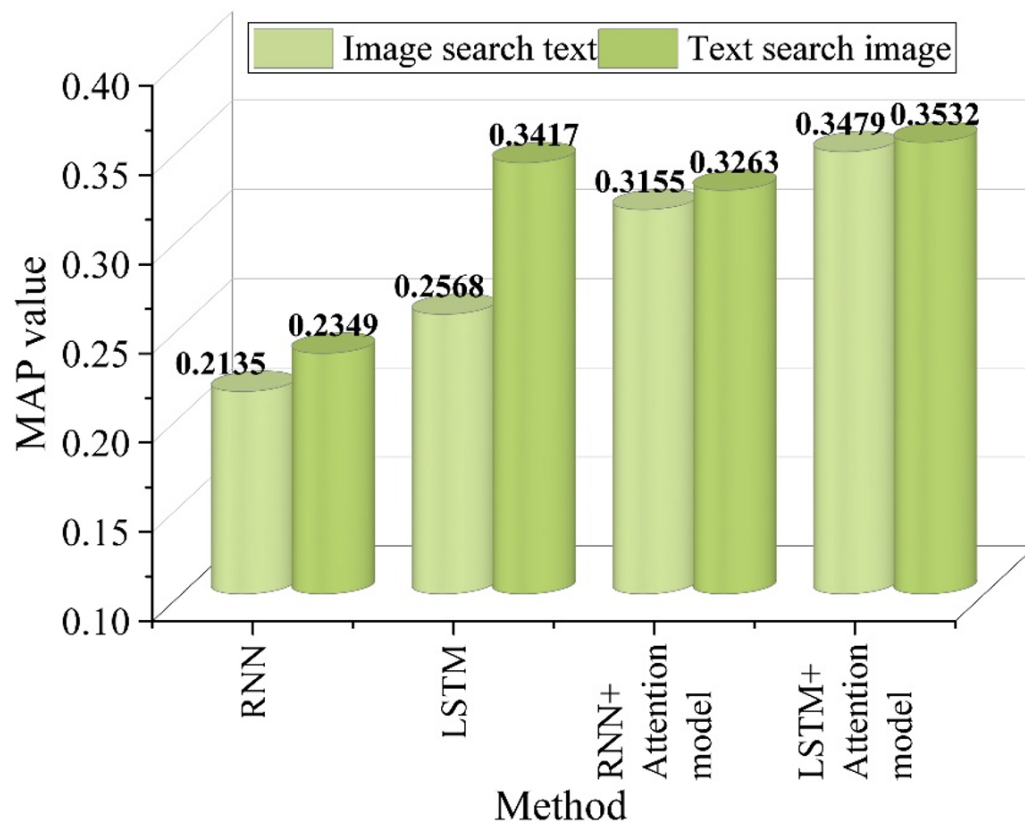


Figure 2: The results of the algorithm in the data set of the education domain

The LSTM algorithm search model based on the attention mechanism designed in this paper has top-k Precision values of 0.431 and 0.411 for the image search text task and the text search image task on the ideological education domain dataset when k takes the value of 800, which is significantly better than the RNN algorithm.

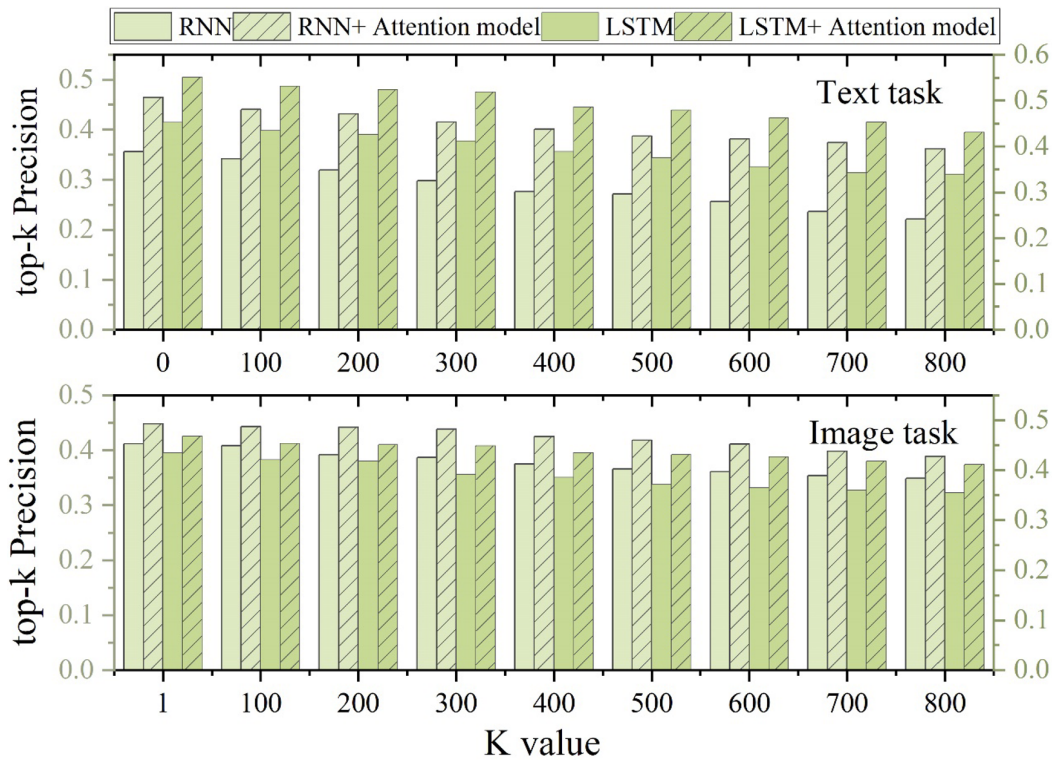


Figure 3: The look of different search tasks

3.2. Teaching Effectiveness of Ideological Education Resources in Higher Education

3.2.1. Research Questions

The questionnaire survey is mainly based on two questions that need to be studied in this thesis, which are:

1. Teachers' use of intellectual and political education curriculum resources based on intelligent search.
2. The impact of students' use of ideological and political education curriculum resources on teaching effectiveness.

3.2.2. Survey Respondents

The target of the study was explicitly college and university teachers, both teachers from 211 key schools and teachers from general specialized schools. A sample of more than a dozen colleges and universities across the country, mainly three types of colleges and universities of finance and economics, teacher training, and general education, where the teachers' type of instruction was ideological and political, totaled 52 teachers.

3.2.3. Analysis of Teachers' Use of Curriculum Resources for Ideological Education

According to the analysis of data on issues related to teachers' use of online course resources, as university teachers in the 21st century, the Internet is already ubiquitous. After years of development, teachers of ideological and political education have become very familiar with online course resources. The main way for Civics teachers to get the network course resources of ideological education is "network search". Therefore, as a leader in cultivating high-quality talents, they will naturally keep up with the development of the times, and will not only focus on the teaching that can be achieved by their personal knowledge reserves, but will also collect more resources on the Internet to enrich their teaching and make the teaching situation more contemporary.

Therefore, when facing the questionnaire "Have you ever used online course resources in the teaching process of ideological and political education courses? (Question 1)", there is no surprise that 86.43% of the teachers chose "Yes", while only 13.57% of the teachers chose the answer "No". On the basis of understanding the utilization rate of teachers' ideological education online course resources, the related survey was further promoted, and the statistics of the question "Select the items that are most likely to influence your choice of online course resources (multiple choice)" are shown in Figure 4.

It can be visualized that the top two factors are "content" 82.39% and "quality" 79.65%, which are significantly higher than the other options. Except for "other", the lowest two options are "author" 7.51% and "publication date" 18.04%. From the two highest and two lowest results, it can be seen that when choosing online course resources for ideological and political education, teachers pay more attention to the quality of the content, and the author becomes a very weak reference, which indicates that the quality is the decisive influence factor in the online resources for ideological and political education. The semantic search model combined with attention mechanism proposed in this paper can provide accurate and excellent online education resources for the ideological education system in colleges and universities.

3.2.4. Analysis of the Impact of Using Civics Online Course Resources on Teaching Effectiveness

For this aspect of the study, the questionnaire was designed to want to see intuitive data, but it is difficult to measure the effectiveness of teaching in a direct way, so the only way to analyze it is through a series of intuitively answered questions, which also provides a more comprehensive understanding of the real teaching situation.

Based on this concept, two comparable questions were firstly designed in the questionnaire "Before the whole course started, what percentage of your students utilized the resources of the ideological education online course for learning?" and "By the final examination, what percentage of your students utilized the resources of the ideological education online course for learning?". The statistics of students' utilization of the resources of the ideology education online course "before the whole course started" and "before the final exam started" are very representative data. These two points in time are also very characteristic. "Before the whole course" represents a personal habit of students, a primitive state of learning. "Until the final exam" is the stage of maximizing the teacher's influence on all students after a semester of study, so it is very meaningful to choose these two time points for comparison. Integration of the questionnaire data shows a significant increase in the percentage of students using online course resources by the time of the final exam, compared to the time before the entire course began.

Next, for the teaching effect, the descriptive statistics of the three grades of the ideological education course are shown in Table 2 by comparing the students' grades before the beginning of the course, during the course and the final exam. It can be found that the three grades of the students in this school are compared, the average score of the midterm ideological education grade is 76.08, while the average score of the final history grade is 79.55. From the table, it can be clearly seen that the average grade of the university's college students at the end of the semester in the ideological and political education course is higher than the grade of the ideological and political education course before the semester, and the difference between the grades is about 7 points.

From the perspective of the four dimensions, the performance of ideological education at the end of the semester is better than the performance of ideological education before the semester. This is because after the ideological education program integrating intelligent search is carried out, the learning attitude of college students has been changed, and their motivation for learning has been greatly improved, and

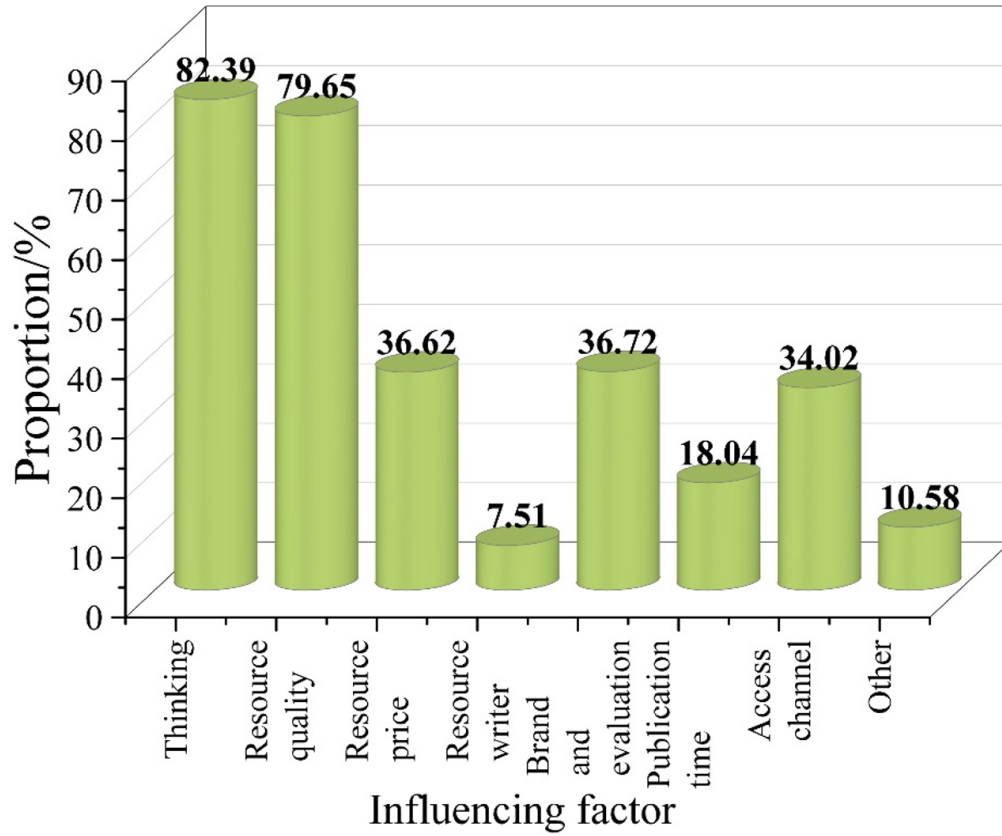


Figure 4: Influence teacher's choice factor of educational resources

Table 2: Descriptive statistics of three results of the thought education course

	Highest score	Minimum score	Mode number	Average score
Before the semester	85	53.5	73.5	72.41
Midterm	89	61.5	78.5	76.08
Final term	93	64.5	79.5	79.55

some bad learning habits have been corrected. This also shows that the efficiency of ideological education classroom is higher, teachers and students can be fully engaged in the “teaching” and “learning”, but also from the side of the integration of intelligent search of ideological education teaching efficiency is slightly worse than the traditional ideological education classroom teaching.

4. Conclusion

This paper applies the intelligent search algorithm to the ideological education system in colleges and universities, proposes the calculation method of word relevance in the field of ideological education, improves the shortcomings of the traditional RNN model by using the LSTM algorithm, and designs and forms the intelligent search method based on the semantic analysis of the attention mechanism. Combined with the actual use of ideological education teaching, to verify the intelligent search algorithm on the ideological education system in colleges and universities to assist the role of the intelligent search algorithm.

1. The semantic search algorithm constructed in this paper, in terms of MAP index, for the text search task and image search task, the search performance is 0.3532, 0.3479, respectively, compared with the performance of the RNN+attention mechanism method to improve the performance of 0.0269, 0.0324, respectively.
2. Intelligent search-based ideological education resources in colleges and universities can assist the teaching of ideological education in colleges and universities to a certain extent. The difference between the ideological education scores of college students before the semester, at midterm and at the end of the semester is 3.67 points and 3.47 points respectively. The use of intelligent search algorithms in the field of ideological and political education in colleges and universities can assist teaching and students to obtain high-quality teaching resources and improve the quality of teaching and learning.

References

- [1] He, X., Dong, X., Liu, L., & Zou, Y. (2021). Challenges of college students' ideological and political and psychological education in the information age. *Frontiers in Psychology*, 12, 707973.
- [2] Qinan, Y. (2024). Research on wisdom-based ideological and political education construction in higher education in the era of artificial intelligence. *Adult and Higher Education*, 6(1), 15–21.
- [3] Liu, J., Deng, X., Liu, Y., & Li, J. (2024). Value analysis of improving college students' physical education and mental health accomplishments under curriculum ideological and political education. *Revista de Psicología del Deporte (Journal of Sport Psychology)*, 33(1), 126–138.
- [4] Si, Y. (2022). On the influence of party history education on ideological and political education for medical students. *Journal of Higher Education Research*, 3(2), 141–145.
- [5] Wang, Y. (2020). RETRACTED ARTICLE: Analysis on the construction of ideological and political education system for college students based on mobile artificial intelligence terminal. *Soft Computing*, 24(11), 8365–8375.
- [6] Yingcong, Y. (2023). Research on ideological and political education in colleges and universities under artificial intelligence. *Frontiers in Educational Research*, 6(25).
- [7] Zhang, T., Lu, X., Zhu, X., & Zhang, J. (2023). The contributions of AI in the development of ideological and political perspectives in education. *Heliyon*, 9(3).
- [8] Zheng, G. (2024). Construction of ideological and political education in universities based on intelligent digital education. *Advances in Educational Technology and Psychology*, 8(1), 45–54.
- [9] Rong, Z., & Gang, Z. (2021). An artificial intelligence data mining technology-based evaluation model of education on political and ideological strategy of students. *Journal of Intelligent & Fuzzy Systems*, 40(2), 3669–3680.
- [10] Nan, Z. (2023). The application of artificial intelligence in college ideological and political education. *Advances in Education, Humanities and Social Science Research*, 6(1), 6–6.
- [11] Cai, J., Zhu, C., Xu, S., & Jin, Y. (2024). Research on the strategy of ideological and political education in the course of deep integration of information technology. *Computer Informatization and Mechanical System*(3), 10–15.
- [12] Liu, Z., & Huang, Y. (2024). Innovation in ideological and political education and personalized learning paths in the era of artificial intelligence. *International Journal of New Developments in Education*(5).
- [13] Rezaiezhadeh Roukerd, F., & Rajabi, M. M. (2024). Anomaly detection in groundwater monitoring data using LSTM-Autoencoder neural networks. *Environmental Monitoring and Assessment*(8), 692.
- [14] Romero Sorozábal, P., Delgado Oleas, G., Laudanski, A. F., Gutiérrez, Á., & Rocon, E. (2024). Novel methods for personalized gait assistance: Three-dimensional trajectory prediction based on regression and LSTM models. *Biomimetics (Basel, Switzerland)*(6), 352–352.