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Retraction

Retracted: Application of Deep Learning for Discourse Expression Recognition in Ideological and Political Education

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] X. Li, Z. Meng, and Q. Meng, "Application of Deep Learning for Discourse Expression Recognition in Ideological and Political Education," *Mobile Information Systems*, vol. 2022, Article ID 6001175, 10 pages, 2022.

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Research Article

Application of Deep Learning for Discourse Expression Recognition in Ideological and Political Education

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The subject context in consideration with discourse expression recognition (DER) provides a communication bridge between ideological and political education (IPE) for budding college students. This paper introduces a novel method for integrating the deep-learning-based approach to ideological and political education in consideration of the discourse expression of subject context. Initially, the relation between ideological and political education is analyzed. Then, the efficiency of teaching is enhanced with the help of deep learning mechanisms; in addition to the flipped classroom and online education, an innovative model of education is proposed using deep learning methods. To perform the experiment, 236 subjects were randomly selected from Hohai University, and the analysis was performed with the help of surveys conducted using a questionnaire. The statistical results prove that the selected questionnaire has a high degree of validity and reliability. Thus, from the analysis, it is observed that most of the students have a better understanding of the subject context in discourse expression of ideological and political education. Moreover, about 50% of the students have a positive approach to the subject contexts and the education methods, making them active in reaching a satisfactory learning effect. The obtained results indicate that the benefits of deep learning in ideological and political education enhance the interest of the students in pursuing this with renowned subject context.

1. Introduction

Big data has a large amount of storage capacity, a fast processing-speed, and a low value-density compared to other types of data, which is why it is called "big data." Traditional algorithms have previously been unable to successfully mine large amounts of heterogeneous data due to their search, memory storage, and processing limitations [1]. However, in the recent years, machine learning algorithms have increased the efficiency of collecting data. Data mining applications of machine learning were discovered after a thorough investigation, which has aided in the long-term development of China's information society [2]. Big data technology allows for the acquisition, preprocessing, and storage of large amounts of data, which can then be analyzed and visualized. Big data technology, also known as data mining, quickly extracts valuable information from large amounts of data [3]. Large amounts of data are used in a variety of ways, including the collection, storage, and management of large amounts of data, the analysis and mining of large amounts of data, and the interpretation and application of large amounts of data [4].

Cloud computing has become very popular for big data analysis and app development in the last few years. Many things go with cloud computing, like the distributed file system GFS, batch processing technology MapReduce, Big Table, and the open-source data processing platform Hadoop [5]. This has had a significant effect on how people live, how they think about the world, and how they act in everyday situations, especially for people who have been the most affected. Our liberal developers and supporters of industrialization require excellent higher education; in fact, students at universities across the United States are among the country's most frequent Internet users. To obtain specific

future leadership positions in mind, it was decided to organize these ideologies, political opinions, and ethical principles. It had a predictable effect as soon as it entered the reader's consciousness [6]. College students can use online resources to learn about other cultures and better understand themselves. The network connects educational institutions to create a more connected community to broaden intellectual and political education in the general public [7]. Students will have more access to high-quality intellectual and social learning opportunities as a result of the platform, which will result in more modern and diverse media and approaches [8]. It is a good idea to bring real-world psychological issues to the attention of politicians and students alike [9].

Ideological and political learning (IPL) is not based on simple techniques, instructors, or knowledge from other books [10]. These things are often better in the school cycle students than the main idea and fundamental principles. Because of the Institute of Conceptual Assistance's ideological and political formation, various theories and genders about the IPL were made. In the ideological and political learning view, the building blocks of human knowledge and understanding are theoretical and political education, universal ways of living, and thought structure [11]. This is what they believe. Based on reality, the IPL model shows how to teach ideology and politics in a way that makes sense. This model is based on logic and reasoning. Despite the obvious precision of IPL's exact nature, the undisputed theoretical and policy education system has elicited a wide range of responses and interpretations [12]. There are three types of ideological and political paradigms in various research fields and traditionally oriented theoretical and political education. Traditional theoretical and political education is divided into traditional theoretical and political education and ideological/political paradigms in various research fields. In order to be effective, educational ideology and policymakers must understand and implement learning frameworks [13]. The concepts, theories, and methodologies of IPL are founded on these principles. The framework can assist researchers in theoretical and social educational philosophy in achieving specific objectives in their thinking, behavior, and debate. We can generate revolutionary developers if we continue to invest in and expand intellectual and political education in the theoretical sector [14]. Developers should consider task-oriented approaches during an IPL training course to ensure that people can always be supported and cooperate honestly. Due to the absence of IPL activity in ideological or political education. The cause is a dearth of IPL activity in ideological and political education [15]. Additionally, the organization developed a model for developing interdisciplinary curricula.

Under the background of the big data era, where everyone is exploring the horizon, ideological and political education can be incorporated to enhance learning techniques. The interaction of humans and deep learning technology enhances the importance of deep learning mechanisms for ensuring the idea of harmonious development. Deep learning methods offer exciting possibilities for predictive problems as well as reveal the subtle properties of data. By using the scheme of discourse expressive combination of Internet technology and the characteristics of subjects, we can improve and innovate the work and then guide students to form a correct outlook on life. The various learning methods encourage the students to enhance their habits by initiating various online resources for learning separately on the campus and at home. The different dimensions of the objectives related to the curriculum are integrated organically, and it enables their support to the obtained knowledge about engineering. The different classification mechanisms will be implemented to check the discourse expression terms in the subject contexts divided into various classes. By analyzing the results, the effectiveness of the scheme can be verified.

2. Literature Review

According to IPL, men's learning is based on fundamental lifestyles and thought structures. Artificial intelligence is being used in computer education as a result of increased competition, individual differences, and the need to teach instruction throughout a student's academic career [16]. The program can make a suggestion based on prior knowledge about how to increase learners' motivation to learn. The fact that they are unique in their existence, ideological and political thinking and various perspectives on the reality of intellectual and social learning are all characteristics of the type of paradigm they represent. The primary goal of learning through interaction and collaboration is best achieved through the theoretical and political education, which is extremely effective. Today's educational institutions require a high level of innovation, and the ability of today's university students to innovate is critical in this regard. Self-awareness, self-monitoring, and personality education procedure management are all important in assisting students in moving from passive acceptance to active participation in IPL creativity [17]. Science requests and trends have risen to the level of an exciting new milestone for IPL, signaling the beginning of a new phase of growth following the reform and reopening of the new environment.

The AI-IPL method is being used to help college students with their ideological and political development and their mental and physical health and fitness [12]. However, when it comes to defining the IPL of eventual preference for creative strategy and psychological education. Also, defining the IPL of eventual preference for psychological education and defining the IPL of eventual preference for psychological education, the AI-IPL method can lead to disagreements among college students. The quantity and complexity of big data and advanced technological attributes all impact how people think about the world when it comes to observing, analyzing, grasping, and changing it. A relatively stable mode of thought is one in which thought elements are organized into a specific structure, method, and procedure and are characterized by consistency in thought element organization. According to Marxist thought, historical categories include people's practices and existence, scientific and technological progress, and the development of new technologies [18].

Significant ideological and conceptual shifts have occurred as a result of large-scale data collection, allowing people to express themselves more freely, make better decisions, manage their lives more effectively, and develop new ways of thinking [19]. Students and ideological and political educators will benefit from being taught to think critically using big data analysis on a daily basis. In addition to being highly applicable to college students' daily ideological and political education, the use of big data thinking has several advantages. The ability to perform in a hybrid manner is especially beneficial for ideological and political work objects [20].

The value of data mining as a potential source of information and the predictability and limitless performance of ideological and political work objects has all grown in importance. Luo et al. conducted extensive research into the practical and literary aspects of network press support for students and the relationship between the two [21]. The authors then provide a high-level overview of the network's significance, characteristics, and the most recent developments and an overview of the network's significance, characteristics, and the most recent developments. College students' cognitive use of IPL and their actions and attitudes are being investigated simultaneously through structured questionnaires and application processes running in parallel [22]. There are a variety of reasons why the IPL is not as popular as it should be, and this study is being conducted to come up with ideas on how to boost the IPL's popularity. According to the authors, a computerized tutoring system is used to help students learn English grammar more quickly and efficiently than they would otherwise be able to do on their own [23]. Based on the information provided by the user, the system generates a set of questions specific to each subject. When this is done, the differences between students and the tasks that have the most significant impact are all taken into account. An intelligent tutoring program was shown to a group of students from various pages to see how it influenced them. We asked them to give it a rating to see how it affected them on a personal level. According to the study's findings, the students were extremely pleased with the program [24].

Wang et al. investigated how their learning influences college students' understanding of democracy and participation in government about the world and their interactions with other students using a variety of methods [25]. Students' civic engagement, public discourse, and their school's politics (including polling) and community involvement appear to have improved significantly due to the program. As a result of the program, these students appear to have become more civically engaged and have participated in more public debates. As shown in the examples above, students at the Chinese universities require theoretical and political knowledge to achieve their knowledge-building goals in the country [26]. According to the proposed educational method, Chinese nationalism must be formalized and materialized into a form and education that goes far beyond traditional theoretical and political education. As a result, a more inclusive definition of nationality education will be developed. The act was carried out according to gather more information about the situation [27]. High school students who participate in public participation research projects to improve their schools and organize others for social justice are discussed in an article published by the Committee of Youth Study (Council). Throughout the report, the importance of teachers participating in civic engagement and the formation of civic organizations in schools is emphasized, a significant point emphasis [28]. Students are finding it difficult to come up with political ideas to deal with the current crisis.

Apart from that, they discuss the impact of microblogs on political and ideological learning in general and how to conduct an ideological study in particular. A review of the literature and a summary of their significance, characteristics, and development as network media, according to Y Leng et al. would help college students accept the effects of IPL, which they believe is an excellent first step toward acceptance [29]. On three levels: mental, attitude, and individual behavior, students at a large number of universities studied had difficulty distinguishing between ideological and political learning. For this investigation, structured questionnaires and interviews were used to gather data. The study's findings were made public, and the questionnaire and interview responses were also made public at the same time.

The background studies are discussed in the second section. The findings of an AI-based IPL of college students based on psychological quality measurements and other factors were discussed in Section 3. Section 4 confirms the findings. Section 5 of the research concludes with a look into the future.

In the ideological and political education of college students, we should also actively adapt to the changes of the times and use the combination of Internet technology and the characteristics of students. Furthermore, through continuous exploration and innovation, it is possible to improve the quality of teaching so that college students can get scientific, ideological, and political education and get comprehensive development [30].

2.1. Methodology. Most deep-learning-related courses are formulated by considering the outcome-based education-related teaching concepts. Normally, the objectives specified for the courses are divided into various categories and dimensions like application, knowledge, integration, emotion, values, and learning. Apart from all those dimensions, knowledge is considered an important part because it enables the students to attain the need for discourse expression by using the fundamental deep learning algorithms. The proper deep learning algorithms are selected depending on the test data and training data by considering the exact needs for solving the classification-related issues with the help of labeled data and unlabeled data. This will help in evaluating a more effective conclusion. By combining the spirit of innovation and literacy which is unified organically by identifying new professional field-related problems by creating new ideas and exhibiting new solutions. The value of deep learning technology in analyzing the subject context in

discourse expression of ideological and political education is the emerging trend in the field of artificial intelligence. The various dimensions of education related to the ideological and political curriculum following the deep learning mechanisms are shown in Figure 1.

The application of advanced mathematics, statistical theory, algebra, trigonometry, and some high-level programming languages is based on the principles that are introduced along with certain techniques and algorithms which is used commonly for the analysis based on deep learning. The content for the particular course contains a linear model, SVM model, KNN model, decision tree algorithm, artificial neural networks, and Bayesian classifier along with some other algorithms. The integration of ideological and political education with deep learning mechanisms is made for integrating the three spirits i.e., the basic principles of being a human for doing certain things, the core values of socialists, and the basic idea behind the teaching process. For ideological and political education, the implicit discourse expression recognition (DER) is initially arranged into decision trees for showing the relations according to their levels and a model is designed based on the BERT model for completing the task. The proposed model showing the work process is shown in Figure 2.

For obtaining the relationship between the ideological and political sentences, the whole information content is divided into various groups. Here, in Figure 2, it is divided into four groups, each group represents one sentence. After processing, all the individual sentences are subjected to deep learning algorithms for further classification. The final stage contains a fusion layer that combines Bert with BILSTM to obtain the relationship between the sentences. The sentences taken here are from ideological and political courses through an existing curriculum. The courses related to this ideological and political education are made clear and the various elements needed for integrating the same are through genetic penetration and integration.

The role of deep learning in such a technological process plays an active role in different sections. The learning of ideological and political education is made possible by using three modes. Initially improving the confidence levels of the students by motivating them towards innovative ideas about science and technology, then, the need for the approach of using science and technology to instill in children a sense of belonging to their nation and a sense of civic responsibility combining components of the implementation of accountability incorporating science and technology into the curriculum is guided by philosophy. Students should be concerned about society and people's livelihood. Deep learning methods are implemented by world health organizations for tracing out large units of data for detecting the alerts about the various health-related contents using natural language processing and other classification algorithms. Finally, the dedication to cultivating the original talents of the students in the area of theory, statistics, derivation, science, etc., The process of teaching and learning uses the KNN algorithm for obtaining an optimization strategy where the various parameters of the model are trained

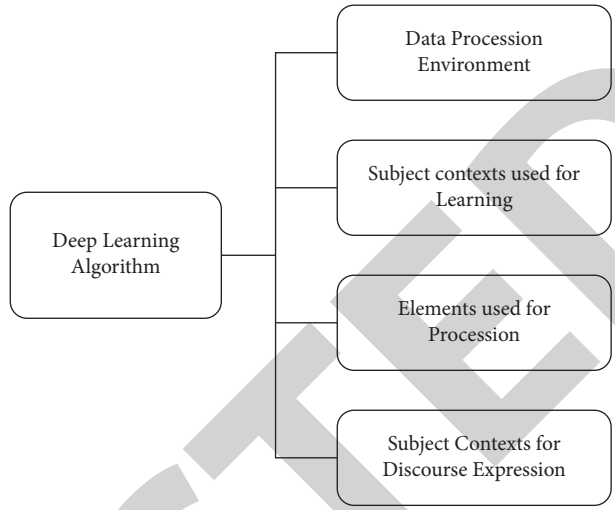

Figure 1: Proposed deep learning algorithm model.

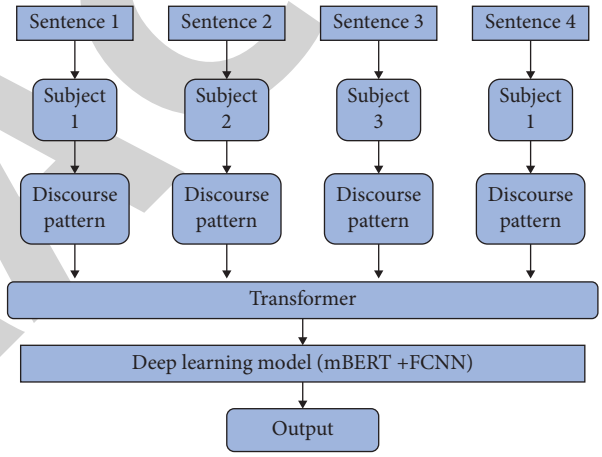

Figure 2: Proposed architecture using a deep learning algorithm.

continuously so that it makes the students concentrate on unique points of the training results by adjusting the different parameters.

2.1.1. Ideological and Political Courses for the College Students. The online platform is used for conducting the courses like ideological and political courses. It must be conducted using flipped classrooms. The application of deep learning is for analyzing the various levels of the students inside the classrooms. Mostly it depends on the application of the media related to certain lifeline-oriented courses by considering the psychological acceptance of the students. The ideological and political education in students' acceptance point of view gets selected with identified new ideas and political views related to the education based on the ideas preferred by the network which forms the quality of the education.

2.2. Deep Learning Mechanisms. Initially, the classification of text is done which is based on hybrid recurrent neural networks (HRNN). This forms the word vector based on the

dictionary. The implementation of the traditional language model forms the next word considering the largest probability from the given sequence of information. Hence, the extraction of the features is difficult at the word level. The BERT model provides a solution for the same. The transformer structure used in the BERT model consists of a self-attention layer, feed-forward layer, and normalize layer as shown in Figure 3.

The extraction of the weight of the word vector in the text is extracted using the self-attention layer. Hence, the subject context of the whole text can be obtained after obtaining the features. After entering through this layer, each word identifies the other word using discourse expression and this relates the semantic features of the sentences or words based on their weights. If we consider the difference between the Chinese or English words or other languages the masking mechanism is used for attaining the training process. The semantics of the text can be analyzed frequently while doing the training process.

While processing the DER, the BERT model is applied for obtaining three matrices Mx, My, and Mz. $M_x = (m_1, m_2, \ldots m_n)$, $M_y = (m_1', m_2', \ldots m_n')$ and $M_z = (m_1'', m_2'', \ldots m_n'')$, $M_{x,y,z} \in T^{n \times d^m}$, where n is the maximum length of the sequence, and dm is the maximum size of the word vectors. The three-sentence vectors taken as samples are fused using equation (1).

$$\begin{aligned} M_l &= F\left(M_x, M_y, M_z\right) \\ &= \left(m_1, m_2, \ldots m_n, m_1', m_2', \ldots m_n', m_1'', m_2'', \ldots m_n''\right). \end{aligned} \tag{1}$$

While concatenating the three vectors, the loss of feature information is taken into consideration and a set of new vectors is formed which is used for representing the three different groups of sentences. For obtaining the features of the filter, the combination between the three parts, the combination of BILSTM and BERT model is applied and this will extract the features of the discourse expression by obtaining the low dimensional vector to reduce the complexity of the proposed model. While comparing the efficiency of the LSTM as the baseline methods, the BILSTM method provides better results in the case of feature extraction. In the fusion network when used with the help of BILSTM and BERT, the vectors are connected to maintain a better relationship between the structures of the obtained tree for completing the classification task.

The output of the BILSTM layer $Y_l = (y_1, y_2, \ldots, y_l)$ is obtained as in equation (2).

$$Y_n = f_{\rightleftarrows/BiLSTM}\left(M_l\right). \tag{2}$$

Either sentences or clauses are considered as one of the parts in each group. The separate label represents the semantic relationship between the two parts which are said to be hierarchical. The structure of the relationship confirms the different characteristics of the tree structure. Hence, the decision tree can be constructed. The base class is considered the root node, and the last class is considered the leaf node. The inner node is trained with the learning filter m_i and a bias b_i by using equation (3).

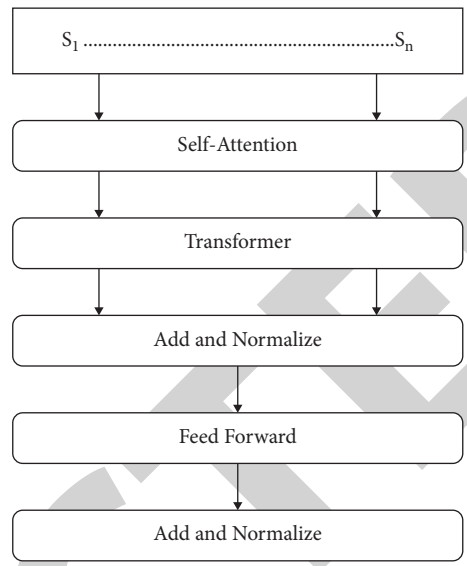

Figure 3: Proposed transformer structure.

$$\Gamma_i\left(\alpha_i\right) = \beta\left(m_i\alpha_i + b_i\right), \tag{3}$$

where, α_i is the input of node I, and β is the logistic function. The hierarchy of the filters is studied through the knowledge obtained from the tree structure which is applied to assigning the individual example of a particular class. The tasks intended for the classification are based on the tree structure where the weights of each layer are allocated. If the classification of each root node is done incorrectly, then, the results obtained can be used directly for finding the error. But if the classification error occurs in the next consecutive levels, then, the accuracy of classification is improved. For overcoming the problems of the classification due to the starting levels of the tree structure, the fusion mechanism is used and it is presented as

$$\operatorname{sim}(a,b) = \frac{\sum_{r\in R}\left(R_{ri} - \overline{R}_i\right)\left(R_{rj} - \overline{R}_j\right)\left(R_{rij} - \overline{R}_{ij}\right)}{\sqrt{\sum_{r\in R}\left(R_{ri} - \overline{R}_i\right)^2}\sqrt{\sum_{r\in R}\left(R_{rj} - \overline{R}_j\right)^2}\sqrt{\left(R_{rij} - \overline{R}_{ij}\right)^2}}, \tag{4}$$

where, R represents the set of students involved in the research, *Rri*, *Rrj*, and *Rrij* respectively. This represents the mean score of the data obtained through the ideological and political education about the subject contexts. According to the level of classes, the tree structure can be constructed. The discourse expression is obtained from the tree structure after selecting the features. Each tree contains a separate root node, and the root node represents the relationship between the discourse expressions which is having relatively balanced data distribution. Hence, the loss of entropy is used for completing the feature selection of any layers. This is shown in equation (5).

$$\delta(x,y,z) = e^{\left(\lambda\left(\left|g_{ri} - g_{si}\right|/g_{i\max} - t_{i\min}\right)\right)}. \tag{5}$$

The loss of entropy that is obtained from the feature selection is shown below in equation (6)

$$\text{Loss}_{\text{root}} = -\chi \log R. \quad (6)$$

Here, χ is an indicator variable. If the predicted value is the same as the real value, then it remains zero. If it is not same as real value, then it is zero.

The primary class of the sample is predicted by considering the subject context by the process of filtering, then, the initial layer which is followed by the child nodes may exhibit an unbalanced status which will make the training to get deviated. Hence, to solve this issue, a loss due to focal is focused on training purposes and is shown in equation (7).

$$Q_i = -\omega_i (1 - T_i)^{\tau} \log(T_i), \quad i = 1, 2, \ldots n. \quad (7)$$

Here, 'i' represents the current layer, the value $(1-Ti)$ represents the modulating factor, and the data distribution factor of the corresponding child nodes are same as that of the root node. The relation between the child nodes is considered in attaining a better relationship among the discourse expression.

3. Experimentation

3.1. Dataset Consideration. The information content is taken from analyzing the students among various subjects related to ideological and political education in consideration of the subject contexts. Totally 236 different subjects were taken for the analysis, and of these, about 5560 pairs of sentences related to the corresponding subject contents are taken into consideration. From the whole dataset, about 60% of the dataset was considered the training data, and about 40% of the dataset was taken as the test data. Here, about three different levels of classification were made for analyzing the words with discourse expressions and each fundamental class of the decision tree is divided into different classes. Some of the discourse expression words from the subject context are shown in Table 1.

The obtained expression values are selected from the list, and from this list, a decision tree is formed. Every content is arranged in various nodes starting from the first level to the third level (called child nodes). There are 50 different classes in the dataset, and there exists a data imbalance problem in considering the data nodes. The classification of the dataset is made at all levels which can interact with each other following the tree structure.

For training purposes, the output of the BILSTM layer is split into 80 different dimensions. Each layer is fed with the taken sentences which are having identified discourse expression values. Individual subjects are fed according to the identified values. The BERT model is fused with the BILSTM model, which is made with the second level of classification, and the third level of classification is done with the help of a decision tree algorithm. Here, the dropout layer is used in extra, which selects the random data to prevent the overfitting problem, which makes the proposed model strong. The rate for robustness is affected by the efficiency; hence, the dropout time is a factor to be considered for modeling.

Table 1: Sample discourse expressions.

Type of sentence	Subjects	Discourse expressions
Formal	Ideological	Fortunately
Formal	Political	Obvious
Informal	Ideological	Exactly
Informal	Ideological	Of course
Formal	Political	Moreover
Informal	Political	Further
Informal	Political	However
Formal	Ideological	Absolutely
Formal	Ideological	Actually
Informal	Ideological	To be honest
Informal	Political	You know

The dropout rate is made to 0.8 before the output layer. The size of the batch is set to 50 for best results.

4. Results and Discussion

4.1. Integration of Ideological and Political Course. The subjects of the ideological and political education are planned, and necessary steps are taken to make great efforts in designing and practicing ideological and practical education for implementing the deep learning courses before and after the classes. A different classification mechanism is implemented to check the discourse expression terms in the subject contexts, divided into 5 various classes 8 classes, 22 classes, 28 classes, 32 classes, and 15 classes. The classification results of all the classes can be considered as a sample and are shown in Table 2. The model proposed might suit the overall architectures that were explored. The BILSTM network might outperform by considering the recurrent neural networks.

For attaining the long discourses, the multilevel attention mechanism is used for extracting the semantics. The multilevel attention requires the most needed values, which are compared with the performance of the decision tree structure. This is shown in Figure 4.

The model prescribed for attaining the complex structure might have elapsed time sequences whose performance is checked with the baseline methods. The importance of our model is that it is tested with conjunction and expansion, which is considered the most important relationship in the training set. The subject context in discourse expression might have fine-grained classification by reducing the elapsed time, as shown in Table 3.

The considered classes are improved according to the tree structure based on BERT implementation. The importance of the architecture is further enhanced by removing the various key structures of our models, which are varied according to the obtained results. The results of the selected classes 8 classes, 22 classes, 28 classes, 32 classes, and 15 classes are shown in Table 4.

$(B + L + R + S + \text{A})$ stands for (BERT + LSTM + RNN + SVM + ANN), but our proposed method uses B (BERT) + BL (BILSTM) + D (decision tree). For considering the improved loss function, the SoftMax layer was applied to the tree structure. The obtained results show that the different structures of various models when

Table 2: Interest of the students in deep learning integrated ideological and political education course.

Attitude	More interest	Interest	Literally interest	Less interest	No interest
Percentage	55	20	15	8	2

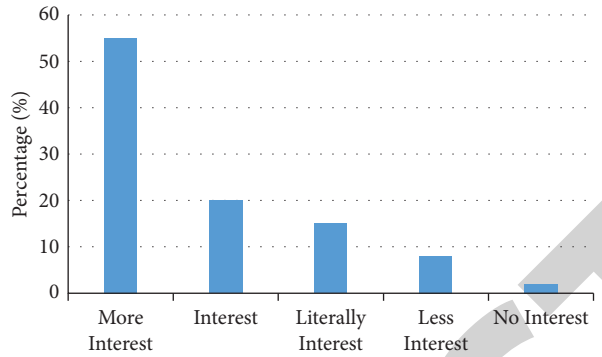

Figure 4: Interest in deep-learning-based courses for ideological and political courses.

Table 3: The classification based on the computational elapsed time.

Model	Time (second)	Accuracy %	Precision %	Sensitivity %	F score
LSTM	5.4	56.65	48.95	54.24	70.89
BILSTM	6.74	64.12	55.00	60.12	72.34
BILSTM + BERT	15.4	56.18	56.87	58.24	74.45
Proposed	14.49	76.64	68.66	75.55	80.33

Table 4: Results for different classes for different models.

Number of classes	Model	Accuracy %	Precision %	Recall %	F score
8	$B+L+R+S+A$	94.54	92.43	94.65	93.31
	$B+L$	93.23	91.12	93.34	92
	$B+R+B$	95.12	93.01	95.23	93.89
	$B+A$	92.13	90.02	92.24	90.9
	Proposed	96.32	94.21	96.43	95.09
15	$B+L+R+S+A$	93.65	92.88	93.54	92.2
	$B+L$	92.34	91.57	92.23	90.89
	$B+R+B$	94.23	93.46	94.12	92.78
	$B+A$	91.24	90.47	91.13	89.79
	Proposed	95.43	94.66	95.32	93.98
22	$B+L+R+S+A$	92.76	93.33	92.43	91.09
	$B+L$	91.45	92.02	91.12	89.78
	$B+R+B$	93.34	93.91	93.01	91.67
	$B+A$	90.35	90.92	90.02	88.68
	Proposed	94.54	95.11	94.21	92.87
28	$B+L+R+S+A$	91.87	93.78	91.32	89.98
	$B+L$	90.56	92.47	90.01	88.67
	$B+R+B$	92.45	94.36	91.9	90.56
	$B+A$	89.46	91.37	88.91	87.57
	Proposed	93.65	95.56	93.1	91.76
32	$B+L+R+S+A$	90.98	94.23	90.21	88.87
	$B+L$	89.67	92.92	88.9	87.56
	$B+R+$B	91.56	94.81	90.79	89.45
	$B+A$	88.57	91.82	87.8	86.46
	Proposed	92.76	96.01	91.99	90.65

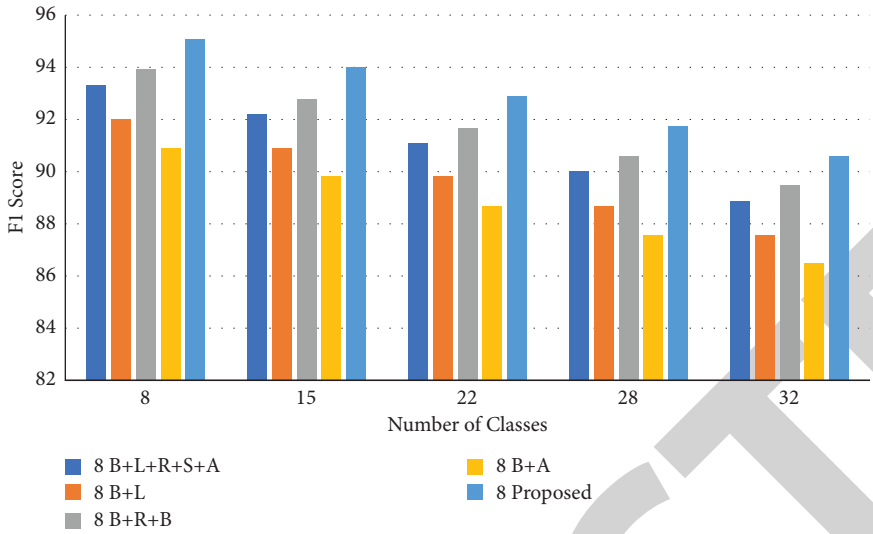

Figure 5: The F-score values under different classes.

Figure 6: The accuracy values under different classes.

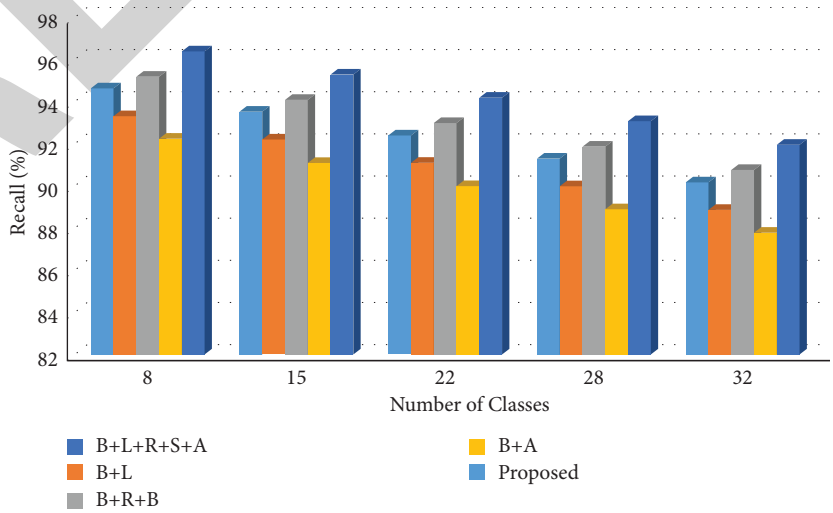

Figure 7: The recall values under different classes.

analyzed prove that the BERT with BILSTM and DT provides better results for extracting the features before and after the classification. This goes as per our proposed method and produces better results than those models with proper tree structure. The results of $(B + BL + D)$ provide better results when compared with all other baseline methods. Comparatively, the proposed method is performing better in managing the loss functions. The effects of various models by considering the F-score values are shown in Figure 5.

The accuracy of classification of the discourse contents from the prescribed values of the ideological and political education is showing better performance when compared to the state of art methods which is shown in Figure 6.

The recall values show some tremendous change in the classification as for understanding the better performance, the recall value is mandatory. The overall sensitivity of the analysis is made with the help of the obtained sensitivity value, and it is shown in Figure 7.

Compared with the RNN, ANN, or SVM, the decision tree will provide better results in analyzing the improved loss function, showing the betterment of the discourse expressions taken. The classification of the dataset is not made in the arrangement of hierarchy, and hence, the structure of the tree is not possible to generate. Hence, the selected 5 classes of classification tasks help to improve the results obtained, which are not accurate. From the obtained results, it is clear that the BERT model, combined with the decision tree and BILSTM, will provide better results in terms of accuracy, sensitivity, and recall.

5. Conclusions and Future Scope

In this approach, a novel method for integrating the deep-learning-based approach to ideological and political education in consideration of the discourse expression of subject context is introduced. The discourse expression recognition model was designed based on BERT, BILSTM, and DT combination, whose results show better accuracy, recall factor, and fewer failing factors, which are beneficial for the education system and students. The various difficulties faced by the students in learning the ideological and political education-related courses were analyzed. The efficiency of teaching mechanisms is enhanced by using deep learning mechanisms. Totally 236 subjects were taken for research, and from the obtained outcome, it is clear that the proposed method proves better results in terms of accuracy, precision, recall, and f score. The benefits of deep learning in learning ideological and political education with discourse expression in subject contexts are analyzed efficiently and effectively.

In the given research, a discourse expression recognition scheme was implemented for ideological and political education using deep learning applications. We know that with deep learning, we can easily add other features like discourse body language or verbal communication to the current model as deep learning can process a large number of unstructured data; hence, any desired feature can be added or replaced in the current model and results can be analyzed for better performance of political and ideological course students by taking subjects more than 236 for a broad analysis.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that he has no conflict of interest.

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References

[1] T. Chen, J. Ma, Yi Liu et al., "iProX in 2021: connecting proteomics data sharing with big data," *Nucleic Acids Research*, vol. 50, no. D1, Article ID D1522, 2022.

[2] X. Li, H. Liu, W. Wang, Ye Zheng, H. Lv, and Z. Lv, "Big data analysis of the internet of things in the digital twins of smart city based on deep learning," *Future Generation Computer Systems*, vol. 128, pp. 167–177, 2022.

[3] K. Suresh, T. A. Kumar, A. S. Radhamani, and S. Sundaresan, "Blockchain technology: an insight into architecture, use cases, and its application with industrial IoT and big data," in *Blockchain Technology,* CRC Press, Florida, FL, USA, 2020.

[4] Y. Pan and L. Zhang, "A BIM-data mining integrated digital twin framework for advanced project management," *Automation in Construction*, vol. 124, Article ID 103564, 2021.

[5] D. Zhang, M. Zhang, F. Lin et al., "Fast extraction of winter wheat planting area in Huang-Huai-Hai Plain using high-resolution satellite imagery on a cloud computing platform," *International Journal of Agricultural and Biological Engineering*, vol. 14, no. 6, pp. 241–250, 2021.

[6] Y. Xing and Y. Zhan, "Virtualization and cloud computing," in *Future Wireless Networks and Information Systems,* Springer, Berlin, Germany, 2012.

[7] N. M. Tri, P. D. Hoang, and N. T. Dung, "Impact of the industrial revolution 4.0 on higher education in Vietnam: challenges and opportunities," *Linguistics and Culture Review*, vol. 5, no. S3, pp. 1–15, 2021.

[8] R. A. Crane and S. Comley, "Influence of social learning on the completion rate of massive online open courses," *Education and Information Technologies*, vol. 26, no. 2, pp. 2285–2293, 2021.

[9] S. Bharathi and T. Ananth Kumar, "Translation its results and insinuation in language learning," *PalArch's Journal of Archaeology of Egypt/Egyptology*, vol. 17, no. 9, pp. 5081–5090, 2020.

[10] B. Zhang, V. Velmayil, and V. Sivakumar, "A deep learning model for innovative evaluation of ideological and political learning," *Progress in Artificial Intelligence*, pp. 1–13, 2021.

[11] Xu Liu, Z. Xiantong, and H. Starkey, "Ideological and political education in Chinese Universities: structures and practices," *Asia Pacific Journal of Education*, pp. 1–13, 2021.

[12] J. Zhong, "Exploring and researching ideological and political education of college students' psychological quality for the development of artificial intelligence," *Mobile Information Systems*, vol. 2021, pp. 1–12, 2021.
[13] Y.-S. Huang and A. Asghar, "Science education reform in confucian learning cultures: policymakers' perspectives on policy and practice in Taiwan," *Asia-Pacific Science Education*, vol. 2, no. 1, p. 3, 2016.
[14] J. Komljenovic, "The rise of education rentiers: digital platforms, digital data and rents," *Learning, Media and Technology*, vol. 46, no. 3, pp. 320–332, 2021.
[15] Y. Yang, "On detecting abnormal access for online ideological and political education," *International Journal of Distributed Systems and Technologies*, vol. 12, no. 2, pp. 35–45, 2021.
[16] H. Xiaoyang, Z. Junzhi, F. Jingyuan, and Z. Xiuxia, "Effectiveness of ideological and political education reform in universities based on data mining artificial intelligence technology," *Journal of Intelligent and Fuzzy Systems*, vol. 40, no. 2, pp. 3743–3754, 2021.
[17] B. Swaminathan and A. Kumar Tamilarasan, "Mental health decline during corona virus outbreak," in *Sustainability Measures for COVID-19 Pandemic*, Springer, Singapore, 2021.
[18] Y. Yu, "On the ideological and political education of college students in the new media era," *Open Journal of Social Sciences*, vol. 10, no. 1, pp. 1–14, 2022.
[19] M. J. Manfredo, T. L. Teel, R. E. W. Berl, J. T. Bruskotter, and S. Kitayama, "Social value shift in favour of biodiversity conservation in the United States," *Nature Sustainability*, vol. 4, no. 4, pp. 323–330, 2021.
[20] S. C. Matz, "Personal echo chambers: openness-to-experience is linked to higher levels of psychological interest diversity in large-scale behavioral data," *Journal of Personality and Social Psychology*, vol. 121, no. 6, pp. 1284–1300, 2021.
[21] H. Luo, G. Li, Q. Feng, Y. Yang, and M. Zuo, "Virtual reality in K-12 and higher education: a systematic review of the literature from 2000 to 2019," *Journal of Computer Assisted Learning*, vol. 37, no. 3, 2021.
[22] P. Li and Y.-J. Lan, "Digital language learning (DLL): insights from behavior, cognition, and the brain," *Bilingualism: Language and Cognition*, vol. 25, no. 3, pp. 361–378, 2021.
[23] N. Tian and S.-B. Tsai, "An empirical study on interactive flipped classroom model based on digital micro-video course by big data analysis and models," *Mathematical Problems in Engineering*, vol. 2021, pp. 1–11, 2021.
[24] J.-J. Choi, C. A. Robb, M. Mifli, and Z. Zainuddin, "University students' perception to online class delivery methods during the COVID-19 pandemic: a focus on hospitality education in Korea and Malaysia," *Journal of Hospitality, Leisure, Sports and Tourism Education*, vol. 29, Article ID 100336, 2021.
[25] Y. Wang, A. Derakhshan, and L. J. Zhang, "Researching and practicing positive psychology in second/foreign language learning and teaching: the past, current status, and future directions," *Frontiers in Psychology*, vol. 12, Article ID 731721, 2021.
[26] S. C. Tan, C. Chan, K. Bielaczyc, L. Ma, M. Scardamalia, and C. Bereiter, "Knowledge building: aligning education with needs for knowledge creation in the digital age," *Educational Technology Research & Development*, vol. 69, no. 4, pp. 2243–2266, 2021.
[27] Y. Hu and K. Dai, "Foreign-born Chinese students learning in China:(Re) shaping intercultural identity in higher education institution," *International Journal of Intercultural Relations*, vol. 80, pp. 89–98, 2021.
[28] W.-J. Yan and S.-C. Chiou, "The safeguarding of intangible cultural heritage from the perspective of civic participation: the informal education of Chinese embroidery handicrafts," *Sustainability*, vol. 13, no. 9, p. 4958, 2021.
[29] Y. Leng, Y. Zhai, S. Sun et al., "Misinformation during the COVID-19 outbreak in China: cultural, social and political entanglements," *IEEE Transactions on Big Data*, vol. 7, no. 1, pp. 69–80, 2021.
[30] T. Yang and M. Chen, "Problems and countermeasures of ideological and political education of college students in the era of big data," in *Proceedings of the 3rd International Conference on Financial Management, Education and Social Science (FMESS 2020)*, 2020.