Research Article
Machine Learning Model-Based English Project Learning and Functional Research

Xiyue Zhang and Guiping Chen

School of International Education, Guizhou Normal University, Guiyang, Guizhou 550001, China

Correspondence should be addressed to Xiyue Zhang; 20160105@ayit.edu.cn

Received 30 January 2022; Revised 18 February 2022; Accepted 21 February 2022; Published 4 April 2022

Academic Editor: Mohammad Farukh Hashmi

Copyright © 2022 Xiyue Zhang and Guiping Chen. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Under the background of the rapid development of machine learning and information technology, traditional classroom mode is gradually replaced by media classroom. To tackle abstract and incomprehensible problems and restricted practical teaching in practical teaching, online classroom design principle is utilized to embody the classroom optimization and design principle of English language teaching from the perspective of machine learning based on English project learning. Based on the advantages of digitization, deep learning algorithm is used to establish classroom application model by information input. Besides, English language and relevant language application scenarios are presented from the perspective of machinery. The simulated textbook contents and relevant extended knowledge points are displayed in classrooms by online teaching. The current advantages of Internet communication are combined with machine learning algorithms for field simulations and calculations on the relevant course content of English subjects. The actual operation process in the English learning process is realized through the online form of the network. It ensures the stability and transmission accuracy of online classrooms, reduces information omission and loss during data transmission, and obtains the optimal solution for data simulation in real-time scenarios. Relevant researches demonstrate that machine learning combined with online classroom design breaks through the face-to-face book teaching in traditional classrooms by the dynamic demonstration of life and actual work scenes and entity innovations as well as design. Besides, it stimulates students’ interest in English courses, enhances the overall learning rate, promotes more significant effects of English project learning, and is conducive to the cultivation of comprehensive language talents in the new age.

1. Introduction

With the advent of the information age, the communication and cooperation between countries are closer and closer. The learning of languages in different countries should not be limited to written form, but needs to focus on practical communication. Countries also pay more and more attention to the practicality of English language. Hence, many schools offer English project learning methods to solve the solidification of English learning. In the education field, the key lies in language cognition, job application, practicality, and cooperation, which are aimed at enabling students to quickly adapt to and apply English language in the age when actual life is rapidly developed. The education under Internet possesses the advantages of curriculum coverage, revisability at any time, diversified learning methods, and real-time interaction [1] and becomes an effective tool in contemporary education.

Due to the particularity of the current situations, a large number of schools combine intelligent learning elements in classroom to respond to the state call of cultivating strategic talents. In this way, schools positively guide students to value courses, majors, and the overall thoughts and inspirations in future work process. As a result, the effective integration of English project learning method model and traditional classroom under machine learning algorithm becomes the innovation in present teaching process. Certainly, the integration causes lots of confusion. Current researches demonstrate that the integration of English project learning into classrooms in many schools is confronted with the conflict
between students' learning goals and teachers' teaching aims and the conflict between students' needs and the need of the development of current age. In addition, teachers can hardly combine current teaching elements in teaching process because of the limited space. Consequently, they continue to use previous traditional teaching mode [2].

The effective combination and application of machine learning and online teaching are investigated for English project learning and teaching design. Based on the advantages of current Internet and combined with machine learning algorithms, the field simulation and calculus of the relevant course content of English discipline are carried out by breaking through conventional textbook face-to-face teaching mode. In the actual running process of English learning process, virtual reality (VR) is applied in virtual drill online [3]. In this case, students' concentration in classroom is stimulated in teaching process, and their ability to deal with problems in future actual work process and to use English for expression and communication is cultivated. Besides, it is conducive to the mutual understanding of needs between students and teachers and the enhancement of classroom teaching and learning efficiency. The innovations of the research lie in the modeling of English project learning process from the perspective of machine learning, the effective constraints of students from three dimensions, including preclass preview, in-class teaching, and after-class review, and the customization of students' learning from the perspective of teachers. The research is conducted to meet the requirements of talents and language use under the development of age. In the practice of online course design, it can help colleges and universities to improve the quality of English teaching, put forward new ideas for contemporary English research learning, and point out new directions for the cultivation of new talents. In addition, this proposed application can be used for teaching or instructional work in other industries under certain optimized circumstances.

2. Materials and Methods

With the continuous development of technologies in the age, relevant researches in education field are also constantly revolutionized and improved. In recent years, the integration and development of artificial intelligence and education receive people's wide attention. Besides, the combination of cloud service, big data, and other technologies opens a new prelude for intelligent education. The combination of promoting education and technology also gradually attracts the attention from governments of various countries [4]. Educational reform is closely related to technological development. With the advantages of accuracy, intelligence, and personalization, intelligent technology becomes a breakthrough in education field. Chinese governments also actively call for the application and implementation of intelligent technology in classroom, further refinement of its application mode and teaching in classroom, and the gradual expansion to the reform of educational methods, the transformation of talent cultivation mode, and the application of modern education mode [5]. Virtualizing the synchronous rectification of VR requires a precise timing control circuit by reducing conduction losses and reverse recovery losses. Although there are several ways to generate control signals, a gate drive signal timing system that is actively controlled by a feedback system is adopted in this work. Its main advantage is that the circuit will specifically adjust the uncontrollable capacitance in the synchronous rectification according to the change of the state of the components. The effect of time delays and temperature changes on the threshold can be corrected according to the feedback loop. At present, this method is a relatively applicable strategy.

2.1. Application of Machine Learning in the Education Field.

The advent of intelligent age results in the extensive promotion of artificial intelligence in the education field with more in-depth and normalized application [6]. Machine learning is a realization method under artificial intelligence technology and a branch of computer science. Besides, it is the interdisciplinary content of pattern recognition and artificial intelligence [7]. Based on data statistic law, an effective prediction model is generated to predict future behaviors. Machine learning is a multifield interdisciplinary subject involving probability theory, statistics, approximation theory, convex analysis, algorithmic complexity theory, and other disciplines. It specializes in how computers simulate or implement human learning behaviors to acquire new knowledge or skills and to reorganize existing knowledge structures to continuously improve their performance. It is the core of artificial intelligence and the fundamental way to make computers intelligent. It is applied in various fields of artificial intelligence, and it mainly uses induction and synthesis rather than deduction.

2.1.1. Machine Learning Algorithm.

Machine learning is a realization method of artificial intelligence, which conducts prediction and simulation by remembering the relevant law of learning statistical analysis data. It is the core technology of artificial intelligence [8]. Based on the learning methods, machine learning algorithm is divided into supervised learning, no supervised learning, and semisupervised learning. According to different application scenarios or data quality, machine learning can choose the corresponding algorithms or combine and apply the several methods. Machine learning is performed based on deep learning algorithm, and it utilizes the relevant computation of hidden layer, input layer, and output layer of deep learning algorithm [9] to process the data uniformly. Besides, it uses the output data text to simulate the drill and operation of cadaver data. Supervised learning refers to using a set of samples of known classes to adjust the parameters of the classifier to achieve the required performance. Unsupervised learning refers to solving various problems in pattern recognition based on training samples of unknown (unlabeled) categories. The supervised learning algorithms are generated by analyzing training data of known categories. The unsupervised learning algorithms mainly include principal component analysis method, isometric mapping method, local linear embedding method, Laplace feature mapping method,
Hesse local linear embedding method, and local tangent space arrangement method.

Firstly, the relevant data required by articles are enhanced to improve the generalization ability of the model [10]. Secondly, relevant data features are extracted, and more detailed features are obtained by convolutional networks and artificial features [11]. Finally, the extracted features are input into the classifier. Figure 1 shows the operation process of machine learning.

As Figure 1 demonstrates, machine learning processes and outputs data uniformly after the computation in the input layer and the hidden layer. The output data are the texts after the reduction in repetition rate for the following operation and use. English project learning uses the features of deep learning algorithm to carry out the simulation and calculus of entity operating data. Next, it obtains the language computers can recognize in the output layer for the next simulation and calculus. After that, it utilizes machine learning algorithm to perform the text prediction of the data [12].

2.1.2. Relevant Models and Methods of Machine Learning. There are many types of machine learning algorithms. In general, algorithm models can be divided into two types, including supervised learning and no supervised learning. The calculation methods of supervised learning are applied more widely [13]. With other data not labeled, supervised learning can be applied in the data sets with specific attributes. In the process of algorithm model training, the results of machine learning training are specified artificially. Algorithm models automatically internal parameters [14]. No supervised learning is applicable to the data sets without labels to find the potential relations between data and realizes the automatic data association with the algorithm models in various countries [15]. Supervised learning includes linear regression, logical regression, decision tree, random forest, naive Bayesian classification, K nearest neighbor algorithm, least square method, support vector machine, and integrated approach [16]. No supervised learning includes clustering algorithm, principal component analysis, singular value decomposition, and independent component analysis [17]. No supervised learning is suitable for the data sets without labels to find the potential relations between data. Based on algorithm models, the automatic data association with no supervised learning algorithm is realized, as Figure 2 illustrates.

Figure 2 shows that algorithm models are divided into two major types. In comparison, supervised learning algorithm possesses the advantage in operation stability. The implementation of the operation basis of English project learning is also based on Apriori algorithm (association rule algorithm) and frequent pattern (FP) growth algorithm [18]. Equations (1) and (2) illustrate the specific operation of the algorithms.

\[
h_q(x) = g (\theta^T x) = \frac{1}{1 + e^{-\theta^T x}}, \quad (1)
\]

\[
g(z) = \frac{1}{1 + e^{-z}}. \quad (2)
\]

In terms of classification prediction function \( h_q(x) \), vector \( x \) is known \( (x) \) the object data of unknown class number, while vector \( \theta \) is unknown. The solution of classification functions is transformed into the solution of vector \( \theta, \theta^T \) is the transposition of vector \( \theta (\theta^0, \theta^1, \ldots, \theta^n) \). Vector \( X (X^0, X^1, \ldots, X^n) \) and \( n - 1 \) are the dimensions of the data. \( X_0 = 1 \) takes the derivative of the function based on the original function. \( e^{-z} \) is the corresponding value of exponential function with \( z \) samples, and the obtained derived function \( g'(z) \) is expressed as follows.

\[
g'(z) = \frac{d}{dz} \frac{1}{1 + e^{-z}}. \quad (3)
\]

In the case of two classifications, \( e^{-z} \) refers to the output of the value function 0 or 1 corresponding to the exponential function with \( z \) samples. In the calculation process, the direct operation of the data without the removal of infrequent sets and the analysis and scan of the algorithm generates

\[
p(y|x; \theta) = (h_q(x))^y (1 - h_q(x))^{1-y}. \quad (4)
\]

In equation (4), \( p(y|x; \theta) \) represents the probability value of the function as \( x \) approaches \( \theta \). It refers to the probability of class \( y = 1 \) with determined \( X_i \). After the sample obtains the probability value, posterior probability of the sample \( L(\theta) \) is expressed by

\[
L(\theta) = p(y|X ; \theta). \quad (5)
\]

In equation (5), \( L(\theta) \) represents the calculation of linear probability. It refers to the probability of class \( y = 0 \) with determined independent variable \( X_i \). The maximum value of likelihood function is vector \( \theta \) to be solved. \( L(\theta) \) denotes linear probability. With the value of \( X_i \), the value of \( Y_i \) is changed. Classification prediction function \( h_q(x) \) is the value of equation (1), and log is a logarithmic function.

The core steps of Apriori are the join step and the pruning step. It is a breadth-first algorithm based on horizontal data distribution. Due to the use of hierarchical search pruning technology, Apriori algorithm shows high efficiency in mining frequent patterns.

On the other hand, there are two major disadvantages for the Apriori algorithm. First, the Apriori algorithm is a multipass search algorithm, and each search has to scan the transaction database, which is expensive. For candidate item sets, each element has to be scanned to confirm whether to join frequent item sets. If the candidate item set contains \( n \) items, the transaction database needs to be scanned at least \( n \) times. Second, the Apriori algorithm may generate a huge set of candidate items. Due to the connection operation for frequent item sets, the generated candidate item sets grow exponentially, and such massive candidate sets are a huge challenge to the computing time and storage space of the computer.

Compared with the classic Apriori algorithm, it can be found that the running time of the algorithm is significantly reduced, which can avoid repeated scanning of the database.
and tedious connection operations and further improve the running efficiency of the algorithm. Targeted at that classical Apriori algorithm needs to repeatedly scan the transaction database when counting items in the transaction database, which increases the overhead, a new improved Apriori algorithm based on the concepts of matrix and vector inner product in mathematics is proposed. The original algorithm is improved from three aspects, reducing the data in the generated candidate frequent item sets, reducing the number of operations in the pruning process, and reducing the number of things in the database that need to be scanned in the statistical support stage. In addition, the computer performs vector operations and bit operations faster, and the program is easier to implement. The new algorithm greatly decreases the system overhead and improves the time efficiency.

2.1.3. Application of Machine Learning Model in Project Learning. In the process of curriculum reform, the teaching for each grade stage is also improved and changed accordingly. Some advanced teaching methods greatly improve the quality of English teaching. Besides, the methods enable students to become the learning subjects to some extent, facilitate the cultivation of students’ independent thinking ability, and meet the needs of students’ physical and mental health development [19]. Therefore, teachers should set up courses according to students’ special points and formulate objectives based on students’ development for students of different ages. Besides, English teaching needs to be combined with project learning to lay the foundation for cultivating students’ comprehensive quality.
Project learning is a dynamic learning process. Course teachers set up research topics according to the age features of students and current teaching objectives, improve students’ enthusiasm and initiative in participating in classroom learning, practice and simulate the setting of class steps and the sense of learning experiences in advance, and sense students’ response in class and ability to absorb knowledge more intuitively [20]. Compared with that in traditional classroom, the content of project learning is more open without uniform and fixed form and content. It is highly explorative and involves a wide range of knowledge with higher requirements for teachers [21]. The English project learning in junior and senior high schools is based on relevant knowledge. Based on students as the subject, the idea and principle of project learning are combined to cultivate students’ abilities to actively explore, analyze, and independently resolve problems. Project learning not only promotes students’ mastery of basic subject knowledge but also plays a positive role in cultivating students’ comprehensive quality and innovation ability.

Based on the above conditions, machine learning algorithms are utilized in the research to establish relevant dynamic research learning models, which are applied in classrooms. Big data statistics is adopted for the current learning objectives and general learning contents of junior and senior high school students and the optimization as well as analysis of test points. Based on the mastery of the contents and knowledge in basic textbooks, students’ active thinking and innovation abilities are further improved by machine learning models. Besides, the models make the classroom not limited to textbooks and teachers’ dictation and become more interesting. As a result, students’ interest in learning is improved [22]. Figure 3 shows the specific process of establishing the model. Corresponding learning contents are input into the text. Firstly, relevant knowledge voice library is established to increase the vitality of classroom, activate teaching, and make teachers become the instructors rather than the dominators in teaching, as Figure 3 illustrates. Wireless networked measurement and control technology with speech recognition technology is a current research direction. It integrates speech recognition, wireless network, and measurement and control technology to realize wireless networked voice control system, which shows good practical value and broad application prospects. The process of voice recognition can be attributed to pattern recognition and matching. The required speech features are extracted by preprocessing and analyzing the speech signal, and the template required for voice recognition is established. When the voice is recognized, it is necessary to compare the voice template stored in the system with the characteristics of the input voice signal, find a series of optimal templates matching the input voice according to certain algorithms and strategies, and finally output the recognition result. The voice recognition system uses the principle of pattern matching.

As Figure 3 demonstrates, relevant text knowledge contents are input into the system in computer language, and then, the function of voice recognition of machine learning algorithm is utilized to establish relevant voice library for subsequent use by models. Next, big data system is used to create learning situations to offer more opportunities to English project learning and stimulate students’ desire for inquiry and the initiative in learning, as Figure 4 displays.

As Figure 4 shows, the established voice knowledge library and relevant text contents are combined to construct machine learning model for the automatic storage and marking of students’ preview before class and the questions answered in class, which are conducive to subsequent review and the mastery of students’ learning by teachers. Finally, voice recognition and evaluation steps are used to offer the motivation to research learning for students’ active participation in learning. Figure 5 shows the analysis of students’ psychological features and the creation of relevant scene models to stimulate students’ interest.

As Figure 5 demonstrates, the voice recognition of machine learning models begins with voice input. Next, relevant voice knowledge points are processed uniformly to form a unique feature interaction space in database. After that, different contents are presented and matched in different classes. In the process, the operation and matching of data always last until the optimal matching scheme is found and stored.

2.2. Machine Learning Model-Based Project Learning and Functional Research. To adapt to the new situation of higher education development, English teaching objective in China is the cultivation of students’ comprehensive ability to use English, especially listening and speaking skills. Another one is the improvement of students’ independent learning ability and comprehensive cultural literacy to adapt to the needs of domestic social development and international communication [23]. English project learning is highly focused and respected since it can guide the cultivation of students’ self-learning ability and innovative thinking to some degree. The combination of project learning and machine learning algorithm is valued and widely used in the education field. The project learning in junior and senior high schools is included as the research objective to construct English project learning combined with machine learning algorithm, which enhances students’ independent learning ability and the ability to use English. In the module of lesson preparation, teachers need to import and rehearse relevant information. Artificial intelligence method is utilized for the setting of lesson preparation module, including making intelligent voice courseware and processing relevant images. In addition, the input and statistics of textbook contents are carried out, the relevant font color and size are set, and relevant browsed webpages are automatically generated and stored. As a result, whether students are well prepared before class can be accurately observed, and teachers can intuitively supervise each student’s preview status before class [24], as Figure 6 displays. In addition, the combination of images and voice can promote students’ initiative and participation in learning more effectively compared with traditional and tedious textbook preview.

Figure 6 indicates that the setting of lesson preparation module in machine learning models of English project learning is combined with textbook contents and relevant images.
as well as voice. To some degree, the same frequency between teachers and students can be achieved to enable teachers to timely grasp the learning dynamics of each student and students’ preview before class [25]. Besides, machine learning algorithm is also used to construct relevant models in the process of teaching module in classroom. The establishment of teaching model includes the import of preclass preview module, pronunciation and relevant vocabulary exercise, and grammar module as well as intelligent matching and resource sharing, as Figure 7 shows.
Figure 7 presents English project learning model constructed by machine learning algorithm. Based on six modules, subject knowledge is transformed into online platform teaching to make classroom become more stereoscopic and students’ overall feelings become more intuitive [26]. After class, big data monitoring and statistics are conducted on each student’s relevant performance to make student information become clearer and enable teachers to clearly guide students to give feedback on and correct each dynamic timely. Besides, it is convenient for students to check the content of each class for review. Figure 8 displays the specific system model.

As Figure 8 indicates, students can use their own student ID numbers to log into student platform to check the content of each class and teachers’ comments after class. According to the knowledge points in class, students can check and make up for the missing parts. Scenes are utilized to help with the memorization of traditional grammar points and vocabulary, which can be applied in practice and life more easily. The overall objective of the construction of English project learning process based on the model is to reduce the burdens on teachers to prepare lessons and to increase students’ individuality and enthusiasm, as Figure 9 shows.

As Figure 9 displays, English project learning and teaching objective under machine learning is divided into three types, which are analyzed from the perspectives of course teachers, students, and society. Course teachers need to combine Internet with textbook contents to enrich English learning contents. Students need to preview and clock in in advance and actively participate in classroom interaction. Based on students’ classroom performance, the model is corrected to enable students to know their own defects clearly for subsequent timely correction and review.

2.3. Deeply Innovative Teaching and Learning Model. Deep learning comes from neural networks, which can be understood as a deeper neural network. One of them is a deep belief network (DBN) based on restricted Boltzmann machine, which can input data from the lower layer to the upper layer when the network operates forward and can get the network output. It should be pointed out that the reason why convolutional networks and recurrent networks generally do not add “Deep” in their names is that their structures are generally deep, so there is no need to specify depth. In contrast, the Auto Encoder can be a very shallow network or a very deep network. Hence, people use deep autoencoders to specify their depth. Its computational graph structure is a tree structure rather than a mesh structure. The goal of recurrent neural network (RNN) is similar to that of recurrent network, and it also hopes to solve the long-term dependence among data. In addition, its better feature is that the tree can reduce the length of the sequence. Simply put, the Boltzmann machine is a very beautiful energy-based model, which is generally learned by the maximum likelihood method, and conforms to biological laws, but it is more suitable for theoretical deduction, and there are quite a lot of practical difficulties.

The restricted Boltzmann machine is more practical; it restricts its structure must be a bipartite graph and the hidden layer and the observable layer cannot be connected. It is mentioned here because it is one of the constituent elements of deep belief networks (DBN); the structure of which is shown in Figure 10.

2.4. Application of Modern Education Model. Information technology has a revolutionary impact on the development
of education. The ability to integrate information technology and education and teaching has become a must-have professional quality for contemporary teachers. It keeps up with the development of educational technology disciplines, faces the work needs of teachers, is oriented at practical application, and emphasizes both theory and practice. It is aimed at enabling learners to understand the concept and connotation of modern educational technology and the principles and methods of information-based teaching design so that they can have good information technology application ability and innovate the methods and strategies for the integration of information technology and education and teaching, thereby applying the information technology within legal and ethical constraints.

The application of modern educational technology to classroom teaching is mainly reflected in two aspects. (1) Creating a situation to stimulate interest: incorporating multimedia technology into mathematics classrooms can create various situations for students based on its features of combining pictures and texts, audio and video, dynamic changes, and intuitive images. In this case, it can arouse students’ participation in various senses and mobilize their

![Figure 8: Construction of entity attribute of student system.](image)

![Figure 9: Teaching objectives under machine learning.](image)

![Figure 10: Deep belief network of restricted Boltzmann.](image)
strong desire to learn, to stimulate motivation and interest, improving their enthusiasm. (2) Turning static into dynamic and breaking through the key points and difficulties of teaching: using multimedia can more easily help teachers reveal rules, expand content, and develop students’ thinking. In addition, it can save a lot of time and improve the efficiency of learning.

With the development of the times, the means of education are constantly being improved, and modern civilization has brought unprecedented development opportunities to education. Modern educational technology based on multimedia has been widely used in various fields, especially in education and teaching. It attracts students with its vivid pictures, clear words, sweet music, and friendly language, stimulates their interest, activates their thinking, and can turn abstract knowledge into difficult and easy, so it can highlight the key points well and break through the difficulties. In a word, the wide application of multimedia teaching has become an important means to optimize classroom teaching and improve the quality of students so that the effect of education and teaching is significantly improved and classroom teaching has unprecedented vitality.

3. Results

In terms of the operation results of the above models, it is supposed that the student population is fixed. Different types of algorithms under machine learning algorithms are used for error simulation analysis and modeling analysis of English project learning mode, as Figure 11 shows.

As Figure 11 shows, machine learning algorithms are used to trace and evaluate overall classroom in English project learning classroom mode. The presented results demonstrated that the project learning model under machine learning algorithm shows relatively small errors and high stability in students’ online and offline learning processes. In the first 40 minutes, the relationship between redundant data loading and network operation results in the increase in error rate. In contrast, the overall classroom effect error is minimum after subsequent operation stability.

In comparison, logistic algorithm shows a relatively high error in main courses. There are some errors between entity operation and theory. In the operation process, FP-Tree is generally stable with low error range. There are relatively small errors in the accuracy and selection indexes of tree model. In terms of the accuracy of the overall classroom operation, the presented results after measurement are shown in Figure 12.

As Figure 12 demonstrates, the operation accuracy of the whole algorithms is maintained between 0 and 1. The calculation accuracy of Apriori algorithm fluctuates more obviously. Because it effectively utilizes real-time changing data for field monitoring and operation simulation in operation process, significant accuracy difference exists in operation process. In the overall operation process, logistic algorithm shows a very high accuracy with smooth calculation process. Hence, there is no classroom delay or inaccuracy in the operation process. After optimization algorithm is used to train the overall operation process, error range is narrowed tremendously. In addition, it is proposed that deep learning model trained by samples should be used to analyze the effects of online classroom and the advantages as well as disadvantages of English project learning classroom, which helps teachers further effectively assess students’ abilities for following teaching design and preparation.

4. Discussion

The research learning is integrated into the deep learning algorithm for classroom real-world exercises. The machine learning algorithm, sound simulation technology, and VR online form are adopted so that the text in the textbook is displayed in the classroom in the form of real scene online, which improves the overall learning effect of students. Through the simulation of real-time scenarios, a new reference idea is proposed for the current English research study.
In addition, the technology of systems science is also considered to provide a methodology for the study of complex systems, including the Internet, social networks, and transportation networks. Studies have shown that two network analysis software, Citespace and Histcite, can provide a better test ratio for the educational program analyzed in this work [27], and they will be used for further research in the future.

5. Conclusions

Based on machine learning-based deep learning algorithm as the background, the relevant theoretical bases of current project learning field and machine learning algorithms are analyzed, and deep learning algorithm-based online course system is constructed and integrated into project learning field for classroom live rehearsal. English project learning and teaching is integrated based on machine learning algorithm, and voice simulation technology and VR online form are utilized to display the text in textbooks in class in live and online forms, which enables students to immerse in the scene where English language is actually used and know how to deal with practical problems. In addition, the optimization of deep learning algorithm ensures the stability of online classrooms and higher accuracy of propagation, reduces the information omission and loss in data transmission, and obtains the optimal solution of data simulation in real-time scenes. The proposed deep learning algorithm is applied in online classroom design and practice, which helps universities enhance the quality of English teaching, offers new ideas to contemporary English project learning, and points out new directions for the cultivation of new talents. From the perspective of machinery, the advantages of intelligent classrooms are exerted and subject professional theoretical knowledge and intelligent technologies are realized, which conform to the needs of the age, are beneficial to the cultivation of high-end language talents, and promote the realization of the values of professional education of subjects with Chinese characteristics. The disadvantage in the research is that the proposed algorithm cannot be promoted and applied in a short time due to the high demand for science and technology. In subsequent researches, the focus will be on the simplification of the promotion of the algorithm and the operation requirements for further development and application.

Data Availability

The data used to support the findings of this study are included in the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] C. T. D. Lim and B. J. Fraser, “Learning environments research in English classrooms,” Learning Environments Research, vol. 21, no. 3, pp. 433–449, 2018.
[2] C. H. Lin, C. C. Cheng, Y. M. Tsai et al., “7.1 A 3.4-to-13.3TOPS/W 3.6TOPS dual-core deep-learning accelerator for versatile AI applications in 7nm 5G smartphone SoC,” in 2020 IEEE International Solid-State Circuits Conference - (ISSCC), pp. 134–136, San Francisco, CA, USA, 2020.
[3] S. Smys, J. I. Z. Chen, and S. Shakya, “Survey on neural network architectures with deep learning,” Journal of Soft Computing Paradigm (JSCP), vol. 2, no. 3, pp. 186–194, 2020.
[4] L. Yang and A. Shami, “On hyperparameter optimization of machine learning algorithms: theory and practice,” Neurocomputing, vol. 415, pp. 295–316, 2020.
[5] S. A. Ahmed, B. Jabbar, B. Gardi et al., “Students’ attitudes towards learning English in the Kurdistan region of Iraq,” International Journal of English Literature and Social Sciences, vol. 6, no. 3, pp. 072–087, 2021.
[6] L. Z. Guo, Z. Y. Zhang, Y. Jiang, Y. F. Li, and Z. H. Zhou, “Safe deep semi-supervised learning for unseen-class unlabeled data,” International Conference on Machine Learning. PMLR, vol. 119, pp. 3897–3906, 2020.

[7] M. M. Dunlop, D. Slępcavage, A. M. Stuart, and M. Thorpe, “Large data and zero noise limits of graph-based semi-supervised learning algorithms,” Applied and Computational Harmonic Analysis, vol. 49, no. 2, pp. 655–697, 2020.

[8] J. E. Van Engelen and H. H. Hoos, “A survey on semi-supervised learning,” Machine Learning, vol. 109, no. 2, pp. 373–440, 2020.

[9] M. Sornalakshmi, S. Balamurali, M. Venkatesulu et al., “Hybrid method for mining rules based on enhanced Apriori algorithm with sequential minimal optimization in healthcare industry,” Neural Computing and Applications, pp. 1–14, 2020.

[10] C. Wang and X. Zheng, “Application of improved time series Apriori algorithm by frequent itemsets in association rule data mining based on temporal constraint,” Evolutionary Intelligence, vol. 13, no. 1, pp. 39–49, 2020.

[11] J. Torres and E. Alieto, “English learning motivation and self-efficacy of Filipino senior high school students,” Asian EFL Journal, vol. 22, no. 1, pp. 51–72, 2019.

[12] S. Zhang, L. Fu, R. Wang, and R. Chen, “The optimization of the location of the cargo in three-dimension shelf: employing the FP-tree and the artificial fish swarm algorithms,” Journal of Control Science and Engineering, vol. 2020, Article ID 8832691, 15 pages, 2020.

[13] G. B. Ozturk, “Interoperability in building information modeling for AECO/FM industry,” Automation in Construction, vol. 113, article 103122, 2020.

[14] S. Zuparova, A. Shegay, and F. Orazova, “Approaches to learning English as the source of all,” European Journal of Research and Reflection in Educational Sciences, vol. 8, no. 5, p. 68, 2020.

[15] Q. Tushar, M. A. Bhuiyan, G. Zhang, and T. Maqsood, “An integrated approach of BIM-enabled LCA and energy simulation: The optimized solution towards sustainable development,” Journal of Cleaner Production, vol. 289, article 125622, 2021.

[16] P. Nancy, S. Muthurajkumar, S. Ganapathy, S. V. N. Santhosh Kumar, M. Selvi, and K. Arputharaj, “Intrusion detection using dynamic feature selection and fuzzy temporal decision tree classification for wireless sensor networks,” IET Communications, vol. 14, no. 5, pp. 888–895, 2020.

[17] X. Meng, P. Zhang, Y. Xu, and H. Xie, “Construction of decision tree based on C4.5 algorithm for online voltage stability assessment,” International Journal of Electrical Power & Energy Systems, vol. 118, article 105793, 2020.

[18] K. Gajowniczek and T. Jębkowski, “Interactive decision tree learning and decision rule extraction based on the Imb tree entropy and Imb tree AUC packages,” Processes, vol. 9, no. 7, p. 1107, 2021.

[19] H. Lu and X. Ma, “Hybrid decision tree-based machine learning models for short-term water quality prediction,” Chemosphere, vol. 249, article 126169, 2020.

[20] M. M. Ghiasi, S. Zendehboudi, and A. A. Mohsenipour, “Decision tree-based diagnosis of coronary artery disease: CART model,” Computer Methods and Programs in Biomedicine, vol. 192, article 105400, 2020.

[21] E. A. Toraih, R. M. Elshazl, M. H. Hussein et al., “Association of cardiac biomarkers and comorbidities with increased mortality, severity, and cardiac injury in COVID-19 patients: a meta-regression and decision tree analysis,” Journal of Medical Virology, vol. 92, no. 11, pp. 2473–2488, 2020.

[22] S. Newman, C. Montgomery, and D. Hyatt, “Initial teacher education in England and the Covid-19 pandemic: challenges and opportunities,” Journal of Education for Teaching, vol. 46, no. 4, pp. 596–608, 2020.

[23] O. Supriadi, Z. Musthan, R. N. Sa’odah et al., “Did transformational, transactional leadership style and organizational learning influence innovation capabilities of school teachers during covid-19 pandemic?,” Systematic Reviews in Pharmacy, vol. 11, no. 9, pp. 299–311, 2020.

[24] A. Shehadeh, O. Alshboul, R. E. Al Mamlook, and O. Hamedat, “Machine learning models for predicting the residual value of heavy construction equipment: an evaluation of modified decision tree, LightGBM, and XGBoost regression,” Automation in Construction, vol. 129, article 103827, 2021.

[25] S. Mishra, P. K. Mallick, H. K. Tripathy, A. K. Bhoi, and A. González-Briones, “Performance evaluation of a proposed machine learning model for chronic disease datasets using an integrated attribute evaluator and an improved decision tree classifier,” Applied Sciences, vol. 10, no. 22, p. 8137, 2020.

[26] L. Xiao-Dong and C. Hong-Hui, “Research on VR-supported flipped classroom based on blended learning — a case study in “learning English through news”,” International Journal of Information and Education Technology, vol. 10, no. 2, pp. 104–109, 2020.

[27] J. Liu, Y. Ma, X. Sun, Z. Zhu, and Y. Xu, “A systematic review of higher-order thinking by visualizing its structure through HistCite and CiteSpace software,” The Asia-Pacific Education Researcher, pp. 1–11, 2021.