Hindawi
Wireless Communications and Mobile Computing
Volume 2023, Article ID 9897214, 1 page
https://doi.org/10.1155/2023/9897214

Retraction

Retracted: Research on English Hybrid Assisted Teaching System Using Contextual Support of R-CNN

Wireless Communications and Mobile Computing

Received 1 August 2023; Accepted 1 August 2023; Published 2 August 2023

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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.

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[1] L. Yuan, "Research on English Hybrid Assisted Teaching System Using Contextual Support of R-CNN," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 5358546, 9 pages, 2022.

Hindawi
Wireless Communications and Mobile Computing
Volume 2022, Article ID 5358546, 9 pages
https://doi.org/10.1155/2022/5358546

Research Article

Research on English Hybrid Assisted Teaching System Using Contextual Support of R-CNN

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Received 6 January 2022; Accepted 16 February 2022; Published 16 April 2022

Academic Editor: Deepak Kumar Jain

The developing countries and developed countries are depending on major as well as single language, i.e., English. The software tool level English teaching assistance models are available but those are not that user-friendly and also unable to support current technology. The earlier English teaching assistance techniques like RFO (Random Forest Optimization) machine learning, Xboosting machine learning, and SVM (Support Vector Machine) cannot support background provision. English teachers must find a way to coordinate the relationships between students, teachers, the learning environment, and learning strategies. A modern user-friendly building technique and an advanced ecobalancing of education are suggested and executed, which may increase the hybrid education characteristics and request skills of English. Therefore, an advanced ANN-(artificial neural network-) based hybrid English teaching assistance model is inevitability necessary. In this research work, R-CNN-based ANN model is imported to make applications for hybrid English teaching assistants. The performance measures like accuracy 97.89%, sensitivity 98.34%, recall 94.83%, and throughput 92.89% had attained. The implemented design is competing with present technology and outstrips the methodology. The process is outstripped by the realized design, which competes with current technology.

1. Introduction

Cloud computing, deep learning, 5G communication, IoT, and additional contemporary technology platforms had emerged as powerful services in the educational improvement battle. The increasing use of mobile Internet, Cloud computing technologies, and deep learning contributed at the development of new educational ideas and approaches for English language acquisition. As a result of new teaching technologies such as flipped classrooms, enormous uncovered operational courses (EUOCs), laptop-based classes, and other cutting-edge methodologies, English instructors are rethinking their conventional methods and shifting from leaders to guides. Universities' teaching environments have transformed from closed to open with intelligence, network, and digitalization due to multimedia classrooms and the Internet. Consequently, English instructors must study how current information technologies might be utilized to improve and promote conventional English teaching in an effort to get a modern standpoint on the future of English language teaching. As a result of the use of Cloud computing and machine learning in teaching English, the training eco-friendly for the language has been upended. According to this research survey, the application of Cloud computing and ML in English language education might assist encounter the requirements of communal growth and worldwide communication, and with the use of Cloud computing, the recommended approach explains how to teach English. The use of DL technologies is then cast off to hypothesize a novel educational atmosphere for application in order to recover both instruction and knowledge. It is possible to shape and contrive an entirely new ecoenvironment based on data mining methods for the purpose of information exchange, quality instruction, and customized learning in English. To conclude, the experiment findings suggest that the proposed technique may assist students in enhancing their ability to learn English by comparing it to certain current teaching methods, as well as inspiring their interest and

initiative in the process. DL and ML are utilized in the ecosupporting platform to provide a new approach to English classroom improvement.

There is a connection between the instructional materials and the components of an ecosystem. Symbiotic relationships are developed between all creatures. Symbiosis, evolution, and the most efficient use of resources are at its heart. Its teaching materials will turn into the major body of the symbiotic connection; these reciprocal power and directions are crucial to maintaining the teaching environment when this system is integrated into English education. There are numerous linked elements in the English-teaching environment. These include students, instructors, textbooks, multimedia, resources, classrooms, schools, and society at large, to name a few examples. Technology and cultural shifts need new approaches to teaching English. There must be a rethinking of how English is taught in the modern classroom. In recent years, a number of scholars have developed new ways for teaching English people in a direction to increase the excellence and state of English.

A thorough examination of the research literature reveals a concentration on teacher experiences, collaborative practice teaching methods, innovative educational models such as ecoeducation, assisted instructional systems such as Kinect-based somatosensory learning, and so on, all with the goal of bettering English language instruction and proficiency levels in students. On the subject of instructional methods and means, this guide stresses the importance of adhering to educational rules, taking into account individual differences and learning styles, utilizing appropriate and effective teaching methods that embody the concept of education, and changing how students learn through active participation. Keep up to date with the newest applied linguistics research, regularly update the idea, and employ teaching approaches that are acceptable for students. In today's world of information technology, students are overwhelmed by the sheer number of educational options available to them. These students put in a lot of effort, but their efforts result in little progress. Because of this, English teachers must find a way to coordinate the relationships between students, teachers, the learning environment, and learning strategies. Thus, a modern user-friendly building technique and an advanced ecobalancing of education are suggested and executed, which may increase the hybrid education characteristics and request skills of English. The contribution of the paper is as follows:

(i) To improve the performance of English hybrid assisted teaching system using contextual support of R-CNN

(ii) To compare the performance of the proposed system with KNN, RFO, and Xboosting

2. Literature Survey

Researchers conducted this study in order to illustrate the feasibility of a new, most powerful kind of CAI (computer-assisted instruction), depends on substantial use of AI (artificial intelligence) methods. It was dubbed SCHOLAR after a group of computer applications that were created. Because of its complexity, this article solely discusses the system's conceptualization and pedagogical elements (including a real online protocol) [1].

Using artificial intelligence technology to aid instructors in correcting and analyzing student writing and data is projected to improve students' self-efficacy in writing and foster their self-awareness of English writing and lifetime learning, according to this study [2].

According to Yunjie, teaching English in a classroom will undergo significant changes when artificial intelligence (AI) enters the picture. These changes will affect everything from the structure of the classroom to how students and teachers interact. Using SPOC and rain classrooms, this paper's combination of information infusions and capability improvement to individual and as a team instruction and from static resources to dynamic resources provides new development possibilities for education [3].

An experimental technique was used to create a database in this study. Filling in missing values, changing values from one form to another, and selecting pertinent attributes and variables were all part of the preprocessing of raw data. To build a Bayes categorization prediction model, we gathered 300 student data. Predictive model, classification, and data mining are some of the terms associated with this study [4].

Business English teachers can benefit greatly from the study, which found that it has a significant impact on both practical and theoretical concepts as well as on their students' interest in the subject because of its autonomous learning atmosphere; it also enhances the evaluation methods and records their entire learning process, making it a valuable tool for teachers. Consequently, the study's next step is to undertake empirical research to demonstrate that AI-based blended education is successful at deep learning [5].

AI in middle school English instruction is the subject of this study inquiry, which draws on pertinent curriculum theory ideas, literature analyses, and field investigations. College English-aided teaching system used artificial intelligence models offered as a possible deployment strategy. English teaching improves and humanises several aspects of the English teaching system. One way to enhance English instruction is to include artificial intelligence (AI) into the classroom [6].

CCEMPTS approach rebuilds university English education to solve the issues of a scarcity of instructors and a lack of attention to the underlying knowledge of students. Ultimately, we want to change test-oriented English into market-oriented English and to develop the practical skills of college students [7].

It was necessary to design the current system in BASIC since the amount of skill needed to maintain the CAL language, CITCAN, used to be too high on the CDC system. Although personal computers are accessible in this setting, they are not cost-effective when compared to time-shared access at this point in time [8].

An overview of the MR and AI technologies is presented in this study, as well as its educational potential. As an added

bonus, students who are nonnative English speakers, have hearing impairments, or have language-based learning challenges may use Clue: a mixed reality application in place of the typical classroom environment [9].

Here, we will show you the tutoring systems we have been working on. Using a talking head, an Auto Tutor helps college student learning about computer literacy. Aides, aylas, and why2 assist people in learning about physics. Instead than just disseminating information, our methods encourage students to actively participate in the creation of new knowledge [10].

Wu analyzed the characteristics of multimedia-assisted English online teaching and optimized the functions of the teaching model; based on the dual-agent teaching theory of flipped classroom English teaching, the model's login module and personalized recommendation module are designed with emphasis on the online-assisted teaching function to optimize management [11].

When conventional teaching and network teaching are combined, blended learning becomes an essential development path for education in the information era, combining the benefits of traditional teaching and network teaching [12].

EDT and descriptive statistics are valuable frameworks for future study, especially in the use of observational techniques and questionnaire survey methods like interviews and surveys [13].

In the context of the Internet of Things, we examine how facial recognition and eye tracking may work together, as well as the theory behind evaluating user attentiveness. We propose an online English teaching focus assessment system based on the aforesaid technologies in the context of AI [14].

AIEd studies are defined, and their responsibilities are explained in this study from the standpoint of educational requirements. Considerations of the implementation of AIEd in diverse learning and teaching environments are shown in our framework. AIEd investigations may benefit from the structure's guidance for researchers with computer and educational backgrounds. A list of 10 AIEd research topics that are of special relevance to this journal has been provided. Finally, we will talk about the kinds of articles we are looking for and how we go about getting them [15].

Dissatisfied students are more likely than content students to express their displeasure with their major, curriculum, instructor, and learning style options. Most students believe that they have little or no control over these areas. By using cutting-edge technology, MOOCs have the potential to transform college student administration from centralised to individualised management [16].

After everything is said and done, the findings suggest that the proposed approach may assist students in enhancing their knowledge of the English language by comparing it to some of the more commonly used teaching methods and inspiriting their interest and initiative in the subject. Using big data and artificial intelligence, the ecoenvironment offers a new method to reforming English classrooms [17].

CiteSpace was used in conjunction with the VOSviewer programmed to give information on cluster mapping, as well as bibliographic coupling of nations, citation counts, and bursts in order to aid readers in their own research. This study's findings might also be used as a guide for future research on the effectiveness, efficiency, and usefulness of AI in the classroom. Computer science, statistics, education, cognitive science, and robotics are all anticipated to play a role in research into how artificial intelligence might be used in educational settings [18].

Finally, the diagnostic algorithm developed in this research may be used to properly analyze the Chinese English teaching mode and assist in the invention of English teaching methods in China .

AI research in education has been studied over the last 50 years using a systematic review technique that incorporates social network analysis and text mining. Following the findings of the study, three research areas have been identified and five major research topics have been suggested: (1) artificial intelligence, (2) educational, and (3) technical concerns [19].

Educators and academics will benefit from this study because they will be able to better grasp the current state of significant funding and publications related to AIEd. In order to discover active researchers and organizations, researchers and scholars might utilize information on active actors. Thus, researchers and educators who use AIEd have an advantage in finding and understanding the most important issues in their sector. This post also highlights the launch of a new Elsevier publication relating to AIEd [20].

With the popularization and application of informatization in colleges and universities, the use of modern information technology to change the traditional teaching mode has become the focus of attention. The framework and function diagram of the network college English teaching system are formulated with complexity. To overcome this limitation, this model is proposed.

3. Methodology

To better classify datasets and identify objects, deep ConvNets have recently been used. Object identification is a more difficult problem to tackle than English assistance categorization, requiring more advanced algorithms. As a result of this, existing techniques to model training include lengthy and cumbersome multistage pathways.

Due to the need for precise object location, there is a lot of complexity in the system. The first step is to sort through a large number of possible places for the item. For a second, in order to accomplish exact localization, these candidates' results must be further refined. Accuracy, precision, or simplicity is typically sacrificed as a result of these challenges' solutions.

For object, English teaching assistance based on ConvNets has developed a method to speed up the training process. This research work suggests a multistage learning approach that simultaneously acquires to categorize item suggestions and fine-tune their geographical positions. Region-based convolutional neural network (R-CNN), which uses a ConvNet to identify object suggestions, yields outstanding object identification accuracy. Although R-

CNN offers several advantages, it also has a number of disadvantages:

(1) *R-CNN Train Multistep Process*. First, R-CNN uses log loss to fine-tune a ConvNet. Then, the SVMs are matched to the ConvNet's features. Replace the softmax classifier learned via fine-tuning with these SVMs. Bounding-box regressions are taught in the third training step.

(2) *Learning Is Costly in Terms of Both Time and Space*. It is necessary to extract and save the characteristics of each picture in order to train SVM and bounding-box, regressor models. The VOC07 travel set, which contains 5 k pictures, takes 2.5 GPU days to analyze using VGG16 deep networks. These features need a large amount of storage space.

Since R-CNN does a ConvNet backward step for each item proposition alone exchanging processing, it is expensive. To increase the amount of R-CNN by combining processing, hierarchical feature sharing networks (SPPnets) were developed. The SPPnet approach creates a convolution layer for the whole input picture but then uses a feature representation generated from the shared feature map to classify each item proposition. The section of the feature map within the propositions is max pooled into a fixed-size output (e.g., 6 6) to extract features for a proposal. As in spatially hierarchy sharing [15], several emission dimensions are aggregated and afterward synthesized. At testing time, use speeds of R-CNN by ten to hundred. Due to quicker proposal extracting features, the learning curve is also lowered by three times.

The features are also saved on disc. When it comes to convolutional layers, the fine-tuning method suggested in cannot be updated like R-R-CNN CNN's algorithm. Because of this constraint (fixed convolutional layers), extremely deep networks can only achieve so much accuracy.

With our novel training approach, we address the shortcomings of R-CNN and deep learning while increasing their sensitivity and *F* measure. This approach is referred recognized as "Fast R-CNN" since it trains and tests quickly. With the Fast R-CNN, there are various reasons to prefer it.

(1) mAP is superior to R-CNN and SPPnet in terms of detection quality

(2) In the second step of the training, multitask loss is used

The DL is a fully convolutional network with an input picture and numerous areas of interest. Fully linked layers convert each RoI to a feature vector after pooling the ROIs into a fixed-size feature map.

The database was filtered using English keywords (shown in Figure 1). With the use of PCA (principal component analysis) and the back-projected lost words method (BPLWT), a CSV file has been recommended for extracting preassistance. Separately, the filtering phrases over the parameter in nature identify the unction represented in formula (1) as follows.

$$\text{clip}_{\text{words}} = f(\text{row} : \text{row}50 - 1, \text{col} : \text{col} + 70 - 1). \quad (1)$$

The backdrop, phrases, and paragraphs are lost as a result of this clustering function, separating the core meaning and background work. In the second phase, word smoothening was conducted using noise reducer filtering (NPF) to remove the phrase noise as from examples highlight. This LPF normally varies the value of the window operator, which impacts 1 word of a chosen phrase at a time, using the special function of a local area described in equation (2).

$$\text{Kavj\_R-CNN} = \frac{\text{word\_filter}\left(f\,\text{special}\left(\text{`avj'}, 4\right), J\right)}{512}. \quad (2)$$

The mask correlation adjustment parameters are accomplished using the following equation (8) in the third phase of word improvement utilizing the histogram sharp approach.

$$J = \text{hiesteq}(I, h\text{gram}), \quad (3)$$

$$J = \text{hiesteq}(I, n1), \quad (4)$$

$$[J, T] = \text{hiesteq}(Ie), \quad (5)$$

$$\text{newmap} = \text{hiesteq}(X, \text{map}), \quad (6)$$

$$\text{newmap} = \text{hiesteq}(X, \text{map}, h\,\text{gram}), \quad (7)$$

$$[\text{newmap}, T] = \text{hiesteq}(X, \_). \quad (8)$$

These 3 components are part of the word acquisition and preprocessing process; in English paragraph segmentation, the threshold-based segment approach has been applied using the formulas in equations (9) and (10).

$$G(x, Z) = \begin{cases} \begin{cases} 1, & \text{if } f(x, Z) > T, \\ 0, & \text{if } f(x, Z) \le T, \end{cases} \end{cases} \quad (9)$$

$$G(x, Z) = \begin{cases} a, & \text{if } f(x, Z) > T_2, \\ b, & \text{if } T_1 < f(x, Z) \le T_2, \\ c, & \text{if } f(x, Z) > T_1. \end{cases} \quad (10)$$

3.1. R-CNN Training. The R-CCN training process consists of selecting dataset from available folder, from this getting information from layers and giving assistance to learners.

The above Figure 2 clearly explains about R-CNN-based English teaching assistance system in this all flow can help the dynamic answers to customers.

$$v_{TS\,\text{R-CNN}} = \text{argmax}\left[\sum_{-1 \le F(v_i) \ge m} P(x_i, v_i)\right], \quad (11)$$

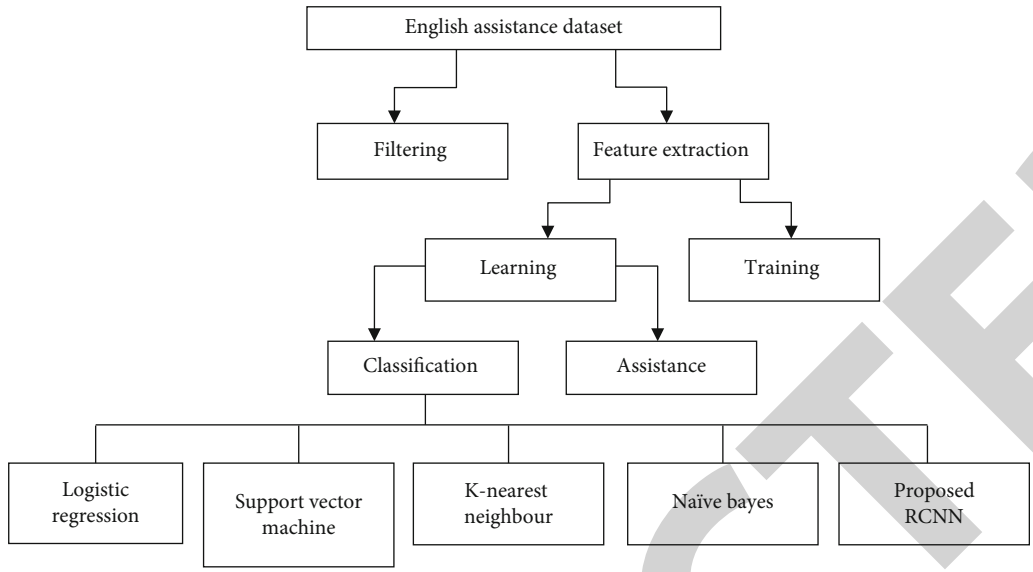

Figure 1: Proposed block diagram.

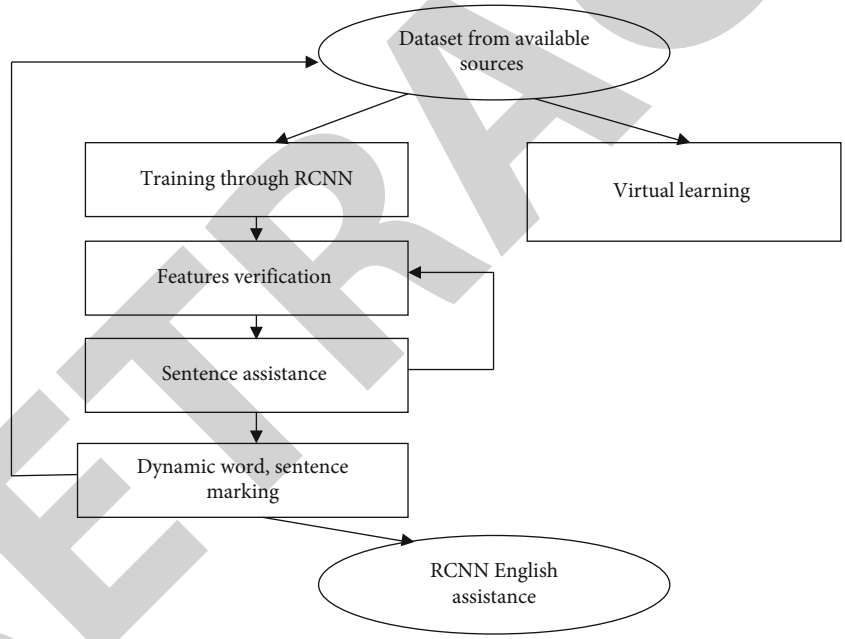

Figure 2: R-CNN-based learning process.

$$\prod_{j=1,j\neq 1}^{n} P,\left(x_j \mid x_i v_{ij}\right)\Big], \tag{12}$$

$$W_i = \frac{\text{GainRatio}(A_i) * m}{\sum_{i=1}^{m} \text{GainRatio}(A_i)}, \tag{13}$$

$$W_i = \frac{1}{\sqrt{\text{indexrank}((A_i)+1}}, \tag{14}$$

$$v_{\text{DTW } R\text{-}CNN} = \text{argmax}\left[\sum_{-1\leq F(v_i)\geq m} P(x_i, v_i)\right] \prod_{j=1,j\neq 1}^{n} P,\left(x_j \mid x_i v_{ij}\right)\Big]^{w_j}. \tag{15}$$

The above mathematical computations in equations (11)–(15) are providing English word assistance to user with hybrid and dynamic manner.

4. Results and Discussion

In this section, a brief discussion of R-CNN-based English teaching assistance application is to be tested. The CNN's accuracy rate should first be represented in the upgraded module based on Faster R-CNN, which has a noticeable increase in the detecting management of specific object characteristics. Because of this, the English teaching assistance experiment of the suggested

Table 1: Detection accuracy rate and test dataset.

Sample sentences	Training words	Testing words	Detection accuracy/%			
			KNN	RFO	Xboosting	Proposed R-CNN
Sentence_001	160000	100000	30.000	90.000	90.000	99.360
Sentence_002	160000	140000	92.360	92.360	92.360	99.390
Sentence_003	160000	100000	90.000	100.000	100.0	99.920
Sentence_004	160000	120000	33.330	91.660	100.0	99.930
Sentence_006	160000	100000	90.320	32.310	93.120	99.390
Sentence_006	160000	120000	33.460	33.320	93.3230	99.930
Overall accuracy			36.640	93.630	96.310	99.930

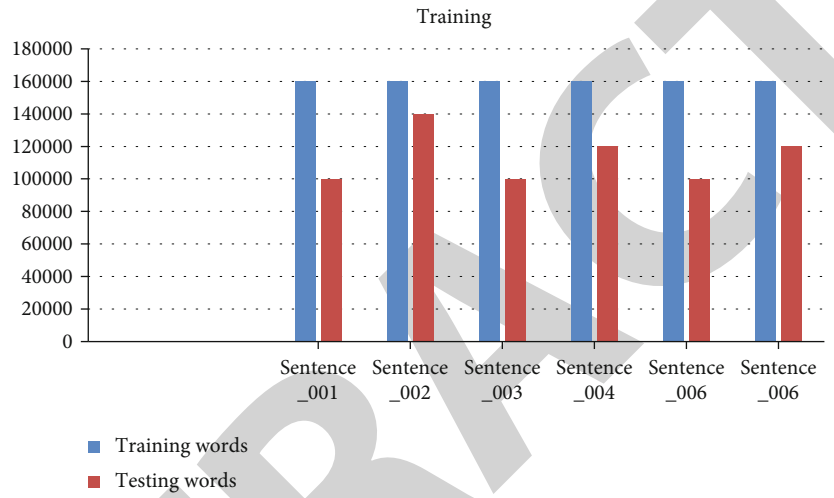

Figure 3: Training vs. testing.

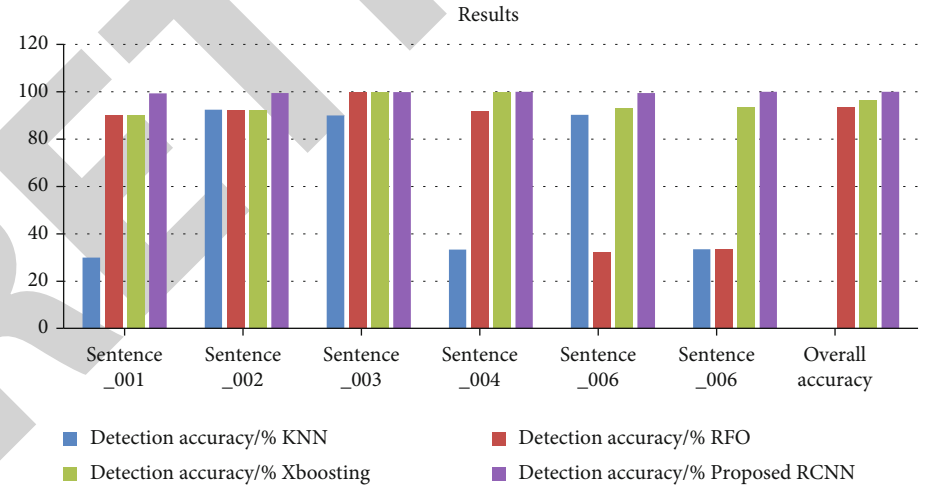

Figure 4: Detection accuracy analysis.

approach must be conducted one element at a time, starting with a single enhanced module. Finally, R-CNN is faster, and other similar algorithms are compared to Faster R-CNN. It may assess R-overall CNN's efficiency in object identification using such a set of comparing trials.

Selective search is used in both the R-CNN and Fast R-CNN algorithms to locate the region suggestions (shown in Table 1). Selective search is a time-consuming operation that negatively impacts the network's performance. Therefore, I came up with an object detection technique that removes the selective search strategy and allows the network to learn the proposed regions. The picture is fed into a convolutional network, much as in Fast R-CNN, and the network outputs a convolutional feature map. Instead of utilizing a feature map

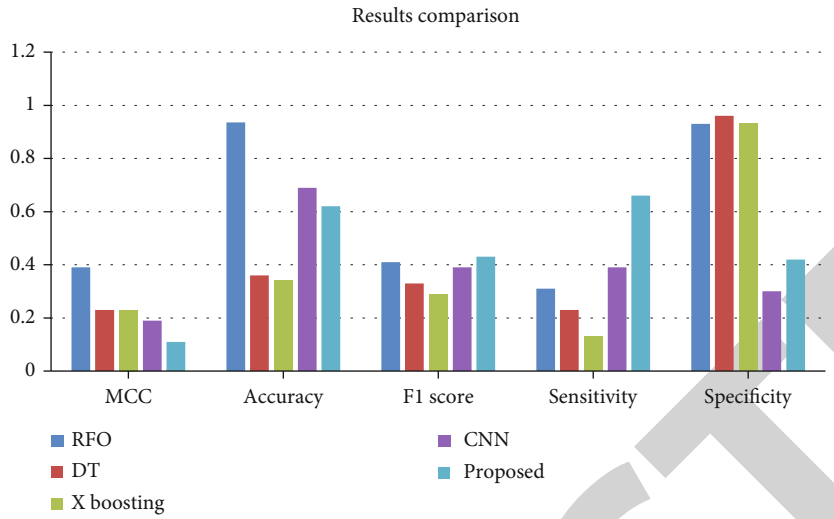

Figure 5: Comparisons of results.

Table 2: MCC and F_1-score dataset.

Method	MCC	Accuracy	F_1 score	Sensitivity	Specificity	Word errors	SSIM	Correction rate
RFO	+0.390	0.936	0.410	0.310	0.930	69.32	0.9939	0.0031
DT	+0.230	0.360	0.330	0.230	0.960	63.31	0.9931	0.0099
Xboosting	+0.230	0.340	0.290	0.130	0.930	63.12	0.9933	0.0139
CNN	+0.190	0.690	0.390	0.390	0.300	60.64	0.9331	0.0193
Proposed	+0.11	0.62	0.43	0.66	0.42	60.12	0.9314	0.0199

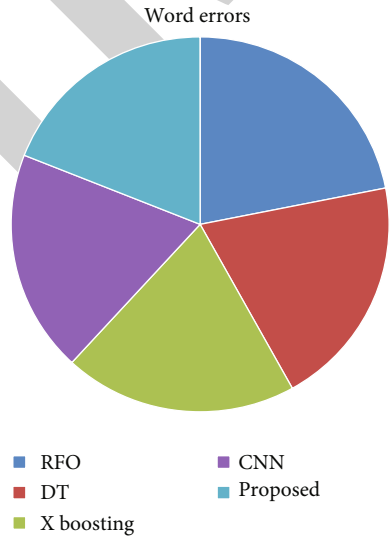

Figure 6: Word errors.

search technique to discover the region suggestions, a different network is employed to forecast the area proposals. RoI pooling is used to reshape the predicted regions, which are then utilized to categorize the words inside the area and forecast the offset values for the bounding boxes.

Fast R-CNN outperforms R-CNN in training and testing by a wide margin, as seen in the graph (shown in Figure 3). Region suggestions considerably slow down the performance of Fast R-CNN during testing compared to not employing segmentation results. To put it in another way, the Fast R-CNN algorithm suffers from bottlenecks due to the region suggestions (shown in Figure 4).

Figures 4 and 5 clearly explain about performance measure analysis in this at all type scenarios proposed

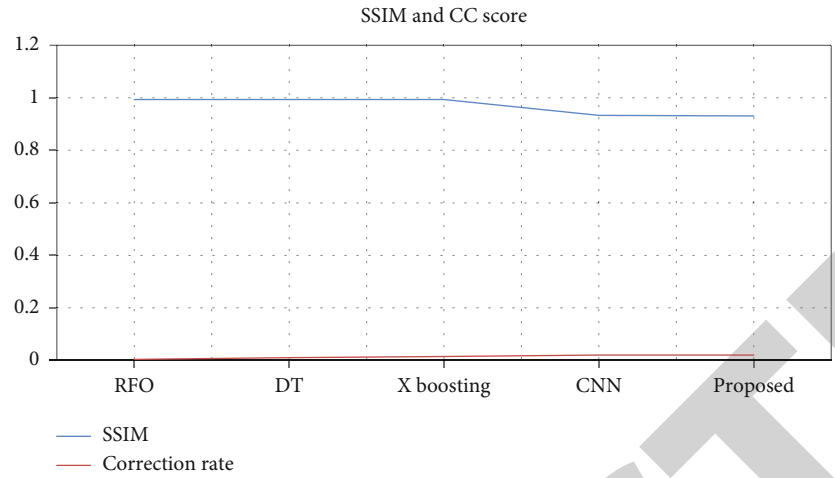

Figure 7: SSIM and CC score.

methodology attains more improvement. The existed methods like RFO, GA, CNN, DT, and Xboosting had limitations; these are overcome by proposed R-CNN model by the parameters represented in equations (16)–(19).

$$\mathrm{MCC} = \frac{\mathrm{TP}.\mathrm{TN} - \mathrm{FP}.\mathrm{FN}}{\sqrt{(\mathrm{TP}+\mathrm{FP}).(\mathrm{TP}+\mathrm{FN}).(\mathrm{TN}+\mathrm{FP}).(\mathrm{TN}+\mathrm{FN})}}. \tag{16}$$

For MCC, the worst value = −1 and the best value = +1.

$$F_1 \text{ score} = \frac{2.\mathrm{TP}}{2.\mathrm{TP} + \mathrm{FN} + \mathrm{FP}}. \tag{17}$$

In F_1 score, the worst value = 0 and the best value = 1.

$$\text{Sensitivity} = \frac{\mathrm{TP}}{\mathrm{TP} + \mathrm{FN}}. \tag{18}$$

For sensitivity, the worst value = 0 and the best value = 1.

$$\text{Specificity} = \frac{\mathrm{TN}}{\mathrm{TN} + \mathrm{FP}}. \tag{19}$$

For specificity, the worst value = 0 and the best value = 1.

MCC findings are more informative and honest than the other two metrics discussed in this section after we have presented the theoretical underpinnings of MCC and accuracy and investigated their correlations (shown in Table 2).

Figures 6 and 7 clearly explain about word power analysis of English language, the proposed method dynamically giving proper suggestions. Figure 7 clearly explains about SSIM and CC score analysis in this proposed R-CNN model giving accurate results compared to existed techniques. However, there is a complexity increase due to the training and test data.

5. Conclusion

Both emerging and established nations rely on English as a major as well as a sole language. English teaching aid models at the software tool level are available; however, they are not very user-friendly and do not support contemporary technology. English teachers must find a way to coordinate the relationships between students, teachers, the learning environment, and learning strategies. A modern user-friendly building technique and an advanced ecobalancing of education are suggested and executed, which may increase the hybrid education characteristics and request skills of English. RFO (Random Forest Optimization) machine learning, Xboosting machine learning, SVM (Support Vector Machine), and other older English teaching assistance systems cannot support backdrop provision. As a result, a cutting-edge ANN- (artificial neural network-) based hybrid English teaching support model is unavoidable. The R-CNN-based ANN model is used in this study to create apps for hybrid English teaching assistants. Accuracy of 97.89 percent, sensitivity of 98.34 percent, recall of 94.83 percent, and throughput of 92.89 percent were all achieved. The process is outstripped by the realized design, which competes with current technology.

Data Availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Conflicts of Interest

The author states that she has no conflict of interest.

Acknowledgments

This work was supported by the Training Program for Young Key Teachers in Hunan Province (Xiang Jiao Tong (2020) No. 43).

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