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Research Article

Advancement in Physical Education Teaching Using Improved Energy Efficient Scalable Routing Algorithm-Based Wireless Network

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Physical education (PE) is a crucial topic in higher coaching that individually points motor abilities in health-enhancing activities. Conventional PE in institutions struggles to pique graduates' attentiveness in sports, proceeding in low task involvements rates, and incapacity to exercise the body. Innovative teaching concepts and methodologies, coaching techniques and procedures, and coaching assessment techniques in physical education are all accompanied to developing the physical education study hall climate and successfully boosting physical education efficacy. Each element of regular living, especially education, is being influenced by wireless internet innovations. We will provide extra help to students by predicting academic endurance or dropout. We can improve the wireless platform's potential utility in sports applications and change the character of PE, including visualization and repetition by incorporating it into PE teaching. Based on the concept of wireless network technology, this paper proposes an Improved Energy Efficient Scalable Routing Algorithm (IEESRA) for physical education advancement. Initially, the physical education dataset is preprocessed using normalization. The aspects are removed using the scale-invariant feature transform (SIFT) method. The data is transferred using a wireless network using Improved Energy Efficient Scalable Routing Algorithm (IEESRA). The classification is done using random forest (RF) classifier. The results of the analysis reveal that wireless network-based PE may increase graduates' strength, speed, and qualities providing a more important reference and reference for enhancing the success of PE. The proposed strategy has the potential to enhance actual attention to PE teaching to 90% with raising students' engagement to 70%.

1. Introduction

Formally, science and technology are severely affecting all elements of the sport, notably in PE training and educating, as a result of fast growth in information technology and the creation of educational concepts. Following the use of classic visuals and media in PE training and educating, a new aspect of information tool called wireless network is incorporated into PE teaching. Like a novel method of PE teaching, wireless network not just enhance the effectiveness of PE courses but also provides benefits to get immersed experiences [1]. Several cities grow regulations from beginning to end, involving sophisticated decision-making at the political level; yet, educators are supposed to simply adopt laws. Teaching skills, syllabuses, educational resources, and evaluation strategies are all prescribed to achieve preset results [2].

At the current level in the growth of extracurricular sports activities in universities, the usage of places and resources is unskilled, students flaw technological movement awareness, and extracurricular sport management mode does not fit the actual needs. Traditional management techniques are in keeping with the diverse movement styles of pupils. The disparity inbetween them will be increasingly apparent. College and university administration of extracurricular sports activities is sloppy and lacking in science. Extracurricular sports activities, as well as regular physical exercises, allow students to better digest classroom sports knowledge [3]. The wireless network increases competitive sport's professional level and competitive ability: with the widespread use of "data-driven sports training and sports decision-making" in industrialized nations, it has become a hotspot for modern aggressive sport development. It can accurately monitor each athlete's physical state using multiple approaches with big data and clever algorithms in aggressive sport [4]. 40 during and after the game and to assist coaches in making real-time adjustments to their skills and tactics. To achieve the goal of enhancing athletes' competitive level, develop more than 42 customized training modes and efficient competition methods for them. Promote the "faster, higher, stronger" development of competitive sport through the use of intelligent technology. In school sport, artificial intelligence helps to accomplish individualized instruction and adaptive learning: youngsters are the succeeding and the foundation of advancing the development of sporting ability. The latest physical coaching ecosystem is built on cutting-edge digital technology like big data.

2. Literature Survey

In paper, [5] proposes the virtual reality method. The goal of this work is to estimate if an effective reality technique depending on wireless networks can help in collegiate physical education training. To make the effective human's animation, the representation posture gained in all frames is supplied, and for interpolation based on the location shift of the effective person's gravity, the spline keyframe interpolation approach is used. The animations can contain elements including videotape recording, quick playing, delayed replay, and stopping after being synthesized using 3D-model human movement information. On same display, the system can show and playback the quality human animations and the cam footage, allowing for an obvious comparison of individual's actions.

In paper [6], the impact of physical education on art students' participation in sports and health promotion is investigated in this study. The breakthrough comes in the form of a model and factor analysis that examines the link between art students' sports involvement and health promotion. It is looked up to increase the importance of PE, improve the grade of graduate PE.

In [7], IoT system powered by AI-IoTS is promoted through wearable technology. A Cloud Platform and 3 layers of AI make up this AI-IoT. The AI-IoTS recognizes the information needed by students. Using an IoT platform, collect data from the cloud and use AI to process it. Without the assistance of a physical instructor, the student can work out using wearable technology.

In paper [8], data collecting, data calculation, and data display are the three components of the developed model. The functions of each layer were explained; after that, an intelligent wearable system was implemented to monitor students' status and a feedback system was put up to aid coaching, and finally, a dataset was created to train and examine the planned model.

In paper [9], the purpose is to provide an overview of artificial intelligence technology's development history and key content. The paper then addresses the challenges that exist in traditional PE teaching techniques, starting with the reality of PE in colleges/universities. Second, to address the deficiencies of traditional sport teaching techniques, the study proposes artificial intelligence-based teaching methods such as virtual reality, big data analysis, and intelligent recognition technology as innovation points.

In paper [10], artificial intelligence research methodologies are used to educate physical education. The application possibility and development trend of artificial intelligence in modern physical education technology are further examined to comprehend the precedence and approach methods of artificial intelligence. Then, the work is being researched using the traditional experimentation model, with 400 students from 10 coaching centers and institutions serving even as study subjects, with the overall, systematic, and development perspectives being analyzed utilizing the decision tree algorithm. A detailed and indepth investigation of the elements influences public physical education practical teaching.

In paper [11], recognizing the aspirational nature of these ideas, data show that each student's vision was influenced by various ecological elements and then individualized. While there are some underlying commonalities among the views, the academic subcomponents and theoretical structures that develop these visions varied among all pupils, according to the research.

In paper [12], the use of active video games in education and training processes increases physical characteristics, cognitive functions, socializing, and motivation to exercise, according to the study. It has been proven that using exergames to motivate students and adults enhances motor activity. Exergames designed specifically for students help them become familiar with a variety of athletic activities, including those that are difficult to perform in the gym. The intelligent usage of active video games in the classroom improves the learning process. Modern mobile exergames combine numerous sports on a single platform and may be played outside of sports facilities, encouraging more individuals to exercise. Exergames personalize components of the game, such as the level of difficulty and type of physical activity, and offer a mechanism for assessing changes in the user's readiness. They also enhance the incentive to exercise.

In paper [13], based on the recovered data, to determine the membership degree of each observation index and to generate the fuzzy relationship matrix of each assessment component, the percentage approach is employed. Paying attention to the number of index weights can help guide and promote the path of informatization teaching progress.

In paper [14], this study examines the principles and applications of AI in PE and provides a concentrated, comprehensive examination of the fields of PE method where AI can be used—customized PE classes, skill allocation, learner computation, and learner advisory techniques—-based on the concept of AI and related research areas.

In paper [15], the content, techniques, and tools of teaching must all be continually innovated. Students' interest in learning should be continually developed in PE classes so that they will be inspired to engage in physical activity. The school's educational curriculum and teaching techniques have been significantly influenced by the advancement of information technology. Because of the Internet and 4G mobile technology, breakthroughs in PE and sports in schools have occurred, as well as an intelligent vision based on intelligent vision technology. In sports and fitness, sports equipment is commonly used.

In paper [16], the study highlights the fact that artificial intelligence technology is widely used in sports and examines the specific applications of AI in sports. In this work, AI comprehension is coupled with physical coaching and instructing in institutions, and an academic structure is established to guide teachers' and students' coaching, resulting in improved coaching standards and effectiveness.

In paper [17], the researchers looked at differences in latent means in subsamples of PETE and sport science students and evaluated their PCK. The factor structure of the PCK is invariant among (sub) groups, allowing for meaningful comparisons of latent mean scores. PETE students outscored sport science graduates in the forms of the "instruction dimension," which is relevant at various stages of the study, confirming the professional knowledge hypothesis. Prior physical activity experience is also linked to better scores on this subdimension. In the "students' dimension," it is the opposite way around: PETE and sport science students scored similarly across phases of the research.

In paper [18], it delves into author 1's professional learning (PL) journey as a deliberate activity to become a better PE educator. Our work applies to other teacher educators in a variety of disciplines who want to be more reflective in the advancement of their careers, even though the environment is PE. The completion of a part-time graduate certificate in human movement science is the learning journey evaluated. Following are the research questions: (1) gow can more context-specific PL help in engaging in innovative practice? (2) Did the completion of the PL report have any unforeseen repercussions if any? Author 1's self-voice is offered by diary extracts in our study, which is based on autoethnography. These excerpts are analyzed using figuration sociology and existing literature as our academic voice, backed up by anonymous formal student satisfaction statistics from an undergraduate course that both authors are now teaching.

This study investigates the current status of AI-based application areas and related effect on the health industry in paper [19]. This study examined various real-world instances of AI applications in healthcare, in addition to a thorough examination of the literature. According to the findings, prominent hospitals are currently employing AI-enabled tools to assist medical professionals in patient diagnosis and treatment for a variety of disorders. Furthermore, AI technologies are having an impact on hospital nursing and management efficiency. While healthcare providers are enthusiastic about AI, its applications provide both utopian (new possibilities) and dystopian (new threats) (challenges to overcome).

In paper [20], this work examines the phenomenon of AI's standup in big academic coaching and studying. It glances at the academic results of improving methods on how graduates learn as well as how schools teach and evolve. Recent technological breakthroughs and the rising pace with which new technologies are adopted in higher education are investigated to forecast the future character of higher education in a world where artificial intelligence is woven into our universities' fabric.

In paper [21], this study looked at whether a theory-based PE intervention aimed at teaching self-control may have a good impact on children's irritability and disruptiveness, as well as anywhere swaps in EFs, could be a correspond or match of such effects. A total of 116 children aged 8–9 years old took part in a 2-year intervention and completed three assessments: baseline, 6-, and 18-month follow-ups in quick-temperedness and disruptiveness, as well as hot and cold EFs. The intervention group's children were less irritable and disruptive after the intervention, and their hot EF was improved.

In paper [22], this article examines the elements that influence pedagogical practice and study of the topic of PE for a class of graduates in initial teacher education, with the goals of (a) determining what feelings the COVID-19 pandemic arouses in future teachers when having to teach physical education virtually, (b) determining the benefits and drawbacks of effective PE coaching during the pandemic, and (c) determining how a group of students in initial teacher education can improve their pedagogic. Figure 1 shows the proposed stage flow.

3. Proposed Methodology

This paper proposes an Improved Energy Efficient Scalable Routing Algorithm (IEESRA) for physical education advancement based on the wireless network concept. Initially, the physical education dataset is preprocessed using normalization. The aspects are removed using the scale-invariant feature transform (SIFT) method. The data is transferred using a wireless network using Improved Energy Efficient Scalable Routing Algorithm (IEESRA). The classification is done using random forest (RF) classifier. Figure 1 depicts the proposed flow, and the description of this study is illustrated below.

3.1. Physical Education Dataset. The data collecting procedure is a crucial phase in the development of an intelligent system. The current three-year student physical education teaching data is used in this research [23], which includes 3106 randomly chosen examples, 3000 of which were favorable samples, and 106 of which were unfavorable samples of data.

3.2. Normalization Preprocessing. The data received is unprocessed which may include duplicate packets or incomplete data. It has been sanitized and normalized to remove duplicated and redundant items, as well as insufficient information. Sample size reduction strategies should be used since the datasets for education systems are so huge. Because there are so many characteristics in this dataset, feature extraction techniques are needed to filter out all the ones

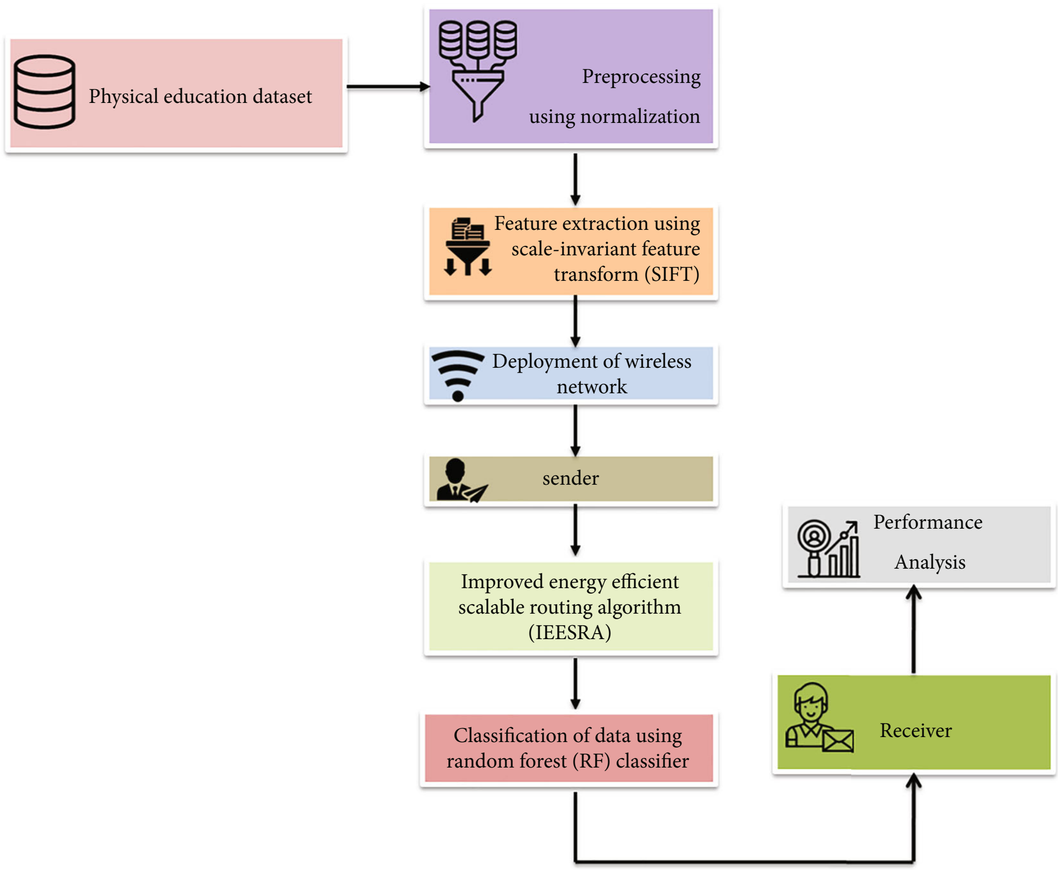

Figure 1: Proposed stage flow.

that are just not relevant [24]. During the preprocessing step, the dataset may be normalized.

The Y-score, which is provided by formula (1), is acquired in the first step of the normalization process.

$$Y = [(R - \mu)/\beta], \tag{1}$$

where μ denotes mean value data, and β denotes standard deviation.

Y can be calculated as

$$Y = \frac{R - \bar{R}}{\mathrm{SSD}}, \tag{2}$$

where $\bar{R}$ indicates sample mean value, and SSD indicates sample standard deviation.

The random sample is composed of

$$Y_l = \omega_0 + \omega_1 R_l + \varepsilon_l, \tag{3}$$

where ε_l represents error identification, and β^2 represents rely.

The errors must not depend on each other after that, as seen below.

$$r_l \sim \sqrt{M}\frac{r}{\sqrt{r^2 + m - 1}}, \tag{4}$$

where r denotes random variable.

The standard deviation is then utilized to normalize the movements of the variable.

The equation below is used to compute the moment scale variation.

$$\mathrm{MMS} = \frac{\lambda^{\mathrm{mms}}}{\varnothing^{\mathrm{mms}}}, \tag{5}$$

where mms represent the moment scale.

$$\lambda^{\mathrm{mms}} = V(R - \mu)^{\mathrm{MMS}}, \tag{6}$$

where V represents the expected value, and R represents random variable.

$$\varnothing^{\mathrm{mms}} = \left(\sqrt{V(R-\mu)^{\mathrm{MMS}}}\right)^{\wedge}2, \quad c_v = \frac{\mathrm{mms}}{\bar{R}}, \tag{7}$$

where c_v indicates the variance coefficient.

Setting all of the parameters to 0 or 1 would terminate the feature scaling method. This method is known as the unison-based normalization technique [25]. This would be the normalized equation.

$$R' = \frac{(r - r_{\min})}{(r_{\max} - r_{\min})}. \tag{8}$$

The data could be maintained after it has been normalized, and the scope and irregularity of the data might be preserved. The goal of this phase is to reduce or eliminate information delays. Following that, the normalized data may be utilized as a feed-in later processes.

3.3. Deployment of Wireless Network. Choosing the wireless LAN requirement that best meets your networking environment's requirements and needs, correctly addressing the possibility for intervention and some other internet speed aspects, and implementing a complete network security plan are all part of the wireless network deployment process. Wireless networks that are made up of a bunch of low-cost, low-power, and multifunctional sensor nodes have advanced at a rapid rate. The sensor system is constructed to recognize the mentioned occurrence and transport the recorded information to the cluster head sensor through several hops owing to the limited computational capacity, detection limit, and transmission range of various sensors [26].

3.4. Feature Extraction Using Scale-Invariant Feature Transform (SIFT). The term SIFT was first used to describe patterns in grayscale imagery. SIFT patterns could be generated for each pixel in a picture by comparing its value to the values of its neighbors. The weighted mask matrix will then be used to encode the results of each thresholding step [27]. The weighted values are then added and displayed in the resulting image to correspond to the center pixel coordinates of the input image. The SIFT function was enhanced to become a multiple resolution analytical tool, allowing it to work with any circularly symmetric neighborhood (P, R) of any dimension. The pair (P, R) denotes the position of P pixels on a circle of radius R.

Generally, the $\mathrm{SIFT}_{P,R}$ of a pixel (x_c, y_c) is represented in a decimal pattern as

$$SIFT_{P,R} = \sum_{p=0}^{P} \mathrm{sign}(S_p - S_c)2^p, \mathrm{sign}\ (x) = \begin{cases} 1, \text{if } x \geq 0 \\ 0, \text{otherwise} \end{cases}. \tag{9}$$

The scores of central and adjacent pixels are denoted by S_c and S_p, respectively. The initial SIFT is not insensitive to image transformations but is resistant to periodic greyscale changes.

The SIFT code of pixels is commonly expressed as in Eq. (10)

$$\mathrm{SIFT}_{P,R}(G_c) = \sum_{p=0}^{P} I(G_p - G_c)2^p. \tag{10}$$

Here, G_c indicates the grey level number of the center pixel, and G_p represents the value of the center pixel's correlated adjacent pixel. R represents the radius of the circular neighborhood, and P represents the maximum number of sampled neighbors. I represents the indicator function (x). Uniform, rotationally invariant, and rotationally invariant uniform SIFT algorithms have been created to reduce the size of the SIFT histogram [28]. As shown in equation, the count of circular spatial transformation could be used to indicate the uniform value of a SIFT pattern (11).

$$U(\mathrm{SIFT}_{P,R}) = |I(G_{p-1} - G_c) - I(G_0 - G_c) + \sum_{p=1}^{P-1} \left| s(G_p - G_c) - (G_{p-1} - G_c) \right|. \tag{11}$$

In Eq. (5), if $U \leq 2$, the SIFT structures are assigned to uniform structures. SIFT structures, on the other hand, are classified as nonuniform structures. It is specified as in Eq. (12) to make the SIFT approach rotation invariant.

$$\mathrm{SIFT}_{P,R}^{\mathrm{riu2}} = \begin{cases} \sum_{p=0}^{P-1} I(G_p - G_c)\ \mathrm{USIFT}_{P,R} \leq 2 \\ P + 1 \text{otherwise} \end{cases}. \tag{12}$$

3.5. Improved Energy Efficient Scalable Routing Algorithm (IEESRA). The IEESRA algorithm is intended for use by fixed nodes and base stations. Clustering, and also additional data sensing and computing duties, is supported by the nonmobile configuration. As a result, each clustering has a cluster head as well as one or more cluster congregations (CG), including a collection of member nodes. The IEESRA algorithm comprises 2 parts: a structure part and then a steady-state part.

Structure part: The next round's clusters are formed after the cluster-head (CH) choosing. Every CH also chooses one or more qualified nodes to serve as CG nodes. The CGs are in charge of collecting and consolidating data from CMs before sending it on to the CHs. The cluster member (CM) nodes use the channel to transfer information from their sensors to respective CG. Every CG, on either hand, transfers the recorded information towards its CH inside the TDMA window given to it.

Steady-state part: each cluster member switches on its radio transmission components to relay the detected data to the corresponding cluster congregation in the improved energy-efficient scalable routing method. As a result, the nodes will only be active during their operating hours and will otherwise slumber. The data is gathered, compressed, and sent to the cluster leaders by the cluster congregations. As a result, the intracluster transmission mechanism is multihopping. In addition, each cluster head sends the data it receives to the BS. The cluster heads send END round signals to the members once the BS gets all of the data. The total energy extracted by a CH in each round (Z UT) is shown in Eq. (13).

$$Z_{UT} = Z_{VhU} + Z_{VuA} + Z_{VrJ} + Z_{VR} + Z_{VU}. \tag{13}$$

Here,

$$\begin{aligned} Z_{VhU}(U, d) &= \left(\left(\frac{U_c}{\propto} \right) \times \left(Z_{ele} + \varepsilon_{fs} d_{\text{to}}^2 BU \right) \right) + \left(\frac{Y \times N - 1}{\propto} \times (U_v \times Z_{ele} \times \beta) \right), \\ Z_{VuA}(u, d) &= U_v \times Z_{ele}, \\ Z_{VrJ}(s) &= N_{vm} \times U_v \times , \\ Z_{vR}(u) &= k \times \left(N_{vgs} \times U_d \times Z_{ele} \right). \end{aligned} \tag{14}$$

The total energy spent by a member node in each round (Z_{MT}), on either hand, may be computed as follows:

$$Z_{MT} = Z_{MrA} + Z_{MuJ} + Z_{MU}. \tag{15}$$

In addition, the total energy spent by a cluster gathering in each round (Z_{GT}) may be calculated using the following formula:

$$\begin{aligned} Z_{GT} &= Z_{GuP} + Z_{GR} + Z_{GaP} + Z_{GU}, \\ Z_{GaP} &= m_{cor} \times (U_d \times z_{DA}), \\ Z_{GU}(u, D) &= k \times U_d \left(Z_{ele} + \varepsilon_{fs} d^2 \right). \end{aligned} \tag{16}$$

In the Improved Energy Efficient Scalable Routing Algorithm, we offer the following lemmas to better define the node's behavior depending on energy consumption. Algorithm 1 depicts the procedure of the IEESRA.

For every round
    Choose the most accurate quantity of CHs
    Create the clusters
For every CH
    Choose the suitable CG depending on residual energy
For every CG
    Collect and send data to CH
End for
    CH sent to BS
End for
End for

Algorithm 1: Procedure of the IEESRA.

3.6. Random Forest Classification Algorithm. Here, we use the RF classifier to overcome the problem of inaccurate classification due to the high dimensionality of learning behavior data. The intrinsic qualities of students and individual educational needs are used as classifications in this strategy. To begin, we compiled and analyzed individual learner variations and choices to develop educational needs appropriate for the RF classifier. Then, based on professional knowledge, we establish the classifier to overcome the issues. RF is a "troupe of unproven classification trees" in essence. It performs well on a variety of functional challenges because it is not sensitive to noise in the data gathering and is not capable of approximating. It combines the forecasts of many trees and every tree has been coached separately. To produce choice trees, RF generates an erratic sample of the data and recognizes a crucial order of assigns. Following the creation of important characteristics, it assembles several trees and calculates their error rates before deciding which tree to use. Choices tree-based classifiers inferred this order.

(i) Each option tree is based on a different bootstrap test chosen at random from the preparation data

(ii) A small set of n factors from the first-factor set is picked at each node split throughout the creation of a decision tree, and the optimal split based on these *m* factors is used

The following are the three most important parameters in an RF classifier:

(i) In contrast to conclusion trees, the number of insights in the end junction of everyone backwoods tree might be very modest. The goal is to create trees with the least amount of bias possible

(ii) No. of trees experimentally 500 trees is regularly a satisfactory conclusion

(iii) No. of predictors examined the no. of predictors trialed at everyone cut would take place to be a key tuning variable that needs influence how well erratic forests perform

For an unintelligible type, the assumptions of the trees that are by the build *N* trees and the classifier blunder esteem shoed by underneath state.

And 3 main key variables handled in the RF classifier are as follows:

(i) In contrast to decision trees, the number of insights in the end junctions of everyone backwoods tree might be very modest. The goal is to create trees with the least amount of bias possible

(ii) Count of trees Approximately 500 trees are usually a good choice

(iii) Count of predictors the number of parameters examined at each split seems to be a critical tuning element that affects how effectively erratic forests function

Input: training sample n, tree index q
Output: decision tree d
If the d's root does not happen
Make a new leaf node F with the category of c as its label
Get the root node F of d
End if
Move the sample n towards the F at the bottom of the tree
Insert the sample n into F sample collection
Using F, refresh the allocation of class labels
if Gini (F) > SPLITTHRESHOLD
create a new node B
construct an additional tree
If F is a root node, then B should be as well
Else change F with B as the son node of O, O is a parent node
End if
Erase F
End if
Return d

Algorithm 2: Algorithm of RF classifier.

The expectancies of the trees that are made N trees and the classifiers error esteem shoed by the underneath condition for an inexplicable instance.

$$DL_{\text{error}} = DL_{r1r2}(L(X1, X2) < 0). \tag{17}$$

The amount to which the usual no. of votes for the right quit at random vectors exceeds the normal vote in favor of another yield. Capacity is a term used to describe the ability to do something.

$$L(X1, X2) = \arg_k I(h_k(X1) = X2) - \max \ \arg_k I(h_k(X2) = j). \tag{18}$$

Algorithm 2 depicts the RF classifier algorithm as below,

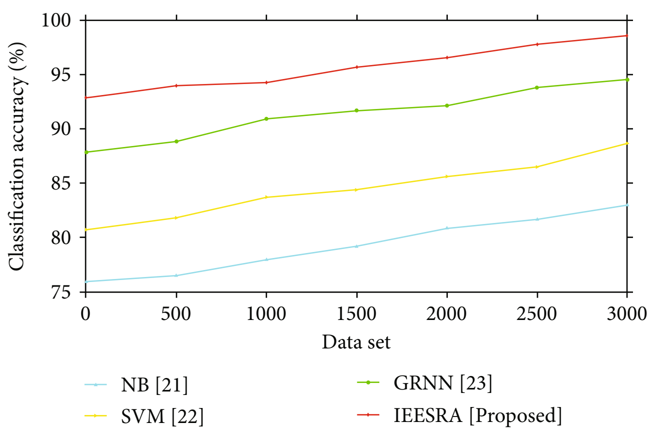

Figure 2: Classification accuracy vs. dataset.

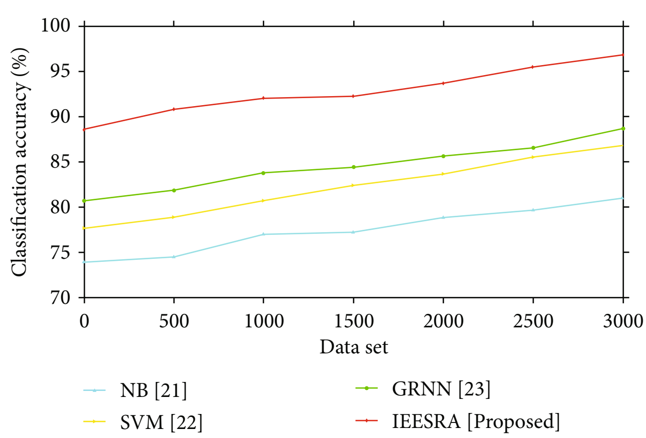

Figure 3: Classification precision vs. dataset.

4. Results and Discussion

The suggested system's performance is examined using the MATLAB simulation platform and further evaluated the proposed technique to current physical education teaching methodologies.

4.1. Accuracy. The efficacy of the physical education teaching system is measured by this statistic. Figure 2 depicts a comparison of the current classification techniques and the suggested classification methods in terms of accuracy. In this work, we utilize the dataset of nearly 3000 items. From Figure 2, the existing techniques (NB, SVM, GRNN) have been proved with below 96percent accuracy, but our proposed approach was proven with 99 percent accuracy over the existing methods.

4.2. Precision. The efficacy of the physical education teaching system is measured by this statistic. Figure 3 depicts a comparison of the current classification techniques and the suggested classification methods in terms of precision. In this work, we utilize 3000 items. From Figure 3, the existing

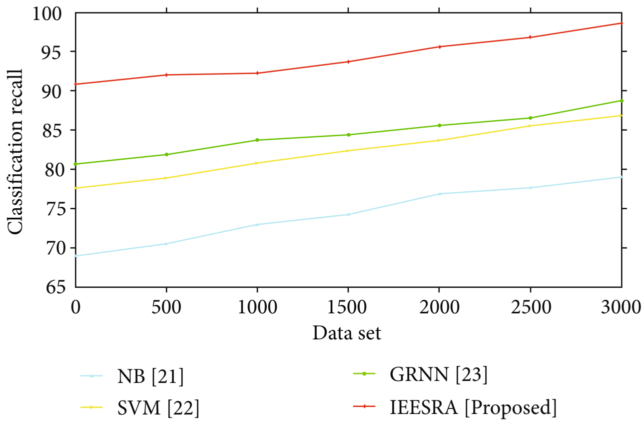

Figure 4: Classification recall vs. dataset.

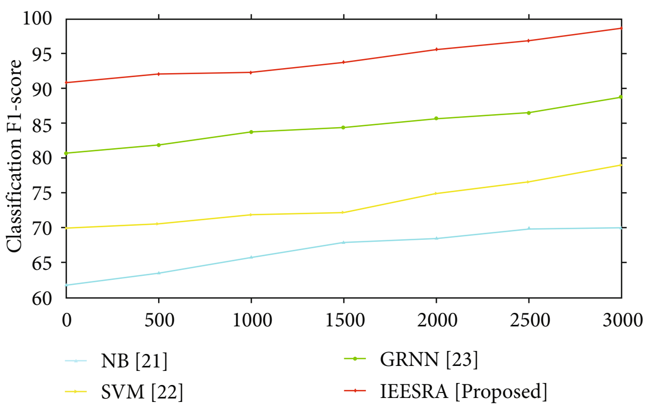

Figure 5: Classification F1-score vs. dataset.

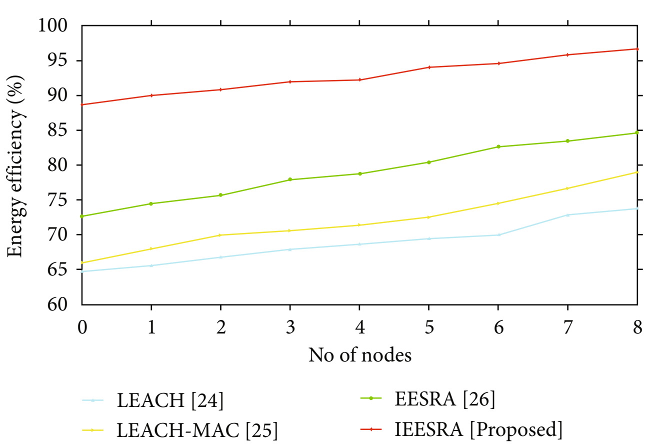

Figure 6: Energy efficiency vs. no. of nodes.

techniques (NB, SVM, GRNN) have been proved with below 90 percent precision, but our proposed approach was proven with 96.8 percent more precision than that of the existing methods.

4.3. Recall. The efficacy of the physical education teaching system is measured by this statistic. Figure 4 depicts a comparison of the current classification techniques and the suggested classification methods in terms of Recall. Here, we

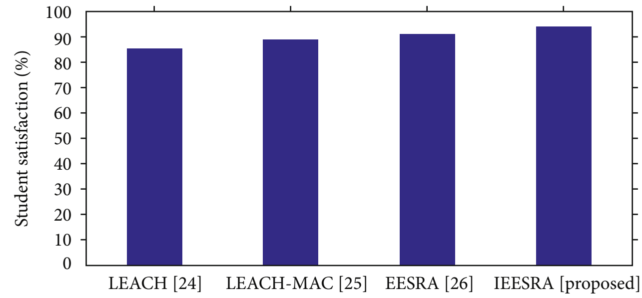

Figure 7: Comparative analysis of students' satisfaction.

utilize 3000 data. From Figure 4, the existing techniques (NB, SVM, GRNN) were examined with below 90 percent of recall, but our proposed approach was proven with 98.3 percent recall over the existing methods.

4.4. F1-Score. The efficacy of the physical education teaching system is measured by this statistic. Figure 5 depicts a comparison of the current classification techniques and the suggested classification methods in terms of F1-score. In this work, we use 3000 data. From Figure 5, the existing techniques (NB, SVM, GRNN) are proved with below 90 percent of f1-score, but our proposed approach was proven with 98.1 percent f1-score over the existing methods.

4.5. Energy Efficiency. The efficacy of the physical education teaching system is measured by this statistic. Figure 6 depicts a comparison of the existing optimization techniques and the suggested optimization methods in terms of energy efficiency. The proposed approach gets an energy efficiency of 96.9 percent while matching with the LEACH (74.2%), LEACH-MAC (79.3%), and EERSA (85%) techniques.

4.6. Student Satisfaction. The student's performance is evaluated, and the student satisfaction measure is compared to existing approaches. Figure 7 shows the comparative analysis of student satisfaction. While comparing the existing methods with the proposed techniques, the student satisfaction greatly enhanced in the proposed IEESRA approach as 94.6%.

5. Conclusions

With the widespread use of digital technologies in college/university classrooms, the conventional PE teaching procedure could no longer satisfy the challenges of both educators' teaching and graduate's understanding, particularly while there are significant variations in learning skill, understanding foundations, and attempts among students. Wireless network, like huge resource incorporation and saving systems, makes the creation and use of online educational tools more convenient. The typical classroom teaching method overlooks the unique characteristics of the education process, necessitating its revision. The progress of wireless networks has a significant effect on the improvement of PE teaching in this country, and it has contributed significant contribution to the creation of a friendly interactive platform and resource development that is creative. The conventional educating scheme is still extensively utilized in college PE today, but with the advancement of technology, this system is no longer able to suit the needs of academic reform. Teaching techniques and materials are continually evolving as the proposed IEESRA routing optimization, and contact among faculty and students, also between academic institutions, has become more intimate. PE teachers in academic institutions must investigate the impact of the network on online learning schemes, boost the development of digital learning techniques for physical education classes, aspire to raise the quality of digital teaching resources for PE courses, and speed the rate of digitization of PE teaching in colleges/universities. Also, the performance metrics of our proposed technique are matched with the existing techniques, and finally, we proved the proposed method as an effective approach for PE teaching streams.

Data Availability

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

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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