Optimizing Resource Management in Physical Education through Intelligent 5G-Enabled Robotic Systems

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Abstract

Resource Management in Physical Education (RMPE) is the term used to describe the management of the curriculum, materials, and human resources needed for Physical Education (PE). Due to increased sports and physical activity participation, student performance in PE classes across all schools and universities has decreased. According to the analysis, it is hard for the available PE educators and managers to establish a relationship between all the resources. This study uses a robotic system with 5G capability for RMPE. The Big Data Analytics-based Artificial Neural Network method (BDA-ANNA) handles all PE resources in this computerized system. The BDA-ANNA can efficiently increase RMPE work quality and efficiency, enabling managers to obtain and save appropriate information accurately and quickly. With assistance from the robotic system, the material stock may be maintained. With the aid of BDA-ANNA, the mechanical system can keep the material stored. Automated systems with 5G capabilities can provide PE instructors with complete remote-control access with a 2-millisecond latency. These two clauses mandate that the RMPE supervise athletic events and physical activity. The suggested 5 G-enabled robotic systems for RMPE can manage all the resources effectively and efficiently with a low error rate. The advanced system and BDA-ANNA were put through a simulation exercise, demonstrating their independence in classifying and managing resources while reducing processing time. The experimental result improves a prediction ratio of 95.5 %, a learning ratio of 90.5%, an error rate of 92.3%, an Efficiency ratio of 96.6%, an Accuracy ratio of 92.5%, and performance ratio of 96.7%, **a** Movement Detection ratio of 90.7% compared to other methods.

Keywords: Physical Education; Big Data Analytics; Resources; 5G; and robotic system.

1. Introduction

5G enabled system improves the robotic workspace when cloud robotics can provide more production capacity and storage of robots based on distributed computing resources to satisfy the sequential placement and rendering needs in dynamic environments [1, 2]. Though the 5G is faster than 4G, with more bandwidth and stable links, the difference between robotics and the latest Qualcomm RB5 system will be supplied by the 5G robots and drones [3,4]. 5G can improve the responsiveness of robots. Hence, this technology blends software and hardware-enabled locations such as factories to develop super-sensitive machines [5, 6]. More usable bandwidth and state-of-the-art antenna technology would allow 5G considerably for enormous data transmission over wireless networks. The latency is a massive challenge; if an input is received and processed for a long time, the

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motion aspects are analyzed and measured by robotics [7, 8]. The way of transmitting the enormous amount of information needed for lag-free activity remained to recall for wired connection, and all this change recognizes to 5G networking. Industrial robots are often used, and the outline of 5G would establish massive telecommunications [9]. The untethering 5G and GPS-based geolocation of robots would make it difficult for them to perform today's functions. In farming, for example, robots may wander around fields tracking growing conditions, capturing video and other sensor information to a virtual device, or even carrying out tasks such as covering, clipping, and gathering [10]. This smart plan with sensors gives a continuous flow of knowledge concerning every aspect of the production process [11]. This amount of data would be excessively matched by existing mobile networks, and one of the major benefits of 5G is to split the bandwidth into slices. Extensive networking infrastructure and 5G cells planned in the coming years are demonstrated and implemented realistically [12]. In particular, the latest 5G networking technologies generally provide improved mobile broadband networks, and 5G wireless technology's millimeter-wave range fast data rates are supported [13].

5G Connectivity will RMPEit robots with almost limitless processing and data storage in the cloud based on next-generation manufacturing environments [14]. Robots will share vast quantities of information with factory workers transforming, shop flooring, and other 5-G-activated devices such as wearables and augmented reality technologies [15]. The gathering of 5G and GPS-based location data of robots will make it difficult for them to perform today's functions [16]. In growing, for example, robots may be roaming around fields monitoring growing conditions and returning video and other sensor information to a virtually anywhere device and growing [17]. A company termed FF Robotics has created based on a product robotic harvester that combines robotic checklists with pictorial software algorithms that enable scalable and damaged products to be found and distinguished among products [18].

The main contribution of this paper

- Designing a BDA-ANNA has been proposed to boost RMPE quality and access and save the right information correctly and facilities cost-effectively.
- Analyzing the BDA-ANNA can boost RMPE quality and efficiency of work efficiently, access and save the right information correctly.
- The experimental results have been analyzed, and the proposed system BDA-ANNA has been submitted using a 5G enabled robotic system for RMPE to manage all the resources efficiently and effectively with a minimized error rate.

The rest of the paper is organized as follows: Sections 1 and 2 discuss the Big Data Analytics-based Artificial Neural Network approach to manage all PE resources in this robotic system. Various literature has been carried out effectively. In section 3, the BDA-ANNA model has been suggested, which helps to improve the quality and optimize the cost factors. In section 4, the experimental results have been computed. Finally, section 5 concludes the research paper.

2. Literature Work

Du, J. et al. [19] explored the Artificial Neural Network functions in the theory of accelerometer estimation. The paper validates the sensor qualities and the location of the sensor. In summary, this work analyzes the Field Programmable Gate Array (FPGA) methodology's current development status, which offers a comprehensive overview of potential technologies in existing various products. This paper has created new possibilities to enhance preparation, and gaming skills learned in physical education.

Feng L et al. [20] discussed the sport in which the physical elements of a single connection are strengthened based on training and gymnastics. This sport attempts to compete with young people and preserve bodybuilding art. It generates a sport that needs gyms; hence mobile communications technology develops less danger between 4G and 5G. The necessary technological measurements for Closer latency-critical facilities for Multi-access Edge (MAE). 5G user support for very low latency is focused on the network's edge by providing system resources.

Çetinkaya A. et al. [21] explored the programming skills of middle school students using algorithms from the artificial neural network (ANN). The findings show that ANN is a suitable machine learning system that can predict the abilities of its participants, such as analysis, problem-solving, and programming ability. Technological developments provided new challenges to enhance education and increase the game skills learned in physical education.

Simon, J. et al. [22] discussed the 4G/5G obtained OFDM under the Binary Phase Shift Keying Guidelines (BPSK) for exploration. The ideal wavelet coefficients in the transmitter end decrease the bit error rate (BER). The discreet wavelet transform (DWT) is used to validate the idea wavelet coefficients in input signals

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Calculation of Binary Firefly (BFF). The approach is processed via BER, Symbol Error Rate, Mean Square Error (MSE), and Spectral Efficiency boundaries. In comparison with conventional techniques, the proposed method provides reliable results.

Sophocles, A. et al. [23] explained the structured visualization studies chosen for the methodology of Preferred Reporting Items for Systematic Meta-Analyses (PRISMA). After studying this research, relevant publications analyze the testing process, performance applicability, the robot platform used, and related costs.

Fiaidhi, J. et al. [24] discussed the solution for the VH-CPS framework proposed for creating a system combining health team cooperation with other crucial virtual tools, for example, remote surveillance and diagnostics as well as chronic management, and outside telehealth visits. Moreover, this article contains a portion of the Virtual Treatment of cyber-physical systems (VH-CPS) ecosystem, enabling the team to further qualitative research techniques based on the thick data analytics platform.

Section 2 presents existing methods such as ANN, PRISMA, VH-CPS, and VH-CPS, and some issues are validated, showing less efficiency, poor accuracy rate, low performance, and learning rate. Hence in this paper, BDA-ANNA has been proposed 5G enabled robotic system for RMPE that can manage all the resources efficiently and effectively with a minimized error rate

3. Big Data Analytics-based Artificial Neural Network approach (BDA-ANNA)

Though mobile technology in the earlier generations concentrated on maintaining connectivity, 5G connects to the next stage by supplying clients with connected experiences from the cloud. 5G networks influence cloud technology, which is virtualized, and software driven. The 5G network would simplify mobility, with unlimited open roaming between cellular and Wi-Fi connectivity. Smartphone systems can be linked when moving from outdoor Wi-Fi to indoor buildings without user involvement or re-authentication. A bandwidth with a mile-millimeter-wave cellular infrastructure supports high data rates and reduced cell specifications. In underserved rural areas or urban centres, demand will surpass today's 4G technology capability through 5G technology, which could boost connectivity. Near the edge and consumers of the 5G networks would be a dense, clustered architecture for data processing. The problem and transmission issues mentioned, including networking and long-term evolution, can be described as the short-term agent to organize objects 5G that are pre-networking technology. 5G New Antenna will protect the spectrums not found in 4G, in which global requirement with a more capable cellular 5G interface is analyzed. New antennas are called the "Big MIMO" technology, allowing multiple senders and receivers to transmit more data simultaneously. A concurrent and heterogeneous network has been created and integrated into approved and uncontrolled wireless networks. Instead of hardware networking, the 5G design architecture will be specified for applications and software. Innovations in virtualization, cloud-based technology, and integration of IT make the 5G architecture scalable, versatile, and open for users anywhere. 5G networks can create software-defined network architectures called network segments. These segments enable network administrators to specify user-oriented and system-based network features.

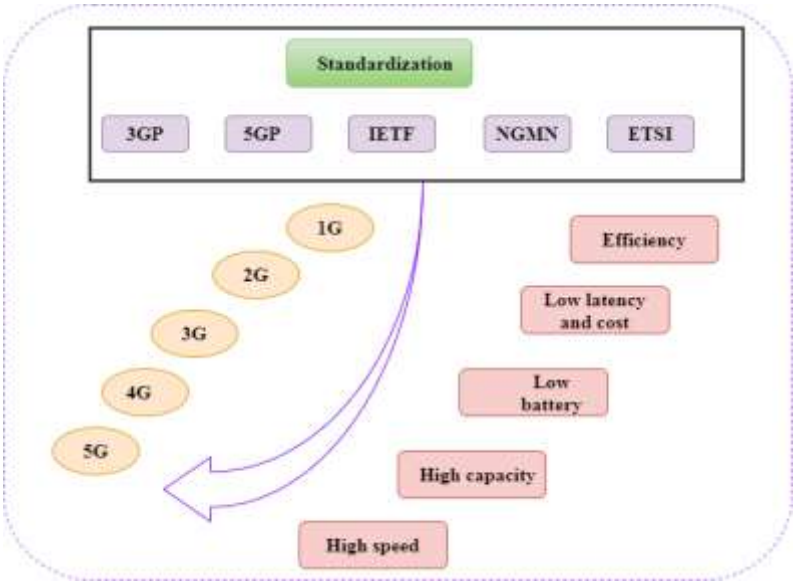

Figure 1: An image of 5G developments and standards.

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Figure 1 shows the Current 5G networks, which embrace a range of opportunists such as multi-input, multi-layered, Network Feature Virtualization, Network Slicing, Low Power Wide Area Networks, etc. Many innovations are exponentially employed in the next generation of cable networks to promote high-speed data service. 5G technology is used for low latency and user requirements stability. Remote access to networks in applications such as the industrial internet has been validated. The 5G architecture focuses on various nodes to provide on-demand networking and efficiency to other devices. The demand for maintaining quality and volume increases significantly as the number of devices increases, affecting a network security framework. 5G is imposed by security requirements such as blockchain, mobility management distributed, core computing, ionic computing, catalytic computing, or fog networks. However, the literature lacks solutions covering the efficiency and safety elements of 5G networks, which are not sufficiently observable. Using different sensor nodes, drones, and self-contained devices will further question the use of 5G networks without being affected. Thus, safety is an essential priority for effective adoption with the rapid advancement of technology in the 5G period.

3.1. 5G enabled robotic system is used for RMPE

These programs ensure that LPWA's mobile network technology provides efficient networking solutions through two major artifacts for various aspects. Some essential requirements consider lower implementation costs, long battery life, low Cost of supplies, expanded coverage, broad range (extended) devices, and support for large security and privacy deployments. As shown in Figure 2, it is essential for various uses.

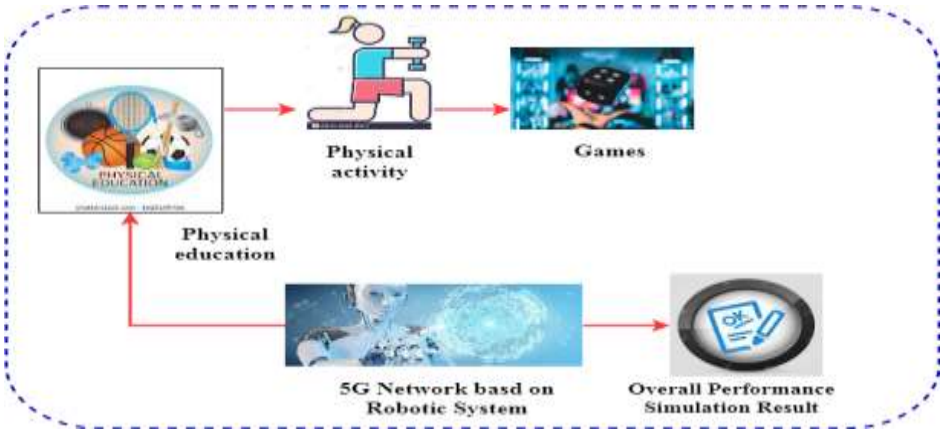

Figure 2: The architecture of 5G network-based robotic systems in physical education resource management.

There are evolving standards for the Robotic system to solve this issue. It aims to make the Fifth-Generation (5G) mobile network based on major network potential success with the previous cap on mobile phones. Physical education offers advantages to the community on social effects and social impact. Fitness is acquired through Physical training to assist and develop social skills. Components of Flexibility, tempo, reaction time, balance, coordination, and basic movement modeling have been used for robotic system analysis. 5G is used for a personal cell telephone. Inflation, available assistance, computerization, decentralization, and more useful information are discussed in this paper. The safety and security aspects of server planning and networking applications are critical prerequisites.

3.2 Design of a Physical Educational Robot's Smart Voice Interaction System

In addition to artificial intelligence technology, the new teaching approach has been improved to promote individualized, reliable, and intelligent physical education. By establishing a voice-based educational artificial intelligence robot, a hybrid physical education model is developed to achieve customized training for students. Firstly, speech recognition is based on voice recognition, interaction management, language synthesis, and algorithms to enhance recognition accuracy. The automatic recognition of the language is a method of translating the human speech signal into a corresponding text. The audio features of speech are derived by processing and analysis of the suspected signal. The speech patterns are compared to the established reference models using the audio and language patterns. The reference pattern with the best matching effect is achieved, and the outcome is based on the relevant search and matching algorithm. The goal is to make the system understand human language through speech recognition. However, the richness and complexity of human language, language comprehension, pronunciation, vocabulary size, the object of praise, and other issues should be considered.

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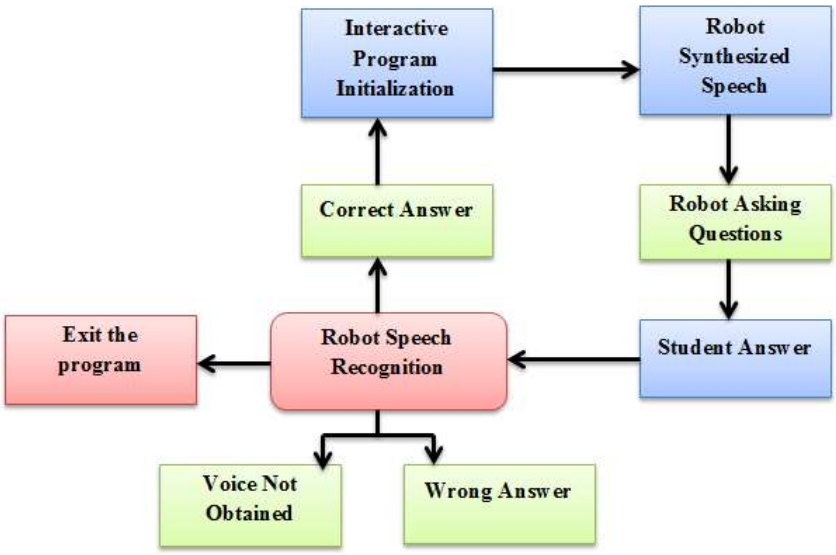

Figure 3: Question and answer process of an educational robot in physical education.

A question and response test on the voice robot for interactive education and the contact instability is shown in Figure 3. According to various teaching communication extracts, students and robots have a conversation, for example, Student: Am I right to do that? Robot: Well finished; student: What do I do next? Robot: See the instruction video. Robot: did you know it? Student: Well, please see if I'm correct. Robot: I might show it. PL: All right.

The educational robot has been designed to solve students' physical education during daily training. Here, the learners' current learning behaviour and interest are assessed by analyzing the students' learning data and determining whether further learning and extensive learning are needed. Therefore, the actual application of voice interaction is tested to represent its features in education and analyze the voice interaction between students and robots. An educational robot is split into three parts: movement firmware, hardware, and a microcomputer. The movement layer is employed to monitor the movement and speed of the pupil; based on the level meter, tachometer, and microcomputer based on the action recognition device that can communicate with the pupils.

3.3. Building-integrated physical education instruction

The method of education refers to the fixed teaching system and the procedure developed under the guidance of teaching theory. It standardizes the entire education and internal relationships between different elements and illustrates from a macro perspective. The traditional instruction of physical education displays and describes the technical movements and the student's preparation. However, several activities have space and consistency that decomposition cannot teach. Students find it hard to grasp the basic elements of gestures only by eye examination in a short period. This problem can be solved well by model teaching. Using modern educational tools, educators record important movements in videos and mark them with slow movements or words to help students learn essential activities.

The education framework is divided into three interconnected areas in the hybrid physical education model: autonomous pre-class training, practical class learning, and a comprehensive extensive after-learning process—the conventional teaching before the learning mode of the classroom. The new teaching mode of learning before teaching has been updated. Here, the educators direct teachers through the design of the teaching activity to learn individually. Further, according to the learners' self-study situation, the curriculum leads Faculty document movement through modern educational tools. Essentials for visuals and tagging with freeze-frame or phrases the technological importance in the movement process to help learners know basic training. The development of a hybrid physical education model is focused on model methodology. By analyzing the characteristics of physical learning and developing information technology, the advantages of conventional and online wisdom are combined, and a hybrid method of physical training is formed, as illustrated in Figure 4.

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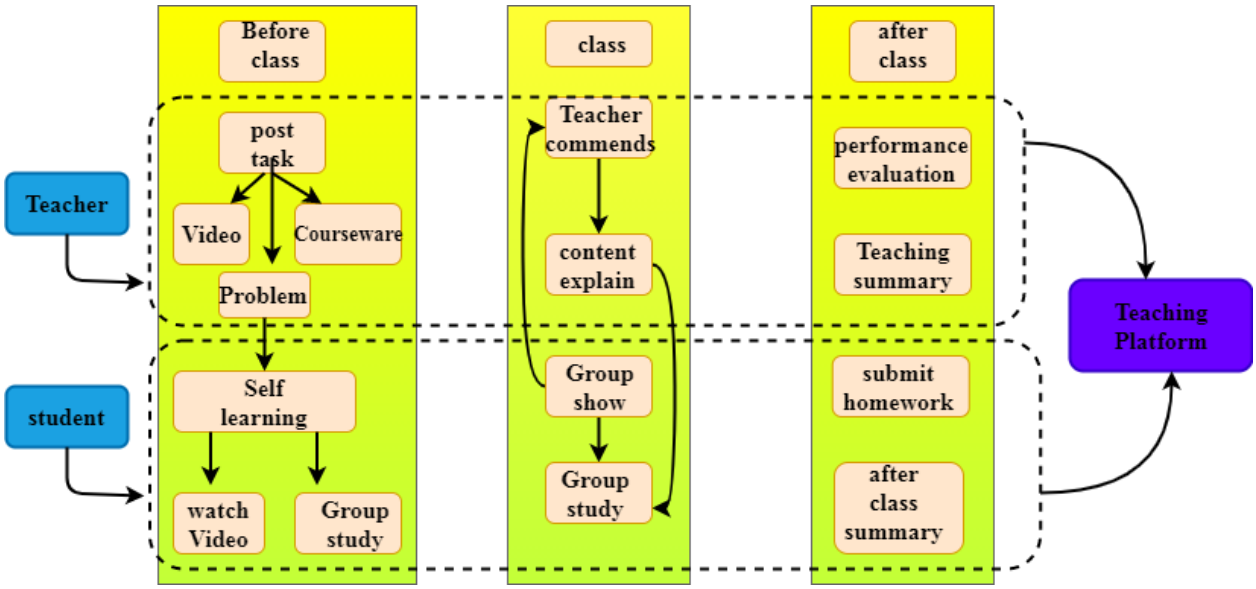

Figure 4: Learning model of advanced physical education

When learning separately before school, the teacher stores the appropriate physical education video that makes the teaching program related to the educational platform according to the course contents and analyses the learning situation. Students can develop solutions to teachers' sustainability problems through the teaching platform through self-learning, view education and training content, lead groups, and find answers to online issues. Teachers must direct and supervise students in the process of autonomous learning

3.4 Big Data Analytics-based Artificial Neural Network approach

The best approaches for broad data processing are validated through neural networks. Here, the simulating neural structure in the brain helps to construct models based on neural network architectures and simulate memory function within the brain to create algorithms for learning. The history of research into neural networks is growing. Big data analysis with neural networks has been very successful with help from the development of computational power, especially for big data applications, such as audio big data analysis, feature data analysis, and huge healthcare data analysis. "Big data + neural networks" are becoming a driving force in innovation, social advancement, and the development of life. It can be clearly shown how the basic principles and leading technologies in big data are balanced and strengthened between large data and neural networks and induce the research structure of neural networks.

On the one side, neural networks can generate conceptual characteristics from data sets. The most commonly used for large data analysis and processing is ANN, typically called deep- or large-scale ANN learning. The DNN can process unstructured data as one of the central elements of Big Data. In big data analytics, several other ANN classes include the massive repetitive ANN, Echo State Network (ESN), and functional connection networks (FLN). As shown in Figure 5, these ANN can be categorized approximately.

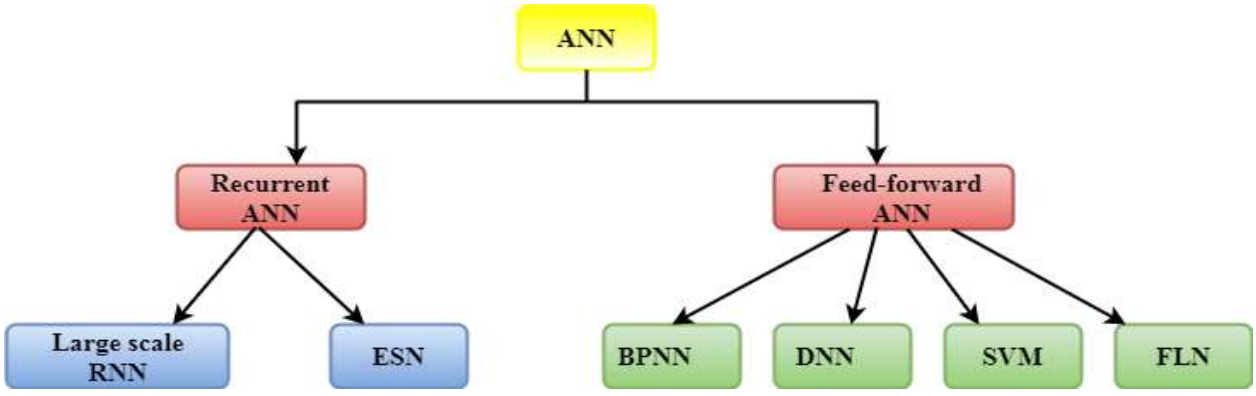

Figure 5: ANNs in big data analysis based on their requirements.

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The ANN is one of the most important software algorithms used in different areas. In the following sub-section, the basic theoretical principles underlying implementation in large-scale data analysis for the various ANN categories are outlined in Figure 5. ANN gives readers a sense of how the various ANN work to achieve their core goals. Big data analytics primarily entails processing huge quantities of data from multiple sources and managing the data to the appropriate organizational company. The method involves transforming a large range of data from various sources into organized, unstructured raw data. For improved market knowledge and processing, data was to be prepared, as a vast array of data was collected. The sample data is to be converted into a modeling data set. The data collection is being analyzed based on the huge volume of data providing ample information for efficient retrieval and explored with data visualization to better understand the overcoming of abnormalities. It concentrates on improving the modeling data to provide the desired results as a specific data possibility is designed for evaluation.

The DNN is a multi-layered ANN feed-forward class. In DNN, each Secret neuron j uses the logistic feature to map the entire entrance low-level $x_j$to y_j (Equation 1), which is a higher-level scalar condition.

$$y_j = \log istic(x_j) = \frac{1}{1+l^{x_j}}, x_j = b_j + \sum_i y_i w_{ij} \quad (1)$$

As discussed in equation (1) where b_j, I w_{ij}Are the neuron j bias, the bottom layer index, and the neuron j weight connection of neuron I, Underneath the layer, Multi-class ranking converts; however, Full entry attributes in the probability class p_j "Soft-max" as indicated in the equation (2) nonlinear:

$$p_j = \frac{exp(x_j)}{\sum_k exp(x_k)} \quad (2)$$

As inferred from equation (2), where k for all classes represents an index class x_kThe evolution of DNN can be trained with reverse propagation. A cost function evaluates the DNN error output and target value produced for each training facility. The Cost is the cross between the true d and $softmax\ p$ probability of "$softmax$" entropy Equation (3) as determined:

$$c = \sum_j d_j log p_j \quad (3)$$

The existing probabilities have values of 1 or 0 that are generated for DNN training. For the application of DNN to a large dataset, the measurement of a data set is found to be more effective for the full data set training before DNN updates. The DNN is present with excellent voice recognition, object identification, and recognition of visual objects. The architecture of the DNN is different. However, the architecture has been implemented in large areas of Data analysis p_j. For instance, neural network convolution $d_j F(x)$ is known as an activation function. $f(x) = \frac{1}{1+e^{-x}}$. The standard fault output units j expressed in (4),

$$d_j = \frac{\partial E_k}{\partial netb_i} = \frac{\partial E_k}{\partial c_j} f'(netc_j) \quad (4)$$

The generalized error e_i At the output units, I is expressed as:

$$e_i = \frac{\partial E_k}{\partial netb_i} \quad ,$$

$$= \frac{\partial E_k}{\partial b_j} f'(netb_j) \quad (5)$$

$$= f'(netb_j)\ \{-\sum_{j=1}^{q} d_j\}\ (\frac{\partial(\sum_{i=1}^{p} w_{ij} b_i)}{\partial b_i})$$

$$= f'(netb_j) \sum_{i=1}^{p} d_j w_{ij} \quad (6)$$

$$\triangle w_{ij} = -\propto \frac{\partial E}{\partial w_{ij}} = \sum_{j=1}^{m} \left[-\propto \frac{\partial E_k}{\partial w_{ij}}\right] \quad (7)$$

A concurrent and heterogeneous neural network $\frac{\partial E_k}{\partial netb_i}$ Integrated into approved and uncontrolled wireless networks has been created based on differential outcomes $\frac{\partial E_k}{\partial b_j}$. Instead of a hardware networking function $f'(netb_j)$ The 5G design architecture will be specified for applications and software. Innovations in

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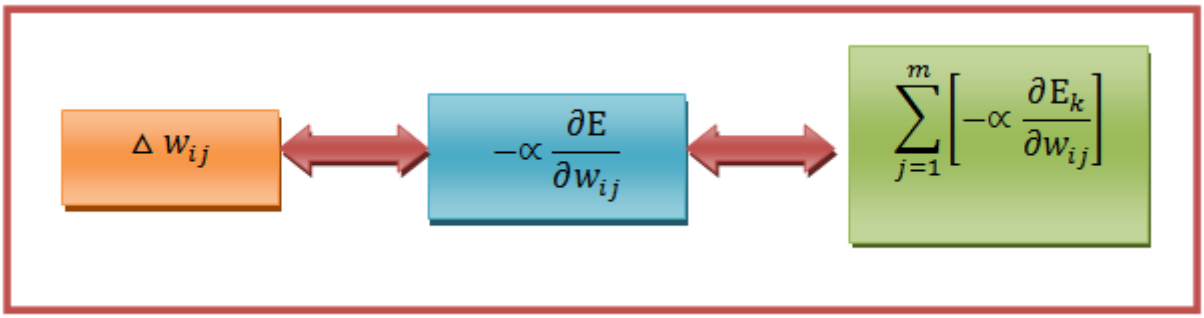
virtualization, cloud-based technology, and integration of IT make the 5G architecture scalable, versatile, and open for users anywhere. 5G networks can create software-defined network architectures called network segments $\triangle w_{ij}$.



$$\triangle v_{ij} = -\beta \frac{\partial E}{\partial v_{ij}} = \sum_{j=1}^{m}\left[-\beta \frac{\partial E_k}{\partial v_{ij}}\right] \quad (8)$$

Figure 6 shows the data analysis in equation (8) where E_k is the cost function, v_{ij} is the actual relation weights, and $\triangle w_{ij}$and $\triangle v_{ij}$are the weight connections in Equations (7) and (8), proportional to gradient negativizes $\left(\frac{\partial(\sum_{i=1}^{p} w_{ij} b_i)}{\partial b_i}\right) * -\propto \frac{\partial E}{\partial w_{ij}}$.

Considering the recurring ANN in equation (9),

$$x(n) = x\big(x(n-1), u(n)\big) \quad (9)$$

The equation describes nonlinear storage extension $x(n-1)$leading to a Linear System $u(n)$

Eqn (10)

$$x(n) = f(w_{in}u(n) + w_x(n-1), \text{ n=1…..., T} \quad (10)$$

As shown in equation (10), where the vectors of activation $x(n)f(\bullet)$,w_{in}, and w_x At any stage of the reservoir, activation of neurons function, the input weight matrix, and the input context weight matrix, respectively.

The proposed BDA-ANNA model enhances the Learning Rate, Performance ratio, prediction ratio, Movement detection ratio, Accuracy ratio, efficiency ratio, and error rate shown below with improved outcomes.

4. Results and Discussion

Observational experiments have been carried out on the proposed BDA-ANNA models. Student success in PE education is good, with increased sporting interest and physical activity. This research focuses on the Big Data analytics strategy of the Artificial Neural Network for the control of all physical education instruments of this robotic system. The proposed model will efficiently improve physical education's effectiveness and operations, providing managers with the right information. RMPE achieves their daily tasks and decides about this in the optimized period parameters in terms of physical activity Learning Rate, Performance ratio, prediction ratio, Movement detection ratio, Accuracy ratio, efficiency ratio, and error rate. 5G network service quality. The parameters comparison is shown in Table.1

Table 1: Parameter's comparison based on BDA-ANNA

Parameters	ANN	BPSK	PRISMA	VH-CPS	BDA-ANNA
Learning Rate (%)	62.33%	52.38%	42.31%	64.31%	90.53%
Error Rate (%)	23.54%	43.53%	53.52%	25.52%	92.33%,
Prediction Ratio (%)	45.76%	55.67%	65.63%	47.73%	95.5 %
Accuracy Ratio (%)	58.28%	68.27%	38.24%	59.25%	92.5%
Efficiency Ratio (%)	65.34%	75.35%	45.35%	64.36%	96.6%
Performance Ratio (%)	58.53%	38.52%	68.56%	57.57%	96.73%
Movement Detection	55.52%	65.54%	55.57%	54.58%	90.78%

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A. Learning Rate (%):

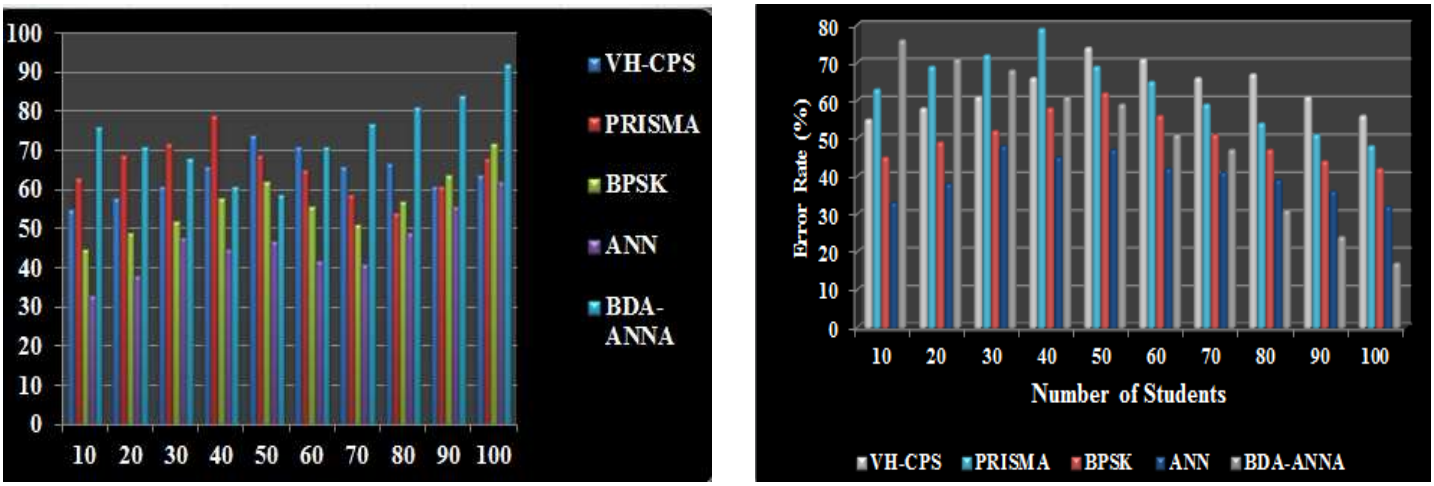
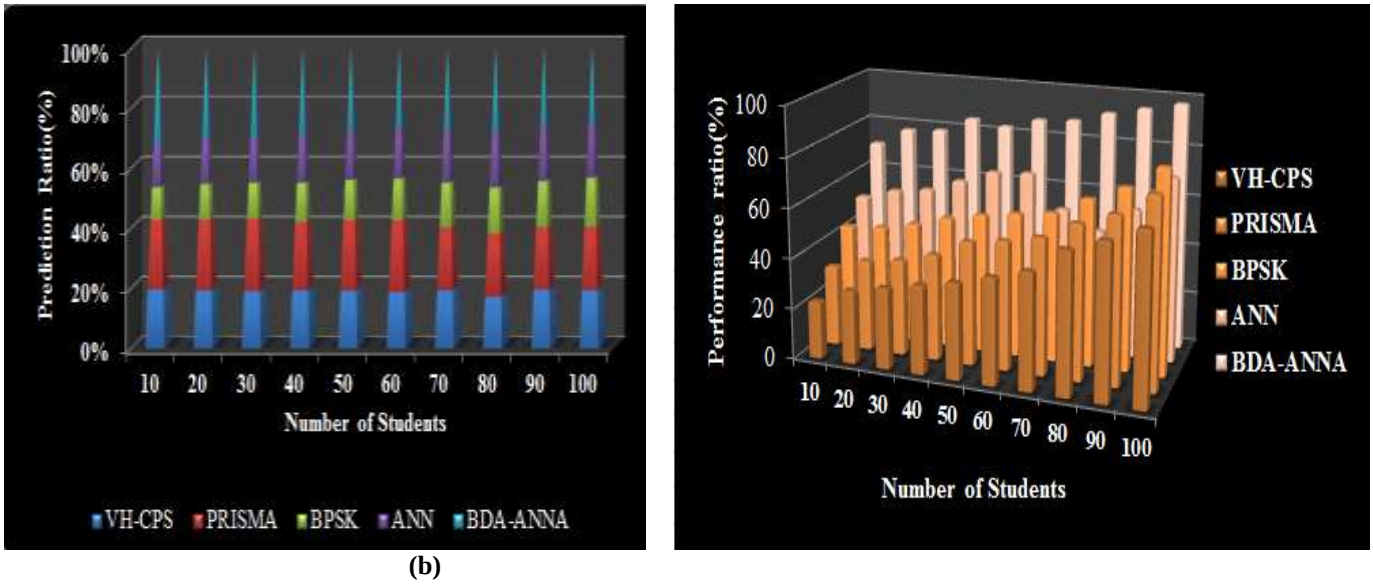


Figure 7: (a) Student Leaning Rate (b) Error Rate

Figures 7(a) and 7(b) show that the Student Learning outcomes and error rate in physical education methods have been improved to foster individualized, precise, and intelligent teaching combined with robotic system technology. 5G could act as a bridge between increased reality and classrooms for all ages. The new levels of efficiency could be reached with holographic instructors and ideas arising from texts and videos and becoming an apparent reality. Physical Educational robotics enhance and help the ability of students by developing, designing, assembling, and running robots to improve their expertise. It's amusing and entertaining for children and young students to directly engage with mechanical and electrical processes. Physical Education (PE) with 5G ROBOTS strengthens the skill and faith of students in various physical activities, both in and out of school, which are fundamental to their lives. A high-quality PE program allows all students to have much physical activity to excel. The experimental findings indicate that it has increased athletes' performance with other physical fitness approaches compared to other methods.

B. Prediction Ratio (%)



(b)

Figure 8: (a) Prediction Ratio (b) Performance Ratio

Figures 8(a) and 8(b) show that physical education robots improve and help students' expertise by creating, developing, installing, and running robots. For young children and students, this is enjoyable and appealing since electrical and mechanical devices are in direct contact with them and processes. Educational robotics

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enhance and help students' expertise by building, designing, assembling, and operating robots. It is amusing and entertaining for children and young students as they are free to engage with mechanical and electrical processes directly. Conversely, students learn what robots can do with direct experience and comprehension by controlling a physical robot and seeing what goes wrong. The advantage of the old robot control way can be virtualized, and sensor data can be collected wirelessly in real time. Physical education goals include human knowledge, skill growth, and the development of personalities. The experimental findings indicate that athletes' performance with other physical fitness approaches compared to other methods.

C. Movement Detection Ratio:

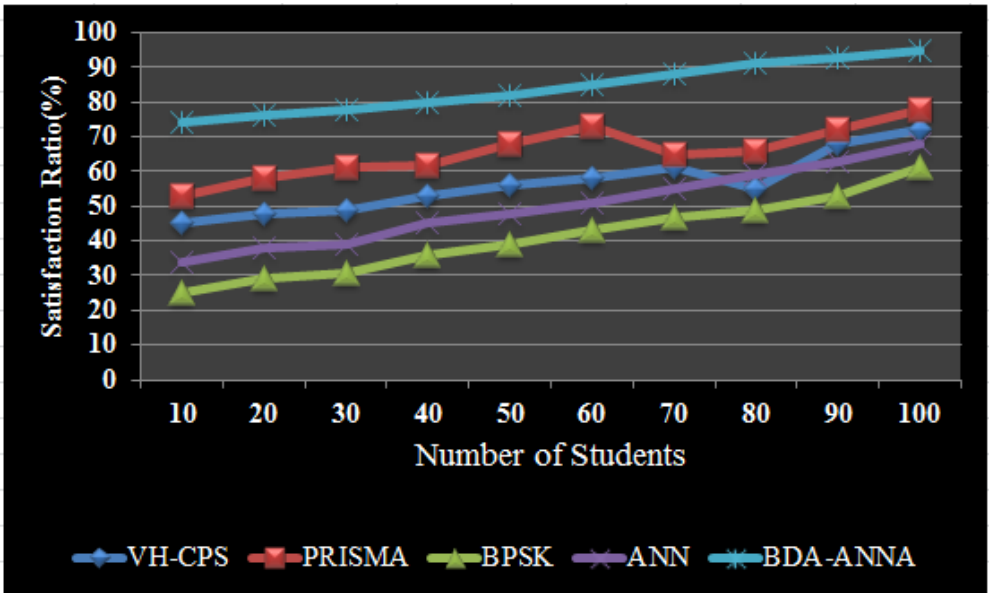

Figure 9: Movement Detection Ratio

Figure 9 shows that 5G robots can obtain real-time, low latency results in physical education benefits for movement detection. The test results show that the proposed approach is more precise and effective—the quality indicators for the college physical training teaching system by comparing many indicators of impacts. The analysis shows that the more accurate motion detection results, the greater the quality of the college physical education teaching system. The detection ratio will reduce the expense of keyframe-based technology in platforms. The experimental findings indicate that it has increased athletes' performance with other physical fitness approaches than conventional methods.

D. Efficiency Ratio (%)

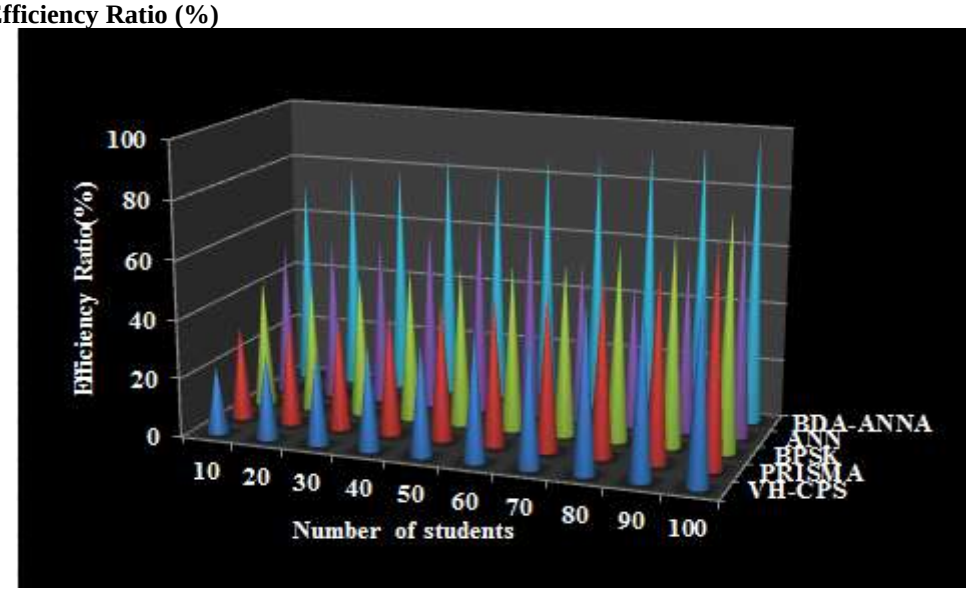

Figure 10: Efficiency Ratio

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The efficiency obtained is shown in Figure 10. Developing a physical education activity system is one successful way to increase the quality of physical education at institutions of higher learning. Physical education holds an essential role in education. Movement detection is one of the key methods for quality training at universities and colleges. It can be checked by movement detection, in which the impact of motion and quality of college students has been analyzed in correlation with the physical quality. The teaching method of schools and universities for the education practice is important based on motion detection. The latest 5 G-enabled robotic system innovations will capture human bio-signals during training and competitive physical education and technology processes. The results are included in various physical activity metrics, including average energy, standard energy, distance, strength, and acceleration. Another method for analyzing the quality of athletes is a 5 G-enabled robotic. It asserts the variance of the physical parameters such as temperature and core rates to improve high prediction, accuracy, and response time. The approach examines sequences of monitoring and sophisticated observations of the activities of athletes during competitions using the Global Position System. The experimental findings indicate that athletes' performance with other physical fitness approaches compared to other methods.

Table 2: Accuracy Ratio

Number of Students	VH-CPS	PRISMA	BPSK	ANN	BDA-ANNA
20	28.6	28.5	38.8	37.8	77.5
40	34.9	34.7	25.8	45.9	65.9
60	45.5	49.8	43.8	50.5	75.8
80	54.4	55.3	50.6	59.9	81.9
100	58.8	69.7	59.5	65.8	90.7

The accuracy obtained is shown in Table 2; the survey questionnaire results indicate that implementing educational robots will significantly increase students' attitudes and participation in physical education. The results show more precision in recognizing the designed artificial intelligence-based voice interaction system. In conclusion, this paper addresses 5G's vital position in offering a knowledgeable forum for broader implementation, digitalization, and automation of technology practices and processes. Next, the neural network system is built from language recognition, interaction control, speech synthesis, and algorithms that enhance recognition accuracy. Secondly, a hybrid physical education system has developed a new mode. The benefits of conventional physical education are integrated with intelligent information technology to increase the effectiveness of physical education and customized training for students. The test results show that the proposed approach is more accurate and effective. Choose the quality indicators of the university teaching physical education system by comparing the various indicators indicating their impact. The analysis shows that the higher their accuracy, the better the quality of the college teaching system, reflected and, thus, better the student physical education system. The experimental findings indicate that has increased the performance of athletes with other approaches to physical fitness compared to Artificial Neural Network (ANN), Binary Phase Shift Keying Guidelines (BPSK), and VH-CPS Preferred Systemic Check and Meta Analytics Reporting Items (PRISMA) and Cyber-physical system Virtual Treatment (VH-CPS)

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5. Conclusion

This research illustrated how the physical education system's people, curricula, and equipment are managed appropriately. Students' outputs per PE trainer were decreased in each section due to increased physical exercise and involvement in sports. The 5G RMPE robotic system is used in this research approach. Large-scale data processing is used to manage all the capabilities of the PE inside the robotic system utilizing an artificial neural network approach (BDA-ANNA). The efficiency and productivity of the RMPE works can easily be increased, and the robotic system can be saved by BDA-ANNA support managers with reliable and rapid access to the right details, RMPE installation, and site cost. In the experimental section improved a high prediction ratio of 95.54%, learning ratio of 90.53%, error rate of 92.33%, Efficiency Ratio ratio96.65%, Accuracy ratio92.52%, and performance ratio96.73%, Movement Detection 90.78% When compared to conventional methods.

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