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Research on Resource Optimization of Music Multi-Terminal Based on Edge Computing

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ABSTRACT The development of mobile cloud computing has increased the number of smart terminals and the computing power of processors. More and more music-type applications are loaded into the cloud, which puts a huge load on the core network. In order to solve the problem of insufficient computing resource optimization of existing music terminals, this article proposes a resource optimization scheme based on edge computing. First, we propose a music multi-terminal architecture through a wireless sensor network to perform wireless transmission of related data and information. Secondly, we propose a music multi-terminal resource optimization model based on edge computing, which can perform fast computing and storage tasks at the edge of the music wireless network. Finally, this article verifies the feasibility and effectiveness of the scheme by analyzing the test results of music multi-terminal cases. This technology can effectively improve the efficiency level of existing music multi-terminal resource optimization, and provide a certain reference for the development of music terminals.

INDEX TERMS Music multi-terminal, edge computing, wireless network, resource optimization.

I. INTRODUCTION

With the continuous growth of users' demands for high-speed, low-latency, and high-reliability services in music wireless networks, a wireless network integrating communication, caching, and computing has become a trend in future network development [1], [2]. In the face of complex music multi-terminal network architecture and multi-dimensional network resources, network control, user scheduling, resource allocation, etc. have become technical difficulties in current music wireless networks [3], [4]. In the cloud computing architecture, all data is transmitted through the network and saved to the cloud. Cloud computing can overcome the exclusivity of IT resources and increase the business density of the data center [5], [6]. At the same time, a large amount of the data required by this technology is collected from related equipment.

Various types of terminals transmit the collected large amounts of data to the corresponding cloud platform, and obtain the analysis results through centralized operations [7], [8]. At present, a large number of mature intelligent management cloud platforms have been put into use, but with the widespread use of distributed intelligent equipment, a large amount of data transmission has caused the blockage of the transmission channel [9]. There are many difficulties in using cloud computing technology to solve this problem, and edge computing technology just provides an effective way to solve this problem. Edge computing was originally a key technology to solve the 5G network delay problem [10], [11]. In recent years, it has been tried to be used in emerging fields such as the Internet of Vehicles and the Internet of Things. The problems in cloud computing can be solved by edge computing technology [12]. The nearby intelligent services provided by edge computing technology can meet the key requirements of agile connection, real-time business, data optimization, application intelligence, security and privacy protection, etc., and build an intelligent, flexible, and elastic network at the edge of the network. Centralized computing platforms complement each other and complement each other [13], [14].

This article analyzes the existing music multi-terminal technology and research status, and compares the current problems of cloud computing technology in music applications [15]. In terms of innovation, this article constructs a music multi-terminal resource optimization model based on edge computing theory. This model can perform fast calculation and storage tasks on the edge of the music wireless network through edge computing technology, and meet the needs of multi-terminal music calculation and storage. In addition, this article establishes a music multi-terminal architecture through a wireless sensor network for wireless transmission of related data and information. This mode can effectively improve the information transmission efficiency of existing multi-terminals. Through the discussion and design of the software and hardware solutions of the new edge computing framework combining edge devices and cloud computing

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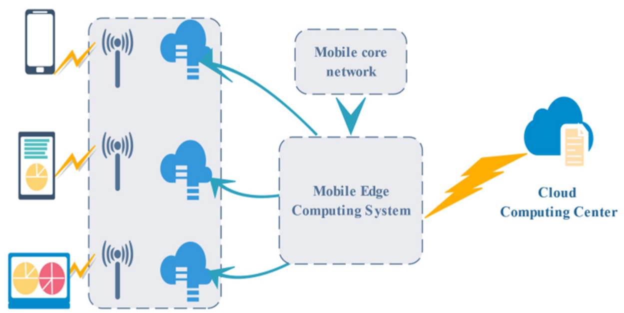

FIGURE 1. Typical architecture of MEC technology system.

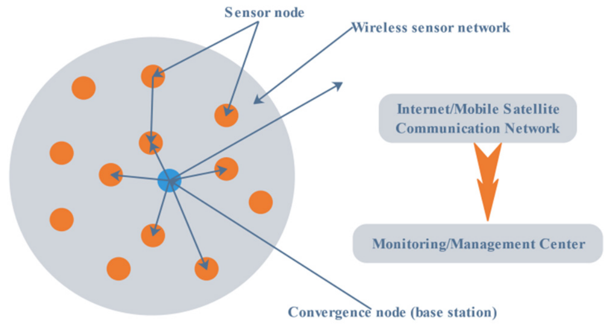

FIGURE 2. Wireless sensor network system structure.

centers and related communication methods [16], [17], this article develops a resource optimization technology based on edge computing.

This technology constructs a music multi-terminal resource optimization scheme by combining edge computing and wireless networks. This solution can provide a certain reference and reference for the development of music terminals. This article introduces the overview of edge computing technology and existing applications in Section 2, and explains that wireless local area network refers to a computer local area network that uses wireless channels as the transmission medium. In Section 3, this article presents the design of music multi-terminal based on wireless network and the optimization research of music multi-terminal based on edge computing. Based on the above research, the paper finally tests the performance of existing music multi-terminal resource optimization algorithms. The tests are the equal power distribution algorithm with fixed power, the traditional water injection power distribution algorithm and the edge computing power distribution algorithm proposed in this article.

II. RELATED WORK

Scholars such as Tong L suggest deploying cloud servers at the edge of the network and designing the edge cloud as a tree-like hierarchy of geographically distributed servers in order to effectively use cloud resources to meet the peak load of mobile users [18]. Chan, et al studied the dynamic service migration in the mobile edge cloud hosting cloud-based services at the edge of the network, and used the Markov decision process framework to formulate the order decision of service migration [19]. In order to study the gap of spectrum dynamic management resources across cloud edges, scholars such as Shekhar S proposed a dynamic data-driven cloud and edge system, which adaptively detects the measurement data collected in the cloud and edge resources to learn and enhance the distributed resource pool model [20]. The above research has done some research on the multi-terminal optimization of edge computing, but there is no in-depth research involving the direction of music multi-terminal resource optimization. Therefore, this article focuses on the research and development of multi-terminal resource optimization technology in music-related fields.

Mobile edge computing provides content providers and application developers with real-time radio access network (RAN) information, such as network load, user location information. This real-time network information can provide mobile users with context-aware services, thereby improving user experience and user service quality. Mobile edge computing adds a corresponding role to the edge network [21].

This technology allows the edge network to perform tasks such as computing and services, and increases the management authority of the edge network to reduce the network delay and energy consumption of mobile users [22]. Network operators allow third-party partners to handle the edge of the wireless communication network. Therefore, for mobile users and enterprises, new applications and edge services will be deployed more quickly [23].

Wireless local area network refers to a computer local area network that uses wireless channels as the transmission medium. This technology is an important supplement and extension of wired networking, and has gradually become a vital component of computer network aggregation [24]. This technology is widely used in fields that require removable data processing or where physical transmission media cannot be wired. The growth of wireless local area network technology began in the mid-1980s. It was produced by the Federal Communications Commission (FCC) providing authorization for public applications in industrial, scientific research, medical (ISM) and agricultural frequency bands [25]. This policy enables major companies and end users to apply wireless products without obtaining FCC licenses, thereby promoting the development and application of WLAN technology.

The wireless sensor network system structure is shown as in Figure 2. Sensor nodes with radio frequency functions are distributed in various parts of the wireless sensor network. These sensors are responsible for the perception and collection of data, and send the data to the sink node through wireless sensor network communication technology [26], [27]. The convergence node communicates with the monitoring or management center through a public network, etc., so that users can process and analyze the collected data to make judgments or decisions [28], [29]. Because of the provisioning and performance processing of music

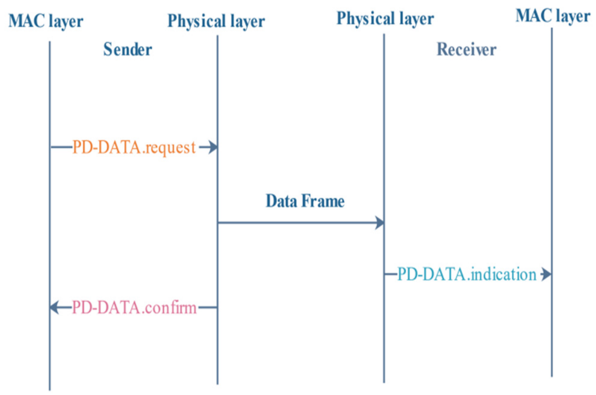

FIGURE 3. The physical layer data receiving and sending process in the music wireless network.

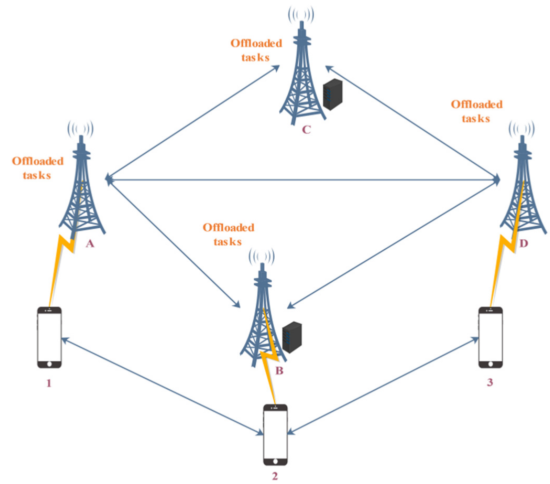

FIGURE 4. Schematic diagram of computing switching in mobile edge computing.

multi-terminal resources, there are some problems of calculation and coordination allocation. The above problems can be solved better by using the structure based on edge calculation.

The wireless sensor network has a very broad application prospect, and its development and application will bring a far-reaching impact on human life and production and other fields. Although the wireless sensor network has already obtained large-scale commercial applications, it still needs to wait to solve the technical constraints [30], [31]. Although edge computing can process edge network data independently of cloud computing, its typical application scenarios are more focused on collaborative computing with cloud computing, that is, terminal cloud integration applications.

However, with the decline in computing costs, the rapid development of sensor nodes, and the reduction of the size of microprocessors, many wireless sensor network applications have begun to be used. At present, the applications of wireless sensor networks are mainly concentrated in agriculture and biological environmental protection, industrial monitoring, home and office automation, medical treatment and nursing [32], [33].

III. MUSIC MULTI-TERMINAL RESOURCE OPTIMIZATION

A. DESIGN OF MULTI-TERMINAL MUSIC

Wireless sensor network is an information acquisition system composed of a large number of wireless sensor nodes distributed in a certain area. Each sensor node has certain computing, sensing and communication capabilities. This technology calculates and processes the collected data through a certain network protocol, so that it can realize the recognition, positioning and tracking of people or objects in the network existence area [34]. Edge computing can be applied to certain resources that may not be continuously connected to the network, such as autonomous vehicles, implantable medical devices, highly distributed sensor fields and mobile devices [35]. Edge computing can be applied to sensor networks to realize mobile data collection and mobile signature analysis.

The general ZigBee positioning system is a passive positioning system consisting of a wireless network and a positioning monitoring center existing in the area to be located. The hardware solution of this system generally uses the CC2530 solution. Therefore, for this kind of scenario, the system needs to select the appropriate data transmission scheme to receive the actual data collected according to the specific situation. Cable data transmission schemes commonly used in sensors include I2C, SPI, DART, USB and other forms of transmission, but also include a variety of wireless network transmission methods, the more popular Bluetooth, WIFI and mobile cellular networks. The positioning method is generally to extract the RSSI value of each reference node and design a corresponding algorithm to achieve positioning.

B. MUSIC MULTI-TERMINAL OPTIMIZATION BASED ON EDGE COMPUTING

In the mobile edge computing environment, the coverage of a single edge cloud is limited. With the frequent movement of terminal users such as personal mobile terminals, the quality of edge cloud services has dropped sharply. This problem even leads to service interruption, and it is difficult to guarantee service continuity. Because edge computing nodes cannot have the same high performance and storage as cloud computing servers, applications deployed on edge nodes need to be developed and optimized separately in order to better collect and process data from IoT devices.

In recent years, society has gradually entered the era of big data, and the emergence of cloud computing makes the need for big data processing and application capabilities increasing day by day. Aiming at some shortcomings and shortcomings of cloud computing itself, this article implements a music multi-terminal resource optimization technology based on edge computing and wireless network. By studying and studying the current situation of the optimization of existing music multi-terminal resources and analyzing its characteristics and shortcomings, this article puts forward a new resource optimization model.

The scene shown in Figure 4 has four base stations A, B, C, and D. Among them, base station B and base station

Care communication base stations with edge servers. When the mobile terminal moves from a place without base station coverage to position 1, the terminal is within the communication range of A at this time. At this time, the terminal just has a task to process, and then consider whether to perform calculation offloading. Research resource allocation has always been an indispensable problem in the field of wireless communication. With regard to power control, interference suppression, spectrum optimization, energy efficiency optimization, throughput maximization and other problems related to resource allocation in heterogeneous networks, the methods and theories of research will involve the theory of convex optimization, the theory of the deconstruction of the pair, the theory of game, and so on.

Edge computing in mobile networks has evolved from mobile cloud computing. Mobile cloud computing is a network architecture that leverages the powerful computing and storage capabilities of the cloud platform to move computing power and data storage from mobile devices to the cloud. However, mobile cloud computing is not suitable for real-time applications due to the disadvantages of long delays and large back-trip bandwidth consumption. At present, mobile cloud computing is facing certain technical challenges. The challenge consists mainly of radio scarcity of spectrum resources, traffic congestion and multiple radios. The coexistence of access technology and so on. In addition, low bandwidth, service availability, and heterogeneity are the main issues in mobile cloud computing communications. When selecting a specific communication scenario, in addition to considering the type of support for the sensor currently in use, you also need to consider the usage needs of the specific scenario, including but not limited to the transmission rate, maximum transmission distance, transmission energy consumption. At the same time, in order to expand the applicable scenario of the edge computing system, it is necessary to preserve the commonly used data transmission interface.

For this reason, many researchers at home and abroad hope to solve the above problems through computational switching. As shown in Figure 4, the user uses the services provided by Edge Cloud A at location 1. When the terminal location moves to location 2, because location 2 is not within the capability of edge cloud A to provide services, the quality of service is difficult to guarantee or even interrupted. Many literatures study resource allocation will build goal optimization functions, such as maximizing energy efficiency or minimizing execution delay, and then set constraints, such as transmission power limit, transmission maximum delay limit, and finally through some classical algorithms and theories to solve this resource allocation problem. The following will focus on the relevant mathematical theories used in edge-based computing architectures. Table 1 shows the relevant parameter information in the theory.

The analytical formula shows that the optimization problem of this function is Procrustes problem. Use the following steps to solve the corresponding transformation step by step, and use the formula to calculate the geometric

TABLE 1. Notation definitions.

Notation	Description
$X_i \quad O \ X'$	Edge cloud performance indicators
$\widehat{D}$	Edge server metrics
p_m	Mobile terminal power is Pm
p_c	Average data transmission power P
p_i	The average power of the computing node is P
P_{k1},P_{k2}	Mobile terminal location parameters
$\widetilde{P}_2 \quad L$	Edge cloud coverage parameters
$V^T \quad O_1$-O_2	Edge computing server communication parameters

centers of P_{k1} and P_{k2}.

$$O = \sum\nolimits_{i=1}^{N} X_i/N \tag{1}$$

The symmetric difference between two data sets X, X' is defined as

$$X \ominus X' = \left\{x|x \in X \cup X' - X \cap X'\right\} \tag{2}$$

The resource switching models are respectively denoted as P_{k1} and P_{k2}., and the number of corresponding models is calculated. By calculating the positions of the global and local point clouds P_{k1} and P_{k2} projected on the music multi-resource endpoints.

$$Pr[A(X) \in \hat{D}] \leqq e^{[X,X']} Pr[A(X') \in \hat{D}] \tag{3}$$

Under the premise of only considering time, if the task execution time locally is greater than the sum of the execution time on the edge server and the transmission time, the calculation is offloaded. But in the mobile edge computing environment, not every base station has an edge server.

If it is calculated for any two data sets $X, X \in D'$ and any $\hat{D} \subseteq Range(A)$ satisfies

$$E\left(P_{k1}, P_{k2}\right) = \|P_{k1} - \left(s \cdot P_{k1} \cdot R + L\right)\| \tag{4}$$

$$\tilde{P}_2 = s \cdot P_2 \cdot R + L \tag{5}$$

In which, O represents the geometric center. X_i represents the coordinate of the itch point. N represents the number of point clouds.

$$L = (O_1 - O_2) + (O - O_1) \tag{6}$$

As shown in Figure 4, if the mobile terminal is in position 1, the only base station that can communicate with it is A, but A and B, C, and D have the ability to communicate with each other, and only B and C base stations have edge servers.

The operation of pooling is shown below.

$$x_j^{l+1} = \propto_j^{l+1} down(x_j^l) + b_j^l \tag{7}$$

Among them, x_j^l represents the i-th feature map of the lth layer. x_j^{l+1} represents the i-th feature map of the l+1th layer.

The convolution operation is expressed as follows:

$$x_j^{l+1} = \sum\nolimits_{i \in M} (K_{i,j}^{l+1} * x_j^l + b_j^l) \tag{8}$$

Among them, x_j^l represents the jth feature map of layer l; x_j^{l+1} represents the jth feature map of layer l+1.

$$\mathrm{c}(x, y, f(x)) = |y - f(x)|_\varepsilon \tag{9}$$

As people's demand for mobile devices increases, the future of mobile devices is on the rise. Although the energy consumption of a single mobile device is very small, due to the large amount, if a small amount of energy saved on a single mobile device is extended to other mobile devices, the total energy consumption can be greatly reduced.

$$E = \frac{1}{2}\sum_{k=1}^{L}(d_k - o_k)^2 \tag{10}$$

Therefore, energy saving is also a very important criterion in calculating unloading decisions.

$$\Delta\omega_{jk} = -\eta\frac{\partial E}{\partial \omega_{jk}} \tag{11}$$

$$\Delta\omega_{jk} = \eta(d_k - o_k)f'(net_k)o_j = \eta\delta_k o_j \tag{12}$$

The above analysis of the terminal and offloading time, assuming that the power of the mobile terminal when performing tasks is p_m, the average power of data transmission is p_c, and the average power calculated on the computing node is p_i. The energy saving of computing offloading to the computing node compared to executing on the mobile terminal is shown in formula 13.

$$|y - f(x)|_\varepsilon = \max\{0, |y - f(x)| - \varepsilon\} \tag{13}$$

Let the training set be

$$T = \{(x_1, y_1), \cdots, (x_l, y_l)\} \tag{14}$$

The coordinates of P_{k1} and P_{k2} are normalized, without considering the scaling factor, and expressed by equation (15).

$$R = U \cdot V^T \tag{15}$$

After the geometric centers O_1 and O_2 of P_{k1} and P_{k2} are obtained, the translation vector L is calculated using equation (8).

$$s = tr\left(P_{K1}^T \cdot P_{k2} \cdot R\right)/tr\left(P_{K2}^T \cdot P_{k2}\right) \tag{16}$$

Therefore, when the mobile terminal needs to perform computational offloading at location 1, it must first determine whether the task is offloaded to base station B or base station C, and this is determined according to the shorter total completion time.

$$E = \frac{1}{2p}\sum_{p=1}^{N}\sum_{k=1}^{L}(d_{pk} - o_{pk})^2 \tag{17}$$

As one of the key technologies of mobile edge computing, computing offloading technology provides new ideas for mobile devices to utilize cloud resources.

In computing offloading, mobile devices use the cloud to collect, store, and process data by offloading workloads in mobile applications to the cloud, thereby reducing the program execution time of the mobile device and reducing its energy consumption. At present, mobile cloud computing is facing certain technical challenges. The challenge consists mainly of radio scarcity of spectrum resources, traffic congestion and multiple radios. The coexistence of access technology and so on. In addition, low bandwidth, service availability, and heterogeneity are the main issues in mobile cloud computing communications. In the traditional centralized computing mode, the entire application program is executed on the mobile terminal. In the distributed computing mode, mobile terminals can migrate applications to the cloud for execution through computing uninstallation.

Applications that need to perform computational offloading generally have strict time requirements, and usually require very low computational and communication delays. Mobile devices running applications, such as smartphones, usually have limited bandwidth and limited computing power. The convergence node communicates with the monitoring or management center through a public network, etc., so that users can process and analyze the collected data to make judgments or decisions. Because of the provisioning and performance processing of music multi-terminal resources, there are some problems of calculation and coordination allocation. The above problems can be solved better by using the structure based on edge calculation. Therefore, cloud resources need to be used to expand the capabilities of mobile devices to run computing power-intensive or interactive-intensive mobile applications.

IV. PERFORMANCE ANALYSIS

A. TEST ENVIRONMENT

In this chapter, we set up an example scenario, using a cloud server as the cloud service layer, and 4 laptops as edge servers to collect the original video of the camera. The server is configured with Intel Xeon CPU and equipped with 8GB memory. The edge server is configured with Intel Core i5-6200U and has NVIDIA GeForce 940MX graphics card. At the same time, the communication bandwidth rate transmitted to the cloud service layer is limited to 1 MB/s. In order to evaluate the performance of the proposed algorithm, a series of simulation experiments are carried out. Suppose a group of smart mobile music devices are randomly distributed in a cell with a radius of 1 km, and the MEC is placed next to the base station.

This technology provides fast computing and storage tasks at the edge of the music wireless network. The results of the music multi-terminal case test verify the feasibility and efficiency of the technology under discussion. At the same time, although this article presents a new combination of edge computing and wireless network music multi-terminal resource

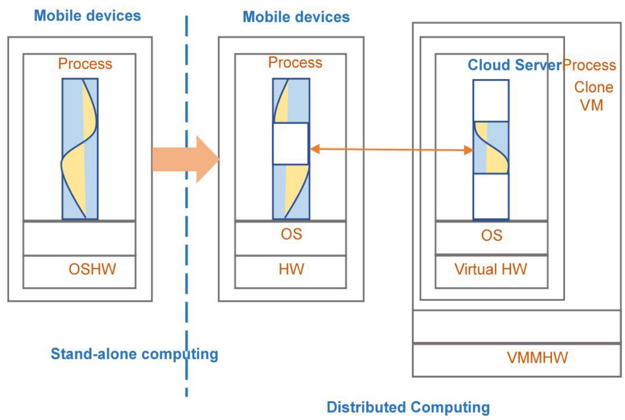

FIGURE 5. Music multi-terminal edge computing offload architecture prototype.

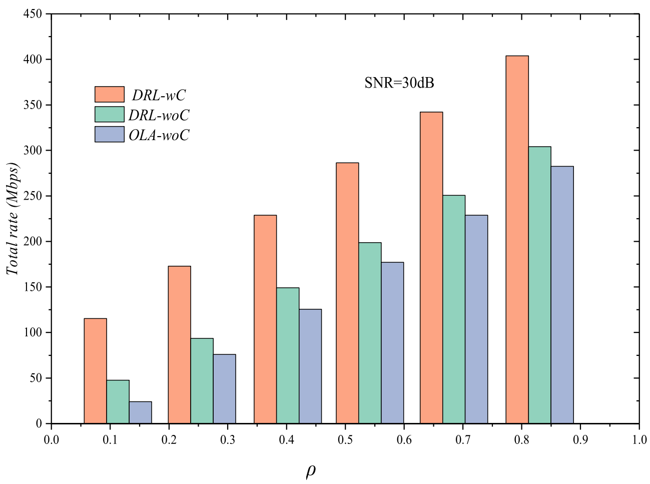

FIGURE 6. Music wireless network rate comparison under different ρ values (SNR = 30dB).

optimization scheme. However, there are some limitations in the utilization and practical application of data. There are still many shortcomings in the research work of this article, and we will continue to devote ourselves to the exploration and research in the field of music multi-terminal resource optimization. A mobile device, the number of sub-channels, and the bandwidth of each sub-channel is determined. The maximum transmission power of the mobile device is set to 0.4W, and the interference tolerance is set to 1mw.

B. THE SPEED COMPARISON OF MUSIC WIRELESS NETWORK

This article compares three algorithms, namely the equal power distribution algorithm with fixed power, the traditional water injection power distribution algorithm and the edge computing power distribution algorithm proposed in this article. It can be seen from Figure 5 that the throughput of the three power distribution methods tends to be stable, no longer changes, and the convergence speed is relatively fast, which is suitable for the real-time requirements of power distribution.

Figure 6 shows the comparison effect of music wireless network rate under different ρ values. The results show the

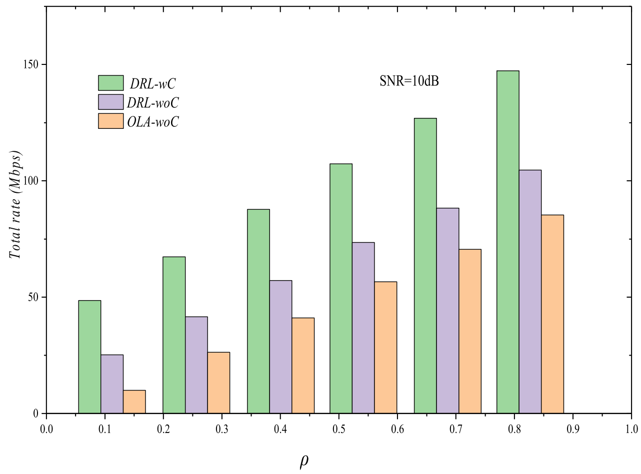

FIGURE 7. Music wireless network rate comparison under different ρ values (SNR = 10dB).

trend of edge server utility when the number of independent variables changes. It can be seen from the figure that with the increase of the number of independent variables, the utility of the edge server is increasing in the three scenarios. As the number of independent variables increases, the MEC server needs to provide a certain calculation rate to perform calculation offloading, which leads to an increase in the overhead of the MEC server.

Figure 7 compares the music wireless network rate comparison effect under different ρ values when the SNR is 10dB. When the value of ρ changes, the utility of the total network speed changes the same. In the three schemes, as the value of ρ increases, the utility of the total network speed gradually increases. This is because as the value of ρ increases, the more calculation rate is obtained, the more energy is needed to perform calculations and the more the utility of the music multi-terminal is. Compared with the other two schemes, the algorithm proposed in this article still has higher utility. However, the algorithm proposed in this article is still more effective than the other two schemes. This is because the algorithm in this article considers the trade-off between the allocated calculation rate and the required CPU cycles, so the utility of MEC is higher.

C. THE INFLUENCE OF SIGNAL NOISE ON EXPERIMENTAL RESULTS

After completing the wireless network-based music multi-terminal architecture test, we will continue to carry out the music multi-terminal resource optimization test based on edge computing. Figure 7 and Figure 8 show the iterative effect diagram of the corresponding music wireless network multi-terminal.

Figure 8 shows the PR curve for multi-terminal music with Gaussian noise. In this test, Gaussian noises with different variances are set respectively, and the range of AP is set to 0.57-0.80. It can be seen from this test that after adding the edge computing architecture, the ability of music multi-terminal resources to deal with noise is significantly enhanced.

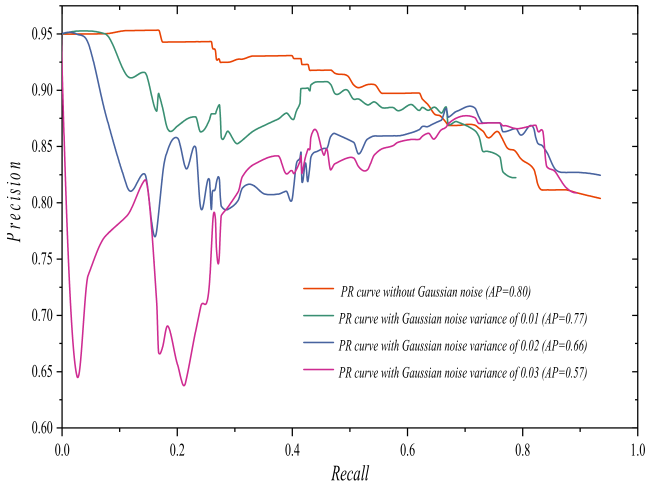

FIGURE 8. Multi-terminal optimization effect diagram of music wireless network-Gaussian noise.

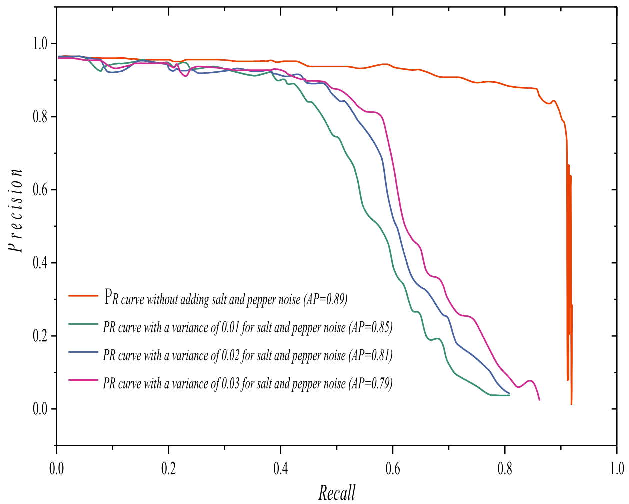

FIGURE 9. Multi-terminal optimization effect diagram of music wireless network-salt and pepper noise.

Figure 9 shows the PR curve for multiple music terminals with added salt and pepper noise. In this test, salt and pepper noises with different variances are set respectively, and the range of AP is set to 0.79-0.89. It can be seen from this test that after adding the edge computing architecture, the ability of music multi-terminal resources to deal with noise is significantly enhanced. Mobile edge computing is one of the key technologies of 5G, which can solve the problems of high latency, high load and energy consumption in traditional cloud computing to a certain extent. In the process of studying resource allocation, there will always be many relationships between competition and cooperation, so the problem of resource allocation in cellular networks is combined with game theory, and the competitive cooperative relationship between users in the network is found, and appropriate punishment mechanism is established.

With the constraints, the problem of resource allocation is modeled as a game problem, so that the power control, energy efficiency optimization and spectrum efficiency optimization

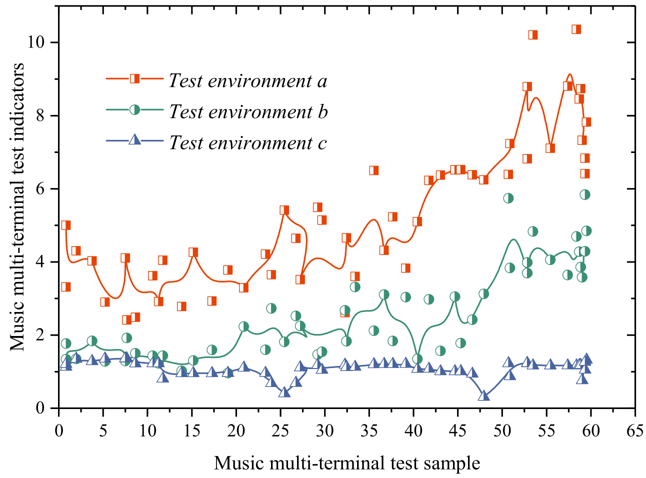

FIGURE 10. Multi-terminal music verification test in different environments.

in heterogeneous networks are modeled and analyzed by game theory or auction theory, and solved by various group intelligence algorithms combined with convex optimization theory. This technology can also alleviate the pressure on the network center, and to a certain extent plays a key role in the development of the future network. The current research on edge computing mainly includes issues such as how to make offloading decisions, when to offload, and where to offload. When the task is offloaded, it also involves the issue of how to allocate resources.

Figure 10 compares the verification results of the number of music multi-terminals under different conditions. It can be found from the figure that in different environments, the multi-terminal optimization technology established in this article can well meet the needs and efficiency of different environments. There are many performance evaluation indicators for handover in mobile communication networks, such as throughput, handover delay, packet loss rate, number of handovers, call blocking rate, and handover blocking rate. But it is too suitable in the computing handover of the mobile edge. So, we put forward the performance evaluation indicators for mobile edge computing are indicators such as the average energy consumption of mobile terminals. In the above process, we conducted performance and simulation tests on the model established in this article. The above-mentioned test includes the music wireless network rate comparison and the corresponding iterative effect of the music wireless network multi-terminal. Next, we will conduct energy consumption testing on the edge computing-based music multi-terminal resource optimization technology established in this article.

Figure 11 compares the energy consumption level of music multi-terminal resource optimization under different conditions, mainly comparing the difference between using Gaussian noise and unused Gaussian noise. When the value of ρ is changed, the overall resource optimization energy consumption will also change. In the scheme using Gaussian noise, the energy consumption levels under different ρ values

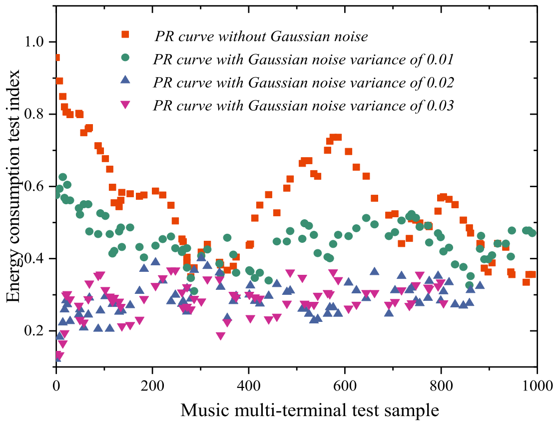

FIGURE 11. **Music multi-terminal resource optimization energy consumption test results.**

are compared. As the value of ρ increases, the utility of the energy consumption level gradually increases. This is because as the value of ρ increases, the higher the calculation rate obtained, the more energy required to perform the calculation, and the greater the utility of the music multi-terminal. Compared with the other two schemes, the algorithm proposed in this article still has higher practicability. However, the algorithm proposed in this article is still more effective than the other two schemes. This is because the algorithm in this article considers the trade-off between the allocated calculation rate and the required CPU cycles, so MEC is more practical.

This technology provides fast computing and storage tasks at the edge of the music wireless network. The results of the music multi-terminal case test prove the feasibility and efficiency of the discussed technology. At the same time, although this article proposes a new combination of edge computing and wireless network music multi-terminal resource optimization scheme. However, there are some limitations in the use of data and practical applications. There are still many shortcomings in the research work of this article. We will continue to devote ourselves to the exploration and research in the field of music multi-terminal resource optimization.

V. CONCLUSION

In recent years, society has gradually entered the era of big data, and the emergence of cloud computing makes the need for big data processing and application capabilities increasing day by day. Aiming at some shortcomings and shortcomings of cloud computing itself, this article implements a music multi-terminal resource optimization technology based on edge computing and wireless network. By studying and studying the current situation of the optimization of existing music multi-terminal resources and analyzing its characteristics and shortcomings, this article puts forward a new resource optimization model.

The music multi-terminal architecture is established through the wireless sensor network, and the relevant data and information are transmitted wirelessly. This technology provides fast computing and storage tasks at the edge of the music wireless network. The results of the music multi-terminal case test verify the feasibility and efficiency of the technology under discussion. At the same time, although this article presents a new combination of edge computing and wireless network music multi-terminal resource optimization scheme. However, there are some limitations in the utilization and practical application of data. There are still many shortcomings in the research work of this article, and we will continue to devote ourselves to the exploration and research in the field of music multi-terminal resource optimization.

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