Research Article

Intelligent Layout of Music and Cultural Facilities Based on Heterogeneous Cellular Network

Jing Zhang [ID]

School of Music and Dance, Qiqihar University, Qiqihar 161006, Heilongjiang, China

Correspondence should be addressed to Jing Zhang; 18401093@masu.edu.cn

With the emergence and development of computer technology, the computing power of computer is also constantly improving and has driven the development of other fields. As an important way to improve the computing power, availability, and reliability of computer system, parallel computing is the hot spot and trend of the development of computer technology. This paper introduces the technical background and basic knowledge of parallel computing. Aiming at the problem of scheduling independent tasks and scheduling related tasks, this paper proposes a method of transforming independent tasks into related tasks and unifies the model. With the progress of mobile Internet technology, the rapid growth of mobile terminals and data traffic has spawned a large number of computing intensive and delay sensitive applications. In 5G heterogeneous cellular networks, users may become computationally demanding and delay sensitive. MEC server can solve the problem of its own computing power and battery capacity limitation. Music and cultural institutions provide City Music and cultural products. With the rapid development of modern cities, unbalanced, disordered, and large-scale music and cultural institutions cannot meet the needs of urban residents for music and culture in essence. From the perspective of urban music and cultural institutions, combined with the characteristics of music and cultural intelligence, this paper analyzes the fairness, accessibility, and attraction of the institutions through field research and GIS technology and analyzes the music. From the perspective of facility layout, it analyzes the problems and pain points of music and cultural intelligence layout, such as disorder, imbalance, and failure. In this paper, we use parallel computing technology to optimize intelligent placement of music and cultural facilities, to provide technical basis for related research.

1. Introduction

With the emergence and progress of computer technology, the computing power of computer also promotes the further innovation and development of other fields and promotes the world and human beings to the era of big data. The operation mode of computer has developed from the traditional single computer computing to multicomputer collaborative computing and parallel processing. The breadth and depth of parallel computing in practical application are far beyond the past. As an important way to further improve the computing power, availability, and reliability of computer data processing system, parallel computing has become one of the key and main directions of computer technology promotion and development. Parallel computing can effectively improve the computing power of

computer, and it has good parallel computing ability when dealing with large tasks. Despite the rapid development of parallel computing, it is still a challenging research challenge to effectively schedule computing resources to execute and process huge tasks. With the rapid development of global wireless communication technology, people have higher and higher requirements for wireless data rate. The data rate of existing 4G technology has reached the theoretical limit, which cannot meet people's requirements for wireless data transmission bandwidth. Using new technology to solve the problem of low data rate, 5G communication technology has brought the gospel to solve this problem. This paper proposes a resource management solution that integrates cellular network and 5G-related technology. Taking heterogeneous cellular network as wireless scene, it explores computing diversion and resource allocation to achieve

efficient resource scheduling, improve system performance, and improve user satisfaction. As the birthplace of human civilization and an important intersection of culture, "city" has become an important research field of many schools. Based on the perspective of urban music culture, combined with the design characteristics of music and cultural institutions at home and abroad, through a large number of field research and POI to capture the status quo, this paper analyzes the communication situation of existing music and cultural institutions. With the development of science and technology, Chinese scholars began to study the intelligence of urban cultural institutions. This paper focuses on the research of music culture system and discusses the ideas and strategies of optimizing music culture intelligence design from the theoretical and practical level. The complete CUDA program uses the above optimization technology to optimize the example and analyzes the results of each optimization, so as to demonstrate the rationality and effectiveness of the above optimization technology.

2. Related Work

The literature shows that GPU was designed for a wide range of parallel computing from the beginning [1]. The parallel processing of tens of millions of polygons and pixels enables GPU to increase more processing core and improve parallel processing ability with its development. It can process a large amount of data at the same time. GPU has such a strong processing capacity mainly due to the unique hardware design. Although the processor is getting better and better, the size of transistor is smaller and smaller. The processor core can accommodate more and more transistors. The resource is not unlimited. The module is still a control unit, and the CPU must compensate for it. Traditional processors must perform many control tasks [2]. The literature shows that 5G technology brings many advantages in cellular network, but the edge of computing and storage resources also brings new challenges. Because some targets are different, some wireless resource control schemes are invalid. Wireless mainly improves the data rate, and mobile edge computing mainly meets the low delay demand of users, which makes the original wireless resource management scheme unsuitable for edge computing scenarios. Wireless edge is complex, so it is necessary to combine the specific scenario to develop a new mobile edge computing resource management strategy [3]. Because of the lack of edge network function, mobile edge computing divides cloud computing resources to the edge of the network. For example, the coexistence of small cells in heterogeneous cellular networks and vehicle mobility in the vehicle network, the original computing migration and content cache strategies are no longer applicable. The literature shows that GPU is the "brain center" of computer graphics card, which is similar to the function of central processing unit in computer system. The performance and quality of a graphics card are mainly related to the performance optimization of GPU. The former mainly relies on CPU processing optimization when dealing with 3D image and display effects, also known as "smooth acceleration" [4]. The latter needs to be optimized when dealing with 3D image and display effect. The display chip displays operations in a centralized manner, while 3D graphics cards are responsible for so-called hardware acceleration. Currently, there are two major manufacturers of video card processors in the market: NVIDIA and AMD. According to incomplete statistics, the literature shows that by the end of 2020, there will be more than 100 theatres and concert halls of different sizes and regions, 10% of which are often used. With the continuous improvement of local music image, more and more modern buildings have opened up a new vision for the construction, but there are still many challenges in the planning and design of music and cultural places [5]. The literature points out that the design standard of the construction of domestic music and cultural institutions is reflected in the theoretical level. How to optimize the design of GIS from the technical level to the GIS system is still to be discussed. In practice, it is of practical significance to use the spatial geographic information database of music and culture institutions created by GIS to coordinate and optimize the selection range of projects.

3. Optimization Algorithm of Heterogeneous Cellular Network Based on Parallel Computing

3.1. Parallel Computing. In order to reduce the number of DFT calculations and improve the calculation speed, the algorithm needs to be improved, such as formula (1):

$$\left(W_N^{nk}\right)^* = W_N^{-nk}. \tag{1}$$

The rotation factor is a periodic function, and its periodicity and symmetry can improve the computational efficiency, such as formula (2).

$$W_N^{nk} = W_N^{(n+N)k} = W_N^{(k+N)k}. \tag{2}$$

With the above properties, we can get formula (3):

$$W_N^0 = e^{-j2\pi/N \bullet 0} = 1. \tag{3}$$

It can be seen from the DFT transformation formula that any calculation of the value of X(k) requires N complex multiplications and (N-1) complex additions, as shown in formula (4).

$$W_N^{N/2} = -1. \tag{4}$$

3.2. Optimization Algorithm of Heterogeneous Cellular Network. In order to get better service, users pay a certain fee to service providers for heterogeneous cellular network composed of a small base station and multiple mobile devices. This is proportional to the size of the function data and inversely proportional to the delay requirement. The calculation formula (5) is as follows:

$$O_i = \frac{xD_i}{T_i^{\max}}. \tag{5}$$

If the custom task is completely executed locally, the local execution delay is as follows:

$$T_i^0 = \frac{DC_i}{F_i}, \qquad (6)$$

where F_i indicates that the user u_i's own computing power (cycles/s) and power consumption are equal to the local computing power, as shown in the following formula:

$$E_i^0 = \delta_i DC_i F_i^2. \qquad (7)$$

If the user submits a D2D task for execution, since the data being processed is much smaller than the data before processing, the processing delay is ignored, and the user service delay is expressed as

$$T_{i,j}^{d,0} = T_{i,j}^t + T_{i,j}^e = \frac{D_i}{R_{i,j}} + \frac{DC_i}{F_j}. \qquad (8)$$

Delaying the user to complete the processing of the complete task on the inactive device represents the processing capacity of the inactive device and the object, as shown in the following formula:

$$R_{i,j} = B_k \log_2\left(1 + \frac{P_i g_{i,j}}{\sigma^2}\right). \qquad (9)$$

Considering the parallel execution of user tasks, the delay in D2D offloading mode is the maximum value of the partial delay of the local calculation and the total offloading delay before D2D execution:

$$T_{i,j}^d = \max\left\{\left(1 - \lambda_{i,j}\right)T_i^0, \lambda_{i,j}T_{i,j}^{d,0}\right\}. \qquad (10)$$

The power consumption in the D2D offloading model is the sum of the power consumption of the local task calculation part and the power consumption of the tasks outsourced to inactive devices, expressed as follows:

$$E_{i,j}^d = \left(1 - \lambda_{i,j}\right)E_i^0 + \lambda_{i,j}E_{i,j}^{d,0}, \qquad (11)$$

where $E_{i,j}^{d,0}$ shows the energy consumption of users who delegate tasks to inactive devices, as in the following formula:

$$E_{i,j}^{d,0} = E_{i,j}^{d,0} + E_{i,j}^{d,e} = \frac{P_i D_i}{R_{i,j}} + \delta_j DC_i\left(F_j^d\right)^2. \qquad (12)$$

This article discusses task latency and power consumption. These two indicators are essential for proper resource allocation in edge computing. In this article, the cost of completing user tasks is defined as U, which is the weighted sum of task delay and power consumption. The calculation formula (13) is as follows:

$$U_i = \mu_i^0 U_i^0 + \sum ru_j \in RU\mu_i^j U_{i,j}^d, \qquad (13)$$

where U_i^0 represents the cost of execution in the local calculation mode, and the calculation formula (14) is as follows:

$$U_i^0 = T_i^0 + \rho_i E_i^0, \qquad (14)$$

where T_i specifies the user weight, which is used to characterize the user's relative preference for task delay and

power consumption. A slightly higher value means that the user's evaluation of power consumption is higher than the delay. The custom task execution delay calculation formula (15) is as follows:

$$T_i = \mu_i^0 T_i^0 + \sum ru_j \in RU\mu_i^j T_{i,j}^d. \qquad (15)$$

The expression of $U_{i,j}^d$ in the formula represents the execution cost of the user in the D2D deletion mode, and the calculation formula is as follows:

$$U_{i,j}^d = T_{i,j}^d + \rho_i E_{i,j}^d. \qquad (16)$$

In this article, the problem of general calculation and resource allocation is expressed as the problem of minimizing the cost of executing the task, expressed as the sum U of the cost of executing all users, and the calculation formula is

$$\text{Min} : \sum u_i \in uU_i, s.t. \begin{cases} C1: \mu_i^0 + \sum ru_j \in RU\mu_i^j \geq 1, \\ \quad \mu_i^j \in \{0.1\}, \mu_i^0 \in \{0.1\}, \\ C2: \lambda_{i,j} \in [0.1], \\ C3: T_i \leq T_i^{\max}, \\ C5: \sum u_i \in U\mu_i^j \leq 1, \\ C5: E_i^0 \leq E_i^Q, \\ C6: \lambda_{i,j}E_{i,j}^{d,0} \leq E_j^Q, \end{cases} \qquad (17)$$

In this article, this article first considers a specific situation, that is, only one user must uninstall the computing task, and then the user task can be executed locally or offloaded to any idle device. In the case of a user, the original problem of simplified calculation and joint offloading of resource allocation is expressed as follows:

$$\text{Min} : U_1 , s.t. \begin{cases} C1: \mu_i^0 + \sum ru_j \in RU\mu_1^j \geq 1, \\ \quad \mu_1^j \in \{0.1\}, \mu_1^0 \in \{0.1\}, \\ C2: \lambda_{1,j} \in [0.1], \\ C3: T_1 \leq T_1^{\max}, \\ C5: \sum u_i \in U\mu_1^j \leq 1, \\ C5: E_1^0 \leq E_1^Q, \\ C6: \lambda_{i,j}E_{i,j}^{d,0} \leq E_j^Q. \end{cases} \qquad (18)$$

According to the formula, U_1 can be written as follows:

$$U_1 = \mu_1^0 U_1^0 + \sum ru_j \in RU\mu_1^j U_{1,j}^d. \qquad (19)$$

For the D2D offloading model, assuming that the task of user task1 is offloaded to an inactive device for execution, the problem of minimizing the cost of user tasks can be written as follows:

$$\text{Min: } U_{1,j}^d, \ s, t, 0 < \lambda_{1,j} \le 1. \tag{20}$$

Therefore, for this situation, choosing an algorithm with the lowest cost to complete the task can determine the optimal strategy for offloading calculations, such as formulas (21) and (22):

$$\mu_1^0 * = \left\{ \begin{array}{c} 1, U_1^0 < U_{1,j}^{d,*}, ru_j \in RU \\ 0, \text{else} \end{array} \right\}, \tag{21}$$

$$\mu_{1,j}^* = \left\{ \begin{array}{c} 1, U_1^{d,*} < U_{1,j}^0, ru_j \in RU \\ 0, \text{else} \end{array} \right\}. \tag{22}$$

When creating a user's device preference list, the user wants the cost of completing the task as low as possible. Therefore, the calculated uninstallation strategy suggested in this article is used to determine the user who needs to uninstall the task and then uninstall and install according to the user on each device):

$$L_i(j) = U_{i,j}^{d,*}. \tag{23}$$

On the contrary, if the user's task is handed over to the device to complete in D2D mode, the device hopes to generate more income, as shown in formula (24):

$$O_i^l = O_i \lambda_{i,j}^*. \tag{24}$$

When creating a device preference list for users, it is sorted in descending order according to the benefits that the device can obtain, expressed as formula (25):

$$L_j(i) = O_i \lambda_{i,j}^*. \tag{25}$$

Figure 1 estimates the cost of completing the task by comparing it with the algorithm proposed in the literature. It can be seen from the figure that the running cost of the two algorithms increases with the increase in the amount of input data because the user data in a longer delay are required in task execution, and at the same time, higher energy consumption is required to complete the task, which leads to higher costs.

Figure 2 shows the comparison of task delay and data size for different user transmission options. Comparing the methods in the literature, it can be seen from the figure that the cost of executing tasks for the two schemes is proportional to the increase in user data, and it can also be seen that the execution The cost of the task decreases as the user's transmit power increases.

Figure 3 compares the solution proposed in this paper with the solutions in the literature: consider the changes in the task delay and power cost of the two solutions as the number of users, task delay, and user energy consumption increase [6]. Both of them increase the number of latency while the solution proposed in the literature is slightly better than this article, but the power consumption is higher, because this article comprehensively deals with delay and power consumption, and can achieve a trade-off between delay and power consumption.
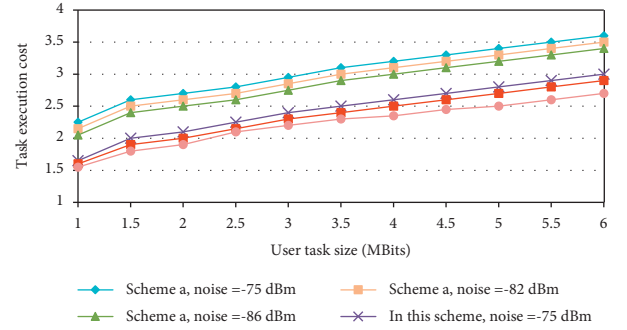

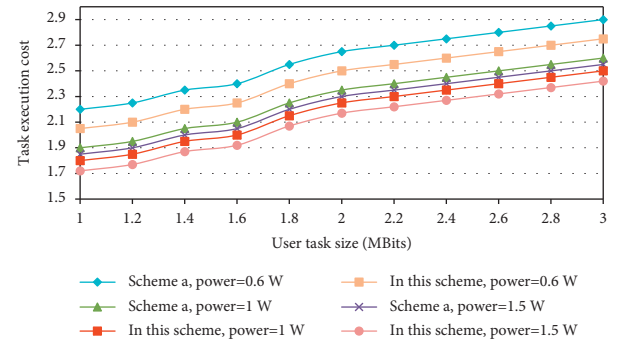FIGURE 1: User task execution cost under different noises.

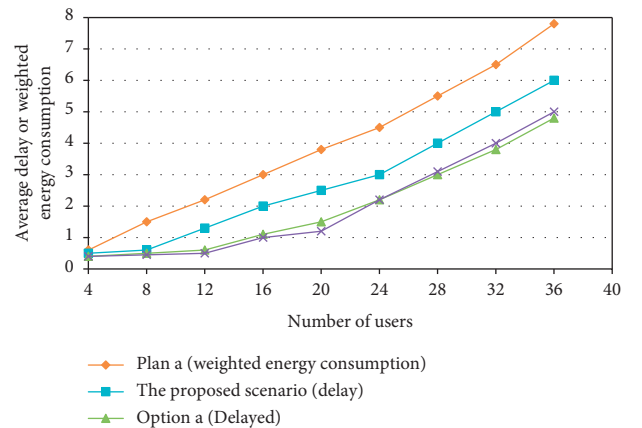FIGURE 2: Task execution cost under different transmission power.

FIGURE 3: Average user delay or weighted energy consumption.

4. Analysis and Optimization Strategy of Intelligent Layout of Music and Cultural Facilities

4.1. Analysis of Intelligent Layout of Music and Cultural Facilities. Because POI needs to study the distribution of various objects within the predetermined range, it is necessary to determine the exact area of interest and adjust the longitude and latitude of POI to reflect the objective data of the object. In this paper, the location of the object is used for statistical calculation, and the reliability of the basic data is required for subsequent calculation. Therefore, the reliability

of the calculation results can only be confirmed by the real and effective data source.

Baidu API is used to retrieve latitude, longitude, and address of music and cultural objects. Because the object coordinates obtained are Baidu offset, it is necessary to adjust the longitude and latitude of objects to get the actual coordinates [7]. After the data of urban master plan are used, the divided street area and street information are input into arc gis10.2 platform in turn to obtain the data set of music and cultural institutions and then calculate the geometric center of each street division area and the geometric street division center of each street division area, taking into account the population data of the sixth community census.

Based on the POI data of music and cultural institutions provided by Baidu API interface, the data of music and cultural institutions are checked, the objects that do not match are deleted, and different types of music and cultural institutions are merged [8]. Because the survival ability of music and cultural institutions is closely related to the activities of citizens, the distribution of its citizens directly affects the number and quantity of music and cultural institutions. Over time, the quantity and accuracy of data have been significantly improved. POI data of music and cultural institutions must also be updated and adjusted dynamically. In accordance with the annual POI update cycle of map company, POI shall be recorded and verified specially [9]. The differences between the data in the library shall be compared, and the differences inside and outside the library shall be checked in each cycle, which lays a foundation for the future music and cultural services.

Through the investigation and interview of people near major music and cultural institutions, the crowd is divided into four different groups: local people, professional musicians, and tourists and leisure groups, as well as four types of attention, appreciation, and recognition of music and target culture. The paper analyzes the level of initiative and summarizes the problems and needs of the number of music and cultural institutions. Local people are people who live and visit music and cultural institutions for a long time, among which local residents are the main groups. In the field of music performance and production, professional musicians pay more attention to music and cultural institutions, and their needs and concerns are higher [10–12]. The training level of performing musicians is higher and the requirements for the venue are higher, which also represents the music culture and image of the city. For different types of people, there are some differences in the social characteristics of the tested population. When comparing local residents, professional musicians, tourists, and leisure people, there are only slight differences in the characteristics of the share of goods, but the differences in characteristics are not significant. This shows that the attention, recognition, and initiative of music and cultural institutions, as well as the different forms of attention, are very different. Different regions of the city have different feelings about music, and the attitudes of local people to music and cultural institutions are different. Through interviews and dialogues, most residents have higher attention to Qunli concert hall and generally lower attention to music and cultural institutions.

The attention of four groups of people is generally corresponding to the average level, which includes the understanding of the residents of music and cultural institutions, the destruction of music and cultural institutions, the protection of music and cultural institutions, the understanding of laws and regulations of music and cultural institutions, and the information cognition of music and cultural institutions. This may be music related, but it is also close to the culture and activities of the public. The perception of music and cultural institutions, the frequency of observation, and the level of close observation of music and cultural institutions are higher than the average level. This may be related to the frequency of contact, the lower the frequency of contact, the higher the perceived information and attention, and the higher the intensity, as shown in Figure 4.

Generally speaking, the subjects agreed with the protection attitude, values, business card attitude, capital attitude, and media publicity attitude of music culture institutions. The local people generally agree with and support the local music and cultural institutions, but do not agree with the abandoned music and cultural institutions [13]. Among them, the residents are very active in the protection of music and cultural institutions through subsidies: obviously, the protection of music and cultural institutions by residents and the value of music and cultural institutions are materialistic on a material basis. The recognition degree of the four types of people corresponds to the average general level. Among them, the attitude of local people towards each element is relatively calm, while the attitude of professional musicians and tourists towards each element is relatively strong, which may be related to their relationship with music culture, and also corresponds to the general identity characteristics shown in Figure 5.

In general, the subjects showed a more positive attitude towards music cultural institutions, except for the elements of voluntary investment. Among them, the initiative of voluntary watching, supervision, and participation is relatively high, the initiative of voluntary public relations, entertainment, and discussion is relatively low, and the elements of voluntary investment are relatively passive [14]. It can be seen that the residents have a positive attitude towards music and cultural institutions, and the people have a high enthusiasm for music and cultural institutions. Among them, the tourism initiative of music and cultural institutions is more for professional musicians, with strong initiative and high enthusiasm for music and cultural institutions.

In the computing platform, the available area of each district mentioned in this paper is used to determine the ownership of each street of each layer of road, and on this basis, the population of each street is read and the population of each street is determined. It is defined as the available population. The music and cultural institutions in the city are served by local residents, and the agglomeration degree of residents in each district is closely related to the institutional allocation [15].

Calculate the proportion of the population in each district and the music and cultural institutions in the whole
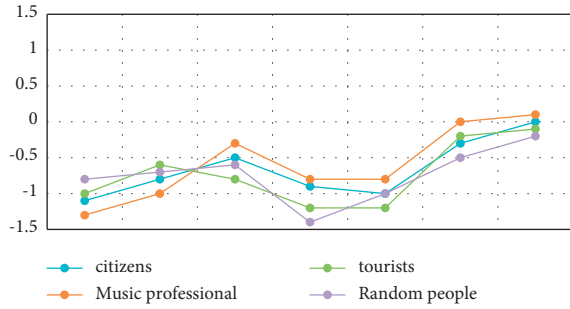
FIGURE 4: The average semantic distribution curve of musical facilities' attention.
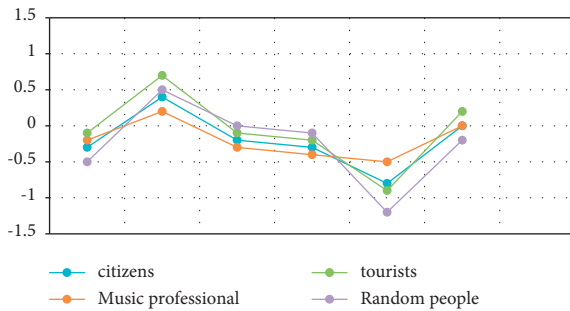

FIGURE 5: The average semantic distribution curve of music facility identity.

FIGURE 6: Lorentz curve of musical and cultural facilities in proportion to population.

city and then sort them from high to low according to the proportion of music and cultural institutions in the population of each street. The abscissa is the cumulative value of the population proportion in each district, and the ordinate is the total value of the proportion of music and cultural property in each district [16]. The Lorentz curve of music and cultural property distribution according to the population is obtained, as shown in Figure 6. After the above calculation, it can be concluded that the Gini coefficient of regional music and cultural institutions according to the population distribution is 0.52.

The results of factor analysis in Table 1 combine the coefficient of variation of each factor calculated by Excel and SPSS.

The factor analysis of variance of the mean and test differences of behavior attitude in the study area is shown in Table 2.

Availability indicators are divided into four levels and are shown in Table 3 every five minutes.

Table 3 reflects that the attractiveness of music and cultural institutions is positively correlated with the reachable area, positively correlated with the population of the area, and negatively correlated with the length of travel. The calculated previsit rate for each market and each area's frequency of access are shown in Table 4.

4.2. Music and Cultural Facilities Intelligent Layout Optimization Strategy.

By comparing the interactive relationship between music and cultural institutions and the population in different regions, the goal of space design of music and
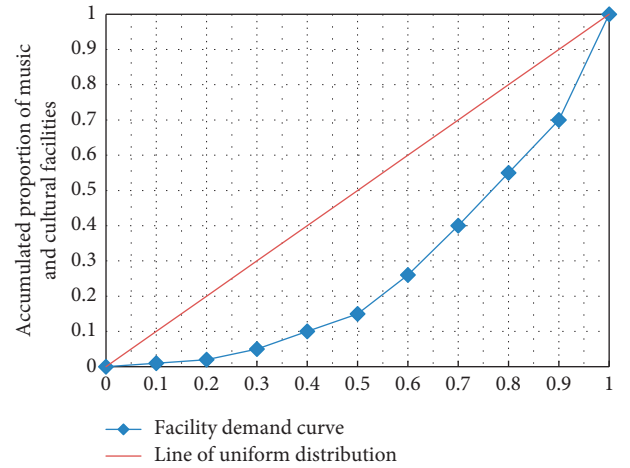
TABLE 1: Analysis of variance of three groups.

Category	Index	Attention	Recognition	Initiative
Local residents	F value	5.9257	7.0716	6.2762
	P value	0.008	0.003	0.006
Professional music staff	F value	2.5426	4.4811	5.2005
	P value	0.221	0.027	0.015
Tourist	F value	4.6542	0.8005	2.3262
	P value	0.009	0.378	0.137

TABLE 2: Road level driving speed (km/h).

Transportation	Trunk road	Secondary trunk road	Access road
Nonmotor vehicle	12	12	12
Public transit	25	20	15
Motor vehicle	40	40	30

TABLE 3: Accessible area ratio of music and cultural facilities under public transportation mode.

Time interval	0-5 min	0–10 min	0–15 min	0–20 min
Accessible area rate	15.6	36.7	52.6	66.1
Standard deviation	1.8	2.4	2.3	3.2

TABLE 4: Expected visit rate of music and cultural facilities under public transportation.

Time interval	0-5 min	0–10 min	0–15 min	0–20 min
Expected visit rate	0.45	0.95	1.26	1.46
Standard deviation	0.09	0.18	0.34	0.59

TABLE 5: Statistics of the nearest distance from residential area to music and cultural facilities.

Type of data	Statistical data
Minimum	−101.835042
Maximum	24643.472313
Sum	11523167.5085432
Average value	6562.612335
Standard deviation	3771.723583

cultural institutions is formulated, which advocates that all regions and blocks should build music and cultural institutions in the form they need, so that each region can meet its specific regional needs. For example, due to the high population density of Daowai, but its music cultural sites are relatively poor, we need to combine the current situation of Daowai and the structural system of the music cultural sites in this area to strengthen the construction of music culture and promote the construction and development of overseas music cultural institutions.

From the above analysis, we can see that there are many music and cultural institutions in the central area, and the coverage is relatively small. As the street layout changes little, with the population gathering, the demand for music and cultural institutions is also gradually increasing. People in the surrounding areas will gradually have a demand for new music and culture, making the crowd in the old city closer to the new music and culture sites in the surrounding areas. Therefore, suburban music and cultural institutions should combine the advantages of surrounding areas, improve the supporting vehicles, materials, and infrastructure, create a good atmosphere for the development of music and cultural institutions, and reduce the pressure of music and cultural places. On the basis of the growth of music culture, cultural entertainment, and cultural consumption, we should improve the functional use of music cultural objects and the use efficiency of music cultural objects.

From the above analysis, it can be concluded that the location of music cultural sites is unbalanced, and there are no music cultural sites in Hulan area. On this basis, according to the actual needs of each region, we should make rational use of music and cultural institutions, strengthen the communication between the region and the surrounding music and cultural institutions, and improve the music and cultural needs of local citizens in combination with the radiation effect of the surrounding music and cultural institutions. Under the current operating conditions of music and cultural institutions and under the influence of market economy, the number of private music and cultural institutions is far larger than that of state-owned music and cultural institutions, and the scale is far smaller than that of state-owned music and cultural institutions. Several large and high-level music and cultural institutions are not standardized in staffing, and it is difficult to achieve high cultural performance in institutions and services.

According to the distribution of music and cultural institutions, the population proportion of music and cultural institutions, the distance from the center of each district to music and cultural institutions, and the value of accessibility are compared. Try to make the most of the music and cultural places in the center of each block and combine them. The distance weighting method is used for estimation, and the general properties of the data are shown in Table 5.

5. Conclusion

This paper focuses on the performance tuning, hardware resource limitation, and parallel computing of HPC programming model on GPU and mainly introduces the evolution and prospect of HPC on GPU and its increasingly popular applications. Taking CUDA as an example, the software and hardware structure of GPU parallel computing is introduced, and the CUDA Programming model is described in detail. Through the analysis and introduction of this paper, the thread-level structure of GPU introduces CUDA Programming language. A CUDA program memory accesses policy, thread block organization and allocation, execution unit, and compilation process, for a deeper understanding. With the continuous growth of intelligent devices, the emergence of new multimedia applications, and the exponential growth of multimedia wireless data demand and use, MEC technology is integrated into 5G cellular network for computing to cope with emerging network congestion and some expiration of high service level, and the task transfer to inactive devices is being considered by D2D technology to reduce the base station load, improve network throughput, and improve user satisfaction. However, MEC introduces computing and storage resources to the edge of wireless network, which poses a major challenge to the original resource management scheme. A method to optimize GPU parallel computing capability is considered. Because it is scheduled in deformation units, thread reduces the execution of branches in the war; improve resource utilization, and increase parallel scale. In the case of large amount of data, batch processing can be carried out. For reaccess to data, load into shared memory using block technology. Finally, the part of CUDA optimization scheme is implemented in a specific experimental environment, and the results are analyzed and the design is completed. The complete CUDA program uses the above optimization technology to optimize the example and analyzes the results of each optimization, so as to demonstrate the rationality and effectiveness of the above optimization technology. Music and cultural institutions are the important carrier and material space of urban cultural development. By combining the development trend and music culture, the paper analyzes the current situation and design strategies of music and cultural institutions and points out the exact development path for the construction of music and cultural institutions. The research results of this paper are to build the system framework of music culture institutions. Through the POI points of multiregion music culture, the author summarizes the existing music and cultural institutions at present.

Data Availability

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

Conflicts of Interest

The author declares that there are no conflicts of interest.

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