Drought environment monitoring and national health exercise data monitoring based on embedded image processing

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Abstract
In recent years, extreme temperatures and arid climates have frequently occurred in the world. Drought and lack of water not only limit the development of society and the progress of material civilization, but also cause great obstacles to the sustainable development of human society. To monitor data such as climate drought and sports health, most application facilities need the ability to support image or data processing, and embedded applications in various industries have become universal. Therefore, the integrated image processing platform has a wide range of applications, which is also a major factor in accelerating the rapid creation of graphics and image processing programs. The new fitness rules run through the period of national health. The new rules clearly indicate the variety of existing fitness methods. At present, the national health informatization reflects the benefits of time and space extension and high accuracy. It follows the laws of development and changes and takes effect quickly. Under the normalization of disease control and surveillance, the improvement of environmental protection and ecological restoration in arid areas, and the establishment of the important role of national health informatization through embedded imaging technology, we must adhere to the functional positioning consistent with the overall plan. Continue to improve the basic capability structure, including improving and implementing relevant systems and standards, strengthening organization building, team building and system building, and continuously promoting the organic combination of embedded imaging technology and data monitoring informatization.

Keywords Embedded image • Drought environment monitoring • National health • Exercise data monitoring

Introduction
In recent years, extreme temperatures and arid climates have frequently occurred in the world. Drought and lack of water not only limit the development of society and the progress of material civilization, but also cause great obstacles to the sustainable development of human society (Endo et al. 2017). The adverse effects and economic losses caused by drought are no longer purely in the agricultural sector, but extend to all aspects of social development (Gies et al. 2014). This extraordinary destructive weather directly or indirectly poses a major challenge to people’s physical fitness, which is why the health problems caused by this type of weather are attracting more and more attention worldwide (Yang et al. 2018). Health management refers to the comprehensive evaluation of individual or group health risk factors (Hadded et al. 2013). Before a comprehensive evaluation, individual inspections and tests must be followed, and related health issues must be determined based on the evaluation data. To monitor data such as climate drought and sports health, most application facilities need the ability to support image or data processing, and embedded applications in various industries have become universal (Hoff et al. 2017). Therefore, the integrated image processing platform has a wide range of applications, which is also a major factor in accelerating the rapid creation of graphics and image processing programs.

Current status of embedded image processing in drought environment monitoring applications

With the rapid improvement of information technology and the increasing development of semiconductor design
technology, the performance of embedded processors has improved to a large extent. From commonly used processor technology to microcontrollers to other controls, new processors continue to appear and are constantly updated (Croitoru et al. 2010). Due to the large amount of digital image information, the related work of image processing can only be carried out on a large scale, and the production of professional digital signal processors has shown an excellent platform for the use of digital image processing in embedded devices (El Gafy et al. 2017). With the continuous investment of manpower and material resources in China’s semiconductor industry, DSP innovation and improvement, the self-designed and developed high-performance digital signal processor chip has 32-bit floating-point digital signal processing capabilities, and its overall function occupies the most important part of the overall general processing. Most of these processors are used in military equipment and other fields (Badiuzzaman et al. 2017). In imaging, the DSP chip can also meet the needs of military equipment. In areas with severe drought, the climate is dry, precipitation is low, evaporation is high, the temperature difference between morning and evening is large, the water content in the soil is very small, and the types of vegetation are generally small (Jaafar et al. 2015; Velis et al. 2017). Most plants are drought-resistant plants, such as grassland and shrubs, and there are not many types of microorganisms. Ecosystems in arid areas are very weak, easily destroyed, and difficult to repair.

The destruction of the ecological environment leads to many ecological and environmental problems, such as reduction of plants, soil erosion, desertification, land subsidence, and cracks. In addition to the difficulty of restoring a weak ecosystem, the contradiction between resource construction and ecological health is even more pronounced (Salim 2012; Adham et al. 2016). For vegetation construction and restoration in arid areas, it plays a very important role in ecological construction and social and economic sustainable development, and is of great value to the construction of Chinese national health and fitness (Ouessar et al. 2004). The energy and material cycles of the mining ecosystem, and their responses, will interfere with the protection of the balance of the ecosystem. The impact of biological factors on changes in the ecosystem is mainly reflected in the following aspects: reducing the quantity and quality of products available in the ecosystem, such as the termination of agriculture, the reduction of livestock production, and the degradation of forestry and grassland, which hinder the maintenance of the balance of the ecosystem (Jarray et al. 2017). The already weak ecosystem is more susceptible to the decline of ecological factors such as declining crop yields, shrinking animal husbandry, and deteriorating forestry and green space (Kaur et al. 2016). Changes in vegetation coverage and ecosystem productivity have not been able to adjust the climate, and the temperature difference between morning and evening has increased, making it difficult to reduce geological hazards and air pollution (Molle et al. 2018). Declining vegetation coverage will damage the ability of ecosystems to absorb carbon dioxide and sulfur dioxide into the atmosphere, and damage the ability of ecosystem soils to conserve water and soil. Therefore, it is necessary to select appropriate ecological impact indicators for quantitative and qualitative analysis.

Current status of research on national health exercise data monitoring

To monitor national health exercise at any time, exercise observers can analyze the data obtained from exercise monitoring and combine it with physical health to effectively understand the real-time situation of exercise to achieve real-time intervention and guidance on the training process (Abdelli et al. 2017). For the indicators of athletes, we can create a sports health evaluation model to achieve the health evaluation of individuals and groups, and achieve the purpose of personal care for athletes and evaluation of the overall effect of sports (King and Jaafar 2015). With the improvement of image and video technology, we gradually use video surveillance methods to monitor motion (Verma et al. 2018). Through the camera, we can truly restore the movement process in all directions, so as to realize real-time movement monitoring (Ahmed et al. 2019). Lei Yao uses the video monitoring method at any time to monitor people’s movement. According to the fluctuation of the gray value of the video image during people’s motion, the motion area extraction method is used to analyze the motion video monitored at any time to obtain the motion path data from the moving target to the target, so as to realize real-time motion monitoring. Real-time monitoring of movement uses video surveillance to monitor movement (Saadé-Sbeih et al. 2018). We can observe movement at any time, but it is difficult to obtain data about people’s movement during the movement, so it is inappropriate as a movement data monitoring system at any time.

Materials and methods

Embedded image processing system design

System architecture

Based on the basic arm structure of the integrated processor, this article creates an integrated image processing system. The system consists of three basic modules: camera data input, core card processing, and final screen. The hardware part adopts the multi-core heterogeneous embedded processing platform including the NVIDIA graphics card, and the GPU enhances the image processing process. In addition, Sony’s high-end CMOS devices and wide-angle lens are used to
expand the camera angle. The software part is cut and transplanted to the Linux system board, and the CMake compilation method based on the CUDA library is used in the GPU programming architecture, as shown in Fig. 1.

In image processing, NVIDIA’s Jetson Nano platform is used as an embedded GPU acceleration processor, and four Cortex-a57 CPUs are integrated on the core card. The GPU is tegraX1 and takes over the graphics card of the Maxwell architecture. The graphics card has 128 CUDA processing units, and the GPU, as the main part of the embedded card, can set up 472 gflops of floating-point operations for the entire card.

**Image processing algorithm**

As the most fundamental algorithm, image and processing algorithm has very important meaning for image processing algorithm. It has a great relationship with image trimming effect and image quality. The preprocessing of general algorithm is mainly in the calculation and processing of image gray level. You can adjust the image contrast and other parameters to improve the visual effect. The process of gray transformation is described as follows:

\[
g(x, y) = T[f(x, y)]
\]

Among the basic methods of image enhancement, image filtering algorithms play a very important role in image naming and image smoothing. The basic principle of image filtering is to perform a template convolution operation on an image. Generally, different filter templates can be selected for the room template to complete the image filtering. The convolution core template used for regular proxy filtering is:

\[
\frac{1}{9} \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}
\]

It occupies a very important role in image processing. The extraction of image functions is widely used in image adjustment, image compression, target detection, and discrimination. Generally, different edge detection algorithms have similar edge detection operators. The fusion of the target image and the edge detection operator can determine whether the current pixel is an edge. The specific formula is:

\[
\nabla f = \text{grad}(f) = \begin{bmatrix} g_x \\ g_y \end{bmatrix} = \begin{bmatrix} \frac{\partial f}{\partial x} \\ \frac{\partial f}{\partial y} \end{bmatrix}
\]
Research methods of drought environment monitoring

Overview of the study area and data sources

The study area is approximately 80 km from north to south and 30 km from east to west. It is located in the arid area in the north, with a total area of 1755 km². The climate type of this area is a temperate continental climate, with dry spring and lack of rain, high temperature in summer, very little snowfall in autumn and winter, abundant solar energy, annual average absorbed solar radiation of 155.9 kca/cm², and annual average solar radiation of 3094.22h. The annual average temperature is 9.97°, the highest temperature and the lowest temperature are 40.21° and −36.61° respectively; even the maximum temperature difference reaches 76.81°. The study area is arid and semi-arid, with low annual rainfall and high evaporation. The annual average rainfall is 159.9 mm, the annual average evaporation is 3290 mm, the average humidity is 42%, the annual average wind speed is 3.0 m/s, and the maximum wind speed is 34 m/s. Remote measurement of data from multiple sources through methods such as data collection and field visits establishes a classification system for land use in the study area, and uses carrier's monitoring and classification method to collect the data of soil coverage change in different periods to evaluate the accuracy of soil classification. Remote sensing results can provide basic data for environmental changes in the study area. Since the difference between seasons and time will cause false changes in the land cover of the study area, distance registration images with the same phase and time interval must be used as the data source of the study area. In this article, based on the selection of remote sensing images in June/July/August, taking into account the characteristics of land use and the availability of data, priority will be given to remote sensing images for forest and grassland identification; remote water meter images with cloud volumes below 6% in 2006, 2011, 2016 and 2020 are selected to select data from remote measurements. In this article, the administrative boundary is used to crop the image according to the direction of the study area, as shown in Fig. 2.

Land use monitoring methods

Remote sensing classification is the main way to derive land classification from remote sensing images. Before classification, first, determine the classification system of land use in the study area. The type of land use is the effect of changing agricultural planting through human production and lifestyle. Different geographical locations, climate characteristics, and land use types of leading products are very different. Therefore, based on the basic classification criteria of the

| Serial number | Land category name | Land description                                      |
|---------------|--------------------|-------------------------------------------------------|
| 1             | Arable land        | Dry field, water irrigated field, water field         |
| 2             | Forest and grass   | Grassland, forest                                    |
| 3             | Wetlands           | Water in rivers, wetlands, lakes, potholes           |
| 4             | Construction land  | Transportation land, urban land, rural residential area|
| 5             | Coal mining        | Coal mine stope, coal stacking site                   |
| 6             | Bare soil          | Sand, sand, bare soil, bare stone, etc.              |

Fig. 3 Power transformation algorithm. a Original image. b CPU processing result. c GPU processing result
classification system and combining the characteristics of land use, a land use classification system for the study area should be established for arid and semi-arid land use types, taking into account the “Land Use Dynamic Remote Sensing Regulations” and “Land Use Status Classification.” In remote recording based on the resolution of identifiable satellite imagery from Landsat, the land use types of the study area are divided into several categories: arable land, forest and grassland, wetland, construction land, coal mining, and bare soil, as shown in Table 1.

This paper adopts the monitoring and classification method of carrier vector machine to study the land use terms of the study area. Support vector machine is an automatic learning method based on statistical analysis. Auxiliary vector machine can actively find carriers with greater distinguishing ability in the Garden classification, and build a classification model based on these carriers. The support vector machine method can distinguish the difference between different categories to the greatest extent, so it has very high accuracy.

Vegetation coverage monitoring method

In this study, Landsat TM/OLI images and ENVI were used to extract the normalized differential vegetation index in the study area. Through the quantitative calculation and change research of the regional NDVI value, the ecological system function of a certain mining area is studied, and the interruption of coal mining is discussed, which has theoretical and practical significance for promoting ecological restoration in arid and semi-arid areas. The establishment of the ecological monitoring system NDVI is the relationship between the reflection of the nearest infrared band and the red band and the sum of the two.

\[
NDVI = \frac{NIR - RED}{NIR + RED}
\]  

On the basis of image processing based on remote registration, the BandMath function is used to calculate the NDVI values of the four periods in the study area, and then the
histogram statistical analysis of the four periods using the NDVI image data with confidence intervals is determined to be the vegetation coverage. The NDVI value of 6–96% is between [0,1]. According to the field survey data of vegetation in the study area, the study area mainly includes sparse green space, bare areas, and other types of uses with low vegetation levels, so that the vegetation coverage of the study area can be divided into four categories: (1) very low vegetation area (bare soil, water, etc.); (2) low vegetation area (scattered vegetation, sparse green space, etc.), 0.1 <NDVI <0.3; (3) medium vegetation area (shrub area, etc.); (4) high vegetation areas (dense shrubs, dense forests, arable land, etc.), 0.6 ≤NDVI ≤1.

Monitoring method of surface deformation

The time of surface formation or the total time of the surface formation process refers to the time from the beginning of the movement to the stable movement, that is, in a state of
complete or almost complete degradation, the surface drops to the maximum landmark. In those areas that continuously deform and complete the deformation process, landslides, cracks, and other geological disasters caused by man-made activities damage basic buildings such as houses, bridges, and roads, as well as arable land and fields, and endanger the sustainable development of society and ecology. Therefore, in order to effectively protect ecological health and study scientific ecological restoration methods, it is necessary to monitor the surface formation in the study area. In recent years, synthetic film radar has formed differential interferometry (D-InSAR), which has the advantages of weather forecasting. The all-day, large resolution and continuous spatial coverage have attracted researchers from various countries in the world. The use of D-InSAR technology in settlement monitoring can help repair the shortcomings of conventional deformation measurement methods, and provide accurate continuous deformation information of the entire area.
within the monitoring time, which helps to create a surface monitoring system. It can also provide new technical methods and solutions for ecosystem monitoring, and promote the development of three-dimensional dynamic monitoring of the ecosystem. The basic principles of InSAR measurement are as follows:

\[
B_\perp = B \cos(\theta - \alpha) \\
B = B \sin(\theta - \alpha)
\]

Results

Simulation experiment of embedded image processing system

For the integrated image processing system, simulation experiments are carried out using gray transform algorithm, filtering algorithm, and edge detection. Due to the principle of the
algorithm, various image processing algorithms are implemented on the PC and cancelled on the ARM integrated development card. At the same time, the parallel processing of the algorithm improves the effect of the algorithm processing. In fact, most algorithms can achieve real-time processing of 40 fps video when the pixel is 490p.

**Results of grayscale transformation**

In the image grayscale transformation algorithm, the use of the Cu control unit on the GPU is $N_{cu} = \text{threadIdx.x} \times \text{threadIdx.y} = 65536$, and the CPU on the current platform uses its single core and thread, so $N_{cpu} = 1$. The details are shown in Fig. 3.
| Category            | 2006 Area  | Percentage | 2010 Area  | Percentage | 2016 Area  | Percentage | 2020 Area  | Percentage |
|---------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Grassland           | 1165.44    | 66.45%     | 943.64     | 53.81%     | 787.77     | 44.92%     | 885.51     | 50.49%     |
| Arable land         | 142.67     | 8.14%      | 68.98      | 3.94%      | 193.62     | 11.05%     | 263.47     | 15.03%     |
| Waters              | 38.96      | 2.23%      | 45.78      | 2.62%      | 30.05      | 1.72%      | 68.73      | 3.93%      |
| Bare land           | 205.09     | 11.68%     | 423.36     | 24.15%     | 363.87     | 20.75%     | 107.64     | 6.15%      |
| Construction land   | 146.77     | 8.38%      | 221.59     | 12.64%     | 287.59     | 16.41%     | 266.78     | 15.22%     |
| Coal mining land    | 55.14      | 3.15%      | 50.67      | 2.88%      | 91.15      | 5.21%      | 161.94     | 9.24%      |

**Fig. 10** The spatial distribution map of the transformation of main land types in the study area (2005–2010)
Since it is time-consuming to perform linear transformation of the same image on the CPU and GPU, the parallel speed of this algorithm on the GPU is about 53 times that of the CPU, and the acceleration efficiency is about 0.0008.

Filtering algorithm results

In the image filtering algorithm, the size of the original image and the number of GPU core units can transmit different filter templates in the filter algorithm to process images differently. Because templates can be predefined and stored in the static storage area of the program, this part of the time-consuming program cannot be included in the term, as shown in Fig. 4.

The convolution acceleration of the GPU used for image filtering is extremely relevant. The GPU used in the Gauss convolution core has an acceleration capacity of 9124 times, so it is very suitable for GPUs to perform huge convolution operations, which is why it is a commonly used major factor. It can be widely used in neural networks, and we can see that

Fig. 11 The spatial distribution map of transformation of main land types in the study area (2010–2015)
the acceleration efficiency of the parsing core is 0.15, and its efficiency has been improved a lot, so the GPU is very efficient for parsing the core.

**Edge detection results**

From the basis of image filtering and edge extraction, it can be seen that the basic principle is the merging process of different templates. Therefore, the image edge extraction algorithm has a very important meaning in terms of acceleration capability and acceleration efficiency, as shown in Fig. 5.

From the above analysis, it can be seen that for all algorithms based on folding templates, the acceleration effect has obvious characteristics. Because there are many parallel structures in the algorithm that are more suitable for GPU acceleration structures, the effect of using this algorithm to accelerate GPU is usually very obvious. The acceleration effect of the Sobel edge detection algorithm has reached nearly 13,367 times and can be processed at any time.
Analysis of drought environment monitoring results

Results of land use analysis

Figures 6, 7, 8, and 9 are maps produced by ArcGIS 10.2 software platform on the four land classification results, as shown in the figures.

Table 2 shows the land survey in the study area and the analysis of land changes using remote sensing images. After passing ENVI5.3 classification statistics, the following land use data are obtained.

In order to further use the ArcGIS 10.2 software platform to understand the geographical characteristics of land use changes, cover the land use maps of different time periods in the

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Fig. 13 The distribution map of vegetation coverage in the study area from 2006 to 2020
study area, and select land types with clear land use conversion properties to create geographic maps. The land use changes are shown in the Figs. 10, 11, and 12.

Figures 10, 11, and 12 show that the spatial distribution of land use conversion in each period in the study area shows distinctive characteristics. In terms of time, the conversion of map usage types in the study area was the most intensive between 2006 and 2016, while the latter two areas were relatively lighter and slower, mainly from grassland to bare areas and coal mining. From a regional perspective, from 2006 to 2016, land use types were mainly distributed in the middle and southwest of the region. From 2016 to 2020, the changes in land use types are mainly in the coal areas on the east and west sides of the region. At this time, most of the areas on both sides of the Yellow River became water.
Results of vegetation coverage analysis

Figure 13 is the regional situation divided according to plant coverage.

From 2006 to 2020, the medium and high vegetation coverage area will gradually decrease, especially the high vegetation coverage on the east and west sides of the Yellow River has almost disappeared; areas with low NDVI index gradually increase, especially the NDVI value of the desert area in the southern part of the study area has dropped significantly. From 2016 to 2020, as the national leadership integrates ecological civilization into the overall order of socialism with Chinese characteristics, local governments at all levels actively promote mine protection and comprehensive management strategies, centralized enterprises, state-owned companies in the state, research areas, and local coal companies have a large
number of comprehensive treatment projects, such as pollution control, land protection, greening, etc. So, the form of the NDVI research area index has been significantly improved. The details are shown in Table 3.

Table 3 shows the area of extremely low, low, medium, and high vegetation coverage areas in the study area.

Table 4 shows that the areas and proportions of different NDVI levels show certain regular characteristics between

| Year | 2006 | 2010 | 2016 | 2020 |
|------|------|------|------|------|
| Mean | 0.049| 0.041| 0.038| 0.042|
| Stdev| 0.108| 0.108| 0.091| 0.316|

Fig. 13 continued.
From 2006 to 2016, the medium-to-high vegetation coverage area showed a decreasing trend, and it was significantly restored in 2016–2020. From 2006 to 2016, areas with low and very low vegetation coverage showed an increasing trend, and there was a significant decline from 2016 to 2020. The details are shown in Table 5.

### Analysis results of surface deformation

Because of the integrity of the image in time and interval, the first data set was selected as the test data in the SBAS-InSAR experiment. Due to insufficient range, the data from the 1204 to 1228 stages cannot be processed. The DEM elevation data is the SRTM1 version released by the US Aerospace Topographic Mapping Mission. The data resolution is 40 m, which is much higher than the SRTM3 version, and the height accuracy is much better than the main GDEM data. These are the best available DEM data in the study area, as shown in Fig. 14.

Figure 15 shows that the central and eastern regions of the study area have suffered severe collapses.

However, in the southeastern part of the study area, the immersion caused by the weak reflection and the strong diffusion of the sand to the microwave signal is very large, so a strong noise signal is generated. Therefore, the analysis together with the collapse is part of the assessment of the geological conditions. In the mine area of the study area, check and correct the restoration of the study area on the basis of the area with a high degree of continuity. Then, according to the distribution characteristics of the degradation value in the study area, the entire study area is divided into four levels: severe descent area $300 \text{ mm} \leq \text{settlement value} < 900\text{mm}$; strong descent area $60\text{mm} \leq \text{sediment value} < 300\text{mm}$; descending influence area $20\text{mm} \leq \text{settlement value} < 60\text{mm}$; non-descent area $0\text{mm} \leq \text{settlement value} < 20\text{mm}$. The details are shown in Fig. 16.

### Discussion

**Ecological restoration strategies in arid environment areas**

Ecological restoration refers to the restoration of original ecological functions such as the restoration of water and soil vitality through artificial emergency measures, microclimate regulation, biodiversity protection, and the development and utilization of damaged ecosystems. Ecological restoration must integrate and distinguish different ecological environments and social conditions, and share ecological restoration areas. This truly and objectively reflects the characteristics of ecological restoration areas. Facts have proved that the use of natural forces to repair the degraded ecological environment is currently the most effective method recognized. According to the degree of damage to the ecological environment of the study area, different restoration methods are designed.

### Table 4

| Category          | 2006        | 2010        | 2016        | 2020        |
|-------------------|-------------|-------------|-------------|-------------|
|                   | Proportion/%| Area/km²    | Proportion/%| Area/km²    | Proportion/%| Area/km²    | Proportion/%| Area/km²    |
| Very low coverage | 66.4%       | 1163.4      | 64.8%       | 1135.5      | 47.1%       | 824.4       | 61.2%       | 1071.8      |
| Low coverage      | 24.4%       | 426.8       | 29.4%       | 513.2       | 47.2%       | 825.9       | 28.9%       | 504.5       |
| Medium coverage   | 6.4%        | 110.6       | 5.7%        | 98.1        | 5.8%        | 99.5        | 6.8%        | 120.6       |
| High coverage     | 3.1%        | 53.4        | 0.5%        | 7.5         | 0.4%        | 4.7         | 3.4%        | 57.2        |
| Total             | 100%        | 1755        | 100%        | 1755        | 100%        | 1755        | 100%        | 1755        |

### Table 5

| Category          | 2006–2010 |       | 2010–2016 |       | 2016–2020 |
|-------------------|-----------|-------|-----------|-------|-----------|
|                   | Change rate/% | Change area/km² | Change rate/% | Change area/km² | Change rate/% | Change area/km² |
| Very low coverage | −1.7%     | −27.8 | −17.8%    | −311.3 | 14.2%     | 247.8        |
| Low coverage      | 4.8%      | 86.3  | 17.9%     | 312.8  | −18.4%    | 321.5        |
| Covered area      | −0.8%     | −12.6 | 0.2%      | 1.5    | 1.3%      | 21.2         |
| High coverage area| −2.7%     | −45.9 | −0.3%     | −2.8   | 3.1%      | 52.7         |
Monitoring and management of national health exercise data

National health management

With the continuous advancement of the times, people’s cognitive level and technological level have been improved. Health management refers to the comprehensive evaluation of individual or group health risk factors. Before a comprehensive evaluation, individual inspections and tests must be followed, and related health issues must be determined based on the evaluation data. We must strive to adhere to the health policy of early prevention, early treatment, and preventive treatment. As a social concept, health management is also a way to ensure good health. In order to promote the concept of national health management, we should initiate, actively participate, reduce investment, increase production, and make it the main principle of development, so as to effectively improve the physical and psychological quality of the entire population.

Significance of national health exercise data monitoring

The state encourages the development and interconnection of health information platforms at all levels across the country. Their services include direct reporting networks for infectious diseases, health monitoring information systems, maternal and child monitoring systems, and other health systems. During the end of the epidemic, the health system and emergency response system developed an epidemic dynamic monitoring module combined with geographic information which provides the characteristic analysis of epidemic data and statistics for the evolution of the epidemic in time and space, and supports epidemic control and decision-making. Use service systems.
universally, coordinate the construction and joint management of basic data resources, improve unified information standards and information systems, and strengthen the construction of related supervision systems. The accumulation of information has been continuously raised to a new level, which promoted and improved the medical and service system, increased supply capacity, and improved serviceability.

**National health exercise data monitoring strategy**

First, the application-oriented approach promotes innovation and development, while transformation and modernization emphasizes applications that benefit people. According to needs, we should strengthen information construction to meet the needs of regional health and hospital development as well as our actual construction. We
will establish a business information system to further improve and optimize processes, strengthen medical cooperation, and strengthen regional governance as well as medical facilities and healthcare. Scientific use of information technology for performance evaluation, subject design, decision analysis improved operation management and other applications, use of the Internet of Things and other technologies, and improved the realization of equipment management, logistics support, and other management efficiency and complexity levels.

Second, consolidate the construction of the technical support system and establish a standardized system. We should continue to coordinate and promote the development of a comprehensive and networked national health information platform. On the basis of strengthening the platform concept and platform construction, we should in-depth determine the
location and scope of the platform, classify all relevant parties, gradually carry out data management, find more innovations and access points of the platform, and promote demonstration construction and high quality platform construction.

Third, in-depth implementation of policy support strategies, and establishment and improvement of a sustainable operation system. Strictly implement the relevant requirements and rules formulated and approved by the state, incorporate computerized implementation into the annual overall plan, incorporate the efficiency of IT structure into the annual goals and tasks, and clarify the structure of key elements and basic positions in the IT health work. It is necessary to clarify information functions, departmental responsibilities, and team configuration, strengthen the overall planning of the information structure, strengthen standardization and order, promote information construction, establish and improve the national health informatics statistical indicator system, and strengthen the statistics, evaluation, and supervision of national health information.

Finally, the new fitness rules run through the period of national health. As people pay attention to their own bodies and the development of the health industry, China has formulated new fitness rules to protect people’s basic rights and interests. The new rules clearly indicate the variety of existing fitness methods. These include fitness programs that are beneficial to health.

Conclusion

The adverse effects and economic losses caused by drought are no longer purely in the agricultural sector, but extend to all aspects of social development. To monitor data such as climate drought and sports health, most application facilities need the ability to support image or data processing, and embedded applications in various industries have become universal. As a social concept, health management is also a way to ensure good health. In order to promote the concept of national health management, we should initiate, actively participate, reduce investment, increase production, and make it the main principle of development, so as to effectively improve the physical and psychological quality of the entire population.

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Declarations

Conflict of interest The authors declare that they have no competing interests.

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