Multi-Feature High-Resolution Remote Sensing Road Extraction Based on Computer Convolutional Neural Network

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Abstract. As an important facility to improve people's material living standards, the accuracy of its mapping work directly determines the quality of people's production and life at this stage. However, in the actual process of mapping, the application effect of remote sensing image technology has not been fully reflected, which is closely related to the content of the remote sensing technology application process. In order to control the difficulty of its auxiliary mapping work, relevant personnel should analyze the value effect of remote sensing technology in practice, so that the mapping work can fully realize the advantages of efficiency improvement and shortened working time brought by the use of remote sensing image technology. In this way, the application of remote sensing image technology can be fully exerted during the development of map mapping. This paper analyzes the extraction of multi-feature high-resolution remote sensing roads.

Keywords: Remote Sensing Technology, Road Features, Extraction

1. Introduction

With the advancement of science and technology, especially the application of satellite technology, electronic technology and computer technology, ocean remote sensing has broken through the traditional content and scope of hydrographic surveys, from measuring navigation elements to developing the entire marine space, including the sea surface, Comprehensive surveying and mapping of water bodies and seabed, including atmospheric (rain, cloud, fog, air temperature, wind, etc.), hydrology (density, seawater temperature, salinity, tide, wave current, etc.) and seabed gravity, terrain, Landform, subsoil, magnetic force, seabed expansion and other data and information and draw thematic maps for different purposes and uses, for economic, military and scientific research services[1]. Remote sensing exploration technology has now become a hot topic in mineral exploration.
2. Computer neural network cloud computing technology analysis

2.1. With the nature of virtualization sharing

Cloud computing is essentially a kind of virtualization, which is invisible and untouchable. Taking into account the characteristics of its virtualization, so the process of cloud computing in various operations will naturally have the characteristics of virtualization. For the resources in the computer, in the cloud computing mode, all are not encrypted and users can use all their resources indefinitely, so all resources on the entire Internet have a shared nature[2].

2.2. Improve work efficiency

Generally speaking, cloud computing has a very high level of intelligence and automation. Through the virtualized cloud platform, users can be centralized and information maintenance can be achieved, which can not only increase the speed of information release, but also ensure information security. In addition, cloud computing can improve the performance of the device and effectively extend the life cycle of the device. This is not possible with traditional information systems. While reducing the frequency of client upgrades, this technology also greatly shortens the upgrade time. The above guarantees the stable operation of the information system and improves the efficiency of the information release and management of the entire information system.

2.3. Improving economies of scale

Due to the characteristics of computing and integrating resources, the application of cloud computing in the power system can maximize the integration of a large number of repetitive or idle resources in remote sensing analysis, which avoids the waste of resources and greatly reduces the computing platform[3]. At the same time, the human and material investment in the information system of remote sensing analysis can be effectively controlled, thereby reducing the cost of investment in the construction and operation of power enterprises and improving the efficiency of scale.

3. Remote sensing road extraction based on computer neural network cloud computing

3.1. Application of remote sensing technology in harsh geographical environment

In all walks of life, aerial survey and remote sensing technology are needed to provide accurate data services for the industry. During the survey, scientific design is very important. At this time, the feasibility of aerial survey technology is determined. Only by comprehensive control can problems be avoided and the effectiveness of the technology guaranteed. One is that the line position has changed out of the control and measurement range; the second is that the line position has changed out of the photography range. Only by fully grasping the two aspects can the accuracy of the measured data be ensured. When it exceeds the measurement range, it needs to be supplemented in time. Depending on the content, it can be supplemented at any time to ensure the comprehensive accuracy of the data. Measurement, then manual supplementary testing is required to ensure the integrity of the data; when it exceeds the scope of photography, it is mainly affected by various factors, which leads to many reasons for exceeding the scope of photography, mainly because the design of the flight belt has no calculation range, saving aerial photography Cost and cost, which limits the aerial photography area and affects the scope of photography. Some data frames are too dead to facilitate the acquisition; in
order to effectively avoid the above situation, the route layout must be selected during the design and control of the flight strip Room.

3.2. Application of remote sensing technology in map surveying

Aerial surveying and remote sensing technology is more and more widely used in map surveying and mapping. With the continuous development of technology, map surveying and mapping has a good application effect, which provides an effective guarantee for map surveying and mapping. The map drawing takes a long time and requires a certain period, so that the position on the map will change in a certain period and the change of the landform will also cause the swing of the position of the line on the map. Only by comprehensively improving the technical support and reasonably mastering the line selection technology can we design a good line and try to avoid situations that exceed the control range. Map surveying and mapping need to ensure timeliness[4]. According to the different tasks described, the map measurement range is designed and the measured area is accurately described within a certain period of time. Especially for the geographical environment and different terrain surveying and mapping, a lot of data support is needed. Making full use of aerial photography technology can effectively ensure the accuracy of surveying, which can be scaled down during surveying and mapping and do a good job in data calculation and collection. Traditional topographic surveys require manpower to complete. Without technical support, their labor is very time-consuming, laborious and dangerous. The innovation and development of technology have greatly reduced human labor and improved efficiency. Through relevant technical support, Being able to accomplish many tasks that humans cannot accomplish, technology has driven the rapid development of map surveying and mapping. The detection chart of remote sensing technology is shown as figure 1.

![Detection chart of remote sensing technology](image)

**Figure 1.** Detection chart of remote sensing technology

4. Accuracy improvement scheme of remote sensing road feature extraction

Establish interpretation marks. According to the spectral characteristics of the image, combined with the field survey data and referring to the geographical maps such as the current land use status map in recent years, the geometry, color characteristics, texture characteristics and spatial distribution of each
land use / cover type are analyzed and finally the bare mountain is established. Interpretation of signs by remote sensing and interpretation of current and changing information. According to the remote sensing interpretation mark of the bare mountain, manually sketch the bare mountain area and improve the attribute information, which is the interpretation of the current information[5]. It is recommended that the attribute structure structure of the current layer of the bare mountain include the monitoring plot number, administrative district code, county-level administrative district name, township / street name, land type, central longitude, central latitude, area and image time. The superimposed analysis with the administrative division vector data can obtain the territorial information of each patch in batches[6]. Comparing the remote sensing images before and after, looking for the change area of land type, sketching the change area and perfecting the relevant attribute information, which is the interpretation of change information. Suggestions for the attribute structure of the bare mountain change layer include: change plot number, administrative district code, county-level administrative district name, township / street name, pre-change land type, post-change land type, central longitude, central latitude, area, previous image phase, Later image phase, direction of change (increasing, decreasing), etc. The main data includes latitude and longitude, area, time phase and direction of change. The data of each part is shown in the figure 2.

![Figure 2. Data of each part](image)

5. Conclusion

For image acquisition, the data use should be determined according to the scale of the map. Remote sensing image processing needs to be combined with actual mapping needs to complete the download of image data, thereby improving the efficiency of image correction and other work. For drawing control work, Erdas, Arc / Info software should be used to improve the accuracy of the map database import information data acquisition. Facts have proved that only by adopting the above measures and methods can the scientific and technological environment for mapping work be optimized.

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