

Application Research of Real Scene Modeling Technology based on UAV(unmanned aerial vehicle)

Liu Jing¹Chen Yajuan,¹Li Chao²

¹Chongqing Real Estate College, China,401331

²Chongqing changan new energy automobile technology co. LTD, China,401331

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Abstract: With the rapid development of modern science and technology in China, the technology of remote sensing transmission of real scene shooting by UAV has been widely applied and the technology has been continuously mature. UAV can realize flexible, light, fast and high-altitude operation. Moreover, UAV can apply real scene modeling technology to integrate the shooting content and realize accurate modeling of real scene to be shot through remote sensing mapping, which can meet the overall application standard requirements of technology. This paper will analyze the remote sensing mapping and modeling technology of UAV, study the advantages and disadvantages of real scene modeling technology of UAV as well as the extended application mode operation of real scene data modeling and ground channel fusion in order to continuously strengthen the comprehensive construction level of real scene modeling of UAV technology.

With the improvement of people's overall living standards, urbanization is developing rapidly. In the face of various construction needs, effective engineering construction needs to be implemented in combination with different actual geographical conditions. Before engineering construction and design, it is necessary to carry out effective real scene shooting for specific regional conditions, obtain parameter protective equipment through real scene shooting and model according to parameter data to facilitate design investigation and research of engineering modeling and mapping work. According to engineering modeling technical standards, we should strengthen the modeling research of real technology, obtain accurate data, remote sensing test specific indexes and improve the technical operation standards and application patterns of UAV from the overall state level of technical modeling.

1. Advantages of UAV real shooting technology test

The test technology of remote sensing real scene shooting of UAV has many advantages compared with the traditional test technology. Through the analysis of the accurate surveying and mapping mode, we can collect the information of the real scene on the ground by measuring the standard of science and technology. It includes geographical location data, hydrological topography, insecurity factors, ecological level, etc. The ground remote sensing test is realized through UAV, the real scene data is collected in the early stage of design, and the standard is determined through data modeling, which can effectively improve the accuracy and authenticity of the overall remote sensing test along with the test efficiency and reduce the technical cost and the measurement risk.

1.1 Accurate test data

The real shooting data of UAV remote sensing test are accurate that can provide accurate data for subsequent engineering construction modeling. UAV test data are measured by satellite positioning technology, sensor, infrared detection technology, photosensitive technology, etc. These technologies have small error and high precision in the measurement process and can be used to check the actual data for many times. UAVs are flexible in the measurement process and can also be easily used in places that are inaccessible to humans or with low light. Through the determination application of computer technology, we may collect each kind of data information

accurately and reduces the pollution to the greatest extent.

1.2 Improve the working efficiency of real modeling measurement

In the process of real scene remote sensing measurement of UAV, data information has been integrated through the satellite with the transmission of measured data. Through the application of network computer technology, the data is collected, collated, calculated and analyzed to realize the remote control of data measurement and real scene modeling. The engineer can adjust the actual test data in time to ensure the accuracy of the test data. For specific weather, the UAV can also operate without delay. Compared with manual work, it has higher work efficiency, fewer limitations, and conforms to the technical work standard requirements of actual survey and modeling.

1.3 Low cost of modeling and testing

The remote sensing test data of UAV can be used for many times. With the progress of technology and the development of science and technology, the production cost of remote sensing test technology of UAV is gradually reduced and it has gradually entered into ordinary people's homes. Compared with the traditional manual measurement, the cost of unmanned aerial vehicle (UAV) for construction engineering modeling and measurement has been lower for 100 times and the time cost and labor cost are reduced. The effective measurement and real scene modeling analysis can be realized in a short time.

Table 1. Comparison between UAV and artificial modeling test technology

	Accuracy of measurement	Work efficiency	Test cost	Adaptive area	data transmission	Job safety
UAV	high	high	low	widely	fast	high
artificial	low	low	high	limit	slow	low

2. Application of Real Scene Modeling Technology of UAV

UAV testing technology has been used in the world for a long time, but China started relatively late, which has a certain gap compared with developed countries. However, in the technical analysis of real scene measurement of UAV in China, the technical mode is fast and high while the technical improvement is fast and the application is wide. Multi-function and multi-application data modeling can be realized in different regions of China. For example, in the technical centers of emergency and disaster relief, deep well exploration and distant shooting, real scene data can be acquired in a short time through the UAV technology, and the scene situation can be accurately judged to facilitate the acquisition of work through the modeling technology. The UAV is lightweight and can't be influenced by the outside world. It can be applied to different special environments. It has fast data transmission speed and can meet the needs of data acquisition and integrated analysis. The following will take engineering measurement data modeling technology as the standard to analyze the practical application of UAV in real scene modeling technology.

2.1 Data collection

In the analysis of engineering surveying and mapping data, it is necessary to carry out preliminary survey and analysis on all kinds of data, and analyze the feasible implementation plan of the project according to relevant data. Based on the distribution of different regions and large-scale data information, we need UAV to carry out rapid remote sensing test and scan the data. Through data scanning, the UAV can integrate and transmit the data. After obtaining the data information, engineers can use computers to conduct simulation modeling and measurement of the data, conduct positioning analysis with standard accuracy according to specific engineering

implementation requirements and determine specific coordinates and positions. According to the implementation process of regionalization, engineers can timely adjust the data detection mode, improve the collected data and information, gradually enhance the accuracy of the data to ensure that the data collected by the UAV is comprehensive and accurate in line with the application standards of the technical operation mode.

2.2 Image data acquisition

Engineering measurement is mainly the acquisition of image data that is not merely about a few photos. Drones can be used to take the data of relevant areas and 3d modeling animation mode can be used to process the data so as to help people obtain the basic data of image data production. In the test of UAV technology, if the content of the measured data is not consistent with the actual measurement data, the UAV system will automatically clear and replace it and automatically focus the measured items digitally so as to improve the accuracy of the test data and ensure the clear effect of the image data.

2.3 Low altitude operation data determination

In engineering surveying and mapping, it is often necessary to analyze the data with large contrast. For example, the analysis of low-altitude operations in mountainous areas or caves without sufficient lights, etc. In order to ensure the accuracy of UAV measurement data, UAV needs to focus on low altitude flight fast and in a flexible way. In the complex environment, it can adapt to efficient data measurement to ensure the safety and accuracy of its own data. In the actual measurement and analysis of UAV, it is necessary to strengthen the response and strain capacity of resistance operation to ensure that the UAV can also operate in complex environment and improve the overall capability effect of measurement and mapping.

Table2. Areas with high application range of UAV live modeling

Intelligent agriculture	logistics	Wind power generation	Water conservancy inspection	environmental monitoring
Consumption level aerial photography	Plant protection field	for police use	Remote sensing mapping	Forest fire control

Conclusion

To sum up, UAV real scene measurement and modeling technology is extremely important for the development of modern technology. In order to meet the demand of measurement, we need to constantly strengthen the expansion of technology model and pay attention to technology fusion and improvement. In combination with the development and construction needs of science and technology, the level of UAV remote sensing measurement technology should be improved, and the accuracy and versatility of measurement technology should be enhanced to meet the construction and development needs of people's life and work in the future.

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