Research and Implementation of Remote Sensing Image Database Technology Based on Oracle9i

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Abstract. With the continuous development of remote sensing technology, more and more image data have been acquired. How to store these data safely and effectively has become an urgent problem that needs to be solved. In this paper, after analysing the types and development methods of image data, we decided to use VC to develop based on Oracle's image database; an image database system is designed and implemented. Specific research work is mainly reflected in many aspects:

Keywords: Remote Sensing, Image Data, VC, Oracle's Image Database

1. Image database system analysis

With the rapid development of remote sensing technology, more and more ground-observed image data are acquired, and multi-temporal and multi-band data in the same area are also continuously increasing[1]. A multi-resolution image pyramid system for ground-observation has emerged. The concept of mass image data, how to manage and organize these mass data is particularly important. For the management of image data, most of them were implemented based on the file system management method[2]. However, with the increase of the image database, the defects exposed by the file system management method are increasing day by day, such as high data insecurity, Low concurrent access performance, weak detection and retrieval functions, etc. Establishing an image database is an effective means to manage these massive data [3]. Therefore, how to use a database system to store and manage image remote sensing image data has received great attention from researchers and designers, and has become one of the focus and hot areas of current research.

1.1. Comparison and selection of data platforms

The study of database technology started in the late 1960s and has developed over decades. Hierarchical database systems, mesh database systems, relational database systems, relational object
database systems, and object database systems have emerged [4]. Currently, relational databases have been widely used [5]. Database products are very rich, especially relational database products. The database application environment can be divided into desktop database system and service database system.

Table 1. Comparison of two database systems

| Database System Category | Advantage                          | Disadvantage                                      |
|--------------------------|-----------------------------------|---------------------------------------------------|
| Desktop Database System  | Low Price and Friendly Interface. | Weak Security and Weak Network Functions. Flexible, |
| Server Database System   | Good Performance And Good Scalability. | High Prices, High Requirements for End-user User, Specialized Knowledge and Training |

1.2. Oracle data management system

The main contents of this paper are as follows: (1) the basic methods of UAV remote sensing image processing are introduced, and several methods of storage and management of shed image data are analyzed in detail [6]. This paper makes a deep analysis and comparison of the two kinds of shed image data storage mechanisms based on middleware Arcs DE and Oracle Spatial, which are most commonly used at present, and determines that the two kinds of storage mechanisms based on middleware are analyzed and compared. Oracle Spatial Georeactor the method of constructing UAV remote sensing image database by Oracle Spatial Georeactor. (2) The database construction technology of UAV remote sensing image based on object-relational database is mainly used. The extended object-relational data model is deeply explored, and the remote sensing image of UAV is completed by using the new characteristics of Oracle Peristerite key technologies of database, such as spatial reference, data segmentation, image pyramid, spatial index and so on, realize the efficient storage and management of UAV remote sensing based on object-relational data model. The number of images is dug. (3) The remote sensing image database system of UAV with C / S architecture is developed to realize the data storage, direct inquiry and management of UAV remote sensing image.

2. The architecture of the Oracle database management system.

In Oracle, the term database and database instance are a key concept to understand the Oracle database structure system. Database is a physical concept, which refers to the physical storage of information, including the file database in the existing disk, as long as it is maintained properly. An instance is software running on a computer, and an instance is a temporarily stored entity.

2.1. Open database connectivity ODBC.

Open database interconnection is an early database interface technology introduced by Microsoft. It is actually the predecessor of ADO that we will discuss later. One of the main reasons why Microsoft introduced this technology is to provide programmers with an easy way to access database content in a non-language-specific way. In fact, Visual C ++ is such a programming platform. ODBC provides a set of two drivers: one is the language of the database manager, and the other is the common interface for the programming language. Allowing the contents of the database to be accessed via a common
interface using standard function calls is the meeting point of these two drivers. ODBC is based on a standardized version of the structured query language. With the help of ODBC and SQL, we can write database access code independent of any database, which makes the program completely modular. A small high-level DLL defines the interface of the program. During the execution of the program, it will call the DLL of a specific database, which is the common driving system.

![Diagram](image.png)

**Figure 1.** Outline of Oracle system software product structure

### 2.2. Method of developing Oracle database.

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### 3. Conclusion

With the rapid development of spatial information science technology, perceptual image data is more and more widely used in various fields of society. However, according to the market demand and the inexhaustible scope of application, satellite remote sensing and clean air remote sensing cannot be completely covered, and UAV remote sensing has made up for satellite and aviation remote sensing because of its advantages of strong flexibility, convenient operation and low investment. Blank. The wide use of UAV remote sensing is bound to produce a large number of remote sensing image data.
How to effectively manage these remote sensing image data and provide these data services are the hot spot of research.

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