

Research on the Enhancement of Technological Innovation Ability in Greater Bay Area By Computer Science and Technology Talent Resource Sharing

Wei Ji*, Biaoxin Chen, Hanying Gan

Guangdong University of Science and Technology, Dong'guan 523000, China

* Corresponding Author Email: jw789111@163.com

Abstract. The Greater Bay Area Science and technology talent Pool system developed in this paper is a Web database system, its purpose is to realize the sharing of science and technology talent resources in the Greater Bay Area. Improve the efficiency and informatization of scientific and technological personnel management. Using JAVA based JSP, Java Servlet, Java Bean and JDBC technology, the separation of application presentation layer, application layer and data layer is realized. This system uses the "connection buffer pool" technology to improve the efficiency of database access.

Keywords: Computer, scientific and technological personnel, resource sharing, greater bay area, innovation ability.

1. Introduction

The concentration of scientific and technological talents can promote regional innovation, which is a key driver of sustained economic growth. As a leading region for deepening economic and social development between China and the mainland, Hong Kong, Macao and other regions, the Greater Bay Area plays an important role in regional economic integration. In recent years, the Greater Bay Area has attracted and nurtured a number of "highly skilled" professionals. These personnel are also the main force to promote the high-quality development of the Greater Bay Area. In the new development period, promoting the organic combination and synergy of scientific and technological talent gathering and high-quality development in the Greater Bay Area will help the resource endowment of the two provinces in the Greater Bay Area. Further deepen exchanges and cooperation between the two places [1]. It is of great significance to build the Greater Bay Area into a world-class metropolis with global scientific and technological innovation. How to better depict the interaction between the concentration of scientists and the economic development of the Greater Bay Area and explain the mechanism and way of their co-evolution is an urgent scientific problem in the world. Greater Bay Area Science and Technology Talent database system is a project of Greater Bay Area Science and Technology Bureau. The project is a Web-based database system. The subject is a set of information resources for researchers based on the Internet, with the Internet as the core, with the enterprise as the center and the government as the center. Its purpose is to promote the effective integration of information resources for researchers in the Greater Bay Area and improve their informatization level and work efficiency. This enables the tracking and management of highly qualified researchers. The system dynamically grasps the development situation of scientific researchers and strengthens the tripartite cooperation among industry, study and research of scientific researchers.

2. Key system technologies

2.1. Web database access Technology

An important goal of the Web database system is to link the Web and the database, so as to generate a dynamic Web page based on the database, and this process is to use the Web access database to complete [2]. At present, there are many types of this technology, which can be divided into three

types: one is to connect the Web server with the database server through the middleware on the Web server side, the middleware technology usually used includes: universal gateway interface (CGI), application programming interface. This method takes the network server as the communication medium, realizes the access to the data through the network server, realizes the access to the data through the network server, and feeds back the obtained data to the user through the network server. Figure 1 shows the overall structure of a network database accessed through a middleware application.

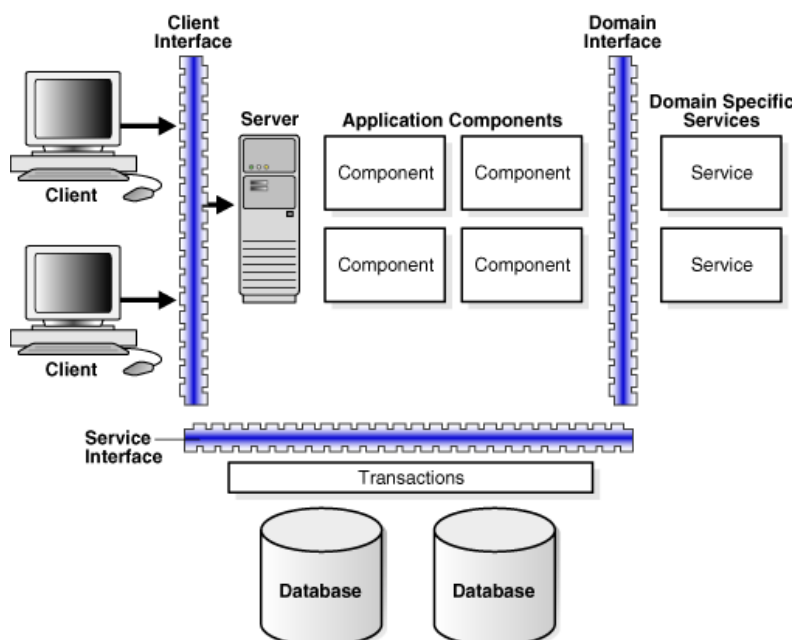


Figure 1. Structure of Web database system based on middleware

The second method is to download an application to a client, and then let it connect to the data server on the client, such as Java, applets, etc. Figure 2 shows the overall architecture of access to a Web database via client applications.

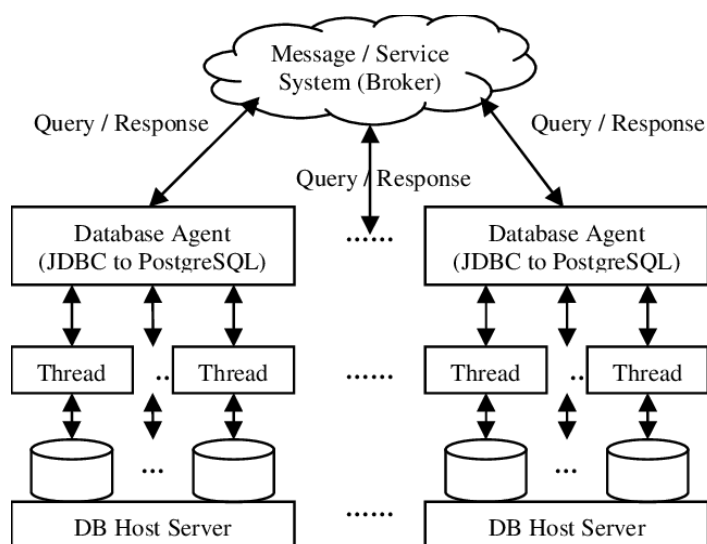


Figure 2. Web database system structure based on client

The third scheme can be regarded as the combination of the above two schemes, that is, to provide a middleware at the server side, and in this process, a part of the application software can be downloaded from a client, and then the client uses this network and middleware to access the database [3]. Now the most used is the first scheme, which contains CGI, Web API, ASP, JSP, PHP and other technologies, and ASP, JSP, PHP are three major technologies with similar functions. Each method has its own advantages and disadvantages, users can according to their actual needs, choose the appropriate method.

2.2. Application Programming model

One is JSP+ JavaBean+ JDBC. This project proposes a user response mechanism based on JSP. After the user request is made to the JSP, the result of the execution is relayed back to the client via the Java Bean. While the technique solves some of the smaller problems, it doesn't work for some of the larger ones. Arbitrary use of this technical approach can lead to a lot of scripts or Java code in a JSP page, especially if there are many requirements to handle. While this is not a big problem for Java programmers, it is fine as long as Web designers develop and maintain JSP pages. Essentially, this leads to unclear roles and responsibilities, which can cause problems in project management [4]. The other is JSP+ Java Servlet+ JavaBean+ jdbc. The system absorbs the significant advantages of JSP and Java Servlet, and uses JSP to achieve the expression layer, so that Servlet can better perform deeper operations. Here the Servlets act as a controller to manage the request, creating a bean and an object that a JSP does not necessarily use, and using a JSP page to determine which JSP page to pass to the request. The advantage of this technology is: JSP page does not need any operation, just get the object or bean created by the service, and extract the dynamic content, and then embed it in a static template; This is a great way to separate presentation and content, and provides a clear delineation of roles and responsibilities for software developers and Web designers. In fact, the benefits of this approach increase as the complexity of the project increases.

3. Design of talent sharing resource data system for Greater Bay Area

3.1. System Architecture

The specific application business of the Greater Bay Area science and technology talent pool system of this subject is not complicated, and the requirements of transaction processing performance are not very high. However, users focus on the sharing of science and technology talent information on the Internet, and the interface is unified and simple, so the three-layer B/S/S architecture is adopted. The system composition and structure are shown in Figure 3 (image is quoted from The AI Behind LinkedIn Recruiter search and recommendation systems).

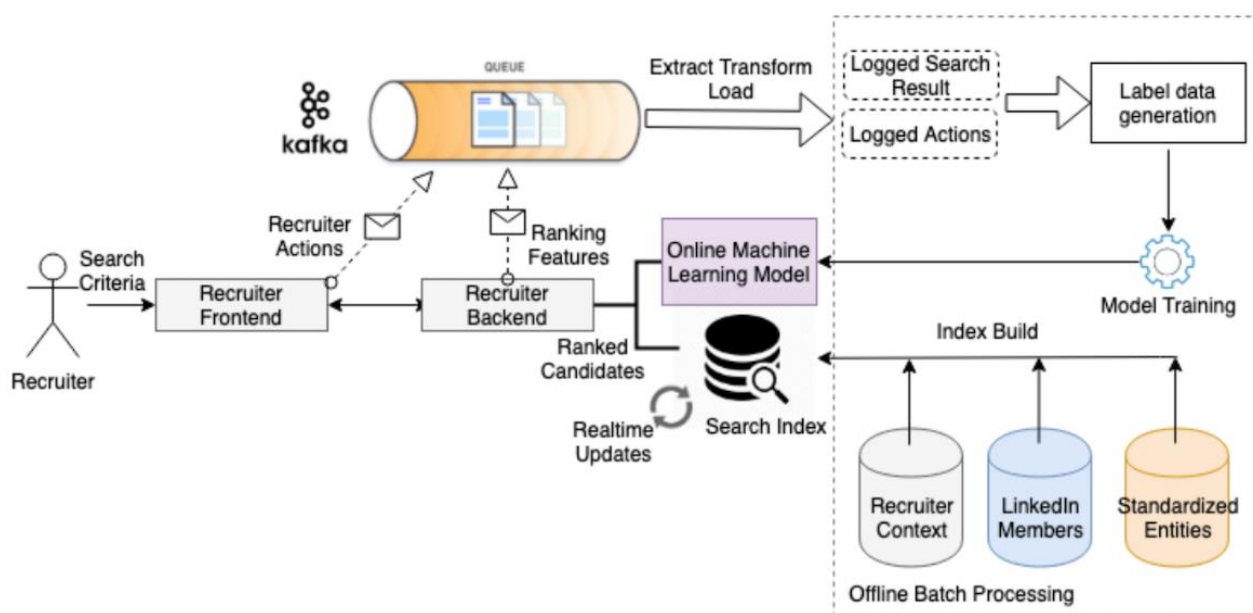


Figure 3. Architecture of the Greater Bay Area Technology Talent Pool System

The client can be any client on the Internet with a Web browser installed, and its operating system can be Windows XP or Windows NT. On the client side, the user makes a request to the Web server, receives a response from the Web server, and displays the returned data to the user. The mid-level operating system is Linux, while Tomcat4.0.1 is a combination of Web and applications. Tomcat

receives and determines the user's request, and if the request is for a plain static page, it finds the desired page in the Web server file system and returns it to the user as the final result [5]. If an application call is requested, the corresponding application is run and its dynamically generated page is returned to the user. The system uses the Solaris operating system and runs in Oracle8. The system can also be used in other DBMSS with JDBC function, such as Sybase, SQL server, etc. The expression layer of the application system includes all JSP programs, static HTML documents and related images; the application layer includes all Servlets and Java beans and other related classes, which are stored in the middle layer; the data layer is the Oracle database, which is stored on the database server. The DB Connection Manager class is responsible for specific JDBC connections, where the core of implementing JDBC connections is keeping a usable JDBC Connection object in the DB Connection. The DB Connection Manager does not actually disconnect the JDBC connection, just put it back into the broken link; When a program requests a JDBC Connection, the DB Connection Manager class does not actually establish a new connection. It simply takes an available connection from the cache and returns it to the user. If there is no available connection in the cache, The DB Connection Manager class does not need to actually establish a new JDBC connection: from this, you can see that the JDBC connection can be reused, improving the efficiency of the connection and the performance of the application accessing the database. Describe a feature document with a feature document, and then use the DB Connection Manager class to create and manage objects associated with it. The profile describes the JDBC drive to which the connection is made, the upper limit of the number of links in the connection pool, the lower limit of the number of links in the connection pool, the maximum number of links a connection can use, and the database user's name and password. The first purpose of a join pool is to act as a regulatory layer to restrict access to a database, but the pool can also be configured to allow multiple joins to occur simultaneously. When the number of user requests exceeds the connected library requests, new requests will be waited until one user request is completed and the other connected library is released.

3.2. System Functions

3.2.1 Collecting and Updating Information

Collect and update expert information, project information, personal and enterprise user information, etc., after certain processing into the database. For example, the system administrator can update the data in the database, the overage processing of experts, the modification of enterprise data, and the expert member users can modify the information content related to their own after logging in the system.

3.2.2 Querying Information

Perform query and database statistics. Query: Use a stepped-type approach to filter each case step by step. For example, enterprises consult experts, government departments recommend experts, project review, experts consult other experts. Data statistics: According to the professional title, education, age, nationality, region, whether the experts have won special awards.

3.2.3 Rights Management

The system administrator is responsible for creating, deleting, authorizing, and so on. Corporate users can consult with specific experts on a subject. For example, if an enterprise user has selected an expert, he can send a message to the expert [6]. After the message is approved by the system administrator, the system administrator sends the message to the expert via email or personal message board. Once in the system, you can read the company's questions and respond to them. The replies are sent to the system and reviewed by the system administrator before they are sent to the company's users.

3.2.4 Project review management

According to the evaluation results of the project made by the expert for many years, the appropriate experts are selected to evaluate the project. According to the desired function of the

system design, after a comprehensive demand analysis and overall design of the whole system, it is divided into the following parts according to different types of users. As shown in figure 4 it is the function of a system architecture (image references from <http://cognitus-h2020.eu/index.php/architecture/>).

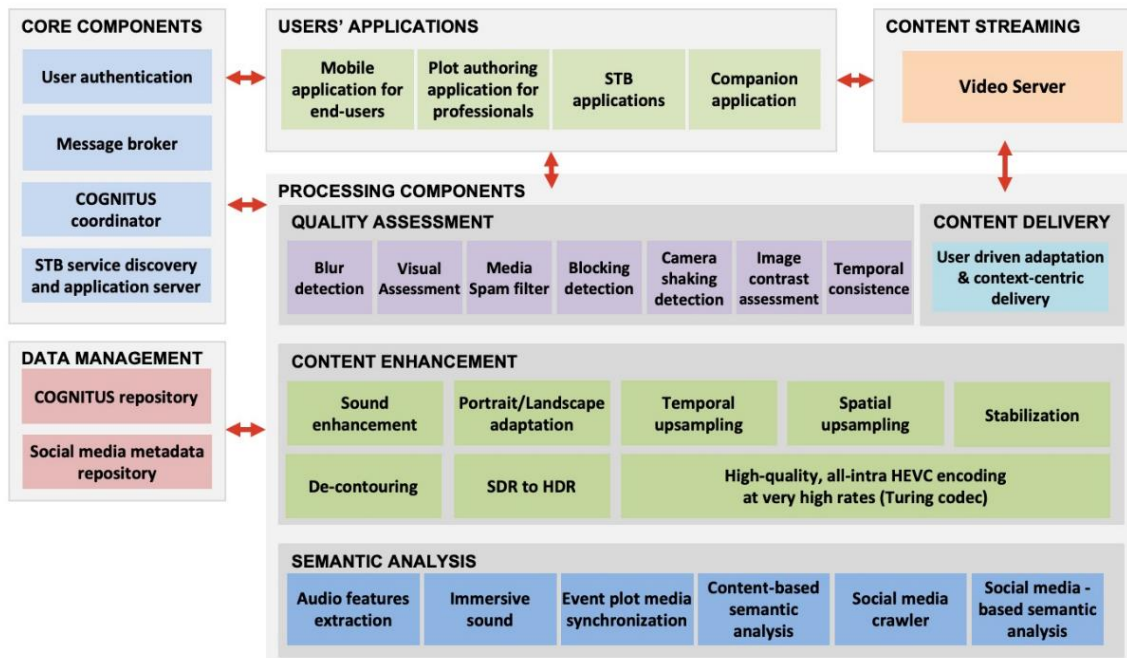


Figure 4. Functional architecture of technical talent pool system

3.3. Function Modules

The application of this system is mainly divided into three modules based on the above programming model: user interface, user input and process control and business logic module. JSP, Java Servlet and JavaBean technologies are selected respectively.

3.3.1 Service Logic Module

In a network database system, business logic is a very important component. Therefore, the business logic model must meet the requirements of most users, including ensuring the integration of transactions between various components of the application software, timely and effective management of application data, management of existing applications, integration of new application components, etc. We need to use the following technologies: servlets, Java beans, EJBs, and so on. Since the business logic module has been separated, the development of this module does not require specialized network programming techniques, so its development only requires transaction processing and logical judgment. It is usually wrapped in Java beans or EJBs to enhance its reusability. Using JavaBean technology, the business logic function of the system is completed.

3.3.2 Control Module

In the Web database application, the functions of the control module are: First, the request from the client user is accepted, and then the request is analyzed and converted into the input parameter of the business logic module. Then the corresponding business logic module is called for processing. Finally, based on the processing result of the business logic module, the corresponding user view module UP is called to generate a result webpage and return it to the browser. Both JSPS and servlets have the ability to execute controls [7]. When the process is complex, choose servlets; In cases where the process is not too complicated, JSP is selected. Because the main function of the control module is to accept the input parameters, to control the flow chart of the program, therefore, its program code is usually consistent Java code, and do not need to output information to the customer; In addition, because JSP is more suitable for writing dynamic web pages, and the interpretation and execution

process of JSP is more complex than that of servlets, the system uses Servlet to achieve its control function.

3.3.3 User View Module

The User View module includes JSP programs and HTML files. The core of the system is based on the analysis of business logic, produce a web page and feedback to the customer, because the core of the system is the design of the web page, so the JSP system is the best way to achieve the web page [8]. Now there are a lot of visual website design software that can recognize JSP tags, which makes it very convenient for website designers to carry out website design. When developing an application in the above programming pattern, different professionals develop, debug, and maintain the various parts of the program in parallel using the most appropriate development tools, such as: People who are proficient in Web page design use HTML technology and JSP technology to develop the view part of the application, people who are proficient in Servlet programming use Servlet technology to develop the control part of the application, and domain experts who are familiar with business logic use JavaBean technology to develop the model part of the application. Develop each module independently, and finally form a whole. During the software maintenance period, the web parts in the web page can be changed frequently by the web page maintainer without changing other parts. This paper presents a design scheme of business logic module based on data stream technology, which has strong practicability.

4. Database operation and design

Bigtable created by the Greater Bay Area talent Pool Information personalized system is a datastore based on GAE. While ensuring its size, it can create a database system more efficiently and quickly. Different from database management system, Bigtable shares more prominent attributes. It is characterized by row - oriented and column - oriented "multidimensional sparse ordered graph" database. A distributed Data Store creates a form by assigning a value to a print button, which operates as a Print Data window (). In addition, with the cursor function of Datastore, data properties and tree view, list view, list box, etc. On a data store base, the first step is to create the object Talents using the data Window:

```
Datastore Info_Talents
Info_Talents=create datastore
Info_Talents. data object="T_Talents"
Info_Talents. set trans object(sa)
Info_Talents. retrieve ()
```

The second step executes the data by row. Create a temporary table Team and dynamically generate a data Window based on the table retrieve (:

```
Data storesa_Talents
Sa_Talents=create data store
Tsql='selectt_idfrom' + #table
Tsql=sqlsa. syntax From SQL (tsql, "", terr)// The knot of the above source code
Create a data window object for the select statement in sql.
Sa_Talents=create (tsql, terr)
```

// The above source code dynamically creates the data window object, terr represents the error message

```
Sa_Talents. Set Trans Object (Sqlsa)
```

Third, after a data window object is created, it is processed by data category, and it is also possible to obtain GAE data by processing the data in each domain, storing key labels on the object in the example @PrimaryKey. In the process of creating Greater Bay Area talent resources, the personalized talent management system mainly adopts two key ways: one is field, and the other is naturally generated. Its key can be used to identify the actions of an entity.

Fourth, after deciding which object to update, you can use the permanent manager to change the value of its properties. It is necessary to define the types of specific modules of the individualized management system of human resources in the Greater Bay Area, and conduct basic processing of data such as adding, deleting, modifying and checking, as well as data processing and management by using indexes. In the personalized management of human resources in the Greater Bay Area, cloud computing technology is adopted, and the protection of human resources is realized through cloud computing technology. At present, the Greater Bay Area human resource personalized management system mainly uses DES, MD5, AES and other digital cryptography technologies, among which DES is one.

5. Conclusion

Through in-depth analysis and discussion of key technologies such as network database architecture, network database access technology, application program model, performance optimization and security, and based on this, the application example of Greater Bay Area network technical personnel database is developed. The establishment of this system can not only facilitate the science and technology Bureau to know the situation of scientific and technological personnel in the region, but also make the evaluation of scientific and technological achievements fairer and more open. The second is to timely grasp the needs of scientific researchers and promote the horizontal communication between scientific researchers and enterprises; Secondly, providing excellent personalized services for various enterprises and institutions, and provide consulting and technical services for corresponding scientific and technical professionals.

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