

Application of Open Source Technology in Japanese Translation System Design Based on Web2.0

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Abstract

Facing the great impact of the Internet, Japanese translation field needs technical change. This article uses open source technology based on Web2.0 to develop Japanese Translation Information System. The research used open source software Apache as server-side application, PHP as Embedded development language, and MySQL database technology as Backend Server, realized low-cost and pollable open information system for Japanese translation. The development of the system is a technological change in the field of Japanese translation. The study in this field possesses important significance and practicable value.

Keywords: *Web2.0, open source technology, MySQL, Japanese translation*

1. Introduction

As major technology of current internet age, the principal character of Web2.0 is that it attached great importance to the user and the user experience by using open source software. Open source software means open source code, so open source technologies are opening, powerful in extensibility, and have bright future. The most famous important web portals such as GOOGLE, YAHOO, EBAY and Alibaba, all used open source technologies.

1.1. Web2.0

Web2.0 is relative to Web1.0 the technical comparisons between Web1.0 and Web2.0 is shown in Figure 1, it is the latest and the most widely used network technology [1]. It is used in interaction of Internet users, users experience is its major characteristic. It has other characteristics such as de-centralization, opening and sharing.

1.1.1. Open Platform and Users Sharing: In the mode of Web2.0, the users can share and use all kinds of information, not have to be restricted by time and place. Web2.0 is opening to users, users can not only get the information you need, also can release their views. What is more, they can keep relatively high loyalty because of the interest, so they can constantly get involved in the construction and development of the platform.

1.1.2. Big Data and Micro Messaging: Big data is the important characteristic of the current era. Under the background of big data, micro messaging is from a variety of data created by users. Web 1.0 also has many micro messaging such as online photo album, network forum, network chats and microblog, *etc.* But one of the most important functions of Web2.0, is to push the micro messaging to more broader spectrum of users, so we can use these micro messaging freely anywhere. As a result, data aggregation,

management, sharing and migration can be realized. They further can be combined into a variety of personalized applications.

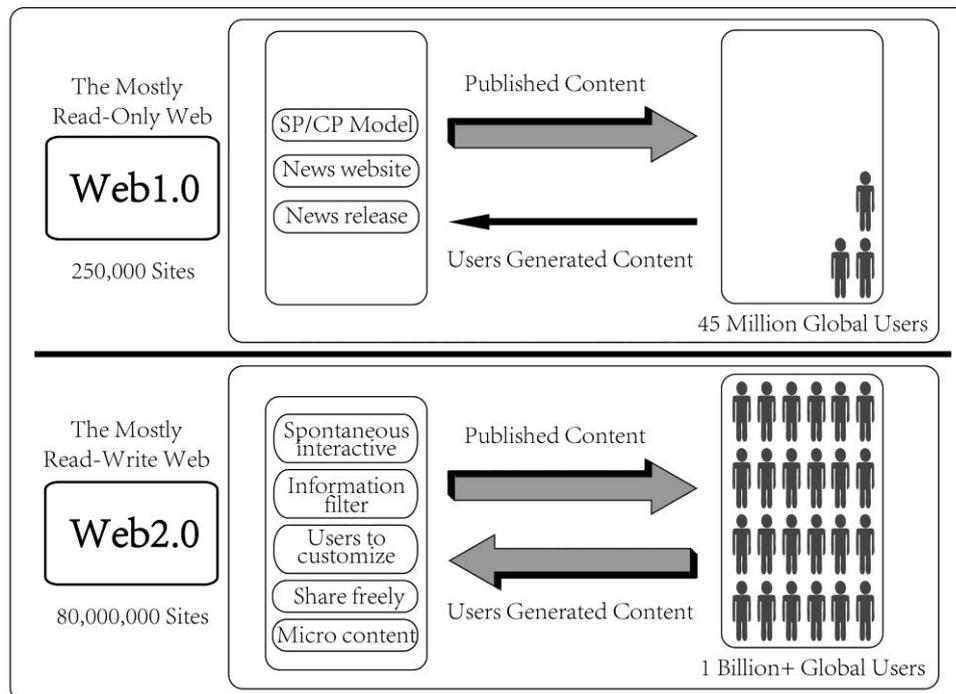


Figure 1. Model of the Technical Comparisons between Web1.0 and Web2.0

1.1.3. Experience as The Core: Web2.0 embodies the development of sociology and humanities, realize care and attention of the society to the person's experience by technology. In the Web1.0, website is concerned about Things. Website organizes the data in a commodities-centered way. But Web2.0 organizes the data in a human-centered way. For example, Dangdang.com can record what books you read, who read the same book. Although people is linked together by books, but people become the focus of concern and the center of organization [2]. BBS is the user participation, so we can also take it as Web2.0. The characteristic of society is the major character of Web2.0. It is human-centered, and human inevitably generate social requirements. Social bring more user interaction for the web site, and produce so rich content that the use value and the attraction of the website service can be increased.

1.1.4. User's Participation: The user's participation is the most well-known characteristic of Web2.0. Web2.0 change 'read-only' mode into 'Read/write' mode, encourage the participation and contribution of users. This kind of user's participation construction is divided into two levels: One is in the website content level, create network value by user's participation to increase the attraction of the website. The other level is to build a benign ecological network by open source and having an open API, so the function and competitiveness of service can be improved.

1.2 Open Source Technologies and Open Source Software

Open source means open source code, the technologies about it are called open source technologies, its main application area is open source software. Open-source as a new noun is defined to describe the software that source code can be used by the public, its use, modification and dissemination is without being limited by the license.

There is a very close relationship between Web2.0 and open source technologies. On the one hand, open source technologies promote the birth of the Web2.0. The concept of Web2.0 was proposed and promoted by the pioneer of open source software Tim O' Reily. Websites based on Web2.0 use a large number of open source technologies, such as LAMP, Python, RubyOnRail, and so on. Its low-cost and opening promoted the development of the social network, brought the spirits of sharing and opening to Web2.0. On the other hand, Web2.0 brought a lot of new communication methods to open source software, such as Network of group cooperation, content pushing ways. All these have the embodiment in the open source sites such as GitHub, SourceForge. Follow, Watch, Push, Tag on the Tweet, FaceBook, are all embedded in the development process of open source projects [3].

Web2.0 and open source software have something in common, including decentralization, group collaboration, and User Generated Content, etc. The essence is user-oriented web experience. Websites of Web2.0 have realized rapid growth with the aid of open source technologies. The spirits of sharing and altruism carried forward on websites of Web2.0. A Nowadays, open source technology occupies most of the market share of mobile platforms.

2. The Comprehensive Thought of Online Japanese Translation System

In the era of open source technologies, Japanese translation industry needs Web2.0. The free, opening and portable software and technology provide technical support for Japanese translation, to construct Online Japanese Translation Information System by using open source technologies, is the future direction of the industry development.

2.1 Basic Structure of Open Source Software Platform

Based on Appache, MySQL and PHP, we can realize a development environment of online information system. From three major areas: Web server-side, the database server and Scripting language, they provide the best, lowest-cost tools for system development, and have good system security and portability [4].

2.1.1. System Construction Based On B/S Structure Mode: The system uses B/S structure mode based on IPS (Internet Protocol Suite), it is a made of browser, Web server and database server. In this structure mode, internet users use the client browser (IE, *etc.*,) to realize network access. Web server parses HTTP requests from client, turn them into standard SQL queries, then submit them to the database server. After data validation and data manipulation, the resulting data stream will be sent back to Web server. After processing by the WEB server, send to the client and display them to users. The working model of B/S system structure is shown in Figure 2.

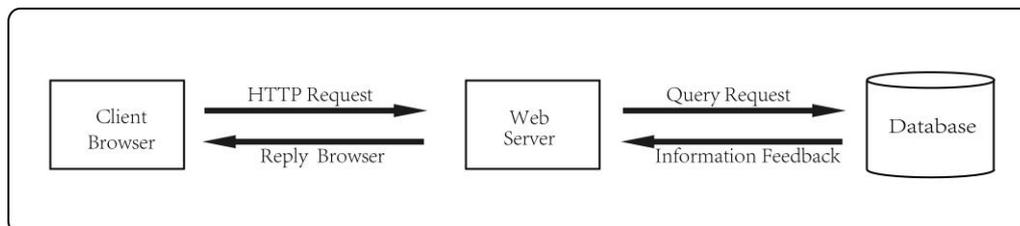


Figure 2. Model of B/S Information Categories

2.1.2. Open Source Software for Online Japanese Translation System: PHP can be run on a variety of web servers and operating systems, including MICROSOFT IIS, NETSCAPE ENTERPRISE SERVER, and so on. Apache is a Web server developed by supercomputer center of Illinois University. At first time, it was used in Unix and Linux system, now has achieved cross-platform use. It is powerful open source software, high efficiency, reliability, expansibility and free of charge is its main characters. MySQL was developed by Swedish company MySQL AB. SQL is the most commonly used standardized language which is used to access the database, is one of the most popular relational database management systems, and also is the best RDBMS (Relational Database Management System) application software used in WEB developing. These three are all open source software, Have the characteristic of open source. If there is any error or loophole, it is able to repair in time. If be used together, the three software can form a good development environment.

2.2 The Main Function Model of Online Japanese Translation System

The function of Online Japanese Translation Information System should correspond to related fields of Japanese translation, in order to solve main problems for Japanese translation. It mainly includes interactive translation, professional vocabulary translation, and the latest Japanese translation information, Chinese and Japanese cultural information; build a professional and technical platform for experts, teachers, students, and customers of Japanese translation. System construction uses PHP technology, uses MYSQL database technology as Backend Server. The system structure includes three major modules: User Management Module, System Management Module, Message Management Module.

User Management Module: classify and manage the users accessing the system, realize the functions of user login, logout, amending personal information etc.

System Management Module: manage the main content of the system, including publishing an article, returning to the theme, searching message, data backup and speech filtering.

Message Management Module: manage the message. Display and query messages, leave messages for legal registered users, give news tips for new messages, and so on.

In order to achieve the above function, the system creates a number of tables through the background database technology, support each function module at the foreground, such as creating user table to storage information of legitimate users; create tables online to manage and store the information of online users. The function module design of Japanese Translation Information System based on above functions is shown in Figure 3.

2.3 System Database Design

System database design is important part of Japanese Translation System, because the realization of dynamic pages in the system needs the support of database. PHP realizes the connect with database server of MySQL, update the information in the database promptly, finish the work of write and read. Connection mode includes MySQL function join and ODBC connection mode. Because of the high performance seamless technology of PHP and MySQL, we chose function join to connect with MySQL database [5].

The system needs to create six data tables: user, online, boardroot, board, announce, message. The system can achieve foreground data's classification and storage. Data tables record the registered user information, online users' information, the information of system and subsystem, topic information and comments. Corresponding to the users' operations at foreground, provide background support such as dynamic real-time data output. The ER model of the database of Japanese Translation Information System is shown in Figure 4.

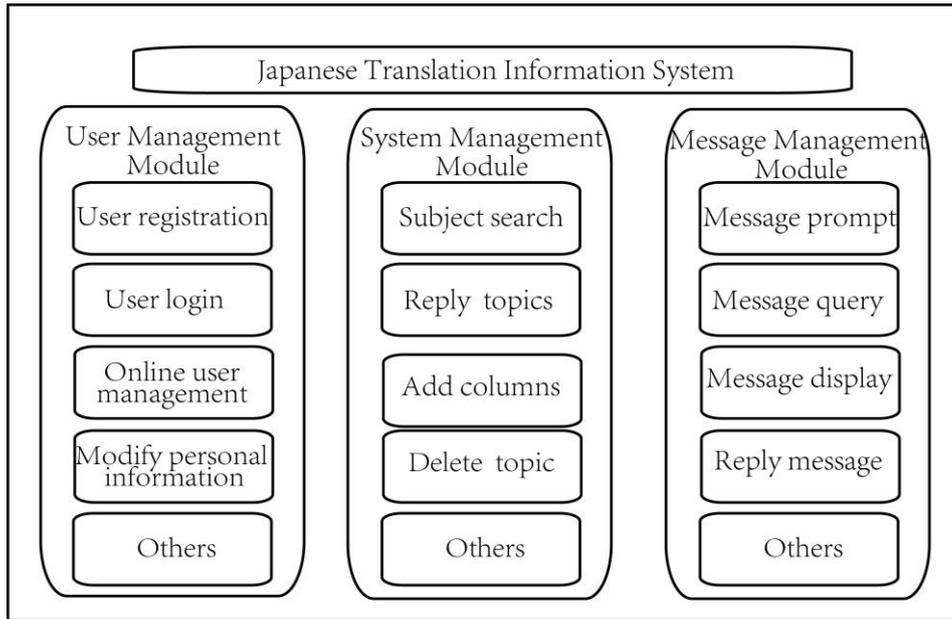


Figure 3. Model of Japanese Translation Information System

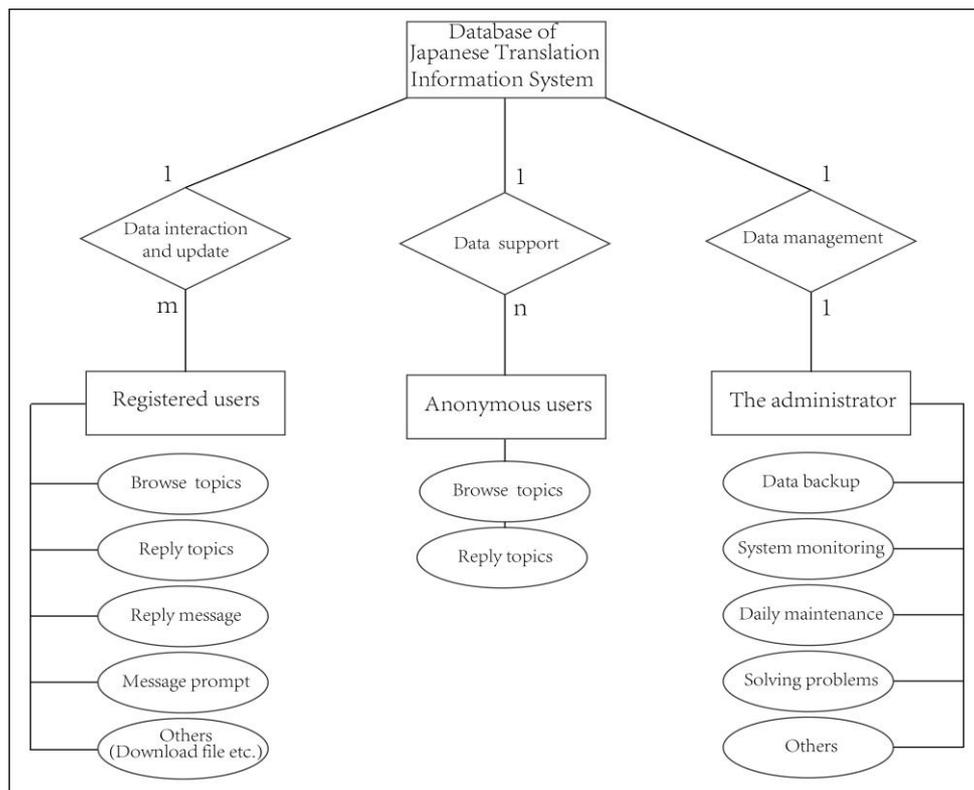


Figure 4. The ER Model of Japanese Translation Information System

3. Implementation Methods of Japanese Translation System

3.1 Main Parts and Technical Indicators

In the system, Japanese and Chinese are the main working language, English and other languages will be used too. Therefore, the system has strong ability of language selecting. On the one hand, it has functions such as translation skills communication, translation

business communication, translation learning and translation information sharing. On the other hand, it also has contents such as Japanese language and culture, cultural comparison between China and Japan. Besides, it must have professional and technical information, such as materials, electronics, machinery, medicine, etc. It is essential means to effectively enhance the capacity of translation practice [6].

Based on the above analysis, the system integrated above functions through adding BBS module, browsing the topics module, publishing topic modules, replying topic module, message processing module, construct dynamic interactive information system as Figure 5.

3.1.1. Forum and Sub-Forum: Forum and sub-forum are shown in a tree structure, are able to add and remove freely. To manage them easily, the system just sets primary subforum. The module is associated with two data tables. Adding subforum means adding a record to database, assign rootid field value of the forum's number. The new columns need to add a new record into data tables, and then add it to sub-forum. The algorithm to delete forum and sub-forum is opposite to it.

3.1.2. Browsing Capabilities: Browsing articles is the basic function of information system. The prolems of this module includes: 1. the topic is shown in a tree structure, the replies will be shown as indentation. 2. Too many articles will be shown as paging form, has jumping page function according to the users' requires. 3. Query and selection according to the users' requires. 4. Thematic information will be updated timely, and be pushed to users.

3.1.3. Post a Topic or Reply: Posting translation topic is important function of this system. After the topic is written by user, the data will be submitted and will be checked by the system. If pass over, it will be added to announce table and become a record.[7] Technically, the Layers Field will be set as 0. The reply to Japanese culture or Japanese translation, is close to publish technology, at the storage link, modify the field value to '1' .

3.1.4. Other Modules: The Japanese Translation Information System includes other modules, such as message managing. It can be realized by Cookie technology. The main technical points are as follows: 1. Read the user's ID by Cookie, find the user's message from message table of database. 2. Judge if the message has been read, and feedback 3. Considering safety of system, prevent information behavior such as 'watering' . (Figure 5)

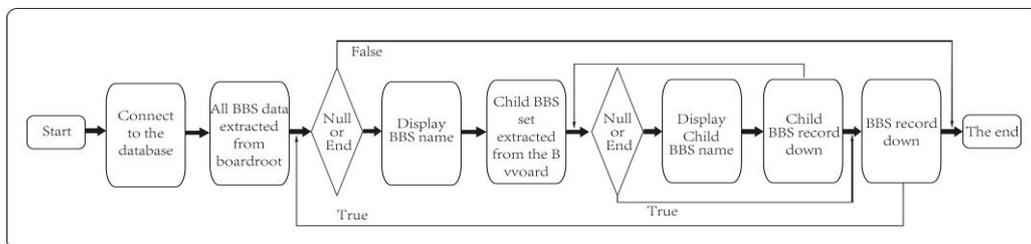


Figure 5. Model of Japanese Translation Information System

3.2 Example for Topics Browsing Module Design

The most important thing of Japanese Translation Information System is the part of topics browsing. An example will be given to explain the development process. The work will be completed by MySQL server technology and PHP development language.

According to above functions of the system, based on design technical requirements, the topic browsing will be shown as tree structure. In the announce table of database, record the node' s child node by childnum field, this number means the article number replying the topic; record the parent node' s ID by parentid field, show number of plies by layer field, show the number of root node by rootid field, show the number of node by orders field [8].

After Setup is complete, according to reverse order of rootid value and orders value, arrange the related articles to the topic. Finally, backspace processing will be done(for example, the number of Japanese translation information is 30). In the process of practical application, the number of topic display of incomplete in the page, we need the page turning technology to realize multi-page. The sentence of MYSAL below can limit the number of displayed dataset: select*from announce limit \$offset,\$psize.

The dollar sign is variables, \$offset is offset, \$psize is the number of record shown. Compute the offset of the last record by formula: \$offset=\$page*\$psize-\$psize, Position to any page dynamically to check out related topic. The development process model of topic list browsing is shown in Figure 6.

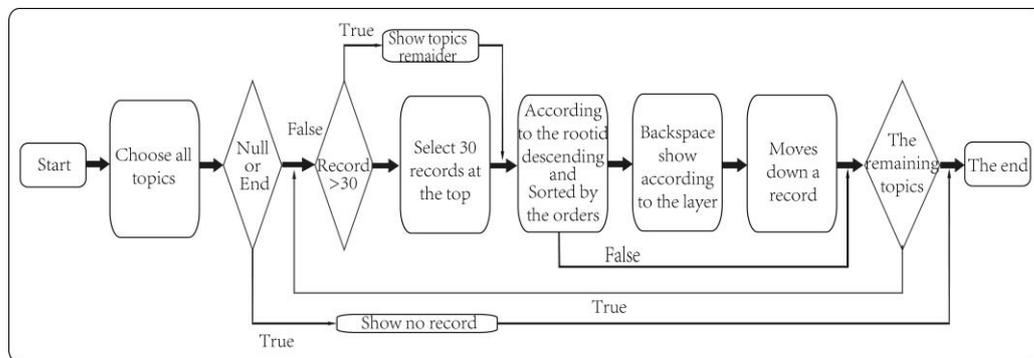


Figure 6. The Mode of Browsing Topics Module

4. Conclusion

The research used open source software like Apache,PHP and MySQL, developed an online Japanese Translation Information System based on WEB2.0 which has good user experience. The system can provide a good technical platform, to greatly improve the efficiency of information exchange and interaction for foreign language learners, translating engineers, business users and translation lovers. Even more important, based on the open source software like Apache,PHP and MYSQL, the system has a good safety and portability, because open source software and technologies are almost free of charge.

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