



# Design and Construction of Assistant Teaching System for Naval Professional English Translation Based on Mobile Education Platform

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**Abstract.** In order to improve our navy's professional English literacy, and further safeguard our overseas interests, this paper takes advantage of the convenience and speed of mobile platform, adopts C/S structure, and uses Java language and SSH framework of J2ee to develop a naval professional English translation auxiliary teaching system under the background of highly popular Android system research and development. Experiments show that the system can effectively guarantee the teaching quality and improve the information English communication ability of naval officers and soldiers.

**Keywords:** C/S architecture · Teaching system · Android · Mobile education platform

## 1 Introduction

With the continuous improvement of China's diplomatic status, China's navy has made more and more appearances on the international stage. Therefore, in order to ensure the smooth progress of China's foreign-related tasks, it is necessary for the navy to have the means of external communication to facilitate operational deployment and coordination in military operations. Improving China's naval professional English literacy is conducive to safeguarding China's overseas interests, promoting China's military assistance and so on, thus reflecting China's role as a big country [1].

Naval professional English is a kind of professional language for naval occupations and related posts. This foreign language needs to learn not only general English, but also English vocabulary and grammar of naval general military language, so as to achieve the purpose of being more suitable for naval professional posts [2].

According to the above analysis, the author of this paper thinks that it is necessary to study the development of the assistant teaching system of naval professional English translation based on mobile education platform. With the convenience and rapidity of mobile education platform, users can learn naval professional English anytime and anywhere. At the same time, authoritative naval professional English teachers are selected to record, plan and screen the teaching content, so as to ensure the teaching quality

and effectively improve the information-based English communication ability of naval officers and soldiers.

## 2 Key Technology

### 2.1 APP Mobile Platform

APP (application) is the mobile phone as the carrier application. The classification of APP is divided by the system type of the publishing platform, and the most widely used are Apple's IOS and the Android released by Google. Android technology is an operating system for mobile devices developed by Google Company based on Linux system and JAVA language. Android operating system has the characteristics of open source and compatibility, and intelligent usage. Its usage of intelligent mobile device operating system ranks first in China. Therefore, this paper chooses the Android system as the basis to design and construct the assistant teaching system of naval professional English translation [3].

### 2.2 C/S Architecture

C/S architecture is the architecture of client/server, which is a mode of application development. C/S architecture is characterized by rich interface operation and fast response speed of interactive experience. The disadvantage is that users need a lot of memory to install the program before they can use it. However, considering that the memory footprint of APP is greatly reduced compared with that of PC, most apps are developed in C/S mode. The realization process of C/S is as follows: the client sends the user's request to the database server, the database retrieves the relevant data according to the instruction sent by the user and returns it to the client, while the realization of functional logic and page display are handled by the client [4].

### 2.3 Development Environment

The front-end development environment based on Android is developed on Windows 10. The development package is JDK1.8, the mobile client is Android 9.0, and the client is integrated under IntelliJ IDEA, with Android studio version of 3.4. [5] The back-end development and integration environment of this system is Eclipse 4.5, the development language is Java, and the SSH framework of J2EE is adopted for development, that is, spring + struts2 + hibernate, the system database is MySQL 8.0.28, and the server is Apache Tomcat9.0. Based on the above technical introduction and environment deployment, the feasibility of building the development environment of this system is ensured [6].

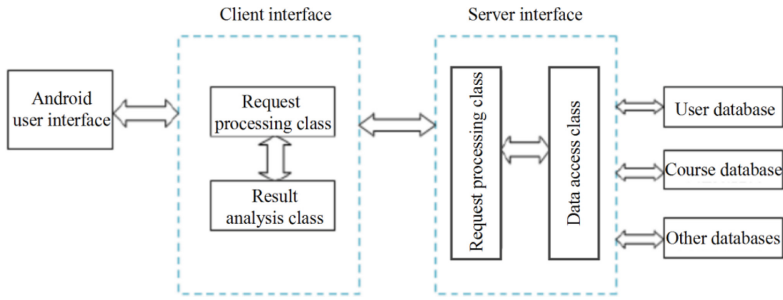


Fig. 1. System design and architecture diagram

### 3 Overall Design

The overall design architecture diagram of naval professional English translation assistant teaching system based on mobile education platform is shown in Fig. 1. According to the C/S architecture, the system is designed in two aspects: client interface and server interface. The main function of the user interface is to display the Android user interface, receive the user’s request, process the request through the feedback of the back-end server data, analyze the result and present it in the user interface. All kinds of UI designs on the user side are researched and developed by Android studio. The main function of the interface is to receive the request from the client, and according to the request, call the effective information in the user database, course database and other databases for feedback through the data access class, and realize the operations of adding, deleting, modifying and searching database data. In the development of the back-end server, the web server development technology is cited, so as to realize the fast data processing effect in the mobile Internet mode. After the system is built, the software is tested through the overall test and unit test. After testing, publish it to Android App Store [7].

### 4 Functional Implementation

In order to realize the data interaction between the mobile terminal and the server to realize the related functions of the system, this system uses hibernate as the persistence layer framework, uses the BaseHibernateDAO class and the update () method to realize the operations of persisting, updating and deleting objects. For data communication, JSON format is selected as the data interaction format between server and mobile. First, get the objects that need to be converted into JSON data, and then use soJson method to convert the values into JSON format, so that these data can be converted into JSON format of strings and returned to the server, and then the JSON can be parsed to complete the data interaction [8].

The main function of the system is the online learning function of video, which is recorded, uploaded and screened by authoritative naval professional English teachers. Users can choose their own naval professional English learning resources through online learning subsystem, and learn through online on-demand mode. The functional realization code of online on-demand course is shown in Fig. 2.

```

Public class Course {
private int courseID = 1;//Course number
private String description = "";//Course description
private String courseName=""; // Course title
22 China Academic Journal Electronice Publishing House. All rights reserved.
private String author=""; //Author
private String iconImageUrl=""; //Icon address
private Date' Time createdDate; //Creation date
private String url="";//Play address
public Course getCourseInfo (int courseID);//Get course information
public bool updateCourse (Course course)://Update course information

```

**Fig. 2.** Functional implementation code of online on-demand courses

**Table 1.** System performance stress test

Concurrency	Login response duration	Play course response time
100	0.5 s	0.5 s
200	1 s	0.8 s
300	1.3 s	1.2 s
400	1.7 s	2 s
500	3.9 s	4 s

The push of video courses in the system is sorted in a personalized way, and the sorting way is not fixed, so that the problem that users watch the same video too many times can be avoided, the limitation of the learning range of video courses can be avoided, and it is convenient for users to learn new knowledge. The ranking elements are analyzed according to time, click-through rate and collection rate. For example, videos published too early in the list need to be downgraded. The video is sorted according to formula (1), and the binary tree algorithm in data structure technology is adopted as the sorting function realization algorithm [9].

$$n = \frac{v}{10} + 10 \times r - (t_c - t_n) \div 3600 + s \quad (1)$$

After the system is developed, the pressure of the system needs to be tested, and the test results are shown in Table 1. The stress test of the system is conducted by JMeter, and the maximum concurrency is set to 500. From the test data in the table, it can be seen that the maximum concurrency of system users is 500, and the response time of playing the course video reaches 4s, which has already affected the user experience. Therefore, the system can allow about 500 people to access at the same time [10].

## 5 Conclusion

The mobile education platform for naval professional English translation assistant teaching system not only has the advantages of online video learning and application, but also has the characteristics of naval militarized English professionalism. It has effectively

realized the construction of a comprehensive military English learning center, and can achieve the purposes of improving the navy's translation ability, improving learning efficiency, enhancing the proficiency of five basic English skills, stimulating learning interest and cultivating correct English learning concepts. It not only achieves the goal of cultivating high-quality comprehensive professionals in the navy, but also further promotes the innovative change of naval professional English teaching form.

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