Applied Research on English Listening Based on Mobile Streaming Media Technology

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Abstract: English listening learning through on-demand system and based on mobile streaming media technology in this paper refers to an open learning learning mode and better enriches English listening learning. Design and analysis of listening through streaming media technology is elaborated in the paper from three perspectives: firstly, system structure that is comprised of integrated service platform, exchange router network and user terminal is designed; secondly, the function of design system contains the foreground demand and background management subsystems; thirdly, design on-demand process chart manifests the complete handling process and explains each module. The critical technical problems about software development are solved in the paper. The developed media player features conciseness, smoothness and high image quality. Meanwhile, multi-media digital English listening learning pathways are expanded. Thus, more efficient learning platform is provided for English listening learners.

Streaming media indicates the continuous audio/video data flow of transmission and playing in chronological sequence on data network. In the past, people only could watch movie or listening to the music online by firstly downloading the whole AVI file and save it on the local computer. Unlike traditional playing mode, the whole file cannot be downloaded before played through streaming media technology, but only part of the content is cached, so that streaming media data flow is transmitted while the file is played. In this way, the waiting time for downloading and storage space is saved. The restriction of network bandwidth in multi-media information transmission is broken through to a certain extent through streaming media technology. Therefore, streaming media technology is widely applied into many fields such as online live broadcasting, online advertisement, video on-demand, distance education, tele-medicine, video conference, enterprise training and e-commerce, etc.

During English listening learning, the English learner will not be as much as enthusiastic as it is troublesome to search and analyze information. Along with the incessant updating of network technology, mobile streaming media technology has been widely developed and applied and universally acknowledged. The English learners could listen to English and consult information conveniently through mobile streaming media so long as there is network and mobile device available. During using the system, the user can download the file while playing. Meanwhile, the surplus content can be directly abandoned, so that the user's waiting time can be reduced and network transmission pressure can be mitigated, which is the best technology to realize English on-demand learning system. The development and application of mobile streaming media technology is further studied by concluding the advanced technologies of other on-demand systems and combining the characteristics of English listening learning.

1. Principle of streaming media technology

Speaking of this technology, high-efficiency RTP/UDP protocol is used output. By saving the beginning part of the file is saved in the memory, transmission and playing of English listening files can be realized anytime.

Related protocols including HTTP, TCP, RSTP, RTP and UDP are used in the diagram. As defined as application layer protocol, RTSP is used for controlling real-time data transmission. As defined as real-time transport protocol, RTP indicates the standard data package format of audio and

video transmitted online. As abbreviated as UDP, user datagram protocol sends out the datagram of IP layer without providing reliable mechanism. Therefore, its transmission speed is very fast. The exchange between web server and browser is realized through HTTP/TCP protocol. After the user selects the media resource to play, the web server will find out basic information including the address of stream media resource and coding type in streaming media server. Then, the web browser will start the player and transmit the request for playing the resource to the server through RTSP/TCP protocol and the server will transmit the streaming media information to the client through RTP/UDP protocol to play the resource.

2. Framework Structure of the Server

The framework structure of mobile streaming media server is as shown in the diagram 2. its working process is simply analyzed as below: the system separates the video and audio data of English listening and use audio and video coders for coding. The streaming media data is effectively transmitted one to one or one to many through RTP. RTCP (realtime transport control protocol) transmits data package according to sequence, provides reliable transmission mechanism and provide flow or congestion control. WAP(wireless application protocol) is the standard for having access to wireless information service through mobile terminal. The user can obtain listening file list, introduction and data by communicating with WAP server and also can realize response with WAP server through HTTP (hypertext transfer protocol)

3. Streaming Media On-demand Process of English Listening

On-demand process can be divided into 21 steps. Meanwhile, some steps also can be subdivided into several ones. In general, on-demand process is: " user login→certification result→on-demand request→business certification→balance inquiry→account balance→certification result→error message→generate UML→send UML→start player→request content→verify UML→error message→send content→timing→ending notice→ending initiatively→begin watching→real-time fee deduction→deduction massage→passive ending→ending timing→calculate time→ending notice→ending initiatively→ ending timing→calculate time→calculate deducted fee→feedback about fee deduction". These steps are classified into five modules, which are divided through double dot dash lines in the diagram. Each module is as introduced as below:

(1) ID certification request module. After the user enters the login interface, inputs user name password and verification code, then the system will certify the user's ID. In case of fail in ID authentication, please exit to the prompt message. In case of successful ID authentication, the user can propose on-demand request and send the request message to the business authentication inquiry module. However, in case of fail in business authentication, please exit to the error message.

(2) Business authentication inquiry module. Corresponding functions of internal API call and HTTP & Cobra protocols will be completed. The user can proceed with business authentication and consult account balance according to the on-demand request. In case of insufficient account balance, please exist to the error message. In case that the account balance is enough for paying the expense for the playing time of the system, UML will be generated and then sent to the play module.

(3) Start play module. UML and additional verification code sent by the business authentication inquiry module is received to start streaming media player, send request for playing content to the player server, then the play server will verify UML according to the verification code. In case of fail in verification, please exit to the error prompt message. In case of successful verification, the streaming media content will be sent to the end user.

(4) Time calculation module. The play server sends the streaming media content code to the end user, and writes the begin time into the system, and then writes the end time into the system after sending out the passive or initiative end message. Meanwhile, the play server will calculate the on-demand duration according to being and end time and write it into the system and regard it as the basis for calculating the expense and assessing the user's learning situation.

(5) Watching charging module. After sending the watching notice to the integrated business

processing system, the play server will send begin play steaming media content and user watch the content and the system enters to the state of realtime fee deduction. In case that account balance is not enough to play the on-demand content of next duration, playing will be ended passively and end notice will be sent to the end user. However, in case of user's initiative end, the billing and fee deduction will be completed and the feedback about the result be sent to the end user.

4. Design Goals and Application Objects of the System

4.1 Design goals of the system

The system design mainly refers to the English learning platform based on streaming media technology, so the following main functions will be realized.

Firstly, video resources including classroom English teaching videos, English listening audio and English movies will be played and downloaded. Secondly, interaction among learners and that among those and teacher will be realized through mobile learning platform. Thirdly, the function that the teacher can upload, edit, fabricate and delete related video resources will be realized. Last but not the least, the function of online test will be realized, including the online test of many question types such as listening, judgment and option, etc.

4.2 Application objects of the system

Through repeated debugging and improvement, the main functions of the system have already been realized. In a bid to check the application effect of the system, English teachers and students are taken as the trial objects respectively. They all have good response to the main functions of the system. Stochastic selection of test questions, options and reading articles and dynamic play list of listening audios are further applicable for students to have test independently. They are interested in stochastic combination of the content of test papers. As the test questions and options are selected stochastically and different test questions are selected every time, more test papers are generated to a certain extent. As a result, students are more enthusiastic about it and system's reusability is also enhanced. In the meantime, students can immediately fill the vacancy through feedback part (including feedback about correct answers and answer analysis, etc.). The students using the system highly think of it. Speaking of foreign English teachers, they are quite interested in the test question management and statistics function of the system as the workload is reduced and the test questions are effectively managed and their working efficiency is enhanced. Besides, the statistics function are helpful for the teacher to immediately analyze students' learning situation and improve teaching work. According to the overall effect of the trial, it could be found that the system features strong utility and satisfies the requirements of most majority of students and teachers.

Foreground on-demand is shown to the end user in the form of web page. Any user having access to the network can visit it. Whether the user possesses on-demand function depends on the user's right and pre-deposited expense. After registering successfully, the user can log in the system to complete related operations after verified by the system administrator. As far as the core function is concerned, on-demand of corresponding content can be completed by using the function of "media play" after finding out it through the function of "media search". The auxiliary function is useful for the user to complete corresponding auxiliary work, including online services such as user's recharge, user's login and recharge data and uploaded payment voucher, etc. The user can directly obtain the answers to the questions through the function during using. As for announcement display, the system officially publish some major events or prompt information. As for software downloading, it is used for downloading related plugs supporting streaming media on-demand of English listening. Background management provides the material basis for on-demand in the form of application program to ensure the system running. Therefore, the core function is "audio and video management", including operations such as uploading, classification, verification and deleting of audio and video resources. In addition, there are some auxiliary functions. For instance, the user management is used to verify the user's registration information and distribute roles and rights. Billing and charging is used to bill the user's on-demand streaming media according to time

or flux and deduct expense from the user's account. System configuration is used to realize comprehensive management of related configuration information. Announcement management is used for publishing, deleting and changing announcement at the system background. Information maintenance is used to add, revise and delete system's code and basic information. Data backup is used used for realizing the backup of system database or partial data at regular interval to ensure the safety of the system.

Through structural design, function design and on-demand process design based on streaming media technology, the critical technical problems of the software development are solved in the paper, which could provide a concise and smooth multi-media digital learning approach with high image quality for the users. It features simple operation, strong function and flexible system. The system is inevitably helpful to strengthen English thinking ability training, improve cognitive processing level, enriching listening learning design and build diversified scheme. The mobile streaming technology is greatly advantageous over design and application. The traditional network information dissemination mode is changed and there is no restriction in time and address during learning. Additionally, the learner's subjective initiative can be fully developed. However, there still exists certain problem about application of streaming media technology. Therefore, the development of he streaming media technology also remains to be improved as there are some problems about commercial operation and technology. The progress should be made gradually in the future development.

Acknowledgment

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