

Designing of an Ubiquitous Learning Support System for Multi-devices*

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Abstract: In this paper, we present a system called Ubiquitous Learning Support System for Multi-devices. In this system, learners could access the server and download learning resources in two modes through wireless communication devices in line with J2ME. In this paper, we introduce the design of this system.

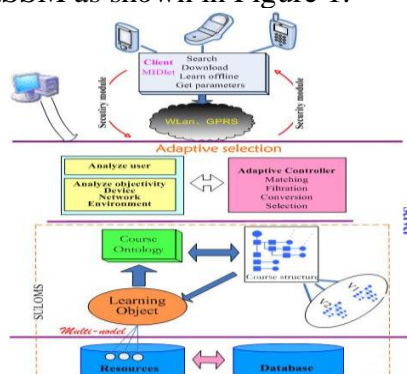
Keywords: Ubiquitous learning, SULO, adaptive, multi-devices

Introduction

There have been many researches on each aspect of mobile learning and ubiquitous learning. Most of existing researches are based on a given operating system in given mobile devices rather than multi-devices. So, it's hard to make them more popular. The Ubiquitous Learning Support System for Multi-devices (ULSSM) is going to solve the problem of access by multi-devices, and organize learning resources in the form of ubiquitous learning object to satisfy the requirements of pushing adaptive resources to multi-devices.

1. System Design

The requirements of this system are availability to multi-devices and reorganization of resources. The ULSSM is a system based on J2ME-J2EE and Fedora [1]. There are three layers and six modules in ULSSM as shown in Figure 1.



*This study was made possible by a research grant (BCA070052) for—A Study of Ubiquitous Learning Resources Support System and Key Technologies from China National Office for Educational Sciences Planning in—the 11th Five-Year planning projects for educational sciences.

Figure 1. System architecture of ULSSM

2. Application Server

There are two parts in application server: semantic-oriented ubiquitous learning object management subsystem and adaptive module. The subsystem based on the Fedora system, offers extended dynamic interfaces to manage semantic-oriented ubiquitous learning objects we designed referring to LOM [2]. The adaptive module selects learning resources according with the physical attributes of mobile device (screen size, memory capacity etc.), network and learner's preferences.

3. Ubiquitous client

We use J2ME to develop this client and adopt Generic Connection Framework to make it communicate with the server by HTTP protocol [3]. Besides, our system transmits info with the server through xml.

In this system we define two learning modes: synoptic learning and in-depth learning. The former means learning the essential of a whole course while the latter means learning detailed knowledge points.

The client provides the main functions as follows.

- Search courses: Learners connect to the server and search courses on the server.
- Download: Learners download proper outline or detailed contents which are selected by adaptive module.
- Offline study: Offline learning based on structure.
- Subscribe: When courses needed don't exist, learners can choose to subscribe them. When the course appears, the server will send a message to the client and the client downloads it automatically and informs the learner.

4. Conclusion

In this paper, we introduce the design of the ULSSM and the functions of this system. Until now, we have constructed ontology and resources of "Java program language". A demo system has been done. The development of other modules is still in progress. We will finish the whole system in June and carry out pilot studies in freshmen.

Acknowledgements

Thanks all partners in our team in Beijing Normal University for their cooperative work and helpful suggestions.

References

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