

Implementation and Evaluation of Adaptive Navigation Support Mechanism for Context-Aware Ubiquitous Learning

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Abstract

In a context-aware ubiquitous learning environment, physical constraints, such as the limitation of the number of students for visiting individual learning targets, the time needed for moving from one learning target to another, and the environmental parameters, need to be taken into account while designing learning activities. Optimizing learning paths for individual students in real time becomes a challenging issue. Although several path-optimization algorithms have been proposed in recent years, most of them only deal with the problem of finding a fixed navigation sequence for learners while the real-time situations or student learning behaviors are not taken into account. In this study, an adaptive navigation system for context-aware ubiquitous learning environments is implemented by considering the real-time parameters, including student learning behaviors. In the developed learning environment, active RFID tags were employed for obtaining real-time contextual information. To evaluate the performance of the approach, several experiments have been carried out in a museum. The experimental results show that the approach is helpful to the students to more effectively and efficiently utilize the learning resources and achieve better learning efficacy.

Keyword : Ubiquitous Learning, Context-awareness, navigation support