Applying Sequential Pattern Mining Technologies for a Context-Aware Museum Route Suggestion System

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ABSTRACT

Guiding service plays an important role in museums. Without guiding service, visitors might spend much time for finding exhibits or get lost in the museums. Therefore, how to develop a guiding system to satisfy visitors' requirements becomes an important issue for museums. This research proposes a context-aware museum route suggestion system that yields routes to fulfill visitors' requirements. Because exhibit items in a museum could be large, the proposed system first apply k-medoids algorithm to conduct exhibit grouping. Next, after executing route transformation algorithm, the original route sequences with exhibit items will be replaced by the route sequences with exhibit sections. The original route sequences with exhibit items will be replaced by the route sequences with exhibit sections. Then, the I-PrefixSpan algorithm is applied to discover time-interval sequential patterns in a route database. The time-interval sequential patterns are filter out according to visitors' requirements including intended-visiting time and must-see exhibits, which are inputted on the visitor's PDA. In addition, the proposed system detects the total number of visitors in each exhibit section through RFID technology and postpones the time that visitors enter crowded areas. If a visitor doesn't follow the suggested routes and want to request new suggested routes, the proposed system will consider the new constraints

which contain the exhibit sections he/she has visited so far and the time he/she has spent so far. Finally, the suggested routes are prioritized by the evaluation method. The suggested routes with first three priorities will be sent back to the visitor's PDA.