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AN EFFECTIVE SOLUTION FOR AUTOMATING THE LAYOUT OF TRANSACTIONAL PAGES

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Abstract. *In this paper, we propose a novel framework, called CATER, for the automated layout of transactional pages. To automatically generate transactional pages, CATER employs a decision-table to solve the problems of what kinds of widgets are suitable for different data items and how to arrange them in transactional pages. To improve the usability, CATER dynamically gathers users' patterns for the optimization of the layout of transactional page. CATER also addresses the issues of data validation, persistent store, navigation control as well as maintenance. Thus it could be used for general Web applications. From the perspective of designers, CATER as a feasible automated layout solution could effectively facilitate the development process of Web applications, avoiding numerous mechanical manual labors. From the standpoint of users, this framework could effectively improve the usability of transactional pages, reducing the duration of completing a business process online.*
Keywords: Automated layout, Web-based user interface, Transactional page, Adaptive user interface

1. **Introduction.** In the last decade, the Web had increasingly penetrated into multiple aspects of our social lives because of the widely supported HTTP protocol, universal access and global availability (technical reason) as well as the background of globalization (social reason). No wonder developing methodology of Web-based user interfaces is an important research direction in the Web community. There had been so many guidelines [2], principles, tools and approaches [4, 5] so far addressing how efficiently to develop Web pages, but it seems as if none of them could be more efficient than a feasible automated layout solution. Actually, the topic about automated layout techniques had already existed for a long time, and there had been so many research achievements [9]. Unfortunately, there was still lack of feasible solutions of automated layout for Web-based user interfaces.

Usability of Web pages is another important issue that researchers often take into consideration. There had been various methods addressing different aspects of the usability issue, such as reducing response time [8], personalizing or customizing Web contents [14], satisfying the needs of special human populations [1] as well as retrieving information [10]. However, it was still a great challenge to gather users' patterns in Web environments to optimize the layout of Web-pages to improve the human performance, especially in transactional pages, which allow users to perform an business process online.

Regardless of the application domain, when designing transactional pages, user interface (UI) designers generally have three common challenges: manually selecting and arranging graphic user interface widgets, connecting these selected widgets to right database fields, and sufficiently grasping and complying with various data rules. These challenges are relevant to UI layout, data storage and data validation, respectively. Therefore, as the main