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A personalized hypermedia application for web-based tools*

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E-tool is a web site offering a wide range of services and tools now available on the web but usually exploited in non computer-based applications. The site is targeted to professional users such as employees, secretaries, managers, layers, and business consultant. Anyway, everyone can find some useful tool to improve his work and his general behavior. Because of the big amount of different web-based applications supplied by the system, we decided to personalize the interaction with the user in order to tailor the services to the individual user's needs and to create long-term relationships with repeat users. As in the computer desktop all the most used applications are always available to the user, also in our system all the tools are always present as menu items. Thus, the user could save time having an easy access to all the necessary working tools using the site as a dynamic web-based desktop. Following the Kobsa's classification of *personalized hypermedia application* [1], we divided our personalization process into these three major tasks.

Acquisition Method and Primary Inferences. To initialize the interaction and construct an initial user model we decided not to exploit explicit user input supplied by registration form for acquiring user information. Therefore, the system shows immediately all the contents and gathers the required information about the user merely observing his behavior during the interaction with the system. On the first visit the system sends to the user's browser a cookie and starts logging the browsing process. On the latter visit the system retrieves the recorded data requesting the unique ID sent with the cookie. If the user decides to maintain the personalized session, he can log on it by a registration form. The recorded usage data are exploited to create an initial user model which will be refined during the following interactions. The collected data, stored in a database, are employed to generate assumptions about the user executing a set of acquisition rules based on heuristic "If ...then...". A section called "Your profile" shows the user model and allows the user to manually correct and update it if is necessary. Moreover, the user can also ignore the adaptive modifications by choosing to anonymize the interaction.

Representation and Secondary Inferences. This task is

aimed to represent the acquired information about the user and let them available for further exploitation. In order to augment the user model based on initial acquisition data a set of secondary inferences will be generated to draw sharper conclusions. The system learns about the user by processing each gathered input as training data, and makes adaptations based on the inferred assumptions.

Adaptation Production. This task is oriented to the generation of contents and structure adapted on the basis of a given user model. The layout of the web site is designed as a simple interface structured in a set of frames: *i)* a top frame containing personalized messages; *ii)* two side frames containing a list of structural links and information concerning the site and the user profile; *iii)* a central frame containing the effective services. The adaptation of the content is realized by presenting personalized recommendations based on the similarity of the features of suggested items and the features of items the user liked in the past. The recommendations are shown in a top frame where are also available *i)* shortcuts; *ii)* personalized commercial offers; *iii)* keyword marketing banners. The most used utilities are highlighted in the pages that appear in the central frames. Instead, the adaptation of the structure regards the side frames where are gathered the links to the available utilities grouped by functions. Over each session, the links are ranked in a more refined way on the basis of usage frequency and user interests. In contrast, the less or not used links will be lightly faded but not disabled.

Recent surveys show that personalization provided to the user gains a considerable payoff. Thus, the most important feature that distinguishes Etool from other similar sites is the customization of the services which is an effective way to transform an occasional user in an habitual one.

REFERENCES

1. Kobsa, A., J. Koenemann and W. Pohl (2001): Personalized Hypermedia Presentation Techniques for Improving Online Customer Relationships. To appear in The Knowledge Engineering Review.

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