Enhancing Personalized Information Services by User-Models Mediation

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Abstract
As the Web and online information access become an integral part of our daily life, we face a growing information overload. Workers in organizations search the Web routinely for information they need for their daily tasks. This can be technical information regarding electrical components in a systems development company or economical information in an economic department of a bank. In most of the cases, people face an overflow of information, most of it irrelevant to their needs. Personalization of online services seems to be a way to cope with this information overload, whether at home or at the workplace, and save us precious time. Personalization is achieved by adapting the services offered to users to their specific characteristics, preferences and information needs, as expressed by their User Models (UMs).

During the years, a variety of approaches and techniques for personalization evolved, based on information elicited, explicitly and implicitly from users in order to build UMs for specific services. However, this development brought with it a problem of heterogeneity in personalization techniques, such as content-based user modeling, collaborative user modeling, demographic user modeling and a wide variety of hybrid approaches. Hence, every service provider selected independently the relevant information he/she needed and the best way to represent it in order to provide the best service to its user.

A major problem that a service provider faces is the lack of initial information about a new user. This information is required before the service starts providing the personalized service. This raises a need for a mediating mechanism allowing to aggregate partial UMs generated by other services. Such a mechanism will allow reusing partial UMs, available in multiple personalization services for any service that may need it. Hence, this mechanism can bootstrap the UMs of services where no UMs exist, or enrich the existing UMs, and improve the quality of the personalized services provided to the user.

In parallel with the evolution of personalized services, the issue of privacy became a major concern for users of such services. This issue is widely researched as well, but even though closely related to personalization, we are only briefly addressing this issue by evaluating the possibility for using only partial user models for personalization. We focus on evaluating the trade-off between limiting the personal information provided by users and the loss of accuracy of the user modeling (and hence the potential of reduction in the quality of the service).