

Preface

Hypertext/hypermedia systems and user-model-based adaptive systems (tutoring or information retrieval) are most often considered as two mutually exclusive approaches to information access and interface organization. Adaptive systems *guide* the user in the infospace to present the most relevant material, taking into account a model of the user's goals, interests or preferences. Hypermedia systems are "user neutral", they provide the user with the tools and the freedom to explore the information by browsing through a complex network of nodes. Adaptive hypertext and hypermedia systems attempt to bridge the gap between these approaches.

With the increasing size, availability, complexity, and heterogeneity of current hypermedia systems, for example the WWW, it becomes impossible to impose any guidelines or discipline in authoring at design time. The networks become so complex that the existing navigational tools are too weak to provide orientation on where to search for the needed information. It is also not possible in principle to foresee what goals and knowledge potential users will have in mind when searching for information in order to define appropriate pre-defined paths or webs. A possible solution is to provide the hypermedia system with the possibility *to adapt to the needs of the individual user*. A possible way of achieving the adaptivity is by modelling the users and tailoring the system's interactions to their goals/tasks/interests. In this sense the notion of "adaptive hypertext/hypermedia" comes naturally to denote a *hypertext or hypermedia system which reflects some features of the user in a user model and utilizes this model by adapting various visible aspects of the system to the user*.

Adaptive hypertext and hypermedia is a very new kind of user-model-based adaptive systems. Though it has good background in Intelligent Tutoring, Help and Information Retrieval Systems research, real adaptive hypertext systems appeared less than 5 years ago. However for the last two years a number of such systems have been developed. Adaptive hypertext and hypermedia systems (we will use the acronym AH for the purpose of brevity) become increasingly important with the growing commercial availability of hypermedia systems. More and more users who are unfamiliar with the system and/or domain have access to such systems and face difficulties in navigation and in formulating good queries. The need of AH systems has been recently recognized by industry and this field promises to become one of great commercial interest in the near future.

The idea of this special issue appeared during the Fourth International Conference on User Modeling UM'94 in Hyannis, MA, where the editors organized two special workshops. The first one, organized by Peter Brusilovsky and Ian

Beaumont, focused on Adaptive Hypermedia. The second one, organized by Julita Vassileva, focused on User Modeling in Information Retrieval. From the papers included in this special issue, two were presented at the workshop on adaptive hypermedia (papers by Brusilovsky and Mathé & Chen) and two at the workshop on user modeling in information retrieval (papers by Höök et al. and Vassileva).

Among the five papers selected for this special issue, Brusilovsky's paper provides a comprehensive state-of-the-art review of adaptive hypertext and hypermedia domain. The review is centered around methods and techniques used in existing AH systems. Four other papers go deeply into the characteristics of a particular AH system, attempts to generalise the major concerns that define adaptivity, or describe in detail a particular application.

The paper by Hohl, Böcker and Gunzenhäuser is the first archive publication of HYPADAPTER, an adaptive hypertext system developed in University of Stuttgart and designed to individually support exploratory learning and programming activities in the domain of Common Lisp. The system employs domain and user modeling techniques to provide two principle types of assistance: individualized presentations of topic nodes and individualized navigation help.

Höök et al. discuss principles for adaptive interface design on a hypertext help system which is able to infer the user's task and plan and to provide appropriate help.

Mathé and Chen describe an adaptive hypermedia information retrieval system which maintains an individual model of user's tasks, preferences, history, queries etc. in order to provide a complex secondary indexing scheme called Adaptive Relevance Network. This network provides a long-term adaptation based both on usage and on explicit user input. Without any *a priori* specialized structure or statistical knowledge the system evolves its dynamic indexing structure over time and allows users to quickly access information relevant to specific tasks.

Vassileva's approach mirrors the one of Mathé and Chen. She describes a real application of adaptive hypermedia system for hospital information (large loosely coupled office documentation systems with underlying databases). The system limits the browsing space according to the current task performed by the user, thus achieving higher efficiency in task performance. It also adapts the size of the browsing space and the direct search options available to the user with respect to the user's level of experience by gradually allowing the use of alternative indexing schemes.

Altogether, the papers appeared in this special issue provide a good state-of-the-art picture of adaptive hypertext and hypermedia problems. We, as guest editors, hope that this special issue will shed light on adaptation and user modeling in AH systems and will form a landmark on the road to better understanding of these problems.

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