

# Web and Hypermedia Systems

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Web-based hypermedia systems are becoming increasingly popular as tools for user-driven access to information and services. The design of a web-based hypermedia should take into account the different classes of users that are more and more heterogeneous due to world-wide deployment, different interests and social conditions. Other important sources of heterogeneity are: the kind of user terminal (standard PC browser, palmtop, wireless device, etc), the available network bandwidth and latency (wired vs wireless networks), the desired "resolution" to observe contents, etc. Thus a web system should be able to adapt itself to different user requirements and environment constraints.

To face these problems, in the last years the concepts of User Modeling, Domain Modeling and Hypermedia Design have come together in the Adaptive Hypermedia System (AHS) research theme. Recently, international conferences (Adaptive Hypermedia and Adaptive Web-based Systems, Conceptual Modeling, User Modeling, Hypertext and Hypermedia) and workshops (Adaptive Hypertext and Hypermedia, Web Dynamics) have been held, and new journals (User Modeling and User-Adapted Interaction, The New Review of Hypermedia and Multimedia) appeared. More information can be found at the Adaptive Hypertext & Hypermedia web site (<http://www.wis.win.tue.nl/ah/>).

This Special Session focuses on the use of adaptive techniques, algorithms and tools, in application areas including data management, processing, transmission and querying/searching of multimedia contents. The program of the session includes nine contributed papers, spanning major aspects of web-based hypermedia systems, from AHS, to adaptive search engines, query languages and tools.

**Adaptive Hypermedia Systems.** *Adapting information presentation and retrieval through user modeling*, by C. Makris, A. Tsakalidis and B. Vassiliadis, describes an interesting architectural framework for intelligent, adaptive and personalized browsing, where the adaptation process is based on co-operative intelligent agents. An interesting algorithm for the scoring of authoritative pages is also presented.

*FlexXML: engineering a more flexible and adaptive web*, by A. Kaplan and J. Lunn, presents a system that allows the delivery of web contents for different user's preferences and browser environment. The proposed approach allows facing different device/bandwidth

environments without requiring changes to the user environment.

*A probabilistic adaptive hypermedia system*, by M. Cannataro, A. Cuzzocrea and A. Pugliese, presents an Adaptive Hypermedia System which use a probabilistic approach for User and Application Domain modeling. The adaptation process addresses three different aspects: technology (network and user's terminal), external environment (location, language, etc.) and user's behavior (browsing activity).

**Search Engines.** *Searching and surfing the web using a semi-adaptive meta-engine*, by A. Castellucci, G. Ianni, and D. Vasile, presents an interesting combination of user-adaptivity with spider-based meta-searching techniques. The use of a non-Bayesian clustering method avoids the need of classifying large sets of documents.

*A query language for user-defined web restructuring*, by D. Montesi, A. Trombetta, and P. A. Dearnley, introduces a fuzzy query language for querying and restructuring information extracted from web sources. The language permits to capture the uncertainty presents in both queries (that may contain weighted conditions about the document relevance w.r.t. some keywords) and data (typically provided by search engines).

*Monitoring web information changes*, by S. Flesca, F. Furfaro and E. Masciari, describes an interesting approach to the problem of monitoring changes in web pages. This approach is useful in adaptive systems whose presentations could depend by external web pages.

*Developing an adaptive search engine for e-commerce using a web mining approach*, by C. Lee and H. Yang, presents an approach based on a SOM neural network for the implementation of a web search engine.

**Tools.** *Working documents automatic generation using an adaptive editor*, by F. Ferri et al., presents an approach for the creation of HTML documents, starting from the shapes and semantics of component parts. It could be used as an editor for adaptive hypermedia.

*Data mining for intelligent web caching*, by F. Bonchi et al., describes an intelligent web caching architecture capable of adapting its behavior on the basis of the access patterns of the clients. Web caching is improved by using classification and rule association techniques. The system could enhance performance of AHSs.