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The Adaptive Web

Methods and Strategies of
Web Personalization

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Preface

In the first few years after its inception, the Web was the same for everyone. Web sites presented the same information and the same links to all visitors, regardless of their goals and prior knowledge. A query to a Web search engine or catalog produced the same result for all users, irrespective of their underlying interests and information needs.

With the growth of the available information on the Web, the diversity of its users and the complexity of Web applications, researchers started to question this “one-size-fits-all” approach. Does it make sense for a Web course to present the same learning material to students with widely differing subject knowledge? Do news sites serve clients well when they suggest the very same hot news items to people with different interests? Is it appropriate for health information sites to present identical information to readers with different health problems and different educational backgrounds?

To address these deficits, researchers started developing adaptive Web systems that tailored their appearance and behavior to each individual user or user group. Adaptive systems were designed for different usage contexts and explored different kinds of personalization. For instance, adaptive search systems promoted items in result lists that they deemed more relevant to the user’s interests and needs than others. Adaptive hypermedia systems tailored page content to the respective user and pushed recommended links to the fore. Adaptive filtering and recommendation systems, finally, complemented search and browsing based information access by actively recommending items that seem most relevant to users’ interests and might otherwise be missed due to information overload. To support these kinds of personalization, adaptive systems collected data about their users by implicitly observing their interaction and explicitly requesting direct input from them, and they built user models (aka “profiles”) that enabled them to cater to users’ different characteristics.

Year after year, the growing demands on personalization as well as the success of early adaptive Web systems resulted in progressively more advanced systems. Web personalization has grown into a large research field that attracts scientists from different communities such as hypertext, user modeling, machine learning, natural language generation, information retrieval, intelligent tutoring systems, cognitive science, and Web-based education.

Meanwhile, the field of the adaptive Web has reached a certain level of maturity. Adaptive Web systems demonstrated their value in several application areas. A wide range of techniques for user modeling and personalization were developed and evaluated in numerous research projects. The volume of knowledge and experience collected in the field gradually turns the adaptive Web from an area of pure research into an engineering discipline where new adaptive systems can be quickly developed by combining known techniques and ideas. The maturity of the field is demonstrated by a number of review papers focusing on

various Web personalization topics, many conference tutorials, and first college courses targeting the new generation of Web practitioners. Yet, there was no book to date that would provide a systematic overview of the ideas and techniques of the adaptive Web and serve as a central source of information for researchers, practitioners, and students. The present volume intends to fill that gap through a comprehensive and carefully planned collection of chapters that map out the most important areas of the adaptive Web, each solicited from the experts and leaders in the field.

To serve the diversity of potential readers, the editors solicited three kinds of chapters. The largest part of the book focuses on personalization techniques and is split into two sections. The first section from Chaps. 1 to 5 discusses the modeling side of personalization, while the second section (Chaps. 6 – 14) focuses on adaptation. Each chapter in these two sections provides a comprehensive review of a specific set of techniques or a specific class of adaptive Web systems. Together, these techniques and system types form the “tool chest” of the adaptive Web that every researcher or practitioner in the field should know. The technique-focused part is complemented by four domain-oriented chapters in the third section of the book (Chaps. 15 – 18). These chapters present a holistic view of personalization from the prospect of four different application areas. Finally, the last section is devoted to recently emerging topics. The ideas and techniques presented in these last six chapters are not yet widespread and are not considered to be part of the “tool chest.” Yet the editors believe that the issues covered therein are moving rapidly into the focus of the adaptive Web community and have to be included as a glimpse into a not-so-distant future.

The editors would like to thank all authors for the work they put into writing and rewriting their chapters in several revision cycles. We are grateful to Bettina Berendt, Andreas Dieberger, Jörg Diederich, Daqing He, Judith Masthoff, Filippo Menczer, Martin Svensson and Kalina Yacef who served as external reviewers. We appreciate the input from graduate students who “test rode” chapters of the book in classes by Alfred Kobsa at the Università di Roma Tre and by Peter Brusilovsky at the University of Pittsburgh. Finally we would also like to thank Philipp Kärger who helped assemble the individual chapters into a coherent book.

March 2007

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