

Recommender Systems Handbook

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Editors

Recommender Systems Handbook

 Springer

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*Dedicated to our families in appreciation for
their patience and support during the
preparation of this handbook.*

F.R.

L.R.

B.S.

P.K.

Preface

Recommender Systems are software tools and techniques providing suggestions for items to be of use to a user. The suggestions provided are aimed at supporting their users in various decision-making processes, such as what items to buy, what music to listen, or what news to read. Recommender systems have proven to be valuable means for online users to cope with the information overload and have become one of the most powerful and popular tools in electronic commerce. Correspondingly, various techniques for recommendation generation have been proposed and during the last decade, many of them have also been successfully deployed in commercial environments.

Development of recommender systems is a multi-disciplinary effort which involves experts from various fields such as Artificial intelligence, Human Computer Interaction, Information Technology, Data Mining, Statistics, Adaptive User Interfaces, Decision Support Systems, Marketing, or Consumer Behavior. *Recommender Systems Handbook: A Complete Guide for Research Scientists and Practitioners* aims to impose a degree of order upon this diversity by presenting a coherent and unified repository of recommender systems' major concepts, theories, methodologies, trends, challenges and applications. This is the first comprehensive book which is dedicated entirely to the field of recommender systems and covers several aspects of the major techniques. Its informative, factual pages will provide researchers, students and practitioners in industry with a comprehensive, yet concise and convenient reference source to recommender systems. The book describes in detail the classical methods, as well as extensions and novel approaches that were recently introduced. The book consists of five parts: techniques, applications and evaluation of recommender systems, interacting with recommender systems, recommender systems and communities, and advanced algorithms. The first part presents the most popular and fundamental techniques used nowadays for building recommender systems, such as collaborative filtering, content-based filtering, data mining methods and context-aware methods. The second part starts by surveying techniques and approaches that have been used to evaluate the quality of the recommendations. Then deals with the practical aspects of designing recommender systems, it describes design and implementation consideration, setting guidelines for the selection of the

more suitable algorithms. The section continues considering aspects that may affect the design and finally, it discusses methods, challenges and measures to be applied for the evaluation of the developed systems. The third part includes papers dealing with a number of issues related to the presentation, browsing, explanation and visualization of the recommendations, and techniques that make the recommendation process more structured and conversational.

The fourth part is fully dedicated to a rather new topic, which is however rooted in the core idea of a collaborative recommender, i.e., exploiting user generated content of various types to build new types and more credible recommendations.

Finally the last section collects a few papers on some advanced topics, such as the exploitation of active learning principles to guide the acquisition of new knowledge, techniques suitable for making a recommender system robust against attacks of malicious users, and recommender systems that aggregate multiple types of user feedbacks and preferences to build more reliable recommendations.

We would like to thank all authors for their valuable contributions. We would like to express gratitude for all reviewers that generously gave comments on drafts or counsel otherwise. We would like to express our special thanks to Susan Lagerstrom-Fife and staff members of Springer for their kind cooperation throughout the production of this book. Finally, we wish this handbook will contribute to the growth of this subject, we wish to the novices a fruitful learning path, and to those more experts a compelling application of the ideas discussed in this handbook and a fruitful development of this challenging research area.

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