Preface

The history of digital libraries is rich and varied because the “digital library” concept is not so much a new idea as an evolving conception of contributions from many disciplines. Digital libraries are interactive systems with organised collections of information. As digital libraries become more complex, the number of facilities provided by them will increase, and the difficulty of learning to use these facilities will also increase correspondingly. Like the Web, digital libraries also provide nonlinear information spaces in which chunks of information are interconnected via links. However, they are different in character from the Web in several important aspects: a digital library represents a collection for a specific purpose, and has search strategies that are clearly defined and more powerful.

In recent years, there has been an emergence of subject-based digital libraries on the Web. Many people have contributed to the idea, and everyone seems to have something different in mind. The metaphor of the traditional library is both empowering and constraining: (i) empowering, because digital libraries automate and extend opportunities offered by traditional libraries, as well as harnessing opportunities not possible on the anarchic Web; and (ii) constraining, because the metaphor evokes certain legacy impressions, many originating in arbitrary physical constraints.

The design of interactive systems, including digital libraries, is often inspired by what technology makes possible. In user-centered design, design emphasizes users, their tasks, and needs. Because digital libraries mean different things to different people, the design of digital libraries is, therefore, dependent of the perceptions of the purpose/functionality of digital libraries.

It is now more than ten years since the first digital library conference on “Theory and Practice of Digital Libraries” was held in 1994 that predicted the beginning of an electronic period, but warned that we needed to construct a social environment for the information highway. Digital libraries have matured from seemingly static to more dynamic and interactive repositories of user-contributed resources with diverse applications. They are part of the global infrastructure being envisioned to interconnect many computer networks and various forms of information technologies around the world, a partial fulfillment of Bush’s 1945 dream “memex” of a personal microfiche-based system to tackle the problem of information overload. Digital libraries, more organized and structured than the Web, are an overwhelming example of a shared world-wide collection of information.

In such an emerging and ever-evolving field, educators, researchers, and professionals need access to seminal works as well as the most current information about concepts, issues, trends, and technologies, and hence, the motivation of this handbook.

This handbook aims to provide comprehensive coverage and definitions of the most important issues, concepts, trends, and technologies relating to digital library technology and applications. This important new
publication will be distributed worldwide among academic and professional institutions and will be instrumental in providing researchers, scholars, students, and professionals with access to the latest knowledge relating to digital libraries. The authors of the chapters in this handbook are representatives from scholars and practitioners with well-established research portfolios and expertise in digital libraries throughout the world.

The Handbook is divided into 5 sections with 58 chapters: (I) Design and Development; (II) Information Processing and Content Management; (III) Users, Interactions, and Experiences; (IV) Case Studies and Applications; and (V) Digital Library Education and Future Trends. In addition, the Handbook also compiles a compendium of terms, definitions, and explanations of concepts, processes, and acronyms.

In Section I: Design and Development, the focus is to highlight a range of design and development techniques, challenges, and solutions in creating usable and effective digital library systems. Drawing from the experiences of the various authors of these 9 chapters, readers are introduced to a series of digital library projects, case studies and evaluative studies that address a wide facet of design and development issues that include data modeling, application profiling, system architecture design, use of technologies, metadata, security, and privacy.

In Section II: Information Processing and Content Management, the focus is on information processing and content management. In these 17 chapters, the readers will encounter details in techniques and issues related to information processing and content management for developing and organizing various digital libraries. In the information processing related chapters, the following techniques are discussed: text summarization, user-centred navigation for browsing large image databases, ontology-based information retrieval, personalization, audio-based information retrieval, ranked query algorithm for personalization, multimodal user interface for multimedia digital libraries, and word segmentation in Indo-China languages. In the content management related chapters, the following techniques and issues are discussed: standardization of terms, metadata interoperability, guidelines for developing digital cultural collection, a classification scheme for new forms of scholarly communication, duplicate journal title detection in references, and the effectiveness of social tagging for resource discovery.

In Section III: Users, Interactions, and Experiences, the focus is on the applicability, use, and impact on the targeted users of the digital library systems. The 10 chapters cover the importance of these various forms of digital libraries, and their roles, key success factors, problems, issues, and contribution to the society at large are important aspects that are typically expounded in this section. Usability evaluation techniques employed are also discussed in the development of large digital library systems, addressing users, requirements, and context of use.

In Section IV: Case Studies and Applications, the focus is on designing and implementing digital libraries, as well as important applications of digital libraries. The 14 chapters cover diverse, but important, areas such as multimedia digital libraries, geospatial digital libraries, music as well as image information access, and digital preservation. Other chapters discuss national digital library projects, as well as the challenges associated with implementing large-scale digital libraries. Delivering effective electronic services in various domains for digital library users are also covered in this section.

In Section V: Digital Library Education and Future Trends, the focus is on digital library education and future trends. In these 8 chapters, the readers will encounter details in current status and issues related to digital library education and future trends for digital libraries. In the digital library education related chapters, the following topics are discussed: a digital library curriculum and its framework, trends in digital library education, the LIS (Library and Information Science) educational and training programs in Europe, and the role of technology in digital library education. In the future trends related chapters, the following issues are
discussed: the core role of libraries as centers of knowledge using historical perspectives, the new role of digital libraries for a new breed of consumers, the future of learning with digital libraries, and an overview of national libraries in Asia Pacific region, and their readiness for globalization.

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June 2008