Preface

The constantly changing landscape of Human-Computer Interaction makes it challenging for experts and practitioners to stay informed of the field’s most up-to-date research. That is why Information Science Reference is pleased to offer this three-volume reference collection that will empower students, researchers, and academicians with a strong understanding of critical issues within Human-Computer Interaction by providing both broad and detailed perspectives on cutting-edge theories and developments. This reference is designed to act as a single reference source on conceptual, methodological, technical, and managerial issues, as well as provide insight into emerging trends and future opportunities within the discipline.

Human-Computer Interaction: Concepts, Methodologies, Tools and Applications is organized into eight distinct sections that provide comprehensive coverage of important topics. The sections are:

1. Fundamental Concepts and Theories;
2. Development and Design Methodologies;
3. Tools and Technologies;
4. Utilization and Application;
5. Organizational and Social Implications;
6. Managerial Impact;
7. Critical Issues; and

The following paragraphs provide a summary of what to expect from this invaluable reference tool.

Section 1, “Fundamental Concepts and Theories,” serves as a foundation for this extensive reference tool by addressing crucial theories essential to the understanding of Human-Computer Interaction. Introducing the book is Intercultural User Interface Design by Rüdiger Heimgärtner; a great foundation laying the groundwork for the basic concepts and theories that will be discussed throughout the rest of the book. Another chapter of note in Section 1 is titled A Probe into the Effectiveness of Non-English Majors’ SMS-based English Idiom Acquisition in China by Jiahong Jiang. Section 1 concludes, and leads into the following portion of the book with a nice segue chapter, Ecological Perspectives Surrounding the Design of Self-Determination-Enhanced Problem-Based Learning as a Formative Intervention for Students with Disabilities in Inclusive Settings by Soohnwa Seok, Boaventura DaCosta, and Woo Kim.

Section 2, “Development and Design Methodologies,” presents in-depth coverage of the conceptual design and architecture of Human-Computer Interaction. Opening the section is Design and Evaluation of Mobile Learning from the Perspective of Cognitive Load Management by Wenhao David Huang and
Jeanette Andrade. Through case studies, this section lays excellent groundwork for later sections that will get into present and future applications for Human-Computer Interaction, including, of note: *Culture Aware M-Learning Classification Framework for African Countries* by Simon Nyaga Mwenda, Peter Waiganjo Wagacha, and Robert Oboko; and *Student Development of E-Workbooks: A Case for Situated-Technology Enhanced Learning (STEL) Using Net Tablets* by Selena Chan, Katrina Fisher, and Peter Sauer. The section concludes with an excellent work by David Fuentes, Heejung An, and Sandra Alon, titled *Using Mobile Devices Selectively: Developing Constructivist Pedagogy to Support Mobile Learning*.

Section 3, “Tools and Technologies,” presents extensive coverage of the various tools and technologies used in the implementation of Human-Computer Interaction. Section 3 begins where Section 2 left off, though this section describes more concrete tools at place in the modeling, planning, and applications of Human-Computer Interaction. The first chapter, *Fuzzy-Based Medical Image Processing* by G. R. Sinha, lays a framework for the types of works that can be found in this section. Section 3 is full of excellent chapters like this one, including such titles as *Assistive Technology as Instructional Supports for Response to Intervention* by Mary G. Curtis; and *Probability and Statistics Apps for Mobile Devices: A Review* by Howard P. Edwards. The section concludes with *Cost Effective for Erlang Traffic of Mobile Learning Over the Clouds* by Khaiing Sandar Hun. Where Section 3 described specific tools and technologies at the disposal of practitioners, Section 4 describes the use and applications of the tools and frameworks discussed in previous sections.

Section 4, “Utilization and Application,” describes how the broad range of Human-Computer Interaction efforts has been utilized and offers insight on and important lessons for their applications and impact. The first chapter in the section is titled *Mobile Wireless Technologies Application in Education* written by Maryam Haghshenas, Abouzar Sadeghzadeh, Roghayeh Shahbazi, and Mojtaba Nassiriyar. This section includes the widest range of topics because it describes case studies, research, methodologies, frameworks, architectures, theory, analysis, and guides for implementation. The breadth of topics covered in the chapter is also reflected in the diversity of its authors, from countries all over the globe. Some chapters to note include: *Mobile Learning Applications and Differentiated Instruction* by Shelley A. Jackson, Sharla Snider, Nicole Masek, and Joanne Baham and *Analysis of SSIM based Quality Assessment across Color Channels of Images* by T. Chandrakanth and B. Sandhya to name a few. The section concludes with *The Use of Ubiquitous Learning for Children with Down Syndrome* by Laura E. Sujo-Montes, Shadow W. J. Armfield, Cherrg-Jyh Yen, and Chih-Hsiung Tu, a great transition chapter into the next section.

Section 5, “Organizational and Social Implications,” includes chapters discussing the organizational and social impact of Human-Computer Interaction. The section opens with *Promoting Environmental Control, Social Interaction, and Leisure/Academy Engagement Among People with Severe/Profound Multiple Disabilities Through Assistive Technology* by Claudia De Pace and Fabrizio Stasolla. Where Section 4 focused on the broad, many applications of Human-Computer Interaction technology, this section focuses exclusively on how these technologies affect human lives, either through the way they interact with each other, or through how they affect behavioral/workplace situations. Other interesting chapters of note include *Turning Competitions into Global Collaboration through Educational Robotics: Case of RoboCupJunior* by Amy Eguchi; and *LingoBee: Engaging Mobile Language Learners Through Crowd-Sourcing* by Sobah Abbas Petersen, Emma Procter-Legg, and Annamaria Cacchione. The section concludes with *Chances for and Limitations of Brain-Computer Interface use in Elderly People* by Emilia Mikołajewska et al.
Section 6, “Managerial Impact,” presents focused coverage of Human-Computer Interaction in a managerial perspective. This section serves as a vital resource for developers who want to utilize the latest research to bolster the capabilities and functionalities of their processes. The section begins with Business English Vocabulary Learning With Mobile Phone: A Chinese Students’ Perspective by Haisen Zhang, Wei Song, and Ronghuai Huang. The chapters in this section offer unmistakable value to managers looking to implement new strategies that work at larger bureaucratic levels. The section concludes with Mobile Social Media as a Catalyst for Collaborative Curriculum Redesign by Thomas Cochrane et al.

Section 7, “Critical Issues,” presents coverage of academic and research perspectives on Human-Computer Interaction tools and applications. The section begins with ESEIG Mobile: An M-Learning Approach in a Superior School by Ricardo Queirós and Mário Pinto. Chapters in this section will look into theoretical approaches and offer alternatives to crucial questions on the subject of Human-Computer Interaction. The section concludes with Using iPads in University Mathematics Classes: What Do the Students Think? by Rim Gouia, Cindy Gunn, and Diana Audi.

Section 8, “Emerging Trends,” highlights areas for future research within the field of Human-Computer Interaction, opening with The Changing Face of Assistive Technology: From PC to Mobile to Cloud Computing by James R. Stachowiak. This section contains chapters that look at what might happen in the coming years that can extend the already staggering amount of applications for Human-Computer Interaction. The final chapter of the book looks at an emerging field within Human-Computer Interaction, in the excellent contribution, Ideas on the Future of Intelligent Web-Based E-Learning by Utku Kose.

Although the primary organization of the contents in this multi-volume work is based on its eight sections, offering a progression of coverage of the important concepts, methodologies, technologies, applications, social issues, and emerging trends, the reader can also identify specific contents by utilizing the extensive indexing system listed at the end of each volume. As a comprehensive collection of research on the latest findings related to using technology to providing various services, Human-Computer Interaction: Concepts, Methodologies, Tools and Applications, provides researchers, administrators and all audiences with a complete understanding of the development of applications and concepts in Human-Computer Interaction. Given the vast number of issues concerning usage, failure, success, policies, strategies, and applications of Human-Computer Interaction in countries around the world, Human-Computer Interaction: Concepts, Methodologies, Tools and Applications addresses the demand for a resource that encompasses the most pertinent research in technologies being employed to globally bolster the knowledge and applications of Human-Computer Interaction.