

Preface

The use of, engagement with, and study of technology has become the basis of modern life. As such, the field of human-computer interaction has emerged as an essential, multidisciplinary field that seeks to determine how humans interact with different interfaces and how these interfaces can be better designed, evaluated, and implemented to minimize barriers between human thought and computer behavior. As we continue to develop new and innovative technologies, we must also strive to more fully understand how these technologies impact humanity, both on a societal and individual level, and to remain aware of the latest in human-computer interaction research and exploration.

In recent years, the areas of study related to the interaction between people and technology have become innumerable. As a result, researchers, practitioners, and educators have devised a variety of techniques and methodologies to develop, deliver, and, at the same time, evaluate the effectiveness of the interfaces implemented and used in modern society. The explosion of methodologies in the field has created an abundance of new, state-of-the-art literature related to all aspects of this expanding discipline. This body of work allows researchers to learn about the fundamental theories, latest discoveries, and forthcoming trends in the field of human-computer interaction.

Constant technological and theoretical innovation challenges researchers to remain informed of and continue to develop and deliver methodologies and techniques utilizing the discipline's latest advancements. In order to provide the most comprehensive, in-depth, and current coverage of all related topics and their applications, as well as to offer a single reference source on all conceptual, methodological, technical, and managerial issues in human-computer interaction, Information Science Reference is pleased to offer a four-volume reference collection on this rapidly growing discipline. This collection aims to empower researchers, practitioners, and students by facilitating their comprehensive understanding of the most critical areas within this field of study.

This collection, entitled **Human Computer Interaction: Concepts, Methodologies, Tools, and Applications**, is organized into eight distinct sections which are as follows: 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 8) Emerging Trends. The following paragraphs provide a summary of what is covered in each section of this multi-volume reference collection.

Section One, **Fundamental Concepts and Theories**, serves as a foundation for this exhaustive reference tool by addressing crucial theories essential to understanding human-computer interaction. Specific issues in human-computer interaction, such as ubiquitous computing, communities of practice, and online social networking are discussed in selections such as "Ubiquitous Computing and the Concept of Context" by Antti Oulasvirta and Antti Salovaara, "Sociotechnical Theory and Communities of Practice" by Andrew Wenn, and "Online Social Networking for New Researched Opportunities" by Lionel Mew. Within the selection "Personalization Techniques and Their Application," authors Juergen Anke

and David Sundaram provide an overview of the personalization of information systems and the impact such an approach has on the usability of everything from e-learning environments to mobile devices. The selections within this comprehensive, foundational section allow readers to learn from expert research on the elemental theories underscoring human-computer interaction.

Section Two, **Development and Design Methodologies**, contains in-depth coverage of conceptual architectures and frameworks, providing the reader with a comprehensive understanding of emerging theoretical and conceptual developments within the development and utilization of tools and environments that promote interaction between people and technology. Beginning this section is the contribution “Measuring the Human Element in Complex Technologies” by Niamh McNamara and Jurek Kirakowski, which analyzes the role that user satisfaction has in shaping the design of products and the impact this has on developers. Similarly, “Design Methods for Experience Design” by Marie Jefsoutine and John Knight describes the authors’ framework for web site design—the Experience Design Framework. Other selections, such as “Content Personalization for Mobile Interfaces” by Spiridoula Koukia, Maria Rigou, and Spiros Sirmakessis and “Kinetic User Interfaces: Physical Embodied Interaction with Mobile Ubiquitous Computing Systems” by Vincenzo Pallotta, Pascal Bruegger, and Béat Hirsbrunner offer insight into particular methodologies for the design, development, and personalization of mobile user interfaces. From basic designs to abstract development, chapters such as “Designing and Evaluating In-Car User-Interfaces” by Gary Burnett and “Integrating Usability, Semiotic, and Software Engineering into a Method for Evaluating User Interfaces” by Kenia Sousa, Albert Schilling, and Elizabeth Furtado serve to expand the reaches of development and design techniques within the field of human-computer interaction.

Section Three, **Tools and Technologies**, presents extensive coverage of various tools and technologies that individuals interact, collaborate, and engage with every day. The emergence of social networking tools such as blogs and wikis is explored at length in selections such as “PDA Plagiarism, Instruction, and Blogs” by Michael Hanrahan, “Wikis as Tools for Collaboration” by Jane Klobas, and “Assessing Weblogs as Education Portals” by Ian Weber. Further discussions of the role of technology in learning are explored in chapters such as “How Technology Can Support Culture and Learning” by David Luigi Fuschi, Bee Ong, and David Crombie and “Facilitating E-Learning with Social Software: Attitudes and Usage from the Student’s Point of View” by Reinhard Bernsteiner, Herwig Ostermann, and Roland Staudinger. The latter of these two chapters discusses both the theoretical basis for the implementation of technology in an educational setting and the impact this implementation has on students. Ultimately, the authors conclude that online social networking has the potential to emerge as a useful tool for both students and teachers. The rigorously researched chapters contained within this section offer readers countless examples of the dynamic interaction between humans and technology.

Section Four, **Utilization and Application**, provides an in-depth analysis of the practical side of human computer interaction, focusing specifically on environments in which the relationship between humans and technology has been significant. Mobile device usage is highlighted in the selections “A De-Construction of Wireless Device Usage” by Mary R. Lind, “Localized User Interface for Improving Cell phone Users’ Device Competency” by Lucia D. Krisnawati and Restyandito, and “Mobile Phone Use Across Cultures: A Comparison Between the United Kingdom and Sudan” by Ishraga Khattab and Steve Love. These selections offer conceptualization and analysis of the factors impacting wireless device usage, ultimately determining that many factors, such as culture, familiarity with the device itself, and ease of use influence an individual’s wireless device usage. Further contributions explore how human factors impact the successful use of technology in areas such as trend detection, veterinary medicine, mobile commerce, and web browsing. From established applications to forthcoming innovations, contributions in this section provide excellent coverage of today’s global community and demonstrate

how the interaction between humans and technology impacts the social, economic, and political fabric of our present-day global village.

Section Five, **Organizational and Social Implications**, includes a wide range of research pertaining to the organizational and cultural implications of humans' reaction to technology. This section begins with a thorough analysis of the intersection of gender and technology in contributions such as "Gender, Race, Social Class, and Information Technology" by Myungsook Klassen and Russell Stockard, Jr., "Gender and the Culture of Computing in Applied IT Education" by Susan C. Herring, Christine Ogan, Manju Ahuja, and Jean C. Robinson, and "Gender Equalization in Computer-Mediated Communication" by Rosalie J. Ocker. Other issues that are surveyed within this section include the implication of cultural differences within Deborah Sater Carstens' "Cultural Barriers of Human-Computer Interaction," computer mediated communication in Bolanle A. Olaniran's "Group Decision Making in Computer-Mediated Communication as Networked Communication: Understanding the Technology and Implications," and community telecommunication networks in Sylvie Albert and Rolland LeBrasseur's "Collaboration Challenges in Community Telecommunication Networks." Overall, the discussions presented in this section offer insight into the implications of human computer interaction in both organizational and social settings, as well as provide solutions for existing problems and shortcomings.

Section Six, **Managerial Impact**, presents contemporary coverage of the managerial applications and implications of human computer interaction. This collection of research opens with "Social Impact of Virtual Networking" by Hakikur Rahman, which documents the emergence of the virtual enterprise and the impact such a structure has on social communication. Similarly, within the article "Human Factors for Networked and Virtual Organizations," Vincent E. Lasnik emphasizes the role that human factors engineering must play in the future design of virtual and networked environments. Later contributions, such as "Knowledge Blogs in Firm Internal Use," investigate knowledge transfer within and among organizations. Within this selection, authors Miia Kosonen, Kaisa Henttonen, and Kirsimarja Blomqvist identify factors for the implementation of "knowledge blogs" within organizations and explain why these tools can be used to encourage institutional memory, create identities, and to inform the organization itself. The comprehensive research in this section offers an overview of the major issues that practitioners, managers, end users and even consumers must address in order to remain informed about the latest managerial changes in the field of human computer interaction.

Section Seven, **Critical Issues**, presents readers with an in-depth analysis of the more theoretical and conceptual issues within this growing field of study by addressing topics such as security, ethics, and gender differences in technology adoption and use. Specifically, these topics are discussed in selections such as "Trusting Computers Through Trusting Humans: Software Verification in a Safety-Critical Information System" by Alison Adam and Paul Spedding and "Global Information Ethics: The Importance of Being Environmentally Earnest" by Luciano Floridi. Later selections, which include "Emotional Digitalization as Technology of the Postmodern: A Reflexive Examination from the View of the Industry," review more novel issues, such as how the digitalization of emotions helps to bridge the gap between technology and humanity. Specifically, within this chapter, author Claus Hohmann identifies the emotion inherent in the design of new technologies and investigates how this has and will continue to impact human reaction. In all, the theoretical and abstract issues presented and analyzed within this collection form the backbone of revolutionary research in and evaluation of human-computer interaction.

The concluding section of this authoritative reference tool, **Emerging Trends**, highlights research potential within the field of human-computer interaction while exploring uncharted areas of study for the advancement of the discipline. "Communicating in the Information Society: New Tools for New Practices" by Lorenzo Cantoni and Stefano Tardini presents a framework for the latest digital communication tools and their implementation, while the evolution of the semantic web is analyzed in Cristian Peraboni

and Laura A. Ripamonti's "Socio-Semantic Web for Sharing Knowledge." The nature of podcasts and their role in encouraging collaboration and acting as an educational tool is explored in "Stay Tuned for Podcast U and the Data on M-Learning" by Deborah Vess and Michael Gass and "Podcastia: Imagining Communities of Pod-People by Jonathan Cohn. Other new trends, such as voice enabled interfaces for mobile devices, programmable ubiquitous computing environments, and intelligent user interfaces for mobile and ubiquitous computing are discussed in this collection. This final section demonstrates that humanity's interaction with technology will continue to grow and evolve, shaping every facet of modern life.

Although the contents of this multi-volume book are organized within the preceding eight sections which offer a progression of coverage of 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. Furthermore, to ensure that the scholar, researcher, and educator have access to the entire contents of this multi-volume set, as well as additional coverage that could not be included in the print version of this publication, the publisher will provide unlimited, multi-user electronic access to the online aggregated database of this collection for the life of the edition free of charge when a library purchases a print copy. In addition to providing content not included within the print version, this aggregated database is also continually updated to ensure that the most current research is available to those interested in human-computer interaction.

As technology continues its rapid advancement, the study of how to successfully design, implement and, ultimately, evaluate human reactions to and interactions with the modern world becomes increasingly critical. Innovations in the design of mobile devices, educational environments, and web sites have all been made possible through a more thorough understanding of how humans react to and engage with technological interfaces. Continued evolution in our understanding of the human-computer dynamic will encourage the development of more usable interfaces and models that aim to more thoroughly understand the theories of successful human-computer interaction.

The diverse and comprehensive coverage of human-computer interaction in this four-volume, authoritative publication will contribute to a better understanding of all topics, research, and discoveries in this developing, significant field of study. Furthermore, the contributions included in this multi-volume collection series will be instrumental in the expansion of the body of knowledge in this enormous field, resulting in a greater understanding of the fundamentals while also fueling the research initiatives in emerging fields. We at Information Science Reference, along with the editor of this collection, hope that this multi-volume collection will become instrumental in the expansion of the discipline and will promote the continued growth of human-computer interaction.