

Preface

Successful interaction with products, tools, and technologies depends on usable designs and accommodating the needs of potential users without requiring costly training. In this context, this book is concerned with emerging ergonomics in design concepts, theories, and applications of human factors knowledge focusing on the discovery, design, and understanding of human interaction and usability issues with products and systems for their improvement.

This book will be of special value to a large variety of professionals, researchers, and students in the broad field of human modeling and performance who are interested in feedback of devices' interfaces (visual and haptic), user-centered design, and design for special populations, particularly the elderly. We hope this book is informative, but even more—it is thought-provoking. We hope it inspires, leading the reader to contemplate other questions, applications, and potential solutions in creating good designs for all.

The book is organized into nine parts focusing on the following subject matters: Virtual reality challenges, Devices and user interfaces and Digital environment, User studies, Product design and evaluation, and Sustainable design. In the parts that cover Devices and user interfaces the focus is on optimization of user devices, with the emphasis on visual and haptic feedback. In the parts that cover User studies, the focus goes to the limits and capabilities of special populations, particularly the elderly, which can influence the design. Generally, the effect of changes in force and kinematics, physiology, cognitive performance, in the design of consumer products, tools and workplaces is discussed. The parts that cover Virtual reality and Digital environment, Product design and evaluation, and Sustainable design employ a variety of research methods and user-centered evaluation approaches, for developing products that can improve safety and human performance and at same time, the efficiency of the system. Usability evaluations are reported for different kinds of products and technologies.

Part I *Virtual Reality Challenges for the Future of Design*

Part II *Usability and User Experience in Design*

Part III *Human Factors in Design and Management*

Part IV *Ergonomic Design for Industry and Musculoskeletal Disorders (MSD's)*

Part V *Ergonomics in Clothing and Footwear Design*

Part VI *User Research in Design*

Part VII *Information Design*

Part VIII *Assistive Technology in Design*

Part IX *Innovative Design*

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