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Editors

Advances in Physical, Social & Occupational Ergonomics

Proceedings of the AHFE 2021 Virtual Conferences on Physical Ergonomics and Human Factors, Social & Occupational Ergonomics, and Cross-Cultural Decision Making, July 25–29, 2021, USA

Springer

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Advances in Human Factors and Ergonomics 2021

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12th International Conference on Applied Human Factors and Ergonomics and the Affiliated Conferences (AHFE 2021)

Proceedings of the AHFE 2021 International Conferences on Physical Ergonomics and Human Factors, Social & Occupational Ergonomics and Cross-Cultural Decision Making, July 25–29, 2021, Manhattan, New York, USA.

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Preface

The discipline of human factors and ergonomics (HF/E) is concerned with the design of products, process, services, and work systems to assure their productive, safe, and satisfying use by people. Physical ergonomics involves the design of working environments to fit human physical abilities. By understanding the constraints and capabilities of the human body and mind, we can design products, services, and environments that are effective, reliable, safe, and comfortable for everyday use. A thorough understanding of the physical characteristics of a wide range of people is essential in the development of consumer products and systems. Human performance data serve as valuable information to designers and help ensure that the final products will fit the targeted population of end users. Mastering physical ergonomics and safety engineering concepts is fundamental to the creation of products and systems that people can use, avoidance of stresses, and minimization of the risk for accidents. This book focuses on the advances in the physical HF/E, which are a critical aspect in the design of any human-centered technological system.

An exploration of how ergonomics can contribute to the solution of important societal and engineering challenges; advances in social and organizational factors discuss the optimization of sociotechnical systems, including their organizational structures, policies, and processes. It includes coverage of communication, crew resource management, work design, design of working times, teamwork, participatory design, community ergonomics, cooperative work, new work paradigms, organizational culture, virtual organizations, telework, and quality management.

The book also highlights issues with special populations, detailing how to design and adapt products and work situations for these groups. In addition to exploring the challenges faced in optimizing sociotechnical systems, the book underlines themes that play a role in all the challenges and how they are linked to each other. It concludes with an exploration of emotional ergonomics and the important positive effects of making people happy and healthy. With chapter authors from around the globe, the book supplies a broad look at current challenges and possible solutions. This book contains a total of ten sections that covers the following topics.

The ideas and practical solutions described in the book are the outcomes of dedicated research by academics and practitioners aiming to advance theory and practice in this dynamic and all-encompassing discipline. A total of ten sections are presented in this book:

Social and Occupational Ergonomics

1. Management and Efficiency
2. Physical Ergonomics and Work-Related Musculoskeletal Disorders
3. Social and Occupational Ergonomics

Physical Ergonomics

4. Holistic Approach in Safety Management During the Pandemic
5. Wearable Sensing in Physical Ergonomics and Safety
6. Workload Assessment Methods and Techniques
7. Job Analysis and Ergonomic Design
8. Human Characteristics and Influencing Factors

Cross-Cultural Decision Making

9. Cross-Cultural Decision Making
10. Cross-Cultural Decision Making

Each section contains research papers that have been reviewed by members of the International Editorial Board. Our sincere thanks and appreciation to the Board members as listed below:

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We hope that this book, which is the international state of the art in physical domain of human factors, will be a valuable source of theoretical and applied knowledge enabling the human-centered design of a variety of products, services, and systems for global markets.

July 2021

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