Applied Human Factors and Ergonomics

Proceedings of the 7th International Conference on Applied Human Factors and Ergonomics (AHFE 2016) and the Affiliated Conferences, July 27-31, 2016, Walt Disney World®, Orlando, Florida, USA

Dr. Tareq Z. Ahram & Dr. Waldemar Karwowski

Orlando, Florida, USA (Eds)

This set of **22 volumes** gathers the proceedings of the 7th International Conference on Applied Human Factors and Ergonomics (AHFE 2016) and the Affiliated Conferences, held July 27-31, 2016, in Walt Disney World®, Orlando, Florida, USA. By highlighting the latest theories and models, as well as cutting-edge technologies and applications, and by combining findings from a range of disciplines including engineering, design, robotics, healthcare, transportation, simulation, management and computer science, the set provides researchers and practitioners alike with a comprehensive, timely guide on human factors research and applications. It also offers an excellent source of innovative ideas to stimulate future discussions, collaborations and developments.

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Advances in Intelligent Systems and Computing

Tareq Ahram
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Applied Human Factors and Ergonomics

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Advances in Intelligent Systems and Computing   484

Neville A Stanton
Steven Landry
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Advances in Human Aspects of Transportation

Proceedings of the AHFE 2016 International Conference on Human Factors in Transportation, July 27-31, 2016, Walt Disney World®, Florida, USA

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N. A. Stanton, S. Landry, G. Di Bucchianico, A. Vallicelli (Eds.)

Advances in Human Aspects of Transportation

Proceedings of the AHFE 2016 International Conference on Human Factors in Transportation, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 484

► Offers a timely snapshot of human factors and intelligent solutions in transportation
► Reports on innovative methods and technologies for improving human performance in transportation
► Highlights transportation safety and sustainability issues

This book discusses the latest advances in research and development, design, operation and analysis of transportation systems and their complementary infrastructures. It reports on both theories and case studies on road and rail, aviation and maritime transportation. The book covers a wealth of topics, from accident analysis, vehicle intelligent control, and human-error and safety issues to next-generation transportation systems, model-based design methods, simulation and training techniques, and many more. A special emphasis is given to smart technologies and automation in transport, as well as to user-centered, ergonomic and sustainable design of transport systems. The book, which is based on the AHFE 2016 International Conference on Human Factors in Transportation, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, mainly addresses transportation system designers, industrial designers, human-computer interaction researchers, civil and control engineers, as well as vehicle system engineers. Moreover, it represents a timely source of information for transportation policy-makers and social scientists dealing with traffic safety, management, and sustainability issues in transport.

Advances in Intelligent Systems and Computing 501

Denise Nicholson *Editor*

Advances in Human Factors in Cybersecurity

Proceedings of the AHFE 2016 International Conference on Human Factors in Cybersecurity, July 27–31, 2016, Walt Disney World®, Florida, USA

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1st ed. 2016, XII, 445 p. 108 illus., 65 illus. in color.

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D. **Nicholson** (Ed.)

Advances in Human Factors in Cybersecurity

Proceedings of the AHFE 2016 International Conference on Human Factors in Cybersecurity, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 501

- ► **Describes innovative systems and technologies for cybersecurity**
- ► **Discusses the role of human error in successful cyber attacks**
- ► **Offers a multidisciplinary perspective on the field of cybersecurity**

This book reports on the latest research and developments in the field of cybersecurity, giving a special emphasis on personal security and new methods for reducing human error and increasing cyber awareness, and innovative solutions for increasing the security of advanced Information Technology (IT) infrastructures. It covers a wealth of topics, including methods for human training, novel Cyber-Physical and Process-Control Systems, social, economic and behavioral aspects of the cyberspace, issues concerning the cyber security index, security metrics for enterprises, risk evaluation, and many others. Based on the AHFE 2016 International Conference on Human Factors in Cybersecurity, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, this book not only presents innovative cybersecurity technologies, but also discusses emerging threats, current gaps in the available systems and future challenges that may be coped with through the help of human factors research.

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Advances in Intelligent Systems and Computing 492

Ben Amaba *Editor*

Advances in Human Factors, Software, and Systems Engineering

Proceedings of the AHFE2016 Conference on Human Factors, Software, and Systems Engineering, July 27-31, Walt Disney World®, Florida, USA

⚡ Springer

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B. Amaba (Ed.)

Advances in Human Factors, Software, and Systems Engineering

Proceedings of the AHFE 2016 International Conference on Human Factors, Software, and Systems Engineering, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 492

► Explores critical aspects of human factors and systems thinking
► Reports on core concepts and applications of systems engineering
► Reports on cutting-edge research in systems engineering workflow and management
► Gives emphasis to next-generation systems and intelligent methods
► Discusses applications for different fields, from energy to urban science and medicine

This book provides a platform for addressing human factors challenges in software and systems engineering, both pushing the boundaries of current research and responding to new challenges, fostering new research ideas in the process. This book is intended for researchers, professional software and systems engineers, and human factors and human systems integration experts to help them address societal challenges for next-generation systems with applications for meeting them. Topics include evolutionary and complex systems, human systems integration, smart grids and infrastructure, workforce training requirements, systems engineering education, and defense and aerospace. Based on the AHFE 2016 International Conference on Human Factors, Software, and Systems Engineering, held on July 27-31, 2016, in Walt Disney World®, Florida, USA. This book represents an inspiring guide for all researchers and professionals in the field of Human Factors, Software, and Systems Engineering.

Springer

Advances in Intelligent Systems and Computing   490

Christopher Schlick
Stefan Trzcielinski *Editors*

Advances in Ergonomics of Manufacturing: Managing the Enterprise of the Future

Proceedings of the AHFE2016 Conference on Human Aspects of Advanced Manufacturing, July 27-31, Walt Disney World®, Florida, USA

Springer

1st ed. 2016, XVI, 637 p. 258 illus., 165 illus. in color.

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Advances in Ergonomics of Manufacturing: Managing the Enterprise of the Future

Proceedings of the AHFE 2016 International Conference on Human Aspects of Advanced Manufacturing, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 490

► Cutting-edge research on human-centered design of manufacturing systems
► Discusses important features of enterprises of the future
► Highlights the role of intelligent technologies in supporting operations and process management
► Explores critical aspects in the design of lean manufacturing systems

This book discusses the latest advances in people-centered design, operation, and management of broadly defined advanced manufacturing systems and processes. It reports on human factors issues related to various research areas such as intelligent manufacturing technologies, web-based manufacturing services, digital manufacturing worlds, and manufacturing knowledge support systems, as well as other contemporary manufacturing environments. The book covers an extensive range of applications of human factors in the manufacturing industry: from work design, supply chains, evaluation of work systems, and social and organization design, to manufacturing systems, simulation and visualization, automation in manufacturing, and many others. Special emphasis is given to computer aided manufacturing technologies supporting enterprises, both in general and in the manufacturing industry in particular, such as knowledge-based systems, virtual reality, artificial intelligence methods, and many more. Based on the AHFE 2016 International Conference on Human Aspects of Advanced Manufacturing, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, the book provides readers with a timely snapshot of the enterprises of the future and a set of cutting-edge technologies and methods for building innovative, human-centered, and computer-integrated manufacturing systems.

Advances in Intelligent Systems and Computing 489

Ravindra Goonetilleke
Waldemar Karwowski *Editors*

Advances in Physical Ergonomics and Human Factors

Proceedings of the AHFE 2016
International Conference on Physical
Ergonomics & Human Factors, July 27-
31, Walt Disney World®, Florida, USA

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1st ed. 2017, XVIII, 1022 p. 415 illus., 293 illus. in color.

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R. Goonetilleke, W. Karwowski (Eds.)

Advances in Physical Ergonomics and Human Factors

Proceedings of the AHFE 2016 International Conference on Physical Ergonomics & Human Factors, July 27-31, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 489

- ▶ Discusses human body's responses to physical and physiological work demands
- ▶ Identifies ergonomic risk factors in the workplace
- ▶ Describes new methods to assess and control risks in the workplace
- ▶ Explores critical aspects in the design of any human-centered technological system

This book reports on the state of the art in physical ergonomics and is concerned with the design of products, process, services, and work systems to assure their productive, safe, and satisfying use by people. With focus on the human body's responses to physical and physiological work demands, repetitive strain injuries from repetition, vibration, force, and posture are the most common types of issues examined, along with their design implications. The book explores a wide range of topics in physical ergonomics, which includes the consequences of repetitive motion, materials handling, workplace safety, and usability in the use of portable devices, design, working postures, and the work environment. Mastering physical ergonomics and safety engineering concepts is fundamental to the creation of products and systems that people are able to use, as well as the avoidance of stresses and minimization of the risk of accidents. Based on the AHFE 2016 International Conference on Physical Ergonomics & Human Factors, held on July 27-31, 2016 in Walt Disney World®, Florida, USA, the book provides readers with a comprehensive view of the current challenges in Physical Ergonomics, which are a critical aspect in the design of any human-centered technological system, and factors influencing human performance.

Advances in Intelligent Systems and Computing **488**

Kelly S. Hale
Kay M. Stanney *Editors*

Advances in Neuroergonomics and Cognitive Computing

Proceedings of the AHFE2016 Conference on Advances in Neuroergonomics and Cognitive Computing, July 27-31, Walt Disney World®, Florida, USA

Springer

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K.S. Hale, K.M. Stanney (Eds.)

Advances in Neuroergonomics and Cognitive Engineering

Proceedings of the AHFE 2016 International Conference on Neuroergonomics and Cognitive Engineering and, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 488

► Reports on emerging practices for a better integration of human operators with computational systems
► Explores cognitive ergonomics research methods
► Gives a special emphasis to mental workload, decision making, and skilled performance
► Covers brain mechanisms of cognition such as perception, memory, reasoning, and motor response

This book offers a broad perspective on the field of cognitive engineering and neuroergonomics. It covers emerging practices and future trends towards the harmonious integration of human operators with computational systems. The book reports on novel theoretical findings on mental workload and stress, activity theory, human reliability, error and risk, and neuroergonomic measures alike, together with a wealth of cutting-edge applications. It describes key advances in the understanding of cognitive processes, including mechanisms of perception, memory, reasoning, and motor response, giving a special emphasis to their role in the interactions between humans and the other elements of a computer-based system. Based on the AHFE's main track on Neuroergonomics and Cognitive Engineering, held on July 27-31, 2016 in Walt Disney World®, Florida, USA, the book provides readers with a comprehensive view of the current challenges in cognitive computing and factors influencing human performance.

Advances in Intelligent Systems and Computing 487

Richard H.M. Goossens *Editor*

Advances in Social & Occupational Ergonomics

Proceedings of the AHFE2016 Conference on Social & Occupational Ergonomics, July 27-31, Walt Disney World®, Florida, USA

Springer

1st ed. 2016, 499 p.

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R.H.M.Goossens(Ed.)

Advances in Social & Occupational Ergonomics

Proceedings of the AHFE2016 Conference on Social & Occupational Ergonomics, July 27-31, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 487

► Reports on cutting-edge research in social and occupational ergonomics
► Discusses different types of organizational structures, including virtual ones
► Gives a special emphasis to lifelong learning, personalized learning, and work-life balance in enterprises

This book reports on cutting-edge research related to social and occupational factors. It presents innovative contributions to the optimization of sociotechnical management systems, which consider organizational, policy, and logistical issues. It discusses timely topics related to communication, crew resource management, work design, participatory design, as well as teamwork, community ergonomics, cooperative work, and warning systems. Moreover, it reports on new work paradigms, organizational cultures, virtual organizations, telework, and quality management. The book reports on cutting-edge infrastructures implemented for different purposes such as urban, health, and enterprise. It discusses the growing role of automated systems and presents innovative solutions addressing the needs of special populations. Based on the AHFE 2016 International Conference on Social and Occupational Ergonomics, held on July 27-31 in Walt Disney World®, Florida, USA, the book provides readers with a comprehensive view of the current challenges in both organizational and occupational ergonomics, highlighting key connections between them and underlining the importance of emotional factors in influencing human performance.

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Advances in Intelligent Systems and Computing 486

Marcelo Soares
Christianne Falcão
Tareq Ahram *Editors*

Advances in Ergonomics Modeling, Usability & Special Populations

Proceedings of the AHFE2016 conference on Ergonomics Modeling, Usability & Special Populations, July 27-31, Walt Disney World®, Florida, USA

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1st ed. 2016, XII, 597 p. 264 illus., 206 illus. in color.

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Advances in Ergonomics Modeling, Usability & Special Populations

Proceedings of the AHFE 2016 International Conference on Ergonomics Modeling, Usability & Special Populations, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 486

▶ Discusses cutting-edge theories and methods in applied ergonomics for modeling, testing, and evaluation
▶ Highlights applications aimed at improving human interaction with products and systems
▶ Reports on innovations in user interfaces and product evaluation studies

This book focuses on emerging issues in ergonomics, with a special emphasis on modeling, usability engineering, human computer interaction and innovative design concepts. It presents advanced theories in human factors, cutting-edge applications aimed at understanding and improving human interaction with products and systems, and discusses important usability issues. The book covers a wealth of topics, including devices and user interfaces, virtual reality and digital environments, user and product evaluation, and limits and capabilities of special populations, particularly the elderly population. It presents both new research methods and user-centered evaluation approaches. Based on the AHFE 2016 International Conference on Ergonomics Modeling, Usability and Special Populations, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, the book addresses professionals, researchers, and students dealing with visual and haptic interfaces, user-centered design, and design for special populations, particularly the elderly.

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Advances in Intelligent Systems and Computing 483

WonJoon Chung
Cliff Sungsoo Shin *Editors*

Advances in Affective and Pleasurable Design

Proceedings of the AHFE2016
Conference on Affective and
Pleasurable Design, July 27-31, Walt
Disney World®, Florida, USA

Springer

1st ed. 2016, XIV, 635 p. 329 illus., 252 illus. in color.

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Advances in Affective and Pleasurable Design

Proceedings of the AHFE 2016 International Conference on Affective and Pleasurable Design, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 483

► Offers a timely snapshot of affective engineering research, with an emphasis on design
► Reports on cutting-edge methods for emotional design
► Discusses aesthetics and enjoyment in user experience

This book discusses the latest advances in affective and pleasurable design. It reports on important theoretical and practical issues, covering a wealth of topics, including aesthetics in product and system design, design-driven innovation, affective computing, evaluation tools for emotion, Kansei engineering for products and services, and many more. This timely survey addresses experts and industry practitioners with different backgrounds, such as industrial designers, emotion designers, ethnographers, human-computer interaction researchers, human factors engineers, interaction designers, mobile product designers, and vehicle system designers. Based on the AHFE 2016 International Conference on Affective and Pleasurable Design, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, the book represents an inspiring guide for all researchers and professionals in the field of design.

Advances in Intelligent Systems and Computing 482

Vincent G. Duffy
Nancy Lightner *Editors*

Advances in Human Factors and Ergonomics in Healthcare

Proceedings of the AHFE 2016 International Conference on Human Factors and Ergonomics in Healthcare, July 27-31, 2016, Walt Disney World®, Florida, USA

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1st ed. 2017, XIII, 465 p. 96 illus., 65 illus. in color.

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V.G. Duffy, N. Lightner (Eds.)

Advances in Human Factors and Ergonomics in Healthcare

Proceedings of the AHFE 2016 International Conference on Human Factors and Ergonomics in Healthcare, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 482

- ▶ Reports on human factors applications in healthcare from a multidisciplinary perspective
- ▶ Written for clinicians, patients, health organizations and insurance providers alike
- ▶ Highlights best practices in healthcare settings

This book discusses the latest advances in human factors and ergonomics, focusing on methods for improving quality, safety, efficiency, and effectiveness in patient care. By emphasizing the physical, cognitive and organizational aspects of human factors and ergonomics applications, it reports on various perspectives, including those of clinicians, patients, health organizations and insurance providers. The book describes cutting-edge applications, highlighting the best practices of staff interactions with patients, as well as interactions with computers and medical devices. It also presents new findings related to improved organizational outcomes in healthcare settings, and approaches to modeling and analysis specifically targeting those work aspects unique to healthcare. Based on the AHFE 2016 International Conference on Human Factors and Ergonomics in Healthcare, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, the book is intended as timely reference guide for both researchers involved in the design of healthcare systems and devices and healthcare professionals aiming at effective and safe health service delivery. Moreover, by providing a useful survey of cutting-edge methods for improving organizational outcomes in healthcare settings, the book also represents an inspiring reading for healthcare counselors and international health organizations.

Advances in Intelligent Systems and Computing 480

Sae Schatz
Mark Hoffman *Editors*

Advances in Cross-Cultural Decision Making

Proceedings of the AHFE 2016 International Conference on Cross-Cultural Decision Making (CCDM), July 27-31, 2016, Walt Disney World®, Florida, USA

Springer

1st ed. 2017, XII, 356 p. 78 illus., 57 illus. in color.

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Proceedings of the AHFE 2016 International Conference on Cross-Cultural Decision Making (CCDM), July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 480

- ▶ Offers a multidisciplinary perspective on cross-cultural decision making
- ▶ Combines neurocognitive studies with concepts in social sciences, as well as modeling methods
- ▶ Includes real-world case studies

This book reports on the latest advances in understanding human cognition and its interplay with various cultural constructs, such as geographical, historical, sociological, and organizational cultures. It addresses researchers, scholars, and industry practitioners from diverse backgrounds, including sociology, linguistics, business, military science, psychology, human factors, neuroscience, and education. The book covers a wealth of topics, such as the analyses of historical events and intercultural competence, commercial applications of social-cultural science, the study of decision-making similarities (and differences) across cultures, Human, Social, Cultural Behavioral (HSCB) modeling and simulation technology, as well as social networks and studies on group communication. It also reports on real-world case studies relevant to cross-cultural decision making.
The book aims at combining neurocognitive studies with studies from other relevant disciplines to develop a more holistic understanding of the decisions that people, groups, and societies make to improve the ability to forecast and plan for the future. The book is based on the AHFE 2016 International Conference on Cross-Cultural Decision Making (CCDM), held on July 27-31, 2016, in Walt Disney World®, Florida, USA.

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Advances in Intelligent Systems and Computing   481

Vincent G. Duffy *Editor*

Advances in Applied Digital Human Modeling and Simulation

Proceedings of the AHFE 2016 International Conference on Digital Human Modeling and Simulation, July 27-31, 2016, Walt Disney World®, Florida, USA

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V.G. Duffy (Ed.)

Advances in Applied Digital Human Modeling and Simulation

Proceedings of the AHFE 2016 International Conference on Digital Human Modeling and Simulation, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 481

- ▶ Offers a snapshot on the state of the art in human system modeling and simulation
- ▶ Focuses on cutting-edge simulation tools, platforms, and applications
- ▶ Describes advanced human factor methods for safety engineering and performance

This book focuses on the predictive capabilities derived from digital representation of humans in simulation or virtual environments. It reports on models that facilitate prediction of safety and performance, and describes both innovative visualization techniques as well as the underlying mathematics and science. Contributions cover a wealth of topics, including simulation tools and platforms, virtual interactive design, model optimization methods, ontologies and knowledge-based decision support, human-computer interaction, human augmentation, and many others. The book gives special emphasis to cutting-edge simulation applications of human system modeling and optimization, including aviation, manufacturing and service industries, automotive design, product design, healthcare, sustainability, and emergency management. Based on the AHFE 2016 International Conference on Digital Human Modeling and Simulation, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, it is intended as timely survey for researchers, engineers, designers, applied mathematicians and practitioners working in the field of Human Factors and Ergonomics.

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Advances in Intelligent Systems and Computing 498

Jussi Ilari Kantola
Tibor Barath
Salman Nazir
Terence Andre *Editors*

Advances in Human Factors, Business Management, Training and Education

Proceedings of the AHFE 2016 International Conference on Human Factors, Business Management and Society, July 27-31, 2016, Walt Disney World®, Florida, USA

Springer

1st ed. 2017, XIX, 1145 p. 289 illus., 197 illus. in color.

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Series: Advances in Intelligent Systems and Computing, Vol. 498

► Reports on methods for optimal human resource management in business organizations
► Focuses on reducing complexity in resource management and leadership
► Describes practical approaches for improving learning in organizational settings
► Reports on competency-based education and personalized learning
► Covers recent research on education research and applications
► Reports on best practices for training applications in military

This book reports on practical approaches for facilitating the process of achieving excellence in the management and leadership of organizational resources. It shows how the principles of creating shared value can be applied to ensure faster learning, training, business development, and social renewal. In particular, the book presents novel methods and tools for tackling the complexity of management and learning in both business organizations and society. It covers ontologies, intelligent management systems, methods for creating knowledge and value added. It gives novel insights into time management and operations optimization, as well as advanced methods for evaluating customers' satisfaction and conscious experience. Based on the AHFE 2016 International Conference on Human Factors, Business Management and Society, held on July 27-31, 2016, Walt Disney World®, Florida, USA, the book provides both researchers and professionals with new tools and inspiring ideas for achieving excellence in various business activities.

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Advances in Intelligent Systems and Computing 485

Francisco Rebelo
Marcelo Soares *Editors*

Advances in Ergonomics in Design

Proceedings of the AHFE 2016
International Conference on
Ergonomics in Design, July 27-31,
2016, Walt Disney World®, Florida,
USA

Springer

1st ed. 2016, XIV, 742 p. 250 illus., 165 illus. in color.

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F. Rebelo, M. Soares (Eds.)
Advances in Ergonomics in Design

Proceedings of the AHFE 2016 International Conference on Design for Inclusion, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 485

▶ Offers a broad, timely perspective on human-centered product design
▶ Highlights the importance of ergonomics and human factors principles in product, system, and service design
▶ Covers the whole process of design, including evaluation, development, and training

This book provides readers with a timely snapshot of ergonomics research and methods applied to design, development, prototyping, as well as evaluation, training and manufacturing of products, systems and services. It includes theoretical contributions, case studies, and reports on technical interventions. The book covers a wide range of topics in ergonomic design, such as ecological design, educational and game design, cultural and ethical aspects in design, user research and human-computer-interaction in design, as well as design for accessibility and extreme environments, and many others. The book gives special emphasis to new technologies such as virtual reality, state-of-the-art methodologies in information design, and human-computer interfaces. Based on the AHFE 2016 International Conference on Ergonomics in Design, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, this book represents a timely guide for both researcher and design practitioners, including industrial designers, human-computer interaction and user experience researchers, production engineers and applied psychologists.

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Advances in Intelligent Systems and Computing 500

Giuseppe Di Bucchianico
Pete Kercher *Editors*

Advances in Design for Inclusion

Proceedings of the AHFE 2016
International Conference on Design
for Inclusion, July 27-31, 2016, Walt
Disney World®, Florida, USA

Springer

1st ed. 2016, XVI, 642 p. 238 illus., 183 illus. in color.

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G. Di Bucchianico, P. Kercher (Eds.)

Advances in Design for Inclusion

Proceedings of the AHFE 2016 International Conference on Design for Inclusion, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 500

▶ Offers a comprehensive perspective on accessibility in design
▶ Discusses some of the overlaps between inclusive design and web accessibility
▶ Highlights practical issues in universal design

This book focuses on a range of topics in design, such as universal design, design for all, digital inclusion, universal usability, and accessibility of technologies independently of people's age, economic situation, education, geographic location, culture and language. It especially focuses on accessibility for people with auditory, cognitive, neurological, and visual impairments, ageing populations, and mobility for physical special needs. The book explores some of the overlaps between inclusive design and web accessibility to help managers, designers, developers, policy makers, and researchers optimize their efforts in these overlapping areas. Based on the AHFE 2016 International Conference on Design for Inclusion, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, this book discusses new design technologies, highlighting various requirements of individuals within a community. Thanks to its multidisciplinary approach, the book represents a useful resource for readers with different kinds of backgrounds and provides them with a timely, practice-oriented guide to design for inclusion.

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Pamela Savage-Knepshield
Jessie Chen *Editors*

Advances in Human Factors in Robots and Unmanned Systems

Proceedings of the AHFE 2016 International Conference on Human Factors in Robots and Unmanned Systems, July 27-31, 2016, Walt Disney World®, Florida, USA

Springer

1st ed. 2016, XIII, 437 p. 150 illus., 99 illus. in color.

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P. Savage-Knepshield, J. Chen (Eds.)

Advances in Human Factors in Robots and Unmanned Systems

Proceedings of the AHFE 2016 International Conference on Human Factors in Robots and Unmanned Systems, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 499

- ▶ Reports on cutting-edge findings in the field of autonomous robots
- ▶ Focuses on how to minimize human errors in human-computer interaction
- ▶ Gives emphasis to issues in sensors, vision, and controls

This book focuses on the importance of human factors in the development of reliable and safe unmanned systems. It discusses current challenges such as how to improve perceptual and cognitive abilities of robots, develop suitable synthetic vision systems, cope with degraded reliability of unmanned systems, predict robotic behavior in case of a loss of communication, the vision for future soldier-robot teams, human-agent teaming, real-world implications for human-robot interaction, and approaches to standardize both display and control of technologies across unmanned systems. Based on the AHFE 2016 International Conference on Human Factors in Robots and Unmanned Systems, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, this book is expected to foster new discussion and stimulate new ideas towards the development of more reliable, safer, and functional devices for carrying out automated and concurrent tasks.

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Advances in Intelligent Systems and Computing   497

Isabel L. Nunes   *Editor*

Advances in Human Factors and System Interactions

Proceedings of the AHFE 2016 International Conference on Human Factors and System Interactions, July 27-31, 2016, Walt Disney World®, Florida, USA

⌖ Springer

1st ed. 2017, XII, 382 p. 144 illus., 87 illus. in color.

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I.L. **Nunes** (Ed.)

Advances in Human Factors and System Interactions

Proceedings of the AHFE 2016 International Conference on Human Factors and System Interactions, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 497

- ▶ **Reports on innovative research on human-systems interactions**
- ▶ **Discusses important implications of virtual, augmented and mixed reality systems**
- ▶ **Presents cutting-edge methods for optimizing total system performance**
- ▶ **Covers computing technologies for teams dealing with dynamic environments**

This book reports on cutting-edge research in innovative systems interfaces, with an emphasis on both lifecycle development and human-technology interaction, especially in the cases of virtual, augmented and mixed reality systems. It describes advanced methodologies and tools for evaluating and improving interface usability and covers new models, as well as case studies and good practices. The book reports on considerations of the human, hardware, and software factors in the process of developing interfaces for optimizing total system performance, especially innovative computing technologies for teams dealing with dynamic environments, while minimizing total ownership costs. One of the main purposes is to discuss forces currently shaping the nature of computing and systems including: the needs of decreasing hardware costs; the importance of portability, which translates to the modern tendency of hardware miniaturization and technologies for reducing power requirements; the necessity of a better assimilation of computation in the environment; and social concerns about access to computers and systems for people with special needs. The book, which is based on the AHFE 2016 International Conference on Human Factors and System Interactions, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, offers a timely survey and practice-oriented guide for systems interface users and developers alike.

Advances in Intelligent Systems and Computing 496

Paul Salmon
Anne-Claire Macquet *Editors*

Advances in Human Factors in Sports and Outdoor Recreation

Proceedings of the AHFE 2016
International Conference on Human
Factors in Sports and Outdoor
Recreation, July 27-31, 2016, Walt
Disney World®, Florida, USA

Springer

1st ed. 2017, XI, 222 p. 65 illus., 37 illus. in color.

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P. **Salmon**, A.-C. **Macquet** (Eds.)
Advances in Human Factors in Sports and Outdoor Recreation

Proceedings of the AHFE 2016 International Conference on Human Factors in Sports and Outdoor Recreation, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 496

► **Discusses human factors research in both sports and outdoor activities**
► **Describes novel applications of complex sports safety systems**
► **Highlights the importance of cognitive and social human factors in sport performance**

This book describes cutting-edge applications of human factors for sport and outdoor recreation disciplines and provides practical guidance on a range of methods for describing, representing, and evaluating human, team, and system performance in sports domains. Contributions in this book show how various human factors methods, applied historically in the complex safety critical domains, are suited to describing and understanding sports performance and sports injury prevention. The book discusses a wealth of methods for different purposes, such as data collection, task analysis (including cognitive task analysis), workload measurement, assessing situation awareness, performance assessment (including team performance assessment), decision making and cognition in sports, human error identification, and interface evaluation methods. With respect to other publications in human factors and ergonomics, which have been more focused on the biomechanical, physiological, environmental, and equipment-related aspects of sports performance, this book gives a special emphasis to research on analysis of individual and team sports, cognitive and social human factors, and covers both sports and outdoor recreation disciplines. Based on the AHFE 2016 International Conference on Human Factors in Sports and Outdoor Recreation, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, this book provides readers with a timely survey of new methods that can be implemented during any sport or outdoor recreation event for analyzing and improving the performance and safety of both individuals and teams.

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Advances in Intelligent Systems and Computing   491

Pedro Arezes   *Editor*

Advances in Safety Management and Human Factors

Proceedings of the AHFE 2016
International Conference on Safety
Management and Human Factors,
July 27–31, 2016, Walt Disney World®,
Florida, USA

Springer

1st ed. 2016, XIV, 562 p. 175 illus., 91 illus. in color.

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P. **Arezes** (Ed.)
Advances in Safety Management and Human Factors

Proceedings of the AHFE 2016 International Conference on Safety Management and Human Factors , July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 491

- ► **Reports on cross-disciplinary research on safety, health, and welfare management**
- ► **Highlights the role of computer technologies and innovative design**
- ► **Reports on cutting-edge research in occupational safety**
- ► **Gives practical insights into the role of human factors in safety**
- ► **Explores critical aspects in accident prevention**

This book discusses the latest findings towards ensuring people's safety, health, and welfare at work. It crosses different disciplines, such as work physiology, health informatics, workplace design, injury prevention, and occupational psychology. It presents new strategies for safety management, including accident prevention methods, such as performance testing and participatory ergonomics. The book, which is based on the AHFE 2016 International Conference on Safety Management and Human Factors, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, provides readers, including decision makers in government and public authorities, with a timely snapshot of the state of the art in the field of safety, health and welfare management. It also addresses agencies such as OSHA and NIOSH as well as other professionals dealing with occupational safety and health.

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Advances in Intelligent Systems and Computing 495

Sacit M. Cetiner
Paul Fechtelkotter
Michael Legatt   *Editors*

Advances in Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries

Proceedings of the AHFE 2016 International Conference on Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries, July 27-31, 2016, Walt Disney World®, Florida, USA

Springer

1st ed. 2017, XI, 205 p. 46 illus., 29 illus. in color.

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S. **Cetiner**, P. **Fechtelkotter**, M. **Legatt** (Eds.)

Advances in Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries

Proceedings of the AHFE 2016 International Conference on Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 495

▶ Discusses the role of human factors in oil and gas assets management
▶ Addresses reducing human error through situation awareness, training, and simulations
▶ Describes the role of cognitive issues in safety management and accident prevention
▶ Discusses building better processes, procedures and organizations in energy
▶ Reports on case studies across different types of industries

This book addresses human factors research in energy, an emphasis on human factors applications in design, construction, and operation of nuclear, electrical power generation, and oil and gas assets. It discusses advanced strategies in the optimization of human and environmental performance, as well as personal and process safety. The book covers a wealth of topics in design and operation management of both offshore and onshore facilities, including design of control rooms, front-end engineering design (FEED), criticality analysis, offshore transport, human contributions to accidents, cognitive bias in decision making, safety-critical human tasks, and many others. Based on the AHFE 2016 International Conference on Human Factors in Energy, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, the book fills an important gap in the current literature, providing readers with state-of-the-art knowledge in human factors best-practice approaches across different types of industries and energy applications.

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Advances in Intelligent Systems and Computing 494

Tareq Z. Ahram
Waldemar Karwowski *Editors*

Advances in The Human Side of Service Engineering

Proceedings of the AHFE 2016
International Conference on The
Human Side of Service Engineering,
July 27–31, 2016, Walt Disney World®,
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T.Z. **Ahram**, W. **Karwowski** (Eds.)

Advances in The Human Side of Service Engineering

Proceedings of the AHFE 2016 International Conference on The Human Side of Service Engineering, July 27-31, 2016, Walt Disney World®, Florida, USA

Series: Advances in Intelligent Systems and Computing, Vol. 494

- ► **Focuses on the suitability of engineering service systems for human use**
- ► **Analyzes various aspects of People-Centered Service Systems**
- ► **Discusses current technologies in the context of different organizations**

This book explores the different ways in which human-factors engineering influences organizations' and enterprises' well-being and competitiveness. It covers a wealth of interrelated topics such as service engineering, service science, human-computer interaction, service usability, attitude and opinion assessment, servicescape design and evaluation, and training for service delivery. Further topics include service systems modeling, anthropology in service science, and customer experience, as well as ethical issues and the impact of an aging society. Based on the AHFE 2016 International Conference on The Human Side of Service Engineering, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, the book provides readers with a comprehensive, general view of current research and challenges in the important field of service engineering. It also provides practical insights into the development of services for different kinds of organizations, including health care organizations, aviation providers, manpower allocation, hospitality and entertainment, as well as banking and financial institutions.

T.Z.Ahram, W.Karwowski (Eds.)

Advances in The Human Side of Service Engineering

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Advances in Intelligent Systems and Computing 493

Jerzy Charytonowicz *Editor*

Advances in Human Factors and Sustainable Infrastructure

Proceedings of the AHFE 2016
International Conference on Human
Factors and Sustainable Infrastructure,
July 27-31, 2016, Walt Disney World®,
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Series: Advances in Intelligent Systems and Computing, Vol. 493

- ► **Reports on advanced methods for sustainable design in the built environment**
- ► **Describes a wealth of different examples of sustainable infrastructure projects**
- ► **Discusses the environmental, social and economic impact of sustainable infrastructure**

This book deals with human factors research directed towards realizing and assessing sustainability in the built environment. It reports on advanced engineering methods for sustainable infrastructure design, as well as on assessments of the efficient methods and the social, environmental, and economic impact of various designs and projects. The book covers a range of topics, including the use of recycled materials in architecture, ergonomics in buildings and public design, sustainable design for smart cities, design for the aging population, industrial design, human scale in architecture, and many more. Based on the AHFE 2016 International Conference on Human Factors and Sustainable Infrastructure, held on July 27-31, 2016, in Walt Disney World®, Florida, USA, this book, by showing different perspectives on sustainability and ergonomics, represents a useful source of information for designers in general, urban engineers, architects, infrastructure professionals, practitioners, public infrastructure owners, policy makers, government engineers and planners, as well as operations managers, and academics active in applied research.

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