



Applied Human Factors and Ergonomics series

Proceedings of the 8th International Conference on Applied Human Factors and Ergonomics (AHFE 2017) and the Affiliated Conferences July 17-21, 2017, The Westin Bonaventure Hotel, Los Angeles, USA

Dr. Tareq Z. Ahram & Dr. Waldemar Karwowski (Eds)

This set of 26 volumes gathers the proceedings of the 8th International Conference on Applied Human Factors and Ergonomics (AHFE 2017) and the Affiliated Conferences, held July 17-21, 2017, at The Westin Bonaventure Hotel, Los Angeles, California. 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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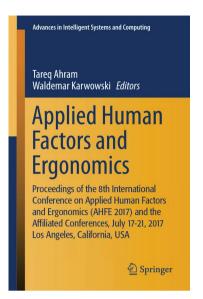
Advances in Human Aspects of Transportation Stanton, Neville (Ed.)

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N. A Stanton (Ed.)

Advances in Human Aspects of Transportation

Proceedings of the AHFE 2017 Conference on Human Factors in Transportation, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 597

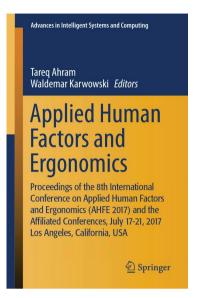
- ► Offers a timely snapshot of human factors and intelligent solutions in transportation
- ► Reports on innovative methods and technologies for improving human performance in transportation
- ► Highlights transportation safety and sustainability issues

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 usercentered, ergonomic and sustainable design of transport systems. The book, which is based on the AHFE 2017 International Conference on Human Factors in Transportation, held on July 17–21, Los Angeles, California, 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.



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R.L. Boring (Ed.)

<u>Advances in Human Error, Reliability, Resilience, and</u> Performance

Proceedings of the AHFE 2017 Conference on Human Error, Reliability, Resilience, and Performance, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 589

- ► Reports on various approaches to identifying, preventing or mitigating human error
- Includes experimental studies, best practices, and technical quidelines
- ► Highlights cutting-edge topics related to security, defense, and human–technology interactions

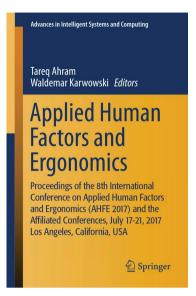
This book brings together studies broadly dealing with human error from different disciplines and perspectives. They concern human performance; human variability and reliability analysis; medical, driver and pilot error, as well as automation error; reports on root cause analyses; and the cognitive modeling of human error. In addition, they highlight cutting-edge applications in safety management, defense, security, transportation, process controls, and medicine, as well as more traditional fields of application.

Based on the AHFE 2017 International Conference on Human Error, Reliability, Resilience, and Performance, held on July 17–21, 2017 in Los Angeles, California, USA, the book includes experimental papers, original reviews, and reports on case studies, as well as meta-analyses, technical guidelines, best practice and methodological papers. It offers a timely reference guide for researchers and practitioners dealing with human error in a diverse range of fields.

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D.N. Cassenti (Ed.)

Advances in Human Factors in Simulation and Modeling

Proceedings of the AHFE 2017 Conference on Human Factors in Simulation and Modeling, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 591

- Reports on computational modeling and simulator studies of human factors phenomena
- Covers applications in various fields, including medicine, economics, transportation, and aviation
- Describes advances in virtual tools, such as training simulation, virtual and augmented reality
- ► Highlights the main challenges in developing reliable computational tools for human factors research

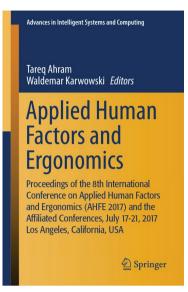
This book focuses on computational modeling and simulation research that advances the current state-of-the-art regarding human factors in simulation and applied digital human modeling. It reports on cutting-edge simulators such as virtual and augmented reality, on multisensory environments, and on modeling and simulation methods used in various applications, such as surgery, military operations, occupational safety, sports training, education, transportation and robotics.

Based on the AHFE 2017 International Conference on Human Factors in Simulation and Modeling, held on July 17–21, 2017, in Los Angeles, California, USA, the book is intended as a timely reference guide for researchers and practitioners developing new modeling and simulation tools for analyzing or improving human performance. It also offers a unique resource for modelers seeking insights into human factors research and more feasible and reliable computational tools to foster advances in this exciting research field.



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R.H.M. Goossens (Ed.)

Advances in Social and Occupational Ergonomics

Proceedings of the AHFE 2017 Conference on Social and Occupational Ergonomics, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 605

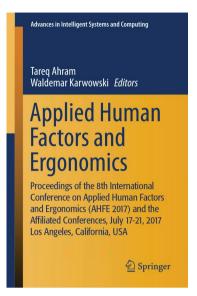
- Reports on cutting-edge research in social and occupational ergonomics
- ► Discusses different types of organizational structures, including virtual ones
- ► Gives a special emphasis to lifelong learning, personalized learning, and work-life balance in enterprises

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 2017 International Conference on Social and Occupational Ergonomics, held on July 17-21, 2017, in Los Angeles, California, 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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R.S. Goonetilleke, W. Karwowski (Eds.)

Advances in Physical Ergonomics and Human Factors

Proceedings of the AHFE 2017 Conference on Physical Ergonomics and Human Factors, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 602

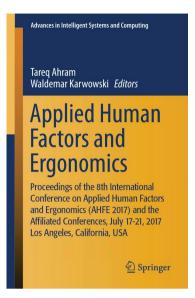
- ► Discusses human body's responses to physical and physiological work demands
- ► Identifies ergonomic risk factors in the workplace
- ▶ Describes new methods to assess and control risks in the workplace
- Explores critical aspects in the design of any human-centered technological system

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 2017 Conference on Physical Ergonomics and Human Factors, July 17-21, 2017, in Los Angeles, California, USA, this 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.



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T. Ahram (Ed.)

<u>Advances in Human Factors in Sports, Injury Prevention and</u> Outdoor Recreation

Proceedings of the AHFE 2017 Conference on Human Factors in Sports, Injury Prevention and Outdoor Recreation, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 603

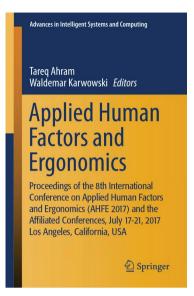
- Discusses human factors research in both sports and outdoor activities
- Describes novel applications of complex sports safety systems
- ► Highlights the importance of cognitive and social human factors in sport performance

This book describes cutting-edge applications of human factors for sports, injury prevention and outdoor recreation disciplines and provide practical guidance on a range of methods for describing, representing, and evaluating human, team, and system performance in various 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 2017 Conference on Human Factors in Sports, Injury Prevention and Outdoor Recreation, held on July 17-21, 2017, in Los Angeles, California, USA, this book provides readers with a timely survey of new methods that can be implemented during any sport or outdoor recreation event, and for analyzing and improving the performance and safety of both individuals and teams.

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M. Hoffman (Ed.)

Advances in Cross-Cultural Decision Making

Proceedings of the AHFE 2017 Conference on Cross-Cultural Decision Making, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 610

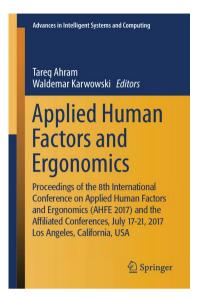
- ► Explores human cognition and its interplay with various cultural constructs
- ▶ Describes a broad spectrum of applications, e.g. in international business
- ► Reports on new modeling and simulation methods
- ► Discusses real-world case studies

This book reports on the latest advances in understanding cross-cultural decision and human cognition with respect to various cultural constructs, such as geographical, historical, sociological, and organizational cultures. It addresses researchers, scholars, and industry practitioners from diverse fields, including sociology, linguistics, business, military science, psychology, human factors research, neuroscience, and education. The book covers a wealth of topics, including: analyses of historical events and intercultural competence; commercial applications of social-cultural science; the study of decisionmaking similarities (and differences) across cultures; cultural behavioral modeling and simulation technology; and social networks and studies on group communication alike. It also reports on real-world case studies relevant to cross-cultural decision-making. The book's main goal is to combine studies from other relevant disciplines such as causal analysis in complex environments, team decision making and social changes to develop a more holistic understanding of the decisions that people, groups, and societies make, so as to improve our ability to forecast and plan for the future. Based on the AHFE 2017 International Conference on Cross-Cultural Decision Making (CCDM), held on July 17–21, 2017, in Los Angeles, California, USA, this book offers a multidisciplinary view on the impact of culture on people's cognition and behavior, and a timely reference guide to new applications and future challenges.



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C. Baldwin (Ed.)

Advances in Neuroergonomics and Cognitive Engineering

Proceedings of the AHFE 2017 International Conference on Neuroergonomics and Cognitive Engineering, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 586

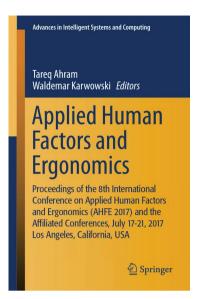
- Reports on emerging practices for a better integration of human operators with computational systems
- ► Explores cognitive ergonomics research methods
- ► Places special emphasis on mental workload, decision-making, and skilled performance
- ► Covers the brain's mechanisms of cognition such as perception,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

This book offers a broad perspective on the field of cognitive engineering and neuroergonomics, covering emerging practices and future trends toward the harmonious integration of human operators with computational systems. It 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. Further, the book describes key advances in our understanding of cognitive processes, including mechanisms of perception, memory, reasoning, and motor response, with a special emphasis on their role in interactions between humans and other elements of computer-based systems. Based on the AHFE's main track on Neuroergonomics and Cognitive Engineering, held on July 17–21, 2017 in Los Angeles, California, USA, it provides readers with a comprehensive overview of the current challenges in cognitive computing and factors influencing human performance.



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T. Ahram, C. Falcão (Eds.)

<u>Advances in Human Factors in Wearable Technologies and</u> **Game Design**

Proceedings of the AHFE 2017 Conference on Advances in Human Factors and Wearable Technologies, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 608

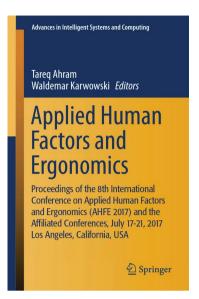
- Discusses human aspects of wearable devices
- ► Highlights topics such as user acceptance, satisfaction and engagement
- ► Focuses on the integration of wearability principles, e.g. aesthetics, affordance, and comfort

This book focuses on the human aspects of wearable technologies and game design, which are often neglected. It shows how user centered practices can optimize wearable experience, thus improving user acceptance, satisfaction and engagement towards novel wearable gadgets. It describes both research and best practices in the applications of human factors and ergonomics to sensors, wearable technologies and game design innovations, as well as results obtained upon integration of the wearability principles identified by various researchers for aesthetics, affordance, comfort, contextual-awareness, customization, ease of use, ergonomy, intuitiveness, obtrusiveness, information overload, privacy, reliability, responsiveness, satisfaction, subtlety, user friendliness and wearability. The book is based on the AHFE 2017 Conferences on Human Factors and Wearable Technologies and AHFE 2017 Conferences on Human Factors and Game Design, held on July 17-21, 2017, in Los Angeles, California, USA, and addresses professionals, researchers, and students dealing with the human aspects of wearable, smart and/or interactive technologies and game design research.



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

Advances in Design for Inclusion

Proceedings of the AHFE 2017 Conference on Design for Inclusion, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 587

- 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

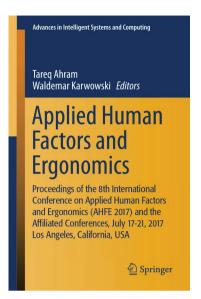
This book addresses a range of topics in design, such as universal design, design for all, digital inclusion, universal usability, and accessibility of technologies regardless of people's age, financial situation, education, geographic location, culture and language. It especially focuses on accessibility for people with auditory, cognitive, neurological, and visual impairments, ageing populations, and mobility for those with special physical 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 areas. Based on the AHFE 2017 International Conference on Design for Inclusion, held on July 17–21, 2017 in Los Angeles, California, USA, it discusses new design technologies and highlights the disparate needs of the individuals within a community. Thanks to its multidisciplinary approach, the book represents a useful resource for readers with various backgrounds, providing them a timely, practice-oriented guide to design for inclusion.



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D. Nicholson (Ed.)

Advances in Human Factors in Cybersecurity

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Series: Advances in Intelligent Systems and Computing, Vol. 593

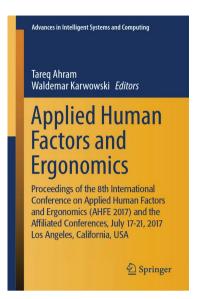
- Describes innovative systems and technologies for cybersecurity
- ▶ Discusses the role of human error in successful cyber attacks
- Offers a multidisciplinary perspective on the field of cybersecurity

This book reports on the latest research and developments in the field of cybersecurity, placing special emphasis on personal security and new methods for reducing human error and increasing cyber awareness, as well as innovative solutions for increasing the security of advanced Information Technology (IT) infrastructures. It covers a broad range of topics, including methods for human training; novel Cyber-Physical and Process-Control Systems; social, economic, and behavioral aspects of cyberspace; issues concerning the cybersecurity index; security metrics for enterprises; risk evaluation, and many others. Based on the AHFE 2017 International Conference on Human Factors in Cybersecurity, held on July 17–21, 2017, in Los Angeles, California, USA, the book not only presents innovative cybersecurity technologies, but also discusses emerging threats, current gaps in the available systems, and future challenges that may be successfully overcome with the help of human factors research.



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F. Rebelo, M. Soares (Eds.)

Advances in Ergonomics In Design

Proceedings of the AHFE 2017 Conference on Ergonomics in Design, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 588

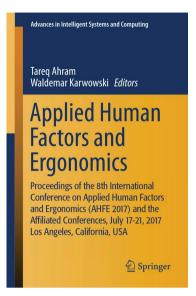
- Offers a broad, timely perspective on human-centered product design
- ► Highlights the importance of ergonomics and human factors principles in product, system, and service design
- Covers the entire design process, including evaluation, development, and training

This book provides readers with a timely snapshot of ergonomics research and methods applied to the design, development and prototyping – as well as the evaluation, training and manufacturing – of products, systems and services. Combining theoretical contributions, case studies, and reports on technical interventions, it covers a wide range of topics in ergonomic design including: 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 places special emphasis on new technologies such as virtual reality, state-of-the-art methodologies in information design, and human–computer interfaces. Based on the AHFE 2017 International Conference on Ergonomics in Design, held on July 17–21, 2017, in Los Angeles, California, USA, the book offers a timely guide for both researchers and design practitioners, including industrial designers, human–computer interaction and user experience researchers, production engineers and applied psychologists.



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P. Arezes (Ed.)

Advances in Safety Management and Human Factors

Proceedings of the AHFE 2017 Conference on Safety Management and Human Factors, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 604

- Presents 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
- ▶ Offers practical insights into the role of human factors in safety
- ► Explores critical aspects in accident prevention

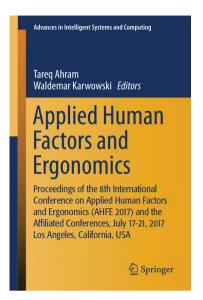
This book discusses the latest findings on ensuring employees' safety, health, and welfare at work. It combines a range of disciplines – e.g. work physiology, health informatics, safety engineering, workplace design, injury prevention, and occupational psychology – and presents new strategies for safety management, including accident prevention methods such as performance testing and participatory ergonomics.

The book, which is based on the AHFE 2017 International Conference on Safety Management and Human Factors, held on July 17–21, 2017, in Los Angeles, California, USA, provides readers, including decision makers, professional ergonomists and program managers 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 the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH), as well as other professionals dealing with occupational safety and health.



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W. Chung, C.S. Shin (Eds.)

Advances in Affective and Pleasurable Design

Proceedings of the AHFE 2017 Conference on Affective and Pleasurable Design, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 585

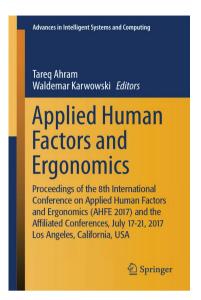
- ► Offers a timely snapshot of affective engineering research, with an emphasis on design
- ► Reports on cutting-edge methods for emotional design
- Discusses aesthetics and enjoyment in user experience

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 2017 International Conference on Affective and Pleasurable Design, held on July 17–21, 2017, in Los Angeles, California, USA, the book provides an inspiring guide for all researchers and professionals in the field of design.



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T. Ahram, C. Falcão (Eds.)

Advances in Usability and User Experience

Proceedings of the AHFE 2017 Conference on Usability and User Experience, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 607

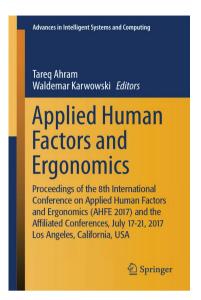
- Discusses the modeling, testing and evaluation of devices and user interfaces
- Focuses on innovative design concepts to improve user experience
- ► Special emphasis on specific populations, particularly the elderly

This book focuses on emerging issues in usability, interface design, human computer interaction and user experience, with a special emphasis on the research aimed at understanding human-interaction and usability issues with products, services and systems for improved experience. It covers modeling as well as innovative design concepts, with a special emphasis to user-centered design, and design for special populations, particularly the elderly. Virtual reality, digital environments, heuristic evaluation and feedback of devices' interfaces (visual and haptic) are also among the topics covered in this book. Based on the AHFE 2017 Conference on Usability & User Experience, held on July 17-21, 2017, in Los Angeles, California, USA, the book describes new findings, research methods and user-centered evaluation approaches.



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L.E. Freund, W. Cellary (Eds.)

Advances in The Human Side of Service Engineering

Proceedings of the AHFE2017 Conference on The Human Side of Service Engineering, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 601

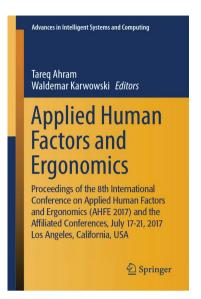
- Focuses on the suitability of engineering service systems for human use
- ► Analyzes various aspects of People-Centered Service Systems
- ► Discusses current technologies in the context of different organizations

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 2017 International Conference on The Human Side of Service Engineering, held on July 17–21, 2017, in Los Angeles, California, 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.



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V. Duffy, N. Lightner (Eds.)

<u>Advances in Human Factors and Ergonomics in Healthcare and</u> Medical Devices

Proceedings of the AHFE 2017 Conference on Human Factors and Ergonomics in Healthcare, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 590

- ► 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

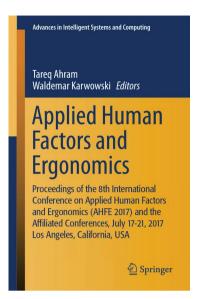
This book discusses the latest advances in human factors and ergonomics, focusing on methods for improving quality, safety, efficiency, and effectiveness in patient care. By emphasizing the physical, cognitive, and organizational aspects of human factors and ergonomics applications, it presents various perspectives, including those of clinicians, patients, health organizations, and insurance providers.

The book describes cutting-edge applications, highlighting best practices for 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 2017 International Conference on Human Factors and Ergonomics in Healthcare, held on July 17–21, 2017, in Los Angeles, California, USA, the book is intended as a timely reference guide for both researchers involved in the design of healthcare systems and devices and for healthcare professionals working to deliver safe and effective health service. Moreover, by providing a useful survey of cutting-edge methods for improving organizational outcomes in healthcare settings, the book also represents a source of inspiration for healthcare counselors and international health organizations.



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A.G. Ho (Ed.)

Advances in Communication of Design

Proceedings of the AHFE 2017 Conference on Human Factors in Communication of Design, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 609

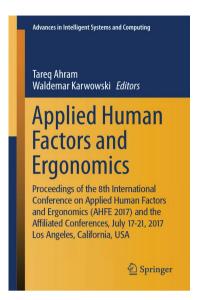
- Reports on methods to understand users and creating engaging experiences
- ► Shows new ways to optimize design considering human needs and emotions
- ► Highlights the role of visual approach in communicating design to users

This book focuses on the emerging role of human factors in understanding, communicating with and engaging users. It reports on innovative approaches, with a special emphasis to visuals cues, such as new typographies, geometries and graphics for mobile and computer interfaces. The book also cover topics of image and video processing, user-focused data compression, generative visuals, computational photography, and interactive design. Further topics include creative and empathetic design, human touch in digital graphics and experiential graphics. Based on the AHFE 2017 International Conference on Human Factors in Communication of Design, held on July 17-21, 2017, in Los Angeles, California, USA, this book reports on new findings, best-practices and case studies, providing readers with a fresh perspective and novel insights into the applications of human factors for enriching communication of design to users.



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S. Trzcielinski (Ed.)

<u>Advances in Ergonomics of Manufacturing: Managing the Enterprise of the Future</u>

Proceedings of the AHFE 2017 Conference on Human Aspects of Advanced Manufacturing, July 17-21, 2017, Los Angeles, California, USA

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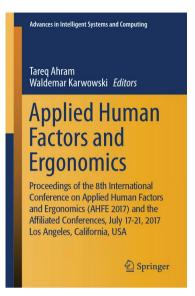
- ► Presents cutting-edge research on human-centered design of manufacturing systems
- ▶ Discusses important features of enterprises of the future
- ► Highlights the role of intelligent technologies in supporting operations and process management
- Explores critical aspects in the design of lean manufacturing 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 2017 International Conference on Human Aspects of Advanced Manufacturing, held on July 17-21, 2017, in Los Angeles, California, 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.



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J. Charytonowicz (Ed.)

<u>Advances in Human Factors, Sustainable Urban Planning and</u> Infrastructure

Proceedings of the AHFE2017 Conference on Human Factors, Sustainable Urban Planning and Infrastructure, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 600

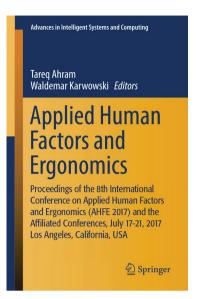
- Reports on advanced methods for sustainable design in the built environment
- Describes a wealth of different examples of sustainable infrastructure projects
- ► Discusses the environmental, social, and economic impact of sustainable infrastructure

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 2017 International Conference on Human Factors, Sustainable Urban Planning and Infrastructure, held on July 17–21, 2017, in Los Angeles, California, 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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J. Chen (Ed.)

Advances in Human Factors in Robots and Unmanned Systems

Proceedings of the AHFE 2017 Conference on Human Factors in Robots and Unmanned Systems, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 595

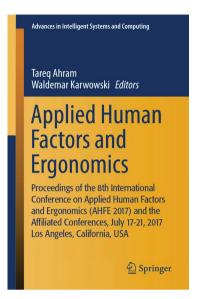
▶ Reports on cutting-edge findings in the field of autonomous robots Addresses how to minimize human error in humancomputer interaction Especially focuses on issues in sensors, vision, and controls

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 2017 International Conference on Human Factors in Robots and Unmanned Systems, held on July 17-21, Los Angeles, California, 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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J.I. Kantola, T. Barath, S. Nazir (Eds.)

Advances in Human Factors, Business Management and Leadership

Proceedings of the AHFE 2017 Conference on Human Factors, Business Management and Society and the AHFE 2017 Conference on Human Factors in Management and Leadership, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 594

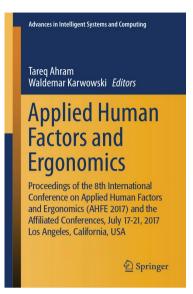
- ► Reports on methods for optimal human resource management in business organizationsFocuses on reducing complexity in resource management and leadership
- Describes practical approaches for improving learning in organizational settings
- Reports on competency-based education and personalized learning

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 two conferences, the AHFE 2017 International Conference on Human Factors, Business Management and Society and the AHFE 2017 International Conference on Human Factors in Management and Leadership, held on July 17-21, 2017, in Los Angeles, California, 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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I.L. Nunes (Ed.)

Advances in Human Factors and System Interactions

Proceedings of the AHFE 2017 Conference on Human Factors and System Interactions, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 592

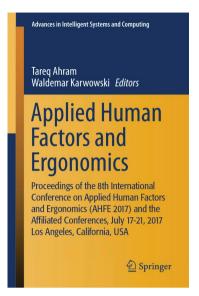
- ▶ Reports on innovative research on human–systems interactions
- ► Discusses important implications of virtual, augmented, and mixed-reality systems
- Presents cutting-edge methods for optimizing total system performance
- Covers computing technologies for teams dealing with dynamic environments

This book reports on cutting-edge research into innovative system interfaces, emphasizing both lifecycle development and human-technology interaction, especially in virtual, augmented and mixed-reality systems. It describes advanced methodologies and tools for evaluating and improving interface usability and discusses new models, as well as case studies and good practices. The book addresses the human, hardware, and software factors in the process of developing interfaces for optimizing total system performance, particularly innovative computing technologies for teams dealing with dynamic environments, while minimizing total ownership costs. It also highlights the forces currently shaping the nature of computing and systems, including the need for decreasing hardware costs; the importance of portability, which translates to the modern tendency toward hardware miniaturization and technologies for reducing power requirements; the necessity of a better assimilation of computation in the environment; and social concerns regarding access to computers and systems for people with special needs. The book, which is based on the AHFE 2017 International Conference on Human Factors and System Interactions, held on July 17–21, 2017, in Los Angeles, California, USA, offers a timely survey and practice-oriented guide for systems interface users and developers alike.

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P. Fechtelkotter, M. Legatt (Eds.)

<u>Advances in Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries</u>

Proceedings of the AHFE 2017 Conference on Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 599

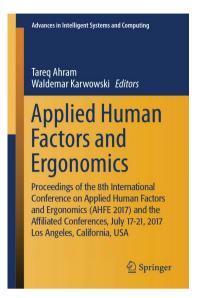
- Discusses the role of human factors in oil and gas assets management
- ► Addresses reducing human error through situation awareness, training, and simulations
- ► Describes the role of cognitive issues in safety management and accident prevention
- ▶ Discusses building better processes, procedures 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 AHFE2017 Conference on Human Factors in Energy: Oil, Gas, Nuclear and Electric Power Industries, July 17-21, Los Angeles, California, 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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T. Andre (Ed.)

Advances in Human Factors in Training, Education, and Learning Sciences

Proceedings of the AHFE 2017 Conference on Human Factors in Training, Education, and Learning Sciences, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 596

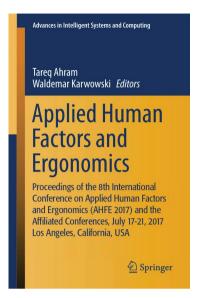
- ► Focuses on the optimal design of training, education, and learning experiences
- ► Covers cognitive science research, together with new technologies and their applications
- ► Discusses best practices in the corporate, higher education, and military training contexts

This book focuses on the importance of human factors in optimizing the learning and training process. It reports on the latest research and best practices and discusses key principles of behavioral and cognitive science, which are extremely relevant to the design of instructional content and new technologies to support mobile and multimedia learning, virtual training and web-based learning, among others, as well as performance measurements, social and adaptive learning and many other types of educational technologies, with a special emphasis on those important in the corporate, higher education, and military training contexts. Based on the AHFE 2017 Conference on Human Factors in Training, Education, and Learning Sciences, held July 17–21, 2017 in Los Angeles, California, the book offers a timely perspective on the role of human factors in education. It highlights important new ideas and will foster new discussions on how to optimally design learning experiences.



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T. Ahram, W. Karwowski (Eds.)

Advances in Human Factors, Software, and Systems Engineering

Proceedings of the AHFE 2017 Conference on Human Factors, Software, and Systems Engineering, July 17-21, 2017, Los Angeles, California, USA

Series: Advances in Intelligent Systems and Computing, Vol. 598

- ► Explores critical aspects of human factors and systems thinking
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