

Human Factors Methods And Sports Science A Practical Guide

The integration of Human Factors in Land Use Planning and Urban Design (LUP & UD) is an exciting and emerging interdisciplinary field. This book offers practical guidance on a range of Human Factors methods that can be used to rigorously and reliably explore LUP & UD. It provides new ways to interpret urban space and detail context sensitive analysis for the interpretation and design of our surroundings. The methodologies outlined allow for the consideration of the technical aspects of the built environment with the necessary experience and human centered approaches to our urban and regional settings. This book describes 30 Human Factors methods for use in the LUP & UD context. While it explores theory, it also focuses on the question of what Human Factors methods are; their advantages and disadvantages; step-by-step guidance on how to carry them out; and case studies to guide the reader. Describes the practice and processes associated with urban and regional strategic planning Constructed so that students, practitioners, and researchers with an interest in one particular area of Human Factors can read the chapters independently from one another 'Complex sociotechnical systems' are systems made up of numerous interacting parts, both human and non-human, operating in dynamic, ambiguous and safety critical domains. Cognitive Work Analysis (CWA) is a structured framework specifically developed for considering the development and analysis of these complex socio-technical systems. Unlike many human factors approaches, CWA does not focus on how human-system interaction should proceed (normative modelling) or how human-system interaction currently works (descriptive modelling). Instead, through a focus on constraints, it develops a model of how work can be conducted within a given work domain, without explicitly identifying specific sequences of actions (formative modelling). The framework leads the analyst to consider the environment the task takes place within, and the effect of the imposed constraints on the way work can be conducted. It provides guidance through the process of answering the questions of why the system exists, what activities can be conducted within the domain as well as how these activities can be achieved, and who can perform them. The first part of the book contains a comprehensive description of CWA, introducing it to the uninitiated. It then presents a number of applications in complex military domains to explore and develop the benefits of CWA. Unlike much of the previous literature, particular attention is placed on exploring the CWA framework in its entirety. This holistic approach focuses on the system environment, the activity that takes place within it, the strategies used to conduct this activity, the way in which the constituent parts of the system (both human and non-human) interact and the behaviour required. Each stage of this analysis identifies the constraints governing the system; it is contended that through this holistic understanding of constraints, recommendations can be made for the design of system interaction; increasing the ability of users to cope with unanticipated, unexpected situations. This book discusses the applicability of the approach in system analysis, development and evaluation. It provides process to what was previously a loosely defined framework.

Over the past decade, Cognitive Work Analysis (CWA) has been one of the popular human factors approaches for complex systems evaluation and design applications. This is reflected by a diverse range of applications across safety critical domains. The book brings together a series of CWA applications and discussions from world-leading human factors researchers and practitioners. It begins with an overview of the CWA framework, including its theoretical underpinnings, the methodological approaches involved (including practical guidance on each phase), and previous applications of the framework. The core of the book is a series of CWA applications, undertaken in a wide range of safety critical domains for a range of purposes. These serve to demonstrate the contribution that CWA can make to real-world projects and provide readers with inspiration for how such analyses can be practically carried out. Following this, a series of applications in which new approaches or adaptations have been added to the framework are presented. These show how practical applications feedback into the theories/approaches underpinning CWA. The closing chapter then speculates on future applications of the framework and on a series of new research directions required in order to enhance its utility. In emphasising the practical realities of performing CWA, and the real-world impacts it can provide, the book tackles several common misconceptions in a constructive and persuasive way. It provides a welcome demonstration of how CWA can be a powerful ally in tackling complexity-related problems that afflict systems in all areas.

There is no shortage of available human factors information, but until now there was no single guide on how to use this information. Human Factors Methods for Design: Making Systems Human-Centered is an in-depth field guide to solving human factors challenges in the development process. It provides design and human factors professionals, syc
Designing Work Systems to Support Optimal Human Performance
Human Factors Methods
Handbook of Human Factors and Ergonomics Methods
Human Factors and Ergonomics in Sport
Introduction to Human Factors
Production Ergonomics

This second edition of Human Factors Methods: A Practical Guide for Engineering and Design now presents 107 design and evaluation methods including numerous refinements to those that featured in the original. The book acts as an ergonomics methods manual, aiding both students and practitioners. Offering a 'how-to' text on a substantial range of ergonomics methods, the eleven sections represent the different categories of ergonomics methods and techniques that can be used in the evaluation and design process.

Military command and control is not merely evolving, it is co-evolving. Technology is creating new opportunities for different types of command and control, and new types of command and control are creating new aspirations for technology. The question is how to manage this process, how to achieve a jointly optimised blend of the social and the technical and create the kind of agility and self-synchronisation that modern forms of command and control promise. The answer put forward in this book is to re-visit the classical sociotechnical systems theory. Human Factors (HF) is also co-evolving. The traditional conception of the field is to serve as a conduit for knowledge between engineering and psychology, yet 21st century command and control presents an altogether different challenge. Viewing military command and control through the lens of sociotechnical theory forces us to confront difficult questions about the non-linear nature of people and technology. The sociotechnical perspective reveals itself as part of a conceptual toolkit through which military command and control can be transitioned, from notions of bureaucratic, hierarchical ways of operating to the devolved, agile, self-synchronising behaviour promised by modern forms of command and control like Network Enabled Capability (NEC). Sociotechnical system theory brings with it a sixty year legacy of practical application and this real-world grounding in business process re-engineering underlies the entire book. This book transforms a set of abstract principles down to the level of easy examples, design principles, evaluation criteria and actionable models. All of these are based on an extensive review of the current state of the art, new sociotechnical-NEC studies conducted by the authors, and insights derived from field studies of real-life command and control. Time and again, what emerges is a realisation that the most agile and self-synchronising component of all in command and control settings are the people.

Diving, Diving equipment, Protective clothing, Occupational safety, Aquatic sports equipment, Ergonomics, Performance testing, Marking, Instructions for use Governments and road safety agencies around the world have either introduced or are considering 'safe system' strategies, a long overdue acknowledgement that different elements of the road system contribute to road safety outcomes. Human factors approaches have a leading role here in both conceptualising the road system as a complex sociotechnical system and in providing practical approaches to support true systems-based countermeasures. This book illustrates the potential for integrating contemporary systems-based human factors methods with modern day driving-assessment methods, such as vehicle instrumentation and driving simulation, to understand and enhance performance in modern day road-transport systems. The book outlines why a fundamental paradigm shift is needed in the way these systems are designed and operated, and illustrates how a wide range of accepted human-factors approaches can be applied successfully to road transport to revolutionise the countermeasure design process. The practical illustrations of these human factors methods are applied to a long-standing road and rail safety issue: rail level crossings, where the road and rail systems intersect. The final chapter of the book highlights the utility of the human factors approach to reducing road trauma and discusses future applications of the approach.

Applications of the Event Analysis of Systemic Teamwork Method

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

Command and Control

Guide to Methodology in Ergonomics

Command and Control: The Sociotechnical Perspective

Human Factors and Ergonomics in Practice

This is a comprehensive, but accessible text that introduces students to the fields of human factors and ergonomics. The book is intended for undergraduate students, written from the psychological science perspective along with various pedagogical components that will enhance student comprehension and learning. This book is ideal for those introductory courses that wish to introduce students to the multifaceted areas of human factors and ergonomics along with practical knowledge the students can apply in their own lives.

The study of human body measurements on a comparative basis is known as anthropometrics. Its applicability to the design process is seen in the physical fit, or interface, between the human body and the various components of interior space. Human Dimension and Interior Space is the first major anthropometrically based reference book of design standards for use by all those involved with the physical planning and detailing of interiors, including interior designers, architects, furniture designers, builders, industrial designers, and students of design. The use of anthropometric data, although no substitute for good design or sound professional judgment should be viewed as one of the many tools required in the design process. This comprehensive overview of anthropometrics consists of three parts. The first part deals with the theory and application of anthropometrics and includes a special section dealing with physically disabled and elderly people. It provides the designer with the fundamentals of anthropometrics and a basic understanding of how interior design standards are established. The second part contains easy-to-read, illustrated anthropometric tables, which provide the most current data available on human body size, organized by age and percentile groupings. Also included is data relative to the range of joint motion and body sizes of children. The third part contains hundreds of dimensioned drawings, illustrating in plan and section the proper anthropometrically based relationship between user and space. The types of spaces range from residential and commercial to recreational and institutional, and all dimensions include metric conversions. In the Epilogue, the authors challenge the interior design profession, the building industry, and the furniture manufacturer to seriously explore the problem of adjustability in design. They expose the fallacy of designing to accommodate the so-called average man, who, in fact, does not exist. Using government data, including studies prepared by Dr. Howard Stoudt, Dr. Albert Damon, and Dr. Ross McFarland, formerly of the Harvard School of Public Health, and Jean Roberts of the U.S. Public Health Service, Panero and Zelnik have devised a system of interior design reference standards, easily understood through a series of charts and situation drawings. With Human Dimension and Interior Space, these standards are now accessible to all designers of interior environments.

Sport is an integral part of society, playing a key role in human health and well-being, and cultural, political and economic development. As sport is becoming more complex, competitive, diverse, and increasingly reliant on technology, HFE theories, methods, and principles are progressively being applied to help understand and optimize sports systems. Human Factors and Ergonomics in Sport: Applications and Future Directions showcases the latest in sports HFE research and practice. Including contributions from both HFE and sports science researchers, it provides a collection of state-of-the-art studies, reviews and commentaries covering a diverse set of sports and sporting issues. "This book is an excellent resource for all academics and students in general. It provides updated theoretical foundations and applications that conceive a world where everything is connected and embedded in technology that allows us to capture, process and visualise actions and interactions, also at transdisciplinary levels." Professor Jaime Sampaio, Head of the Research Center in Sports Sciences, Health and Human Development (CIDESD), University of Trás-os-Montes e Alto Douro, Portugal "With the changing nature of work comes an ever-greater focus on leisure. Sport is a major dimension of this crucial form of human activity. Now comes Salmon and his colleagues who have assembled a panoply of world leaders who each provide their own individual perspectives on this intriguing world. Their emphasis on the human factors and ergonomics of these activities brings us new and exciting insights. A great read for the specialist and generalist alike." Professor Peter Hancock, Pegasus Professor, Provost Distinguished Research Professor and Trustee Chair, University of Central Florida, USA. "Finally, the complexity of sports and health is being considered in full. This book challenges contemporary thinking toward the prevention of injuries in sports, and provides tangible solutions to help our field into a new decade." Professor Evert Verhagen, Amsterdam Collaboration on Health and Safety in Sports & Department of Public and Occupational Health, VU University Medical Center

Human Factors Methods and Sports ScienceA Practical GuideCRC Press

Theory, Measurement and Application to Teamwork

A Source Book of Design Reference Standards

Improving System Performance and Human Well-Being in the Real World

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

Integrating Human Factors Methods and Systems Thinking for Transport Analysis and Design

Concepts and Applications

Human Factors in Practice: Concepts and Applications is written for the practitioner who wishes to learn about human factors (HF) but is more interested in application (applied research) than theory (basic research). Each chapter discusses the application of important human factors theories, principles and concepts, presented at a level that can be easily understood by layman readers with no prior knowledge or formal education in human factors. The book illustrates to the non-HF practitioner the many varied domains in which human factors has been applied as well as serving to showcase current research in these areas. All chapters address the common overarching theme of applying human factors theories, principles and concepts to address real-world problems, and follow a similar structure to ensure consistency across chapters. Standard sections within each chapter include a discussion of the scientific underpinnings, a description of relevant HF methods and guidance on sources of further information, case studies to illustrate application, and a summary of likely future trends. Each chapter concludes with a short list of key terms and definitions to enhance the reader's understanding of the content. Featuring specialist contributors from a variety of disciplines and cultural backgrounds, the book represents a diverse range of perspectives on human factors and will appeal to a broad international audience. It is consciously not a classroom textbook but rather intended to be read at the workplace by non-HF practitioners, and written specifically with their needs in mind. Reading this book will give all practitioners a solid grounding in modern human factors and its application in real-world situations.

This book focuses on computational modeling and simulation research that advances the current state-of-the-art regarding human factors in this area. 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, including surgery, military operations, occupational safety, sports training, education, transportation and robotics. Based on the AHFE 2018 International Conference on Human Factors in Simulation and Modeling, held on July 21-25, 2018, in Orlando, Florida, USA, the book serves 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.

This important new volume brings together recent research by leading international ergonomists and sport and exercise scientists. The book presents a wide range of studies in occupational ergonomics, each utilizing techniques that are also employed by sports and exercise science research groups, and therefore breaks new ground in the interface between sport and industry. Arranged into sections examining environment, special populations, human factors interface, sports technology and occupational health, this book will be an essential purchase for all those involved in sports science or ergonomics research.

The fourth edition of the Handbook of Human Factors and Ergonomics has been completely revised and updated. This includes all existing third edition chapters plus new chapters written to cover new areas. These include the following subjects: Managing low-back disorder risk in the workplace Online interactivity Neuroergonomics Office ergonomics Social networking HF&E in motor vehicle transportation User requirements Human factors and ergonomics in aviation Human factors in ambient intelligent environments As with the earlier editions, the main purpose of this handbook is to serve the needs of the human factors and ergonomics researchers, practitioners, and graduate students. Each chapter has a strong theory and scientific base, but is heavily focused on real world applications. As such, a significant number of case studies, examples, figures, and tables are included to aid in the understanding and application of the material covered.

Analysing Human Movement Patterns

Advances in Simulation and Digital Human Modeling

Cognitive Work Analysis

Advances in Human Factors in Sports and Outdoor Recreation

The Sociotechnical Perspective

Integration of Sports Science Principles into Ergonomics

Having an accurate understanding of what is going on is a key commodity for teams working within military systems. 'Situation awareness' (SA) is the term that is used within human factors circles to describe the level of awareness that operators have of the situation that they are engaged in; it focuses on how operators develop and maintain a sufficient understanding of 'what is going on' in order to achieve success in task performance. Over the past two decades, the construct has become a fundamental theme within the areas of system design and evaluation and has received considerable attention from the human factors research community. Despite this, there is still considerable debate over how SA operates in complex collaborative systems and how SA achievement and maintenance is best supported through system, procedure and interface design. This book focuses on the recently developed concept of distributed situation awareness, which takes a systems perspective on the concept and moves the focus on situation awareness out of the heads of individual operators and on to the overall joint cognitive system consisting of human and technological agents. Situation awareness is viewed as an emergent property of collaborative systems, something that resides in the interaction between elements of the system and not in the heads of individual operators working in that system. The first part of the book presents a comprehensive review and critique of existing SA theory and measurement approaches, following which a novel model for complex collaborative systems, the distributed SA model, and a new modelling procedure, the propositional network approach, are outlined and demonstrated. The next part focuses on real-world applications of the model and modelling procedure, and presents four case studies undertaken in the land warfare, multinational warfare and energy distribution domains. Each case study is described in terms of the domain in question, the methodology employed, and the findings derived in relation to situation awareness theory. The third and final part of the book then concentrates on theoretical development, and uses the academic literature and the findings from the case study applications to validate and extend the distributed SA model described at the beginning of the book. In closing, the utility of the distributed SA model and modeling procedure are outlined and a series of initial guidelines for supporting distributed SA through system design are articulated.

Human Factors Methods offers a 'how-to' text on a substantial range of ergonomics methods that can be used in the design and evaluation of products and systems, it is a comprehensive point of reference for all these methods. Presenting more than ninety design and evaluation methods, it is designed to act as an ergonomics methods manual, aiding both students and practitioners.

This book is about applying the theories of sports science into the principles of ergonomics in order to prevent injuries. It is unique from traditional ergonomic principles, in which one focuses on engineering control, administrative control, and proper equipment selections. Although all the aforementioned mechanisms are crucial, human factors also play a key role. If one can condition himself or herself physically, injuries can be further reduced in spite of traditional injury prevention methods.

This book provides an overview of, and practical guidance on, the range of human factors (HF) methods that can be used for the purposes of accident analysis and investigation in complex sociotechnical systems. Human Factors Methods and Accident Analysis begins with an overview of different accident causation models and an introduction to the concepts of accident analysis and investigation. It then presents a discussion focussing on the importance of, and difficulties associated with, collecting appropriate data for accident analysis purposes. Following this, a range of HF-based accident analysis methods are described, as well as step-by-step guidance on how to apply them. To demonstrate how the different methods are applied, and what the outputs are, the book presents a series of case study applications across a range of safety critical domains. It concludes with a chapter focussing on the data challenges faced when collecting, coding and analysing accident data, along with future directions in the area. Human Factors Methods and Accident Analysis is the first book to offer a practical guide for investigators, practitioners and researchers wishing to apply accident analysis methods. It is also unique in presenting a series of novel applications of accident analysis methods, including HF methods not previously used for these purposes (e.g. EAST, critical path analysis), as well as applications of methods in new domains.

Encyclopedia of Sport and Exercise Psychology

Cognitive Work Analysis: Coping with Complexity

Diving Suits. One Atmosphere Suits (Ads). Human Factors Requirements and Test Methods

Methods, Practical Guidance, and Applications

International Encyclopedia of Ergonomics and Human Factors - 3 Volume Set

A Practical Guide for Engineering and Design

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.

During the course of any sporting event, critical cognitive and physical tasks are performed within a dynamic, complex, collaborative system comprising multiple humans and artifacts, under pressurized, complex, and rapidly changing conditions. Highly skilled, well-trained individuals walk a fine line between task success and failure, with only slightly inadequate task execution leading to the latter. Promoting cross-disciplinary interaction between the human factors and sports science disciplines, Human Factors Methods and Sports Science: A Practical Guide provides practical guidance on a range of methods for describing, representing, and evaluating human, team, and system performance in sports domains. Traditionally, the application of human factors and ergonomics methods in sports has focused on the biomechanical, physiological, environmental, and equipment-related aspects of sports performance. However, various human factors methods, applied historically in the complex safety critical domains, are suited to describing and understanding sports performance. This book delineates the similarities in the concepts requiring investigation within sports and the more typical human factors domains. The book's focus on cognitive and social human factors methods rather than mainly on the application of physiological ergonomics approaches sets it apart from other books in either field. It covers eight categories of human factor methods: data collection, task analysis, cognitive task analysis, human error identification, situation awareness measurement, workload measurement, team performance assessment, and interface evaluation methods. Constructed so that each chapter can be read non-linearly and independently from one another, the book provides an introduction and overview to each Human Factors topic area, and of each method discussed, along with practical guidance on how to apply them. It also includes detailed descriptions of the different methods, example applications, and theoretical rationale. This allows the concepts to be easily found and digested, and the appropriate method to be easily selected and applied.

How do athletes overcome fears, slumps, mental blocks, or injuries? How do they deal with stress and anxiety, be it from competitors, teammates, audiences, parents, coaches, or themselves? What psychological techniques prove effective in mental training for peak performance, maintaining concentration, motivation, and competitive drive? How can an athlete enhance his or her commitment to a training regimen, or how might the average person better adhere to a program of fitness and exercise? Readers will find answers to these questions and more in the Encyclopedia of Sport and Exercise Psychology. Features & Benefits: Entries explore the theory, research, and application of psychology as it relates to sport and fitness in a manner that is accessible and jargon-free to help readers better understand human behavior in sport and exercise settings. From personal factors to situational factors influencing performance to specific psychological techniques for enhancing performance, this work provides comprehensive coverage of the field via approximately 350 to 400 signed entries. Entries conclude with cross-references and suggestions for further readings to guide students further in their research journey. Available in print and online, this monumental work is edited by two leading figures in the field with a distinguished international Editorial Advisory Board to select and assign entries, ensuring authoritative content readers can trust.

Packed with illustrations and practical examples, Guide to Methodology in Ergonomics: Designing for Human Use, Second Edition provides a concise introduction to ergonomics methods in a straightforward manner that helps you conduct an ergonomics analysis of a product in development. It details the execution of 12 ergonomics methods that can be applied to the design of any type of product or interface. The authors stress the role of ergonomics in reducing device interaction time and user error while improving user satisfaction and device usability. See What's in the New Edition: Four case studies Addition of another co-author Examples that reflect current technology Information on Critical Path Analysis (CPA) The authors highlight where ergonomics methods fit in the design process and how to select a method appropriate for your purpose. They describe each method, supplying an overview, instructions on how to carry out an analysis, a mini bibliography, pros and cons, one or more examples, and a flow chart. They then rate each method for reliability/validity, resources, usability, and efficacy. The book then examines data from studies on training, reliability, and validity, and presents an equation that enables you to calculate approximately the financial benefits of using each method. Based on research and expertise, the book gives you the freedom to be adventurous when choosing methods and the foundation to choose the method that fits the task at hand. Written by experts, it also helps you hone your skills and put the craft of ergonomics into practice.

Designing for Human Use, Second Edition

Practical Guidance and Case Study Applications

Advances in Human Factors in Simulation and Modeling

Applications and Future Directions

Human Factors in Practice

Systems Thinking in Practice

Production ergonomics – the science and practice of designing industrial workplaces to optimize human well-being and system performance – is a complex challenge for a designer. Humans are a valuable and flexible resource in any system of creation, and as long as they stay healthy, alert and motivated, they perform well and also become more competent over time, which increases their value as a resource. However, if a system designer is not mindful or aware of the many threats to health and system performance that may emerge, the end result may include inefficiency, productivity losses, low working morale, injuries and sick-leave. To help budding system designers and production engineers tackle these design challenges holistically, this book offers a multi-faceted orientation in the prerequisites for healthy and effective human work. We will cover physical, cognitive and organizational aspects of ergonomics, and provide both the individual human perspective and that of groups and populations, ending up with a look at global challenges that require workplaces to become more socially and economically sustainable. This book is written to give you a warm welcome to the subject, and to provide a solid foundation for improving industrial workplaces to attract and retain healthy and productive staff in the long run.

The management of risk and safety is not simply a matter of trying to remove risks, but is necessary and vital to these industries. Sensible risk management is concerned with making the most of the positive opportunities or reducing the negative risks. This books shows how the absence of explicit risk practices is not necessarily an absence of risk management, and how many existing operational and strategic practices can be understood as part of a process of risk and safety management. Its main objective is to develop greater clarity in the communication of risks and the development of safety programmes, illustrating how organisations can use a single language of risk, relevant for all levels of management and areas of operation.

This second edition of Human Factors Methods: A Practical Guide for Engineering and Design now presents 107 design and evaluation methods as well as numerous refinements to those that featured in the original. The book has been carefully designed to act as an ergonomics methods manual, aiding both students and practitioners. The eleven sections represent the different categories of ergonomics methods and techniques that can be used in the evaluation and design process. Offering a 'how-to' text on a substantial range of ergonomics methods that can be used in the design and evaluation of products and systems, it is a comprehensive point of reference for all these methods. An overview of the methods is presented in chapter one, with a methods matrix showing which can be used in conjunction. The following chapters detail the methods showing how to apply them in practice. Flowcharts, procedures and examples cover the requirements of a diverse audience and varied applications of the methods. The final chapter, a new addition, illustrates the EAST method, which integrates several well-known methods into a teamwork analysis approach.

This book is a collection of contemporary applications of psychological insights into practical human factors issues. The topics are arranged largely according to an information processing/energetic approach to human behavior. Consideration is also given to human-computer interaction and organizational design.

Human Factors Methods and Sports Science

Advances in Human Factors in Sports, Injury Prevention and Outdoor Recreation

Distributed Situation Awareness

Proceedings of the AHFE 2018 International Conferences on Human Factors and Simulation and Digital Human Modeling and Applied Optimization, Held on July 21–25, 2018, in Loews Sapphire Falls Resort at

Universal Studios, Orlando, Florida, USA

Handbook of Human Factors and Ergonomics

Introduction to Sports Biomechanics

Military command and control is not merely evolving, it is co-evolving. Technology is creating new opportunities for different types of command and control, and new types of command and control are creating new aspirations for technology. The question is how to manage this process, how to achieve a jointly optimised blend of socio and technical and create the kind of agility and self-synchronisation that modern forms of command and control promise. The answer put forward in this book is to re-visit sociotechnical systems theory. In doing so, the problems of 21st century command and control can be approached from an alternative, multi-disciplinary and above all human-centred perspective. Human factors (HF) is also co-evolving. The traditional conception of the field is to serve as a conduit for knowledge between engineering and psychology yet 21st century command and control presents an altogether different challenge. Viewing military command and control through the lens of sociotechnical theory forces us to confront difficult questions about the non-linear nature of people and technology: technology is changing, from platform centric to network centric; the interaction with that technology is changing, from prescribed to exploratory; and complexity is increasing, from behaviour that is linear to that which is emergent. The various chapters look at this transition and draw out ways in which sociotechnical systems theory can help to understand it. The sociotechnical perspective reveals itself as part of a conceptual toolkit through which military command and control can be transitioned, from notions of bureaucratic, hierarchical ways of operating to the devolved, agile, self-synchronising behaviour promised by modern forms of command and control like Network Enabled Capability (NEC). Sociotechnical system theory brings with it a sixty year legacy of practical application and this real-world grounding in business process re-engineering underlies the entire book. An attempt has been made to bring a set of sometimes abstract (but no less useful) principles down to the level of easy examples, design principles, evaluation criteria and actionable models. All of these are based on an extensive review of the current state of the art, new sociotechnical/NEC studies conducted by the authors, and insights derived from field studies of real-life command and control. Time and again, what emerges is a realisation that the most agile, self-synchronising component of all in command and control settings is the human.

Situation Awareness (SA) is critical commodity for teams working in complex sociotechnical systems and is thus a fundamental consideration in collaborative system design and evaluation. Despite this, SA remains predominantly an individual construct, with the majority of models and measures focused on SA from an individual perspective. In comparison, team SA has received much less attention and this thesis argues that further work is required in the area both in relation to the development of theoretical perspectives and of valid measures, and to the development of guidelines for system, training and procedure design. This thesis advances team SA theory and measurement by further investigating a recently proposed model of SA in complex collaborative environments, the Distributed Situation Awareness (DSA) approach, and by testing a new methodology for representing and analysing DSA during real world collaborative activities. A review of SA theory and SA measurement approaches is presented. Following this, the DSA theory and propositional network assessment methodology are outlined and a series of case studies on DSA during real world collaborative activities in the military and civil domains are presented. The findings are subsequently used to explore the concept of DSA and the sub-concepts of compatible and transactive SA. In conclusion, a model of DSA in complex collaborative systems is presented, and a series of system design guidelines for supporting DSA are outlined.

The first encyclopedia in the field, the International Encyclopedia of Ergonomics and Human Factors provides a comprehensive and authoritative compendium of current knowledge on ergonomics and human factors. It gives specific information on concepts and tools unique to ergonomics.

About 500 entries, published in three volumes and on CD-ROM, are pre

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.

Risk and Safety Management in the Leisure, Events, Tourism and Sports Industries

Human Factors Methods and Accident Analysis

Applying Psychology to Design

A Practical Guide

Proceedings of the AHFE 2020 Virtual Conferences on Human Factors and Simulation, and Digital Human Modeling and Applied Optimization, July 16-20, 2020, USA

Research suggests that ergonomists tend to restrict themselves to two or three of their favorite methods in the design of systems, despite a multitude of variations in the problems that they face. Human Factors and Ergonomics Methods delivers an authoritative and practical account of methods that incorporate human capabilities and limitations, envi

This edited book concerns the real practice of human factors and ergonomics (HF/E), conveying the perspectives and experiences of practitioners and other stakeholders in a variety of industrial sectors, organisational settings and working contexts. The book blends literature on the nature of practice with diverse and eclectic reflections from experience in a range of contexts, from healthcare to agriculture. It explores what helps and what hinders the achievement of the core goals of HF/E: improved system performance and human wellbeing. The book should be of interest to current HF/E practitioners, future HF/E practitioners, allied practitioners, HF/E advocates and ambassadors, researchers, policy makers and regulators, and clients of HF/E services and products.

Introduction to Sports Biomechanics has been developed to introduce you to the core topics covered in the first two years of your degree. It will give you a sound grounding in both the theoretical and practical aspects of the subject. Part One covers the anatomical and mechanical foundations of biomechanics and Part Two concentrates on the measuring techniques which sports biomechanists use to study the movements of the sports performer. In addition, the book is highly illustrated with line drawings and photographs which help to reinforce explanations and examples.

Ergonomics in Sport and Physical Activity: Enhancing Performance and Improving Safety is also available as an e-book. The e-book is available at a reduced price and allows readers to highlight and take notes throughout the text. When purchased through the Human Kinetics site, access to the e-book is immediately granted when the order is received. Ergonomics in Sport and Physical Activity: Enhancing Performance and Improving Safety is the first text to provide an in-depth discussion of how the principles of ergonomics can be applied in the context of sport and other physical activities to reduce injury and improve performance. The text blends concepts from biomechanics, physiology, and psychology as it shows how ergonomics is applied to physical activity. This comprehensive text outlines methods for assessing risk in and procedures for dealing with stress, eliminating hazards, and evaluating challenges posed in specific work or sport environments. It discusses issues such as the design of effective equipment, clothing, and playing surfaces; methods of assessing risk in situations; and staying within appropriate training levels to reduce fatigue and avoid overtraining. The text not only examines sport ergonomics but also discusses ergonomic considerations for physically active special populations. Ergonomics in Sport and Physical Activity explains what ergonomics is, how ergonomists solve practical problems in the workplace, and how principles of ergonomics are applied in the context of sport and other physical activities when solving practical problems related to human characteristics and capabilities. The text shows readers how to improve performance, achieve optimal efficiency, enhance comfort, and reduce injuries by exploring topics such as these: Essential concepts, terms, and principles of ergonomics and how these relate to physical activity Physical properties of the body and the factors limiting performance Interactions between the individual, the task, and the environment Injury risk factors in relation to body mechanics in various physical activities Injury prevention and individual protection in the review of sports equipment and sports environments Comfort, efficiency, safety, and details of systems criteria in equipment design This research-based text uses numerous practical examples, figures, charts, and graphs to bring the material to life. In addition, descriptions of technological advances show where we have been and how technology has advanced the field. Through the book's discussion of the various stressors and adaptive mechanisms, readers will learn how to cope with various environmental conditions. They will also learn how various training modes can be used to alter sport-specific capabilities and enhance performance. Presenting a wide range of approaches, theoretical models, and analytical techniques, Ergonomics in Sport and Physical Activity: Enhancing Performance and Improving Safety illustrates the potential for ergonomics to be extended across recreation, competitive sport, and physically active work environments. Bridging the gap between ergonomics and exercise science, this unique text will assist both health care and exercise professionals in developing an improved awareness of how human capabilities are best matched to physical activities.

Applications, Extensions and Future Directions

Human Dimension and Interior Space

Making Systems Human-Centered

Advances in Sport, Leisure and Ergonomics

Ergonomics in Sport and Physical Activity

Human Factors in Land Use Planning and Urban Design

This book presents the latest developments of Systems Thinking in Practice to the analysis and design of complex sociotechnical systems. The Event Analysis of Systemic Teamwork (EAST) method is applied to micro, meso and macro systems. Written by experts in the field, this text covers a diverse range of domains, including: automation, aviation, energy grid distribution, military command and control, road and rail transportation, sports, and urban planning. Extensions to the EAST method are presented along with future directions for the approach.

Illustrates a contemporary review of the status of Distributed Cognition (DCOG) Presents examples of the application of Event Analysis of Systemic Teamwork (EAST) method Presents examples of the application of Event Analysis of Systemic Teamwork (EAST) method Discusses the metrics for the examination of social, task, and information networks Provides comparison of alternative networks with implications for design of DCOG in systems

This book presents the latest advances in modeling and simulation for human factors research. It reports on cutting-edge simulators such as virtual and augmented reality, multisensory environments, and modeling and simulation methods used in various applications, including surgery, military operations, occupational safety, sports training, education, transportation and robotics. Based on two AHFE 2020 Virtual Conferences such as the AHFE 2020 Virtual Conference on Human Factors and Simulation and the AHFE 2020 Virtual Conference on Digital Human Modeling and Applied Optimization, held on July 16–20, 2020, the book serves 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 field.

Whether used for aviation, manufacturing, oil and gas extraction, energy distribution, nuclear or fossil fuel power generation, surveillance or security, all control rooms share two common features. The people operating them are often remote from the processes that they are monitoring and controlling and the operations work 24/7. The twin demands of remote and continuous operation place special considerations on the design of central control rooms. Human Factors in the Design and Evaluation of Central Control Room Operations provides an analysis of Human Factors and Ergonomics in this complex area and the implications for control room staff. This information contained within this book can then be used to design, assessed and evaluate control rooms. Taking an integrated approach to Human Factors and Ergonomics in the control room environment, the book presents fourteen human factors topics: competencies, training, procedures, communications, workload, automation, supervision, shift patterns, control room layout, SCADA interfaces, alarms, control room environment, human error, and safety culture. Although there are many resources available on each of these topics, this book the information together under one cover with a focus on central control room operations. Each chapter is self-contained and can be read in any order, as the information is required.

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.

Advances in Physical Ergonomics and Human Factors

Human Factors Methods for Design

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

Human Factors Psychology

Human Factors in the Design and Evaluation of Central Control Room Operations