## Contents

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

**Virtual Reality Technology Applied in the Building Design Process:**
**Considerations on Human Factors and Cognitive Processes** ........................................ 3  
Daniel Paes and Javier Irizarry

**Rapid Integration and Evaluation of Functional HMI Components in a Virtual Reality Aircraft Cockpit** .......................................................... 17  
Matthias Oberhauser, Daniel Dreyer, Thomas Convard and Sebastien Mamessier

**Virtual Reality to Study Job Interview Anxiety: Evaluation of Virtual Environments** .......................................................... 25  
Tânia Borges, Elisângela Vilar, Paulo Noriega, Sara Ramos and Francisco Rebelo

**Development of a Virtual Environment for Safety Warnings Behavior Compliance Evaluation** .......................................................... 35  
Ana Almeida, Francisco Rebelo and Paulo Noriega

**Child-Persona: What I Think to What They Are** ................................................ 43  
Ana Claudia da Costa, Francisco Rebelo and Júlia Teles

**Web Press Carousel and His Effects Over News Memorization** ...................... 53  
Paulo Noriega, Tiago Pinto, João Assunção, Filipa Lourenço, Cristina Ungureanu and Eduardo Ribeiro

### Part II Usability and User Experience in Design

**Using Video Game Patterns to Raise the Intrinsic Motivation to Conduct Accessibility Evaluations** .......................................................... 65  
Alexander Henka, Andreas Stiegler and Gottfried Zimmermann
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria Based Approach to Assess the User Experience of Driving</td>
<td>79</td>
</tr>
<tr>
<td>Information Proactive System: Integration of Guidelines, Heuristic</td>
<td></td>
</tr>
<tr>
<td>Mapping and Case Study</td>
<td></td>
</tr>
<tr>
<td>Mathilde Duczman, Eric Brangier and Aurélie Thévenin</td>
<td></td>
</tr>
<tr>
<td>Analysis of the Effect of Varying Trash Receptacle Distance to the</td>
<td>91</td>
</tr>
<tr>
<td>Littering Behavior of Metro Manila Bus Commuters</td>
<td></td>
</tr>
<tr>
<td>Jan Alessa J. Balane, Karina O. Felizardo and Ma. Christina Beatrice F. Lopez-Tan</td>
<td></td>
</tr>
<tr>
<td>Using Digital Thermography to Analyse the Product User’s Affective</td>
<td>97</td>
</tr>
<tr>
<td>Experience of a Product</td>
<td></td>
</tr>
<tr>
<td>Rafaela Q. Barros, Marcelo M. Soares, Márcio A. Maçal, Ademário S. Tavares, Jaqueline A.N. Oliveira, José R.R. Silva, Aline S.O. Neves, Robson Oliveira and Geraldo O.S.N. Neto</td>
<td></td>
</tr>
<tr>
<td>Size Effects and Scale Effects on the Usability of Tablets in Finger</td>
<td>109</td>
</tr>
<tr>
<td>Pointing and Dragging Tasks</td>
<td></td>
</tr>
<tr>
<td>Chih-Chun Lai and Lung-Wen Kuo</td>
<td></td>
</tr>
<tr>
<td>Embedding Smart Materials into Products to Motivate the User:</td>
<td>121</td>
</tr>
<tr>
<td>Flexers, a Smarter Approach to Finger Splinting</td>
<td></td>
</tr>
<tr>
<td>Marco Ajovalasit, Massimo Micocci and Rob Adam</td>
<td></td>
</tr>
<tr>
<td>Part III Human Factors in Design and Management</td>
<td></td>
</tr>
<tr>
<td>Human-Automation Manufacturing Industry System: Current Trends and</td>
<td>137</td>
</tr>
<tr>
<td>Practice</td>
<td></td>
</tr>
<tr>
<td>Beata Mrugalska, Magdalena Wyrwicka and Barbara Zasada</td>
<td></td>
</tr>
<tr>
<td>Burnout Syndrome and Musculoskeletal Complaints in Mexican Middle</td>
<td>147</td>
</tr>
<tr>
<td>School Teachers in Ciudad Juarez</td>
<td></td>
</tr>
<tr>
<td>Aidé-Aracely Maldonado-Macías, Jorge García-Alcaraz, Carolina Corchado-Nevarez, Juan Luis Hernández-Arellano and Yolanda Baez-Lopez</td>
<td></td>
</tr>
<tr>
<td>The OHS Management in a Development of Small Enterprises (For Example</td>
<td>161</td>
</tr>
<tr>
<td>of Welding Factory)</td>
<td></td>
</tr>
<tr>
<td>Adam Górny</td>
<td></td>
</tr>
<tr>
<td>Comparative Study on User and Manufacturer Perception of Ergonomics</td>
<td>173</td>
</tr>
<tr>
<td>Requirement on Sofa Design in Malaysia</td>
<td></td>
</tr>
<tr>
<td>Ahmad Hafizi Abdul Nasir, Ahmad Rasdan Ismail, Khairul Azhar Mat Daud, Suriatini Ismail, Nik Zulkarnaen Khidzir and Darliana Mohamad</td>
<td></td>
</tr>
</tbody>
</table>
Using Temporal Representations for Understanding Complex Interrelationships for Mission Planning ........................ 183
Jennifer Danczyk, Stephanie Kane, Drew Housten, Martin Voshell, Ryan M. Kilgore and Chris Hogan

Systemic Assessment of Human-Factor-Based Security Impact ........ 191
François Pérès, Carmen Martin and Vicente Gonzalez-Prida

The Relationship Between Vitamin D Deficiency Predisposition Among Healthy Young Individuals: A Few Considerations for Human Wellbeing and Overall System Performance ............ 203
Rosimeire Sedrez Bitencourt, Ester Farias de Souza and Carlos Alberto da Rosa

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

Redesign of Work-Accessories Towards Minimizing Awkward Posture and Reduction of Work Cycle Elements in an Indian Shop-Floor Workstation ................................. 219
J. Sanjog, Rajiv Lochan Baruah, Thaneswer Patel and Sougata Karmakar

Ergonomical Study of Workplace Using the Technique of Path Process Chart ........................................ 233
Poonam Magu, Kumud Khanna and Premavathy Seetharaman

Cooperation University and Industry, a Challenge or a Reality: An Example in an Aircraft Maintenance Company ............... 245
Francisco Rebelo, Paulo Noriega, Teresa Cotrim and Rui B. Melo

Postural Education: Correlation Between Postural Habits and Musculoskeletal Pain in School Age Children .................. 255
Gustavo Desouzart, Ernesto Filgueiras, Rui Matos and Ricardo Dagge

Design and Evaluation of an Arm Support for Prevention of MSDs in Dentists ............................................. 265
Shaygan Hallaj and Sareh Sadat Moosavi Razi

Participatory Ergonomics Management in a Textile Thread Plant in Brazil Employing Total Quality Management (TQM) Tools ........ 277
Carlos Maurício Duque dos Santos, Rosangela Ferreira Santos, Andréa Ferreira Santos and Mariana de Castro Moreira Rosa

Can the Context Stigmatize the Assistive Technology?
A Preliminary Study Using Virtual Environments ................ 289
Luciana Carneiro, Tiago Oliveira, Paulo Noriega and Francisco Rebelo
The Physical Elements Affecting Student’s Concentration in Libraries ..................................................... 299
Thao-Hien Dang and Wenzhi Chen

Part V Ergonomics in Clothing and Footwear Design

Effects of Different Body Postures on Anthropometric Measures ........ 313
Sara Bragança, Pedro Arezes, Miguel Carvalho and Susan Asldown

A Research on Ergonomic Approaches of Apparel Designers ............ 323
Emine Koca and Özlem Kaya

Costume Study on Spondylopathy Nursing Type Vest Based on Functional Costume Studies of Human Body Engineering ................................................................. 337
Xiaoping Hu and Zhang Xiao

Exploring the Impact of Lifestyle on Fashion Consumption Behaviour for Older Chinese Women .......................................................... 345
Minzhi Zhang, Sonja Andrew, Gary Warnaby and Simeon Gill

Clothing Custom Design: Qualitative and Anthropometric Data Collection of a Person with Multiple Sclerosis ............................. 359
Bruna Brogin, Dalila Campigotto Weiss, Sandra Marchi, Maria Lucia Ribeiro Okimoto and Sabrina Talita de Oliveira

Part VI User Research in Design

The Form, Senses and Dynamics: A Literature Review on the Philosophical and Technical Coherency for the Development of the Floor-Sitting Furniture Design ............... 373
Sani M. Najib and Yusoff B. Saiful

Design Evaluation of Classroom Armchairs Based on the Anthropometric Measurements of Public Elementary School Students Aged 10–12 ........................................ 379
Maebelle Aralar, Lizbeth Mariano, Diana Marie De Silva, Marc Immanuel Isip and Clarissa Pesigan

An Integrated Analysis of Customer Requirements for Bicycle Leisure Activity Functional Clothing Design ............................. 391
Ming-Chyuan Lin, Yi-Hsien Lin, Shuo-Fang Liu and Ming-Shi Chen

The Assessment of QFD Applying to Curling Iron of the Hair Salon ................................................................. 405
Hsiu-Ching Lu and Fong-Gong Wu
Analysis and Research on the Gesture-Based Interaction of Touch-Screen Smartphones for the Elderly Based on Ergonomics ........................................... 415 Yulin Zhao and Delai Men
The Study of Design of Senile Dementia Patients’ Anti-lost Clothing Based upon Ergonomics ........................................... 427 Xiaoping Hu and Jiying Zhong
Evaluating Interfaces and User’s Profiles ...................... 437 Lucila Mercado Colin and Alejandro Rodea Chavez
Analysis of Glasses Wearing Comfortability Based on 3D Head Shape Features .................................................... 447 Zhelin Li, Xiaomin Zhang, Jiaxin Zhang, Lijun Jiang and Guangzheng Yu
Developing of a System for Measuring and Evaluating the Hand Stress in Relation to the Strain Index .................. 455 Peter Gust, Aydin Ünlü and Max Hoppe
User’s Capabilities and Limitations Identification in Design Process ... 465 Alejandro Rodea Chávez and Lucila Mercado Colin
Increasing Sustainability by Improving Full Use of Public Space: Human Centred Design for Easy-to-Walk Built Environment ........ 473 Erminia Attaianese
Ocular Movement Characteristics to LED Lights with High Luminous Intensity ....................................................... 485 Atsuo Murata, Tomohisa Takamoto and Makoto Moriwaka
Working with the Elderly—Issues Regarding Registering Their Experience and Knowledge ................................. 495 Rosângela Míriam Lemos Oliveira Mendonça and Ângela Zampier Lopes Vieira de Oliveira
Improving Medication Adherence for the Elderly in China-An User Study in Design .................................................... 515 Qian Zhou, Long Liu, Qianwen Zheng and Jinhua Li
Part VII Information Design

Typographic Literacy: Are Users Able to Perceive What We Design? .......................... 537
Daniel Rodriguez-Valero, Fernando Olivares and Alberto Pinillos-Laffon

The You-Are-Here Sign in Public Maps: A Design Study with Special Focus on Orientation and Direction Elements ........ 547
Kai-Hsin Chiu and Meng-Cong Zheng

Study on Interface Design for Smart Phone Based Indoor Navigation Under Special Consideration of Information Judgment by the User in Emergency Evacuation Scenarios ........................... 559
Ching-I. Chen and Meng-Cong Zheng

Study on Landmark Design of Wayfinding Map in Taipei Main Station ................................................ 571
Ken-Tzu Chang and Meng-Cong Zheng

Design Entropy: A New Approach for Evaluating User Experience in User Interface Design .............................. 583
Lei Wu, Juan Li and Tian Lei

Analysis of the Detectability and Conspicuity of Fire Extinguishers Based on Placement Location in Low to Moderate Hazard Public Spaces .......................................................... 595
Cesar Lorenzo G. Capistrano, Maria Jacinta K. Lagonera, Patrick Louie B. Lim and Benette P. Custodio

Information Searches by Vehicle Engineers in Engineering Design Development ................................................. 605
Shuai Zhang and Aylmer Johnson

Ergonomics and Information Design: Design, Standardization and Uniformization of Graphical Symbols for Public Information ..... 615
João Neves, Fernando Moreira da Silva, Daniel Raposo and José Silva

Systematic Pattern Code Design on Kitchenware for Operable Activities in Tangible User Interface .......................... 625
Fong-Gong Wu, Pin-Chin Wang and SuHuey Tan

Study on Design Principle of Touch Screen with an Example of Chinese-Pinyin 10 Key Input Method in iPhone ................ 639
Xiaoli Wu and Tianyang Xi

The Contribute of Graphic Style and Connotations to Memorability of Brand Marks from Agri-Food Sector .................... 651
Daniel Raposo, João Neves, José Silva and Catarina Laginha
Production Design and Game Design in Videogames: Action, Emotion and Immersion in the Player Lived ........................................ 665 
Carlos Figueiredo

Part VIII Assistive Technology in Design

Proaid E. Low Cost Neurological Wheelchair Design ................. 677 
Gustavo Sevilla Cadavid, Andres Valencia-Escobar 
and Juliana Velásquez Gómez

Ubiquitous Notification Mechanism to Provide User Awareness ........ 689 
Gustavo López and Luis A. Guerrero

Assistive Technology for People with Low Vision: Equipment for Accessibility of Visual Information ......................... 701 
Sabrina Talita de Oliveira, Julia Vieira Bozo 
and Maria Lucia Leite Ribeiro Okimoto

Design of a Tactile Map: An Assistive Product for the Visually Impaired ................................................................. 711 
Sabrina Talita de Oliveira, Katsuk Suemitsu 
and Maria Lucia Leite Ribeiro Okimoto

Part IX Innovative Design

Innovative Approaches and Verification in the Design of Flower Beds to Support Horticultural Therapy Classes. ............ 723 
Meng-Cong Zheng

A Method for Measuring the Weight of Body Segment Based on Human Model and Body Pressure Distribution ............. 735 
Fei Fang, Liming Shen, Yuxia Chen and Yuding Zhu

Testing and Evaluation of a New Multitrack Electric Bicycle—A Comparative Study ..................................................... 743 
Sophie Steinmaßl and Markus Lienkamp

Ergonomic Challenges in Designing Personal Cooling Equipment for Ultra-Deep Mining ................................................. 757 
Valérie Tuyêt Mai Ngô, Sylvie Nadeau, Justine Mackowiak 
and Stéphane Hallé

Change the Mental Model, Change the Behavior: Using Interface Design to Promote Appropriate Energy Consuming Behavior in the Home .......................................................... 769 
Kirsten Revell and Neville Stanton
Research on the Modular Function Design of Intelligent Lighting Equipment Based on Different Environmental Requirements ........ 779
Junnan Ye, Jianxin Cheng, Le Xi and Wangqun Xiao

Using Cognitive and Physical Ergonomic Requirements to Promote Healthy Snacking Behavior: A Refrigerator Design Analysis. ........ 789
Dara Gruber and Thomas Berry

Enhancing User Experience in Graphic Design:
A Study in (Unusual) Interaction. ......................... 801
Marco Neves

Kubit: A Responsive and Ergonomic Holographic User Interface for a Proxemic Workspace .......................................................... 811
Jed Looker and Thomas Garvey

The Development of Design Specification for Ergonomics Sofa in Malaysia. ................................................................. 823
Khairul Azhar Mat Daud, Ahmad Rasdan Ismail, Suriatini Ismail and Nik Zulkarnaen Khidzir

Smartphone Ergonomics: A Proposal for Older People .............. 831
Javed Anjum Sheikh, Beenish Zafar, Anam Pervez and Zunaira Ilyas Bhutta
Advances in Ergonomics in Design
Walt Disney World®, Florida, USA
Rebelo, F.; Soares, M. (Eds.)
2016, XVI, 841 p. 250 illus., 165 illus. in color.,
Softcover
ISBN: 978-3-319-41982-4