Advances in
Human Aspects of
Transportation

Part III
Advances in Human Factors and Ergonomics 2014

5th International Conference on Applied Human Factors and Ergonomics


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Tareq Ahram and Renliu Jang

Advances in Ergonomics In Design, Usability & Special Populations (Part I, II, III)
Marcelo Soares and Francisco Rebelo

Advances in Affective and Pleasurable Design
Yong Gu Ji and Sooshin Choi

Advances in Science, Technology, Higher Education and Society in the Conceptual Age: STHESCA
Tadeusz Marek
Advances in
Human Aspects of Transportation
Part III

Edited By
Neville Stanton
Steven Landry
Giuseppe Di Bucchianico
and
Andrea Vallicelli

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# Table of Contents

## Section 22: Maritime - Human Diversity

Human diversity: A limit or an opportunity in the maritime design domain?  
G. Di Bucchianico, Italy  
3

Water-based public transport accessibility. A case study in the internal waters of Northern Italy  
S. Ercoli, A. Ratti and S. Piardi, Italy  
11

DfD_UD_ID_DfA: Design for inclusion in sailing yacht design  
J. Lagatta, Italy  
22

Human Factors in Yacht Design for Older Adults  
M. Musio Sale, Italy  
30

Living aboard with kids and pets  
V. Solera, Italy  
40

## Section 23: Maritime - Training and Work Simulations

Reducing crew size of future naval ships using a method suite for design, simulation and evaluation  
W. Post, J. van Diggelen, M. Rakhorst-Oudendijk and M. Grootjen, The Netherlands  
55

Maritime simulator training: Eye-trackers to improve training experience  
S. Renganayagalu, S. Komandur and R. Rylander, Norway  
66

Differences in workload of both skippers and pilots due to changes in environmental bank lights  
W. Uitterhoeve and M. Zeilstra, The Netherlands  
73

Sailing as stroke rehabilitation strategy  
M. Romero, G. Andreoni, S. Pardi, A. Ratti, B. Imamogullari and F. Molteni, Italy  
86

## Section 24: Road and Rail - Eco-Driving, Public Transport and Pedestrians

Climbing decision ladders to analyse ecodriving: The first rung on the way to fuel-efficient driving  
R. McIlroy and N. Stanton, UK  
95
The future of social transport: "A good idea, but…"
J. Osmond, A. Woodcock, J. Begley and K. Frankova, UK

Passenger needs on mobile information systems – Field evaluation in public transport
S. Horold, C. Mayas and H. Kromker, Germany

Development of future scenarios: Prediction of mental workload in a traffic management control room
M. Zeilstra, M. Wilms, F. Blommers and D. de Bruijn, The Netherlands

Section 25: Road and Rail - Human Factors in Rail Systems

To beep or not to beep: Developing a non fail-safe warning system in a fail-safe train protection environment
R. Van der Weide, K. Schreibers and C. Weeda, The Netherlands

Increasing the vocational action competences of rail traffic controllers by creating a virtual learning environment for trainees
S. Dietsch and A. Naumann, Germany

Developing Bayesian belief networks to support risk-based decision making in railway operations
B. Molloy, N. Balfe and E. Lowe, Ireland/UK

Section 26: Road and Rail - Accident Analysis and Prevention

Detection or appraisal – Do their eye movements reveal what causes novices’ poor performance in a dynamic hazard perception test?
S. Malone and R. Brunken, Germany

Training needs research applied to the development of a standardised incident investigator training framework
T. Banks, H. Biggs and N. Dovan, Australia

The critical factors in human error that lead to express bus accidents in Malaysia
S. Liew, P. Francis and C. T. Foong, Malaysia

Section 27: Road and Rail - Individual Differences in Driving

Development of an inference system for drivers’ driving style and workload sensitivity from their demographic characteristics
T. Sato and M. Akamatsu, Japan
One day in the life of a persona – A framework to define mobility agendas
C. Mayas, S. Horold, T. Wienke and H. Kromker, Germany

Driving Ability Index (DAI) for assessing elderly people’s performance
M. Meloni, C. Pinna, L. Lecca, G. Fancello, A. Del Rio, D. Setzu, G. Costa and P. Fadda, Italy

Automatic inference of driving task demand from visual cues of emotion and attention
A. Soro and A. Rakotonirainy, Australia

Investigating the effect of long-term worksites on road users
C. Busen, A. Gerhards, M. Haberstroh, E. Skottk and, M. Oeser, Germany

An application of the driver behaviour questionnaire in a large Australian organisational fleeting setting: Can it predict crashes and demerit point loss?
D. Wishart, J. Freeman, J. Davey, B. Rowland and P. Barraclough, Australia

Comparison of fuel economy over different drive cycles each having the same average speed
A. McGordon, S. Birrell, J. Poxon and P. Jennings, UK

Affective states and driving behavior of novice and young drivers
M. Oehl and R. Hoger, Germany

Choosing routes and looking around carefully: Aspects of security management in behavior of nonprofessional motorcyclists
A. Goliás and I. Almeida, Brazil

Section 28: Road and Rail - Human Factors in Rail and RLX

Testing changes in the railway system through gaming simulation: How different types of innovations affect operators’ mental models
J. Lo, J. van den Hoogen and S. Meijer, The Netherlands/Sweden

Drivers’ over-trust on advanced driver assistance systems on passively protected railway level crossings
G. Larue and A. Rakotonirainy, Australia

Effects of driver familiarity and prolonged or intermittent right-side failure on level crossing safety
C. Wullems, N. Haworth, G. Larue, A. Haines and M. Gildersleeve, Australia
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train accidents at level crossings in Indonesia - A preliminary study</td>
<td>324</td>
</tr>
<tr>
<td>H. Iridiastadi and A. Umyati, Indonesia</td>
<td></td>
</tr>
<tr>
<td>An evaluation of a national rail suicide prevention programme</td>
<td>329</td>
</tr>
<tr>
<td>A. Mills, T. Flint and A. Monk, UK</td>
<td></td>
</tr>
<tr>
<td><strong>Section 29: Road and Rail - System Design and Evaluation III</strong></td>
<td></td>
</tr>
<tr>
<td>A visuohaptic collision warning approach for high-priority braking</td>
<td>341</td>
</tr>
<tr>
<td>scenarios</td>
<td></td>
</tr>
<tr>
<td>K. Maier, J. Hellbruck and H. Sacher, Germany</td>
<td></td>
</tr>
<tr>
<td>DriveLab: Understanding driving behavior made easy</td>
<td>351</td>
</tr>
<tr>
<td>T. Heffelaar, B. van Mil, J. Kuipers, J. Andersson, L. Wiertz and L.</td>
<td></td>
</tr>
<tr>
<td>Noldus, The Netherlands/Sweden</td>
<td></td>
</tr>
<tr>
<td>Requirements Discovery for Smart Driver Assistive Technology</td>
<td>355</td>
</tr>
<tr>
<td>Through Simulation</td>
<td></td>
</tr>
<tr>
<td>A. Gregoriades, M. Pampaka, C. Florides and S. Christodoulou,</td>
<td></td>
</tr>
<tr>
<td>Cyprus/UK</td>
<td></td>
</tr>
<tr>
<td>**Section 30: Road and Rail - Naturalistic and Simulator HF Driving</td>
<td></td>
</tr>
<tr>
<td>Communities</td>
<td></td>
</tr>
<tr>
<td>Crash trifecta: A complex driving scenario describing crash</td>
<td>369</td>
</tr>
<tr>
<td>causation</td>
<td></td>
</tr>
<tr>
<td>N. Dunn, J. Hickman and R. Hanowski, USA</td>
<td></td>
</tr>
<tr>
<td>Comparing truck driving performance in a simulator and</td>
<td>376</td>
</tr>
<tr>
<td>instrumented vehicle</td>
<td></td>
</tr>
<tr>
<td>R. Hanowski, J. Morgan, S. Soccolich and S. Tidwell, USA</td>
<td></td>
</tr>
<tr>
<td>The development of standard protocols to improve the quality of</td>
<td>388</td>
</tr>
<tr>
<td>driving simulator research</td>
<td></td>
</tr>
<tr>
<td>C. Harvey and G. Burnett, UK</td>
<td></td>
</tr>
<tr>
<td>A presence questionnaire for understanding the driving simulator</td>
<td>396</td>
</tr>
<tr>
<td>experience</td>
<td></td>
</tr>
<tr>
<td>G. Burnett, R. Donkor and S. Sharples, UK</td>
<td></td>
</tr>
<tr>
<td>An evaluation of the use of odds ratios to estimate the association</td>
<td>408</td>
</tr>
<tr>
<td>between mobile phone use and safety critical driving events</td>
<td></td>
</tr>
<tr>
<td>N. Reed, C. Hallett, S. Cynk and D. Jenkins, UK/France</td>
<td></td>
</tr>
<tr>
<td>Forecasting of evolution system the driver – a vehicle – transport</td>
<td>418</td>
</tr>
<tr>
<td>network – environment</td>
<td></td>
</tr>
<tr>
<td>V. Dolia, I. Ivanov, I. Sanko, D. Pankratov and Y. Kush, Ukraine</td>
<td></td>
</tr>
</tbody>
</table>
Preface

Human Factors and Ergonomics have made a considerable contribution to the research, design, development, operation and analysis of transportation systems which includes road and rail vehicles and their complementary infrastructure, aviation and maritime transportation. This book presents recent advances in the Human Factors aspects of Transportation. These advances include accident analysis, automation of vehicles, comfort, distraction of drivers (understanding of distraction and how to avoid it), environmental concerns, in-vehicle systems design, intelligent transport systems, methodological developments, new systems and technology, observational and case studies, safety, situation awareness, skill development and training, warnings and workload.

This book brings together the most recent human factors work in the transportation domain, including empirical research, human performance and other types of modeling, analysis, and development. The issues facing engineers, scientists, and other practitioners of human factors in transportation research are becoming more challenging and more critical.

The common theme across these sections is that they deal with the intersection of the human and the system. Moreover, many of the chapter topics cross section boundaries, for instance by focusing on function allocation in NextGen or on the safety benefits of a tower controller tool. This is in keeping with the systemic nature of the problems facing human factors experts in rail and road, aviation and maritime research— it is becoming increasingly important to view problems not as isolated issues that can be extracted from the system environment, but as embedded issues that can only be understood as a part of an overall system.

In keeping with a system that is vast in its scope and reach, the chapters in this book cover a wide range of topics. The chapters are organized into 30 sections over three volumes.

Part I:

Section 1: Aviation - Human Factors Issues in Air Transportation, Aviation Safety and Risk Analysis
Section 2: Aviation - Human Factors Issues in Air Traffic Management I
Section 3: Maritime - Design Tools and Methods
Section 4: Maritime - Communication and Cognitive Performances
Section 5: Road and Rail - Road Infrastructure, Design and Safety
Section 6: Road and Rail - System Design and Evaluation I
Section 7: Aviation - Recent Methodological Developments and Results from Psychophysiology in Ergonomics (PIE)
Section 8: Road and Rail - Highly Automated Driving - Aspects of Driver Vehicle Interaction I
Section 9: Road and Rail - Human Factors at Level Crossings
Section 10: Road and Rail - Risk and Driving

Part II:

Section 11: Road and Rail - Driver State Detection and Simulated Driving: Drawbacks and Opportunities
Section 12: Road and Rail - Highly Automated Driving -Aspects of Driver Vehicle Interaction II
Section 13: Road and Rail - Human Mobility Increase as a Key Element in Designing Innovative Transportation Systems
Section 14: Road and Rail - Perception and Control Issues in the Design of Advanced Driving Assistance Systems
Section 15: Road and Rail - Transport Data and Analysis
Section 16: Road and Rail - Systems Thinking in Road and Rail Transport
Section 17: Road and Rail - Electric Vehicles: New Challenges for Human Machine Interaction
Section 18: Road and Rail - System Design and Evaluation II
Section 19: Road and Rail - Driver Distraction and Inattention
Section 20: Aviation - Human Factors Issues in Air Traffic Management II
Section 21: Aviation - Human Factors Issues in Air Traffic Management III
Part III:

Section 22: Maritime - Human Diversity
Section 23: Maritime - Training and Work Simulations
Section 24: Road and Rail - Eco-Driving, Public Transport and Pedestrians
Section 25: Road and Rail - Human Factors in Rail Systems
Section 26: Road and Rail - Accident Analysis and Prevention
Section 27: Road and Rail - Individual Differences in Driving
Section 28: Road and Rail - Human Factors in Rail and RLX
Section 29: Road and Rail - System Design and Evaluation III
Section 30: Road and Rail - Naturalistic and Simulator HF Driving Communities

This book will be of interest and use to transportation professionals who work in the road and rail, aviation and maritime domains as it reflects some of the latest Human Factors and Ergonomics thinking and practice. It should also be of interest to students and researchers in these fields, to help stimulate research questions and ideas. It is my hope that the ideas and studies reported within this book will help to produce safer, more efficient and effective transportation systems in the future.

We are grateful to the Scientific Advisory Board which has helped elicit the contributions and develop the themes in the book. These people are academic leaders in their respective fields, and their help is very much appreciated, especially as they gave their time freely to the project.

Road and Rail

K. Bengler, Germany
G. Burnett, UK
P. Chapman, UK
F. Chen, Sweden
D. Coelho, Portugal
L. Dickson-Bull, USA
L. Dorn, UK
I. Glendon, Australia
I. Grabarek, Poland
J. Groeger, Ireland
R. Happee, Netherlands
S. Jamson, UK
D. Kaber, USA
J. Krems, Germany
M. Lenne, Australia
F. Mars, France
D. McAvoy USA
A. Mills, UK
R. Risser, Austria
P. Salmon, Australia
S. Sharples, UK
G. Walker, Scotland
K. Young, Australia

Aviation

A. Alexander, USA
H. Davison Reynolds, USA
M. Draper, USA
M. Feary, USA
B. Gore, USA
B. Hooey, USA
D. Kaber, USA
M. Kupfer, USA
K. Latorella, USA
A. Majumdar, UK
N. McDonald, Ireland
J. Mercer, USA
E. Rantanen, USA
C. Samms, USA
A. Sebok, USA
S. Verma, USA
T. von Thaden, USA
K. Vu, USA
B. Willems, USA

Maritime

A. D. Alkan, Turkey
D. Andrews, UK
M. Barnett, UK
M. Grootjen, Netherlands
T. Koester, Denmark
S. N. MacKinnon, Canada
M. Musio Sale, Italy