Contents

Part I  Road and Rail—Ergonomic Analysis and Assistance

Modelling Human Factors for Advanced Driving Assistance
System Design ................................................................. 3
Ata Khan

Effects of Driver Characteristics and Driver State on Predicting
Turning Maneuvers in Urban Areas: Is There a Need
for Individualized Parametrization? ................................. 15
Matthias Graichen and Verena Nitsch

Using Adaptive Interfaces to Encourage Smart Driving
and Their Effect on Driver Workload ............................... 31
Stewart Birrell, Mark Young, Neville Stanton and Paul Jennings

Is It Me or Is It You? Assessing the Influence of Individual
and Organizational Factors on Safety Performance in the North
American Railway Industry .............................................. 45
Dylan Smibert and Mark Fleming

The Use of Modelling Tool in Order to Evaluate the Dwelling
Times for Trains .............................................................. 57
Guillaume Craveur and Olivier Anselmi

An Overview of the Factors Associated with Driver Distraction
and Inattention Within the South African Railway Industry ...... 67
Inga Dambuza

Investigating the Potential to Mitigate Crowding Issues
on Trains by Providing Improved Information to Passengers .... 77
James Pritchard and John Preston
Part II Aviation—Human Factors in Aviation

Task Demand Variation in Air Traffic Control: Implications for Workload, Fatigue, and Performance ......................... 91
Tamsyn Edwards, Cynthia Gabets, Joey Mercer and Nancy Bienert

How Important Is Conflict Detection to the Conflict Resolution Task? .......................................................... 103
Joey Mercer, Cynthia Gabets, Ashley Gomez, Tamsyn Edwards, Nancy Bienert, Lauren Claudatos and Jeffrey Homola

Human Systems Integration and Strategic Planning .................. 117
Edward Austrian, Michael Sawyer and Katherine Berry

If It Gets Measured, It Can Be Managed ........................................ 127
Sue Burdekin

New Approach to Determination of Main Solution Taking Dominant of Air Traffic Controller During Flight Level Norms Violation .................................................. 137
Oleksii Reva, Sergii Borsuk, Bala Mirzayev Mushgyul-Ogli and Peyman Mukhtarov Shirin-Ogli

Part III Road and Rail—Pedestrians and Intersections

Quantitative Evaluation of Orientation Performance of Tactile Walking Surface Indicators for the Blind ...................... 151
Shinji Takahashi, Tatsuki Ishibashi, Katsuya Sato, Shin-ichi Ito and Shoichiro Fujisawa

Proof Experiment of LED Block Equipped with Projections to Locate Travel Direction for Blind and Vision Impaired Persons .......................................................... 159
Hideaki Nagahama, Tomoyuki Inagaki, Norihiro Ikeda, Kazuya Takahashi, Kiyohito Takeuchi, Hiroshi Ogino, Katsuya Sato, Sin-Ichi Ito, Motohiro Seiyama and Shoichiro Fujisawa

Effect of Tire Pressure to Driving Forces at a Wheelchair .......... 171
Masayuki Booka, Hidehisa Oku, Ikuo Yoneda and Shoichiro Fujisawa

Development of an Effective Pedestrian Simulator for Research .... 183
Richard Sween, Shuchisnigdha Deb, Daniel W. Carruth, Daniel Waddell and Masakazu Furuichi

Effect of Human Reactions at Signalized Intersections on Intersection Efficiency and Safety ......................... 193
Songsu Son

An Analysis of the Start-up Delay and Safety for Signalized Intersections: Impact of Left-Turn Phasing Sequences .............. 205
Mohamed Shawky, Abdulla Al-Ghafl and Hussain Al-Harthi
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving a Roundabout Design Through Simulation in a Unity 3D Virtual Environment</td>
<td>219</td>
</tr>
<tr>
<td>Li Wang, David Johnson and Yingzi Lin</td>
<td></td>
</tr>
<tr>
<td>Part IV Road and Rail—Driver, Behavior, Distraction and Fatigue</td>
<td></td>
</tr>
<tr>
<td>Exploration of the SHRP 2 NDS: Development of a Distracted Driving Prediction Model</td>
<td>231</td>
</tr>
<tr>
<td>Syndney Jenkins, Julius Codjoe, Ciprian Alecsandru and Sherif Ishak</td>
<td></td>
</tr>
<tr>
<td>Hanan Alnizami, Ignacio Alvarez and Juan E. Gilbert</td>
<td></td>
</tr>
<tr>
<td>Risk Factors for Driver Distraction and Inattention in Tram Drivers</td>
<td>257</td>
</tr>
<tr>
<td>Anjum Naweed, Janette Rose, Sangeeta Singh and Damien Kook</td>
<td></td>
</tr>
<tr>
<td>7 Years of Experience with Demerit Point System in the Czech Republic: Is It Effective?</td>
<td>269</td>
</tr>
<tr>
<td>Petr Zámečník, Vít Gabrhel, Veronika Kurečková and Pavel Řezáč</td>
<td></td>
</tr>
<tr>
<td>Driving Related Fear—A Complex Problem with a Complex Treatment</td>
<td>279</td>
</tr>
<tr>
<td>Veronika Kurečková, Aleš Zaoral, Pavel Řezáč and Petr Zámečník</td>
<td></td>
</tr>
<tr>
<td>Using a Prospect Theory Approach to Studying the Car-Following Model</td>
<td>287</td>
</tr>
<tr>
<td>Mohammadadel Khodakarami, Yunlong Zhang, Bruce X. Wang, Mohammadali Shirazi and Maryam Shirinzadeh Dastgiri</td>
<td></td>
</tr>
<tr>
<td>Enhancing Drivers’ Situation Awareness</td>
<td>301</td>
</tr>
<tr>
<td>Andreas Gregoriades and Maria Pampaka</td>
<td></td>
</tr>
<tr>
<td>Driving Behavior in Weaving Maneuver: A Driving Simulator Study</td>
<td>313</td>
</tr>
<tr>
<td>Maria Rosaria De Blasiis, Chiara Ferrante, Antonella Santilli and Valerio Veraldi</td>
<td></td>
</tr>
<tr>
<td>Observations of Drivers’ Behavior When Opening Car Door with Two Stages</td>
<td>327</td>
</tr>
<tr>
<td>Cheng-Yong Huang</td>
<td></td>
</tr>
<tr>
<td>Resurrecting Driver Workload, Multivariate Analysis of Test Track Data</td>
<td>337</td>
</tr>
<tr>
<td>Jack L. Auflick</td>
<td></td>
</tr>
</tbody>
</table>
Effect of Mental Workload and Aging on Driver Distraction
Based on the Involuntary Eye Movement ................................. 349
Le Anh Son, Hiroto Hamada, Makoto Inagami, Tatsuya Suzuki
and Hirofumi Aoki

A Study on the Positioning of a Mounted Mobile Phone
to Reduce Distraction While Driving Among Young Adults ......... 361
Angelique Mae Alconera, Lakan Garcia, Jeremy Christine Mercado
and Alyssa Jean Portus

Characterization of Driver Perception Reaction Time at the Onset
of a Yellow Indication .......................................................... 371
Ihab El-Shawarby, Hesham Rakha, Ahmed Amer and Catherine McGhee

Part V Maritime—Human Performance and Safety Assessment
in the Maritime Domain

Evacuations of Passenger Ships in Inclined Positions—Influence
of Uphill Walking and External Stressors on Decision-Making
for Digital Escape Route Signage ........................................... 385
Sonja Th. Kwee-Meier, Alexander Mertens and Christopher M. Schlick

FRAM in FSA—Introducing a Function-Based Approach
to the Formal Safety Assessment Framework .......................... 399
Gesa Praetorius, Armando Graziano, Jens-Uwe Schröder-Hinrichs
and Michael Baldauf

Designing New Interfaces for Submarines: From Cognitive Work
Analysis to Ecological Interface Design ................................... 413
Daniel Fay, Neville A. Stanton and Aaron Roberts

The Command Team Experimental Test-Bed Phase Two:
Assessing Cognitive Load and Situation Awareness
in a Submarine Control Room ................................................. 427
Aaron Roberts, Neville A. Stanton and Daniel Fay

Passenger Safety During Rescue and Evacuation from Passenger
Vessels: A Holistic Concept for the Integration
of Technical Assistance ....................................................... 439
Silvia Höckling, Alexander Kunz and Florian Motz

Part VI Road and Rail—Vehicle Automation

What Drives Ecodriving? Hybrid Electric Vehicle Drivers’ Goals
and Motivations to Perform Energy Efficient Driving Behaviors .. 451
Thomas Franke, Matthias G. Arend, Rich C. McIlroy
and Neville A. Stanton
Annika Larsson

Assessing Truck Drivers’ and Fleet Managers’ Opinions Towards Highly Automated Driving .............................................. 473
Natalie Richardson, Fabian Doubek, Kevin Kuhn and Annika Stumpf

Will There Be New Communication Needs When Introducing Automated Vehicles to the Urban Context? ................................ 485
Victor Malmsten Lundgren, Azra Habibovic, Jonas Andersson, Tobias Lagström, Maria Nilsson, Anna Sirkka, Johan Fagerlönn, Rikard Fredriksson, Claes Edgren, Stas Krupenia and Dennis Saluää

Command-Based Driving for Tactical Control of Highly Automated Vehicles ................................................................. 499
Azra Habibovic, Jonas Andersson, Jan Nilsson, Maria Nilsson and Claes Edgren

Driving Simulator Experiment on Ride Comfort Improvement and Low Back Pain Prevention of Autonomous Car Occupants .... 511
Junya Tatsuno and Setsuo Maeda

The Unknown Paradox of “Stop the Crash” Systems: Are We Really Improving Driver Safety? ........................................... 525
Victoria A. Banks and Neville A. Stanton

Calibrating Trust to Increase the Use of Automated Systems in a Vehicle ................................................................. 535
Siddartha Khastgir, Stewart Birrell, Gunwant Dhadyalla and Paul Jennings

Cooperative Guidance and Control in Highly Automated Convoys—StrAsRob ................................................................. 547
Marcel C.A. Baltzer, Claudia Rudolph, Daniel López and Frank Flemisch

Autonomous Vehicles in Developing Countries: A Case Study on User’s View Point in Pakistan ........................................... 561
Irum Sanaullah, Amjad Hussain, Amna Chaudhry, Keith Case and Marcus Enoch

A New Method and Results for Analyzing Decision-Making Processes in Automated Driving on Highways ........................ 571
Eugen Altendorf, Constanze Schreck and Frank Flemisch
A Human-Machine Interface for Cooperative Highly Automated Driving .......................................................... 585
Frederik Naujoks, Yannick Forster, Katharina Wiedemann
and Alexandra Neukum

Part VII Road and Rail—Logistics and Passengers

Child Restraint Seat Installation Errors and a Simple Mechanical Device to Mitigate Misuse ........................................ 599
Xinqi Chen and William Altenhof

Experimentation System for Determining Bus Routes for Customers of Supermarket Chains .................................... 611
Artur Pohoski, Leszek Koszalka, Iwona Pozniak-Koszalka
and Andrzej Kasprzak

Carbon Nanotube Modified Asphalt Binders for Sustainable Roadways ......................................................... 623
Rafiqul A. Tarefder and Arif Zaman

Sensor Oriented Approach to Prevent Hyperthermia for Children in Car .............................................................. 635
Maysoon Abulkhair, Lujain Mulla, Amani Aldahiri, Hanin Alkhatabi,
Hala Alonezi and Somia Razzaq

Relationships Between Years of Licensure and Driving Style Measured with a Short Simulator-Based Test (N = 650) ........ 641
Joost de Winter and Jorrit Kuipers

The Usefulness of Augmenting Reality on Vehicle Head-up Display ................................................................. 655
Kyongho Kim and Yoonsook Hwang

Cognitive Constructs and Psychomotor Tracking ................................................................. 663
Rebecca Fosha, Lisa Durrance Blalock and Steven Kass

Fatigue Driving Influence Research and Assessment ......................... 677
Gang Wu, Zhangwei Liu, Xiaodong Pan, Feng Chen, Meng Xu,
Deshan Feng and Zhiguan Xia

Research on Design Pattern of City Tunnel Side Wall Based on the Driver Visual Effect ........................................ 689
Zhiguan Xia, Yonggang Lv, Xiaodong Pan, Feng Chen, Meng Xu,
Gang Wu and Deshan Feng

Research on Drivers’ Recognition Ability of Obstacles Under Lighting Environment of Tunnel Entrance Sections .......... 703
Meng Xu, Zewen Yu, Xiaodong Pan, Zhiguan Xia, Feng Chen,
Shaoshuai Li and Gang Wu
Research on Optimized Design of Bridge-Tunnel Linkage Sections on Mountainous Highways Considering the Effect of Crosswind on Driver Behavior .......................................................... 717
Deshan Feng, Kai Wu, Feng Chen, Xiaodong Pan, Meng Xu, Gang Wu and Zhiguang Xia

Part VIII  Road and Rail—Accidents and Pedestrian Modeling

Reducing Reversing Vehicle Incidents in Australian Fleet Settings—A Case Study .......................................................... 733
Darren Wishart, Klaire Somoray and Bevan Rowland

The Relationship Between Traffic Rule Violations and Accident Involvement Records of Drivers ........................................... 745
Mohamed Shawky, Yousef Al-Badi, Iyad Sahnoon and Hussain Al-Harthi

Acquisition System Improvement and Results Analysis in Small Overlap and Oblique Tests .................................................. 757
Núria Parera and Alba Fornells

Part IX  Road and Rail—Warning Systems/Public Transport

Effects of Intersection Collision Warning Systems and Traffic Calming Measures on Driver’s Behavior at Intersections .......................................................... 773
Manuel Silvestri and Francesco Bella

Directional Identification of Sirens and Warnings in a Simulated Driving Task: Comparison of Two Loudspeaker Technologies ...... 787
Christine Mégard, Valentin Le Guelvout, Steven Strachan, Cendrine Mercier and Christian Bolzmacher

Bus Rapid Transit (BRTS): A Case Study to Investigate Its Use by the Persons with Disability .................................................. 799
Devarshi Chaurasia, Sandeep Sankat and Sushil Kumar Solanki

Ergonomic Assessment and Evaluation of Philippine Buses for Filipinos: A Case Study on Metro Manila City Buses .......... 811
Dyan Veronica Bombais, Janina Angeli Ferrer, Arrenzo Paul Perea and Alyssa Jean Portus

QZTool—Automatically Generated Origin-Destination Matrices from Cell Phone Trajectories .................................................. 823
Christopher Horn, Heimo Gursch, Roman Kern and Michael Cik
Follow-the-Greens: The Controllers’ Point of View Results from a SESAR Real Time Simulation with Controllers. .................. 837
Karsten Straube, Marcus Roßbach, Björn D. Vieten and Kerstin Hahn

So Young Kim, Jennifer Cooper, Alexander Carroll and Sundar Murugappan

An Important Failure: Lessons from Daedalus and Icarus .......... 863
Simon Cookson

Improved User Acceptance During Stepwise Air Traffic Control Display Functionality Introduction. ................................. 873
Oliver Ohneiser

EEG-Based Human Factors Evaluation of Conflict Resolution Aid and Tactile User Interface in Future Air Traffic Control Systems ................................................................. 885
Xiyuan Hou, Fitri Trapsilawati, Yisi Liu, Olga Sourina, Chun-Hsien Chen, Wolfgang Mueller-Wittig and Wei Tech Ang

Paul Schutte, Kenneth Goodrich and Ralph Williams

Developing a Mental Model in ATC: 1—Learning Situational Assessment ................................................................. 913
Richard W. Rohde

Sleep Environment Recommendations for Future Spaceflight Vehicles. ................................................................. 923
Zachary A. Caddick, Kevin Gregory and Erin E. Flynn-Evans

Well Worth a Detour?—Users’ Preferences Regarding the Attributes of Fast-Charging Infrastructure for Electromobility . . . 937
Ralf Philipsen, Teresa Schmidt and Martina Ziefe

Introducing Wireless Charging for Drivers of Electrical Vehicles in Sweden—Effects on Charging Behaviour and Attitudes ........... 951
Jonas Andersson, Maria Nilsson and Stefan Pettersson
Exploring the Value of Information Delivered to Drivers 963
Jaemin Chun, SeungJun Kim and Anind K. Dey

A Typology of In-Vehicle Eco-Driving Feedback 979
Angela Sanguinetti, Hannah Park, Suhaila Sikand and Ken Kurani

Part XII Road and Rail—Education and Hazard Perception

Education and Training of Problematic Drivers and Drivers of the Integrated Emergency System 995
Pavel Řezáč, Veronika Kurečková, Petr Zámečník and Aleš Zaoral

Development and Trial of an Item Set for Testing Traffic Perception and Hazard Avoidance 1003
Annika Dreßler, Bianca Bredow, Lars Rößger, Mathias Rüdel and Dietmar Sturzbecher

David M. Cades, Caroline Crump, Benjamin D. Lester and Douglas Young

Part XIII Road and Rail—Infrastructure

Generating a Lane-Specific Transportation Network Based on Floating-Car Data 1025
Robert Neuhold, Michael Haberl, Martin Fellendorf, Gernot Pucher, Mario Dolancic, Martin Rudigier and Jörg Pfister

Construction of PCT Girder Bridge Using an Overhead Movable Scaffolding System (MSS) 1039
Chuan Chuntavan, Nuthaporn Nuttayasakul, Martin P. Bae and Huang Aiwu

Part XIV Maritime—Users, Tasks and Tools in the Maritime Domain

Prediction of Human Postural Response in Shipboard Environments 1053
Nicholas Bourgeois and Robert Langlois

Maritime and Port Activity Analysis Tool 1065
Mahdi Safa and Brian N. Craig

Boat Camping Sailing Yacht: A Study Case of Conscious Yacht Design 1075
Massimo Di Nicolantonio, Jessica Lagatta, Antonio Marano and Andrea Vallicelli
Contents

Design for Inclusion in the Field of Sailing Yachts. Design for All Approach for Small Sailing Boats. 1087
Jessica Lagatta, Andrea Vallicelli, Massimo Di Nicolantonio and Antonio Marano

Part XV Road and Rail—Safety, Driver Psychophysiology and Eye Tracking

Measuring Trade-Offs Between Risk and Travel Time Based on Experimental Speed Data 1103
Paolo Intini, Pasquale Colonna, Nicola Berloco and Vittorio Ranieri

Crash Testing High-Power Portable Traction System Device. 1117
Núria Parera, Daniel Sánchez, Alba Fornells, Eloi Boix and René Molina

Traffic Light Assistant Simulation: Foggy Weather. 1129
Jacob Poirier, Fabian Ludwig and Sanaz Motamedi

Skill Metrics for Mobile Crane Operators Based on Gaze Fixation Pattern 1139
Jouh Yeong Chew, Koichi Ohtomi and Hiromasa Suzuki

Towards a Real-Time Driver Workload Estimator: An On-the-Road Study 1151
Peter van Leeuwen, Renske Landman, Lejo Buning, Tobias Heffelaar, Jeroen Hogema, Jasper Michiel van Hemert, Joost de Winter and Riender Happee

Impact of Motorcyclists’ Travel Behavior on Delay and Level-of-Service at Signalized Intersections in Malaysia 1165
Lee Vien Leong and Jong Hui Lee
Advances in Human Aspects of Transportation
A Stanton, N.A.; Landry, S.; Di Bucchianico, G.; Vallicelli, A. (Eds.)
2017, XX, 1178 p. 456 illus., 308 illus. in color., Softcover
ISBN: 978-3-319-41681-6