Advances in Human Aspects of Transportation

Part III

Advances in Human Factors and Ergonomics 2014

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Part III

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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
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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
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Section 15: Road and Rail - Transport Data and Analysis
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Section 18: Road and Rail - System Design and Evaluation II
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Section 20: Aviation - Human Factors Issues in Air Traffic Management II
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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.

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