Contents

Part A  Driver Behavior and Modeling Systems

1  Towards Multimodal Driver’s Stress Detection  ......................... 3
   Hynek Boril, Pinar Boyraz, and John H.L. Hansen

2  Driver Emotion Profiling from Speech  ................................. 21
   Norhaslinda Kamaruddin, Abdul Wahab, and Hüseyin Abut

3  Driver Status Identification from Driving Behavior Signals ........ 31
   Emre Öztürk and Engin Erzin

4  Multilayer Modeling of Driver Behavior Based on Hierarchical Mode Segmentation ................................. 57
   Hiroyuki Okuda, Ato Nakano, Tatsuya Suzuki, Soichiro Hayakawa, and Shinkichi Inagaki

Part B  In-Vehicle Interactive/Speech Systems

5  Evaluation of In-Car Communication Systems  ......................... 73
   Gerhard Schmidt, Anne Theiß, Jochen Withopf, and Arthur Wolf

6  Wideband Hands-Free in Cars – New Challenges for System Design and Testing  ................................. 109
   Hans W. Gierlich and Frank Kettler

7  A Novel Way to Start Speech Dialogs in Cars by Talk-and-Push (TAP)  ................................. 123
   Balázs Fodor, David Scheler, and Tim Fingscheidt

8  Cognitive Dialog Systems for Dynamic Environments: Progress and Challenges  ................................. 133
   Felix Putze and Tanja Schultz
9 In-Vehicle Speech and Noise Corpora ........................................... 145
Nitish Krishnamurthy, Rosarita Lubag, and John H.L. Hansen

10 A Likelihood-Maximizing Framework for Enhanced
   In-Car Speech Recognition Based on Speech
   Dialog System Interaction .................................................. 159
Tristan Kleinschmidt, Sridha Sridharan, and Michael Mason

11 Feature Compensation Employing Variational Model
   Composition for Robust Speech Recognition in In-Vehicle
   Environment ................................................................. 175
Wooil Kim and John H.L. Hansen

12 Dual-Channel Speech Enhancement Using
   a Perceptual Filterbank for Hands-Free Communication ......... 187
Jongsung Yoon, Kihyeon Kim, Jounghoon Beh,
Robert H. Baran, and Hanseok Ko

13 Optimal Multi-Microphone Speech Enhancement in Cars ........ 195
Lae-Hoon Kim and Mark Hasegawa-Johnson

Part C  Vehicle Dynamics, Vision, Active Safety, and Corpora

14 Generating Reference Views of Traffic Intersection
   for Safe Driving Assistance .............................................. 207
Jien Kato and Yu Wang

15 Computer Vision Systems for “Context-Aware” Active
   Vehicle Safety and Driver Assistance .................................... 217
Pinar Boyraz, Xuebo Yang, and John H.L. Hansen

16 Integrated Pedestrian Detection and Localization
   Using Stereo Cameras...................................................... 229
Yu Wang and Jien Kato

17 An Examination of Overtaking Judgments Based
   on Limitations in the Human Perceptual System:
   Implications for the Design of Driver-Assistance Systems ....... 239
Anand Tharanathan

18 Advances in Multimodal Tracking of Driver Distraction ......... 253
Carlos Busso and Jinesh Jain

19 A Stochastic Approach for Modeling
   Lane-Change Trajectories ............................................... 271
Yoshihiro Nishiwaki, Chiyomi Miyajima,
Norihide Kitaoka, and Kazuya Takeda
20 CAN-Bus Signal Analysis Using Stochastic Methods and Pattern Recognition in Time Series for Active Safety ........ 283
Amardeep Sathyanarayana, Pinar Boyraz, Zelam Purohit, and John H.L. Hansen

Part D Transportation, Vehicle Communications, and Next Generation Vehicle Systems

21 Adaptive Error Resilient Mechanisms for Real-Time Multimedia Streaming over Inter-Vehicle Communication Networks ........................................ 295
Matteo Petracca, Paolo Bucciol, Antonio Servetti, and Juan Carlos De Martin

22 Matisse: A Large-Scale Multi-Agent System for Simulating Traffic Safety Scenarios ......................... 309
Rym Zalila-Wenkstern, Travis L. Steel, Ovidiu Daescu, John H.L. Hansen, and Pinar Boyraz

Index ........................................................................................................ 319
Digital Signal Processing for In-Vehicle Systems and Safety
Hansen, J.H.L.; Boyraz, P.; Takeda, K.; Abut, H. (Eds.)
2012, XXII, 326 p., Hardcover
ISBN: 978-1-4419-9606-0