Heidi Krömker (Ed.)

HCI in Mobility, Transport, and Automotive Systems

First International Conference, MobiTAS 2019
Held as Part of the 21st HCI International Conference, HCII 2019
Orlando, FL, USA, July 26–31, 2019
Proceedings

Springer
Contents

Interaction in Autonomous and Semiautonomous Vehicles

Turmoil Behind the Automated Wheel: An Embodied Perspective on Current HMI Developments in Partially Automated Vehicles 3
   Anika Boelhouwer, Jelle van Dijk, and Marieke H. Martens

Self-driving Vehicles: Do Their Risks Outweigh Their Benefits? 26
   Peng Liu and Zhigang Xu

Methodologies to Understand the Road User Needs When Interacting with Automated Vehicles 35
   Evangelia Portouli, Dimitris Nathanael, Angelos Amditis, Yee Mun Lee,
   Natasha Merat, Jim Uttley, Oscar Giles, Gustav Markkula,
   André Dietrich, Anna Schieben, and James Jenness

Multi-methods Research to Examine External HMI for Highly Automated Vehicles 46
   Melissa Cefkin, Jingyi Zhang, Erik Stayton, and Erik Vinkhuyzen

The Hexagonal Spindle Model for Human Situation Awareness While Autonomous Driving 65
   Daehhee Park and Wanchul Yoon

Future Personalized Autonomous Shared Car Design Based on User Experience 76
   Yufei Xie and Ting Han

HMI Design for Autonomous Cars: Investigating on Driver’s Attention Distribution 92
   Weizhe Chen and Wei Liu

Investigating Temporal Changes of Behavioral Adaptation and User Experience During Highly Automated Driving 103
   Dominique Stimm, Arnd Engeln, Julia Schäfer, and Holger Schmidt

Exploratory Study into Designing Enhanced Commute Experiences in Autonomous Vehicles with Connected Sensors and Actuators 115
   Zheng Sun, Hugues Vigner, Shreyas Bhayana, Changhao Zheng,
   Ziwei Zhang, Euiyoung Kim, and Alice M. Agogino

Attentional Dynamics After Take-Over Requests: The Need for Handover Assistance Systems in Highly Automated Vehicles 128
   Tobias Vogelpohl and Mark Vollrath
Driving Experience

Combining Virtual Reality (VR) Technology with Physical Models – A New Way for Human-Vehicle Interaction Simulation and Usability Evaluation .................................................. 145
  Chao Ma and Ting Han

Designing Augmented Reality Navigation Visualizations for the Vehicle: A Question of Real World Object Coverage? ................................................................. 161
  Nikolai Pährsch, Clemens Harnischmacher, Martin Baumann, Arnd Engeln, and Lutz Krauß

A Method to Assess the Effect of Vertical Dynamics on Driving Performance in Driving Simulators: A Behavioural Validation Study .............................. 176
  Arben Parduzi, Joost Venrooij, and Stefanie Marker

  Seda Aydogdu, Corinna Seidler, and Bernhard Schick

Do Drivers Prefer Female Voice for Guidance? An Interaction Design About Information Type and Speaker Gender for Autonomous Driving Car ...................... 208
  Wang Ji, Ruijie Liu, and SeungHee Lee

Development of Immersive Vehicle Simulator for Aircraft Ground Support Equipment Training as a Vocational Training Program ..................... 225
  Yongjae Park, Yonghyun Park, and Hyungsook Kim

Proposal of Driving Support Agent Which Speak Based on Politeness Theory .................. 235
  Tomoki Miyamoto, Daisuke Katagami, Yuka Shigemitsu, Mayumi Usami, Takahiro Tanaka, Hitoshi Kanamori, Yuki Yoshihara, and Kazuhiro Fujikake

Do You Shift or Not? Influence of Trajectory Behaviour on Perceived Safety During Automated Driving on Rural Roads .............................. 245
  Patrick Rossner and Angelika C. Bullinger

Automobile Auditory Experience: A Pilot Study ........................................ 255
  Yang Zhao and Hua Dong

User Experience in Real Test Drives with a Camera Based Mirror – Influence of New Technologies on Equipping Rate for Future Vehicles .......................... 270
  Corinna Seidler, Seda Aydogdu, and Bernhard Schick
Mobility and Transport

Improving Mobility in University Communities Using a Collaborative Prototype ........................................ 285
   Erick López-Ornelas

A Comprehensive Persona Template to Understand Citizens’ Mobility Needs ............................................. 295
   Svenja Polst and Phil Stüpfert

Understanding the Usefulness and Acceptance of Adaptivity in Smart Public Transport .............................. 307
   Christine Keller, Susann Struwe, Waldemar Titov, and Thomas Schlegel

Challenges for Local Authorities in Planning and Implementing Sustainable and User-Oriented Mobility Measures and Services ......................................................... 327
   Sebastian Spundflasch and Heidi Krömker

Monitoring Road Surface Conditions for Bicycles – Using Mobile Device Sensor Data from Crowd Sourcing .................. 340
   Waldemar Titov and Thomas Schlegel

Spatial Features and Elements Affecting Indoor Wayfinding—A Case Study in a Transit Hub ......................... 357
   Dadi An, Junnan Ye, and Wei Ding

Smart Biking as Gendered Innovations? The Case of Mobike in China .................................................... 368
   Hilda Romer Christensen

Gender Issues in the Digitalized ‘Smart’ Mobility World – Conceptualization and Empirical Findings Applying a Mixed Methods Approach ....................................................... 378
   Barbara Lenz, Viktoriya Kolarova, and Kerstin Stark

How to Integrate Gender Equality in the Future of “Smart” Mobility: A Matter for a Changing Planning Practice ............................................................................................................ 393
   Lena Levin

User Centred Design of a Knowledge Repository to Support Gender Smart Mobility .................................... 413
   Cathleen Schöne, Sebastian Spundflasch, and Heidi Krömker

Towards an Integrated Mobility Service Network ............................................................................................... 430
   Cindy Mayas, Tobias Steinert, and Heidi Krömker

Mobility-as-a-Service (MaaS) Testbed as an Integrated Approach for New Mobility - A Living Lab Case Study in Singapore ......................................................................................... 441
   Zhanhe Ryan Jin and Anna Zhi Qiu
Business and Billing Models for Mobile Services Using Secure Identities . . . 459
   Ulrike Stopka, Gertraud Schäfer, and Andreas Kreisel
Study on Evaluation of Subway Passenger Wayfinding Systems
   Based on SEM ................................................................. 477
   Chuan-yu Zou, Guangxin Wang, and Yongquan Chen
User Journey with Intelligent Public Transportation System in Shanghai . . . 487
   Yuqian Ni, Fan Yi, Shaolin Ma, and Yanjuan Sun
Investigating Users' Responses to Context-Aware Presentations
   on Large Displays in Public Transport ........................................ 500
   Romina Kühn, Diana Lemme, Juliane Pfeffer, and Thomas Schlegel
Crossing the Street Across the Globe: A Study on the Effects
   of eHMI on Pedestrians in the US, Germany and China. .................. 515
   Florian Weber, Ronee Chadowitz, Kathrin Schmidt,
   Julia Messerschmidt, and Tanja Fuest
Author Index .................................................................................. 531