Smart Vehicles

edited by

J.P. Pauwelussen

H.B. Pacejka: Anticipinal state of the state

TECHNISCHE HOCHSCHULE DARMSTADT FACHGEBIET FAHRZEUGTECHNIK PROF. DR.-ING. B. BREUER PETERSENSTRASSE 30 64287 DARMSTADT TELEFON 06151-163796 - Fax 165192



Inv.-Nr.

TABLE OF CONTENTS

SECTION ONE: KEYNOTE PAPERS	1
H. Braess Prometheus - A Contribution to a Comprehensive Concept for Future Road Traffic	3
B.J. Hollis Telematics and Information for the Automobile User. The Intelligent Car	37
P.M.W. Elsenaar Smart Vehicles Need Smart Highways	45
SECTION TWO: INTERACTION VEHICLE-ENVIRONMENT	53
H.B. Pacejka The Role of Tyre Dynamic Properties	55
K. Naab, R. Hoppstock Sensor Systems and Signal Processing for Advanced Driver Assistance	69
P. Degaugue, M. Lienard Introduction to Mobile Communication	98
M. Rombaut A Driving Assistance System: The French Demonstrator Prolab2	111
SECTION THREE: ACTIVE CHASSIS CONTROL - I	123
H. Wallentowitz Introduction to Active Chassis Control	125
P.J.Th. Venhovens, A.C.M. van der Knaap Delft Active Suspension (DAS). Background Theory and Physical Realization	139
R.S. Sharp Preview Control of Active Suspensions	166
D.A. Crolla Active Suspension Control: Review of Recent Applications	183

VI CONTENTS

SECTION FOUR: ACTIVE CHASSIS CONTROL - II	203
J.J.M. van Oosten, S.T.H. Jansen Development of an Active Rear Wheel Steering System: Theory and Realisation	205
G. Mastinu Integrated Controls and Interactive Multi-Objective Programming for the Improvement of Ride and Handling of Road Vehicles	219
H. Wallentowitz Longitudinal Control and Interaction with Other Systems	252
E. Donges Supporting Drivers by Chassis Control Systems	276
SECTION FIVE: COMMERCIAL VEHICLES	297
O. Nordström Visions of Future Improvements of Stability, Steerability and Brakeability of Heavy Vehicle Combinations by Use of Smart Technology from a Swedish Point of View	299
H.Chr. Pflug, E.C. von Glasner, R. Povel Improvement of Commercial Vehicles' Handling and Stability by Smart Chassis Systems	318
B.G. Bevan The Development and Application of a Novel Hydropneumatic Suspension for Commercial Vehicles	339
L. Kusters Increasing Roll-over Safety of Commercial Vehicles by Application of Electronic Systems	362
SECTION SIX: DRIVER-VEHICLE INTERACTION	379
M.D. Galer Driver Vehicle Interaction and Human Factors	381
J.A. Rothengatter Designing In-Vehicle Interaction to Meet User Requirements: The Value of Human Factors	388

CONTENTS VII

A. Parkes	
The Contribution of Human Factors Guidelines and Standards to Usable and Safe In-Vehicle Systems	393
J. Godthelp Integration of In-Car and Roadside Driver Support Systems in a Self- Explaining Traffic System	403
SECTION SEVEN: TRAFFIC SAFETY	417
O. Carsten A Framework for Safety Evaluation	419
R. Kulmala, P. Rämä Safety Evaluation in Practice - Weather Warning Systems	428
L. Ekman ATT Systems for Safety Enhancement	439
SECTION EIGHT: CLOSING	449
J.P. Pauwelussen Smart Vehicles - For Better and For Worse	45
J.P. Pauwelussen Panel Discussion	463
Authors Addresses	46:
Index	46